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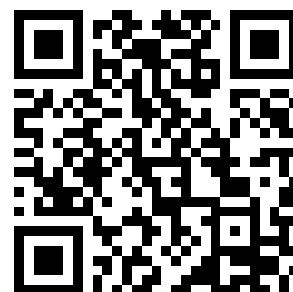
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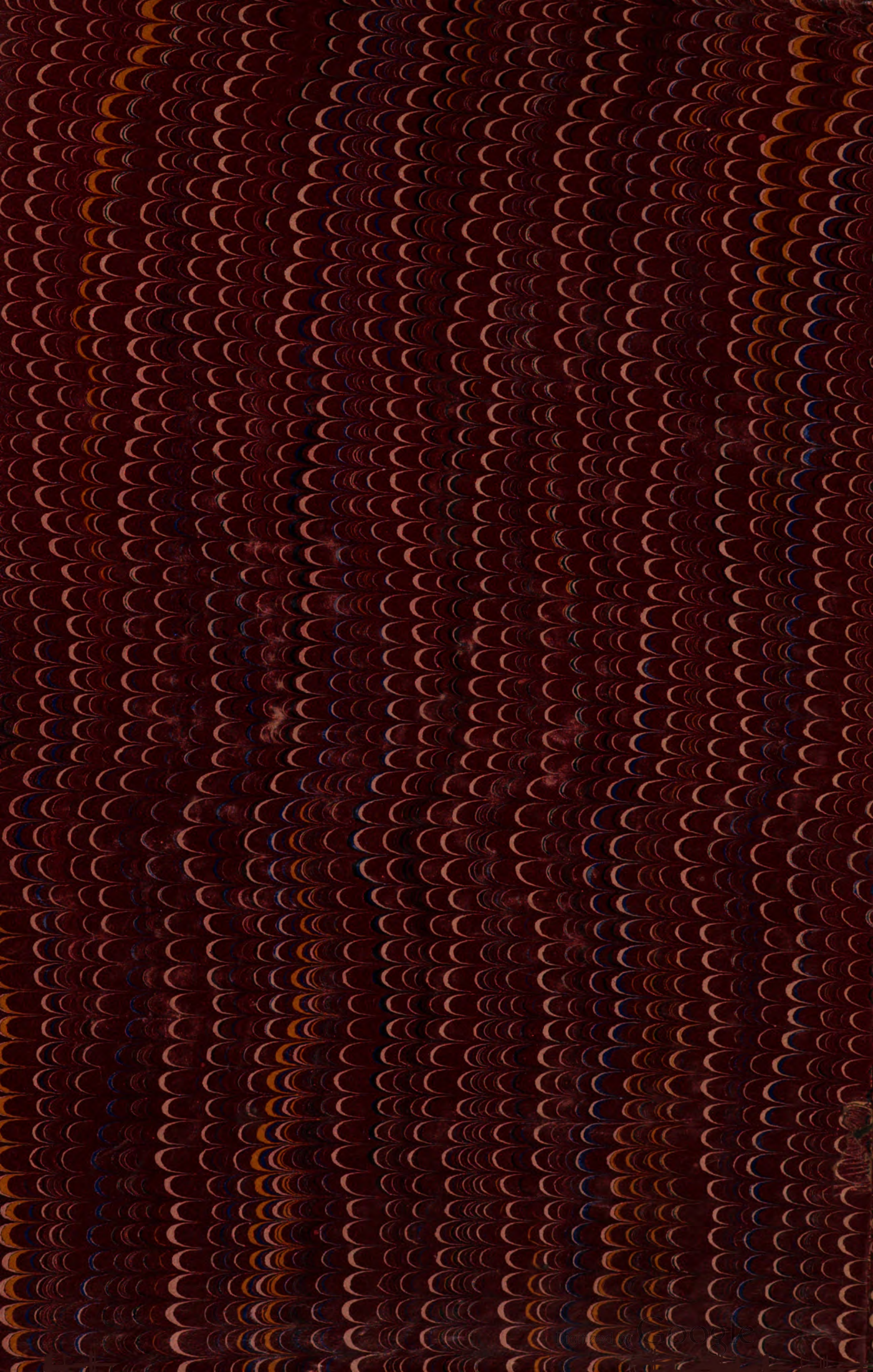
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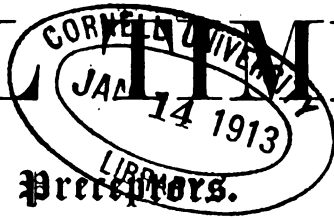
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AND  
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## THE COLLEGE OF PRECEPTORS. INCORPORATED BY ROYAL CHARTER.

### GENERAL MEETING.

The Half-Yearly General Meeting of the Members of the Corporation will be held at the College, Bloomsbury Square, W.C., on Saturday, the 25th of January, 1913, at 3 p.m.

### LECTURES FOR TEACHERS.

The First Course of Lectures (Forty-first Annual Series), by Prof. J. ADAMS, M.A., B.Sc., LL.D., F.C.P., on "Educational Psychology," will commence on Thursday, February 13th, 1913, at 7 p.m.

This Course will to a certain extent prepare for the Examinations of the College in connexion with the Associateship, the Licentiate, and the Fellowship; but its main purpose will be to present the facts of Psychology in such a way as to enable the teacher to make use of them in the practical work of the school. The work will be so arranged as to give the students an opportunity of comparing the results of their experience with the latest results of psychological research into educational processes. The Lectures will be illustrated by frequent references to the work in all classes of schools.

For Syllabus, see page 4.

### EXAMINATIONS.

**Diplomas.**—The Summer Examination of Teachers for the Diplomas of the College will commence on the 1st of September, 1913.

**Practical Examination for Certificates of Ability to Teach.**—The next Practical Examination will be held in February, 1913.

**Examination of Foreign Teachers for Certificates of Proficiency in English.**—These Examinations may be held at any date.

**Certificate Examinations.**—The Midsummer Examination for Certificates will commence on the 23rd of June, 1913.

**Lower Forms Examinations.**—The Midsummer Examination will commence on the 24th of June, 1913.

**Professional Preliminary Examinations.**—These Examinations are held in March and September. The Spring Examination in 1913 will commence on the 4th of March.

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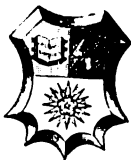
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II. (Feb. 20.) *The Habitual.*—Meaning of habit: relation to consciousness: co-ordination and accommodation: place of association in organic development: continuum of common interest: convergent and divergent association: reintegration: projection: habit making and habit breaking: intellectual side: fact into faculty: imitation and suggestion: manipulation of habits: suggestion depends on paid-up mental capital.

III. (Feb. 27.) *The Perceptual.*—Nature of sensation: sense organs: five gateways of knowledge: organization of knowledge: perception: cognitive aspect of sensation: objective reference: "training of the senses": fallacy: apperception: observation: relation to inference: observation zone: inference point: zone of inference: gaping point: the two worlds: nature of relation between them: resemblance and correspondence.

IV. (Mar. 6.) *The Conceptual.*—Conception distinguished from perception: conception essentially active and subjective: psychological and logical concept: nature of ideas: presented content and presentative activity: fusion, complication and arrest: mediate and immediate recall: concept really the power to behave intelligently in relation to certain stimuli: the series—percept, image, generalized image (type) concept.

V. (Mar. 13.) *Modes of Expression.*—Relation between impression and expression: various theories of origin of speech: possibility of thought without speech: words and their meaning: connotation and denotation: transitive and intransitive words: definition: laws of classification: gestures: deliberate and non-deliberate: term *gesture* sometimes limited in application: all kinds of gestures are important to the teacher.

VI. (Mar. 20.) *Memory.*—As natural endowment: not limited to intellectual processes: personal identity: possibility of improving the natural memory: retention and recall: Bergson's two kinds of memory: use of the memory: predominance of purpose: need for selection: learning by rote: mnemonics and the educational applications: "pictorial" and "rational" memory: memory in relation to imagination and to reality.

VII. (April 24.) *Imagination.*—"An inverted memory": prevailing misconceptions: unwarranted restriction to the aesthetic side of school life: relation of conception to imagination: free and constrained imagination: limitations imposed by "picture thinking": importance of clearly imaged ends: function in science: the framing of hypotheses: place in the teaching of geography and history: nature and moral value of ideals: day dreaming.

VIII. (May 1.) *Attention and Interest.*—Attention as general innate quality: index of educability: prehensile process: quarrels about classification of kinds of attention: absorption: relation to the will: interest the pleasure-pain aspect of attention: interaction between interest and attention: confusion between the interesting and the pleasant: drudgery: interest as means and as end: the mechanism of attention: rhythm: concentration and diffusion beats.

IX. (May 8.) *Temperament and Type.*—Nature of temperament: its permanency: Lotze's view and its educational applications: physical attributes of the temperaments: relation of temperament to personality: meaning of type: contrast with *average*: personal coefficients: classification of pupils by types: dangers: the superposition of classes: practical use of the type in school: abbreviated thinking: ideal pupil as standard: specification of types.

X. (May 15.) *The Emotions.*—Nature: cause of their dispute among philosophers: various theories: emotions to be utilized not eliminated: relation to passions and to the intellect: expression of the emotions: Lange-James theory; McDougall's theory of the relation between instinct and emotion: connexion between emotion and desire: the mechanism of the emotions and its manipulation by the teacher; practical distinction between emotions and sentiments.

XI. (May 22.) *The Will.*—Nature of will: relation to emotions and to desire: influence of mere knowledge on will: nature and function of motives: fallacy underlying the phrase "the strongest motive": freedom of the will in relation to the teacher's influence as an educator: relation of will to character and of character to conduct: genesis of the will in the individual; subjective and objective character: plasticity and rigidity of character.

XII. (May 29.) *Reasoning.*—General nature and relation to judgment: thinking means the fitting of means to ends by the use of ideas: always implies purpose: thinking as opposed to reverie: imagery in thinking: abstract thought: laws of thought as thought: conditions under which all thinking must have the same conclusions: possibility and causes of error: teacher's power to control the thinking of his pupils: manipulation of the matter of thought.

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## The Educational Times.

### LEISURE AND WORK.

THE BISHOP OF SOUTHWARK, giving away the prizes recently at a girls' school, spoke of education as a preparation for leisure. He said that a new term—"vocational"—had been lately introduced into educational politics to describe the aim of school life. He pointed out that the vocation was only a part of life, and that education must help to fill wisely the hours not spent on business. Drawing on his own experience as Head Master of Winchester College, he told his audience of an irate parent who had condemned in unmeasured language the whole curriculum at Winchester, and who had demanded for his son instruction in book-keeping, and apparently in nothing else. Dr. Burge took counsel with some prominent business men, and was told that all the book-keeping necessary could be learnt in an office in three months. Dr. Burge deduced that in the opinion of business men book-keeping was not sufficient to fill a school time-table.

There is truth in both points of view: in that of the irate parent and also in that of the business men. But, before dealing with this, we want to point out a prevailing misconception in the use of the terms "vocational" and "bread-and-butter subjects." For a man who is to become a schoolmaster, vocational education would include instruction in the subjects he proposed to teach, and also training in the art of teaching them, and experience and knowledge in dealing with boys. But in practice the best qualification for a Mastership is a First Class at Oxford or Cambridge. It is clear, then, that in working for a First Class a man is following a course of vocational education. The same is true of other careers to which a First Class is an Open Sesame. From this point of view it may be held that the School of Literæ Humaniores is as much a bread-and-butter study as a course in the use of engineering tools. Equally utilitarian is it to study at a medical hospital, for this is the entrance to a profession. In fact, all preparation for an examination

that offers entrance to a profession is utilitarian. The word is used slightly only when the occupation chosen by the boy begins early in life. If a boy is to start earning his living at the age of fifteen, he needs a training for his occupation just as surely as the man who postpones the age of earning till twenty-four or thirty. It is, therefore, reasonable that every boy (and every girl) should have an opportunity at school of direct preparation for the career by which he is to earn his livelihood.

But, said the Bishop, the vocation is not the whole of life. This is quite true; and school education must prepare for many things besides the vocation by which bread is to be earned. You cannot make a time-table out of book-keeping! Quite true. But it may be equally true that it is desirable in certain circumstances to teach book-keeping and office routine. The earlier a boy enters the labour market, the less elaborate is the preparation that he needs for his career. It is preparation alone that the school offers: no school attempts, or can wisely attempt, to turn out the skilled mechanic or the complete cook. Consider the case of a boy destined for an office. The actual vocational training he needs includes shorthand, book-keeping, and office routine. These studies do not occupy the whole of the school life. Indeed, it is found that it is often best to specialize on such subjects as these during the final period of school life. There remains the rest of the time. Here, as the Bishop well said, comes in the opportunity to prepare for "leisure." There are hours of leisure, even in the busiest life. How these hours are spent will depend in part upon the education that has been given at school. That is the justification for most of the subjects upon the time-table. It is at school that boys prepare for later life in three aspects: in their human relationship to one another, in their relation to the State, and in their capacity of earning a livelihood.

The Bishop used the word "vocational" without enthusiasm, and evidently looked upon it as a modern fad without much reality. But, however immoderately enthusiasts may press the idea, it is based on a genuine foundation. The doctrine of formal training has been profoundly modified by recent observations and investiga-

tions. It does not follow that because a boy shows intelligence in one school subject that he will be able, without further training, to carry that intelligence into a fresh range of experiences. A boy may learn to observe Nature in his Nature study lessons: it does not follow that he is being trained to observe human nature so that he will be a useful salesman in a shop. This has long been recognized in reference to medicine, law, architecture, music, and other professions. It is not assumed that a general training will prove sufficient to make a good doctor or a good lawyer. There is no reason why it should be assumed that a general training should make a good schoolmaster or a good shoemaker.

The reason that operates against the introduction of what are known as vocational subjects is the dislike, and a very sound dislike it is, to early specialization. We do not wish the musical prodigy to specialize on the piano at the age of seven, or the future scientist to spend all his days in the laboratory. We want what we call an all-round education as a basis for the specialized study. This is quite right. But when the age of earning is fourteen, it is not early specialization that at the age of thirteen, or thirteen and a half, education should be definitely directed towards the after career of the boy. Vocational education means no more than this. To a general education, as wide and deep as time permits, an education for life and leisure, should be added a specific education in preparation for the occupation by which the boy is to earn his living.

## NOTES.

THE steps taken by the President of the College of Preceptors, Sir Philip Magnus, and the questions he asked in Parliament, have borne fruit in the announcement of the Board of Education that the time for the repayment of the guineas has been extended up to February 28 of this year. Everyone, therefore, who paid a guinea on admission to Column B of the Register maintained by the previous Registration Council, and who has not already applied for its return, may now do so. Applications should be addressed to the Secretary of the Board of Education, Whitehall, S.W., and should state the registered number and the service of the applicant, with dates. No further extension of time will be allowed. We may remind our readers that the repayment of the guineas does not affect the finances of the present Registration Council. It was stated in Parliament that only 4,581 teachers out of a total number of 11,666 on Column B had applied for the return of the guinea. Sir Philip Magnus asked that a post card should be sent to every teacher who has not yet applied, but Mr. Pease would not promise this.

THE event of the past year that stands out above all others as affecting the teaching profession is the formation of the Teachers' Registration Council. The College of

*The Return of the Guineas.*

*The College and the Registration Council.*

Preceptors, always alive to its responsibilities as one of the oldest and most firmly established of bodies of teachers, invited the Registration Council to meet in the College buildings. The invitation has been accepted. The College has always been in the habit of extending a welcome to other bodies who do not possess a building, and this last invitation is in accord with the traditions of the College. The connexion thus established with the Registration Council cannot but add dignity and prestige to the College. The College is founded on a wide basis. The Charter has never made any distinction between men and women, heads of schools or assistant teachers, teachers in public schools or teachers in private schools. The new Register will make for the unification of the teaching profession, and the College buildings may well stand as the outward sign of the corporate union of the secondary branch of that profession.

MEMBERS of the College of Preceptors will learn with regret that Mr. C. R. Hodgson, who has been Secretary since the year 1874, has now decided to resign. The Council have made arrangements by which a suitable retiring allowance will be secured, and the resignation will take effect on March 25 of this year. Mr. George Chalmers has been appointed Secretary. When Mr. Hodgson became Secretary, nearly forty years ago, the College held a comparatively modest position. During his term of office, and in great measure owing to his sound business qualifications, Mr. Hodgson has seen the present buildings erected and the College grow in material sources and influence to the position it at present occupies. The Council fully recognize Mr. Hodgson's efficient service and his assiduous devotion to the interests of the College. Mr. Hodgson has grown to be so much a part of the College that we can hardly imagine it without him. We wish him many years of enjoyment of his well earned leisure, but at the same time we are quite sure that his interest in the College will remain unabated.

MR. GEORGE CHALMERS, who will succeed to the post of Secretary of the College of Preceptors on the retirement of Mr. Hodgson, joined the office staff in 1887, just before the present buildings were opened. For some years he was Librarian, and compiled the first catalogue of the Library. In 1902 he was appointed Assistant Secretary, which post he now holds. Mr. Chalmers is fully conversant with all the details of the work of the College; he is well known to all the members, and will serve their interests with efficiency and loyalty.

THE year 1912 will be remembered (for a little time: memories are proverbially short) as the period when a wave of enthusiasm for the Montessori Method overspread England. We have watched this wave with dismay; for the inevitable reaction is bound to follow. Already we see

*Mr. Chalmers.*

*Montessori.*

signs that the unreasoning advocacy of the band of enthusiasts is resulting in a tendency to sweep the whole matter aside as unworthy of real investigation. In our leading article last month we wrote in cordial agreement with the main principle of Dr. Montessori's teaching. In the words of Mr. Edmond Holmes, "the master principle of the Montessori method is that of self-education." This is a principle adopted to a large extent in good Kindergartens and in some secondary schools; but we need to be reminded that the function of education is to help growth, to give it free play, and to stimulate it to provide suitable channels for itself, and that discipline through liberty is the ideal. We must not be misled by the methods with which Mme Montessori seeks to carry out her principle into a belief that, because we think we can find better methods, therefore we were in no danger of losing sight of the principle.

WE have much sympathy with Miss Charlotte Mason's letter to the *Times*, pointing out that Mme Montessori encourages the training of the senses only and entirely omits education in ideas. All that Miss Mason says is justified in a sense; but we are inclined to think that she is attacking certain manifestations of the method rather than its underlying principles. It is true that in Mme Montessori's book we see little attempt to supply ideas outside the experience of daily life. Stories are not told. The Baby House is a little world occupied with itself alone. The senses are sharpened by practice until the children can do little wonders; but still they would not compare with a Red Indian or a trained acrobat, as Miss Mason points out. We must remember the type of child with which Mme Montessori is dealing and the age of that child. These were children living in tenements in the least desirable quarters of Rome and from three to seven years of age. Miss Mason has devoted herself to the study of schemes of education suitable for children of well-to-do parents who have left the nursery behind.

AMIDST this variety of opinion some of us would like an authoritative statement on the value of the Montessori method. It saves trouble when we are told exactly what to think. But not even the Child Study Society would, we expect, venture to lay down the law. Certainly the Board of Education will not do so. Mr. King asked the President of the Board of Education whether inquiries are being made into the methods and results of the Montessori system and its applicability in this country; and, if so, how it is proposed to introduce a system under which children are admitted at two years, whereas most Local Authorities exclude them till five years of age; and 15 superficial feet are required, whereas our standard of 9 superficial feet has not been attained in many schools. This is Mr. Pease's reply: "The Board published on November 1, as an educational pamphlet, a report upon the Montessori system made by Mr. E. G. A. Holmes.

In publishing the report, the Board were careful to state that they did not necessarily endorse the opinions expressed in it. They have not suggested the introduction of the system into public elementary schools."

WE are glad to think that the London Education Committee allow their inspectors and officers to express freely their views on educational matters. The tradition in Government Departments is that an officer should not publicly express any views of his own on matters connected with his Department. This tradition has its convenient aspect. Personal views may be mistaken for official views, and the Department may seem to be tied by the utterances of its officers. Still, we think the tradition can be followed too rigidly. Lately, Mr. John Nickal, a L.C.C. Inspector, on the eve of retirement, has published a rhyme for teachers called "The School Door," an impressive poem on a high level of thought, written with much spiritual insight. Dr. Hayward, another L.C.C. Inspector, has published "The Psychology of Educational Administration and Criticism," a book that compels attention. Dr. Hayward is an unsparing critic of teachers, inspectors (including himself), and administrators. He has cast his net wide, and every page is full of vigour. We trust that no member of the L.C.C. Education Committee will regret his frank outspokenness.

MR. MAURICE HEWLETT is somewhat scathing in his condemnation of English boarding schools, of which he writes in the December number of the *English Review*. "I believe," he says, "that when I went to my great school I had the makings of an interesting lad in me; but I declare upon my conscience that it was that place only which checked the promise for ten years or more, and might have withered it altogether." From the rest of the article we gather that Mr. Hewlett was unfortunate in his school. "Drill in school, *laissez-faire* out of it" is his complaint, and "I fancy I should have found the same sort of thing at Eton." So far as his complaints are valid in schools of to-day, they may be summed up as lack of privacy and lack of an absorbing out-of-school occupation, apart from games. "The single aim of the master," he says, "should be to give every boy in his charge some sane interest which he can pursue to the death, as a terrier chases a smell, in and out, up and down, with every nerve bent and quivering." In a modern boarding school there are many interests besides football and cricket; but, perhaps, we give too little leisure, influenced too strictly by the thought that mischief lies in wait for the idle.

THE work of the Committee of the British Association that dealt with the type of school books is beginning to bear fruit. The Medical Officer of the London Education Committee has condemned as injurious to eyesight most

of the books now in use, and in particular Bibles and New Testaments. The Education Committee have taken a preliminary step by warning publishers not to increase their stocks with the idea that the Committee would continue to be large purchasers. If the London Education Committee take this line, other Authorities will follow, and publishers will adopt a larger type so soon as present stocks are exhausted. After the careful investigations that have taken place, it is no longer possible to doubt that real harm is done to young eyes by the use of closely printed textbooks in small type. But it is not only a question of size. Experience has shown that some types can be read more easily than others. We wonder if our readers find the type of this paper too small, or whether the perusal of a long article induces fatigue to the eyes.

MR. FRANK ROSCOE has been unanimously appointed by the Registration Council to the post of Secretary, and enters upon his duties at once. Six candidates were invited to meet the Council. These were Mr. J. M. Crofts, Rev. W. Madeley, Mr. E. L. Milner-Barry, Mr. Roscoe, Mr. W. D. Sadler, and Mr. W. Trevor H. Walsh. Any one of these would have made a competent Secretary. There were in all fifty-eight candidates. Mr. Roscoe is forty-two years of age. He was a pupil-teacher in Lancashire and a student in Borough Road College. He was at Balliol College, Oxford, and Master of Method at the Oxford Day Training College. He has been an assistant master in the Isleworth County School and the Sheffield Day Technical School. At the time of his appointment he was Lecturer in Education at the University of Birmingham. His administrative experience has been very wide. It is doubtful if it would have been possible for the Council to have secured a better Secretary, and we may feel complete confidence that the Registration Council will now be firmly established.

THE College of Preceptors presented a busy scene on December 20. Not only had the Registration Council met to appoint a Secretary, but, in addition to one or two smaller Committees, the Head Masters' Conference was in session. The College buildings are a most valuable asset to the bodies of secondary teachers. The first resolution of the Conference proposed to welcome the establishment of a Royal Commission to inquire into the relations of the Universities with public schools. This resolution was printed on the agenda of the public meeting to which the representatives of the Press were invited. But a motion was at once made to consider this as private business and to exclude the reporters, who were readmitted after an hour and a half. No statement was made as to the result of the discussion. Mr. Hendy then introduced a resolution urging that all student teachers should pass through a course of practical training in approved schools under selected members of the ordinary

staff and in close connexion with the Training Department of a University. It was impossible to gather from the speeches made that any one really believed in professional training for masters at the public schools. But the resolution was carried without opposition.

MR. GILSON then introduced a resolution dealing with the multiplicity of examinations and asking that a uniform school proficiency examination should be accepted *pro tanto* for entrance to any University and the professions. This resolution was also carried unanimously. There was no discussion, and, although Mr. Gilson referred to the Report of the Consultative Committee, no real attempt was made to deal with the Report or to suggest a way in which its recommendations could be carried out, supposing them to be desirable. Mr. Gilson dealt mainly with the existing difficulties in schools where the boys are presented for a variety of examinations. We want rather a practical scheme showing how a uniform examination can be organized and administered. In our opinion it is quite impossible to suppose that the State can ever establish such an examination. The existing examining bodies will continue. The only possible reform is the formation of a central body which should have power to control the entrance to Universities and professions and should be enabled to ensure that each examining body maintained the requisite standard.

## SUMMARY OF THE MONTH.

"WHAT I have been trying to do myself," says Mr. Grahame-White in the current number of the *Tollingtonian*, "is to influence public opinion and so awaken a national interest in this great subject. If the nation demands more aeroplanes and more men, the Government will be obliged to grant its wish. Therefore, every individual can play a part in this campaign; and every boy who reads this article can help as well, by becoming genuinely interested in the conquest of the air, even if, to begin with, he flies only a paper aeroplane across a room."

THE Special Schools Sub-Committee of the London Education Committee reported that, in considering the Mental Deficiency Bill, their attention had been drawn to the great importance of the question of heredity in relation to mental defect and to the lack of reliable scientific evidence in regard to the inheritance of feeble-mindedness. In order to obtain information in that direction, they were of opinion that a number of family histories should be examined. If the inquiry were to be of substantial value, it would be fairly comprehensive, and they suggested not only that the family histories of at least fifty mentally defective persons should be examined, but that inquiry should be made also into the family histories of fifty normal children, with a view to ascertaining the extent to which the two sets of family histories presented different problems. The Council had appointed a medical officer (research), presumably for investigations of this nature, which would be of importance to the Council not only in its position as the Local Education Authority, but also from the point of view of the asylums work.

THE Incorporated Association of Head Masters will meet at the Guildhall, on January 7 and 8, under the presidency of the Rev. Canon Swallow, who for many years was one of the joint secretaries of the Association. This Conference will be

asked from the chair to welcome the establishment of the Teachers' Registration Council as an important step towards the creation of a teaching profession having control of its own membership. Mr. Barber, of Leeds, will submit a resolution acknowledging with satisfaction the sympathetic reception given by the President of the Board of Education and the Chancellor of the Exchequer to the claim for the establishment of a superannuation fund for teachers in secondary schools, but asking for a higher State contribution than is at present proposed. The report of the Consultative Committee of the Board of Education on Examinations will be discussed. It appears from the agenda that some objection is taken to the establishment of a new composite Examinations Council, the objectors being of opinion that the responsibility for determining the number and character of external examinations should lie with the Board of Education. A common entrance qualification for the Universities and professions is also suggested. Mr. Barton, of Wakefield, will read a paper on "The Appreciative Treatment of Literature in Secondary Schools." Dr. McClure and Dr. M. E. Sadler will open a discussion on the extent to which it is desirable for secondary-school teachers to become Government servants. Other subjects to be discussed are salaries, tenure, free places, and the training of teachers.—*Morning Post*.

THE Annual General Meeting of the Association of Assistant Masters in Secondary Schools will be held at St. Paul's School, West Kensington, on Friday, January 3. Notice has been given of the following resolutions:—

*Teachers' Register.*—That this Association is of opinion that for present teachers the regulations for admission to the Register should provide: (a) That two years' satisfactory experience in recognized secondary schools, or in such schools as may be approved by the Registration Council, be accepted as a qualification; (b) that masters in recognized secondary schools, or in such schools as may be approved by the Registration Council, who have not completed two years' service when the Register is established be eligible for registration when three years have been completed; (c) that all teachers who can show evidence of ten years' satisfactory service in secondary schools be admitted to the Register.

*Superannuation.*—That this Association considers that no system of pensions for secondary teachers will be satisfactory which does not provide (a) that the proportion of the contributions paid by the State be at least as high as in the case of elementary teachers; (b) that the pension be of £100 per annum at least for men at sixty years of age, after thirty-five years of recorded service.

*Examinations.*—That this Association approves of the recommendations of the Consultative Committee on Examinations in Secondary Schools; expresses its gratification that the Committee finds reform possible without adding to the clerical duties of schoolmasters; and recommends the Executive Committee to advocate as widely as possible the adoption of the recommendations.

*Right of Appeal.*—That the Executive Committee be requested to circularize all Boards of Governors and Education Committees in the country to the effect that before the dismissal of an assistant master be determined upon he shall have the right to be heard by the governors of the school.

In commemoration of the twenty-first year of the Association, a dinner will be held at the Waldorf Hotel, Aldwych, on Thursday, January 2, at 7.30. All former officers of the Association who are no longer members will be present as guests of the Association.

THE Joint Educational Conference will meet at the University of London during the week beginning January 6. The time-table has been arranged with care, so that it will be possible for teachers to attend a good many more of these meetings than has been the case hitherto, when the various bodies met in different places and often at the same time. A joint meeting will be held at the beginning of the week, at which Sir Henry Miers, Principal of the University of London, will preside, and a discussion will be opened by Dr. Sadler and Dr. Sophie Bryant on "Should Teachers become Civil Servants?" Among the bodies that will meet during this week are the Training College Association, the Teachers' Guild, the new approved Insurance Society for Secondary Teachers, the Art Teachers' Guild, the Private Schools Association, the Froebel Society, the Modern Language Association, the Geographical Association, the National

Home-Reading Union, the Historical Association, the Assistant Mistresses' Association, and the Association of Teachers of Domestic Subjects.—*Morning Post*.

THE proposals of the Senate of London University with regard to the establishment of new chairs have now been submitted to the London County Council, which authority has already agreed to make financial grants in aid. The salary in each case is to be £600 a year, the new chairs being as follows:—(1) Professorship of Electrical Engineering, tenable at University College; (2) Professorship of History, tenable at King's College; (3) Professorship of Mathematics, tenable at King's College; (4) Professorship of Zoology, tenable at King's College; (5) Professorship of Commerce, tenable at the London School of Economics; (6) Professorship of Mechanical Engineering, tenable at East London College; (7) Professorship of Mathematics, tenable at Bedford College; (8 and 9) Professorships of French Literature and of French History, not attached to any particular school or institution.

DISCUSSING the purpose of education, Prof. Murray, in distributing the prizes at the Strand School, asked his audience to imagine an ancient Greek in modern London. He said: "Supposing the Greek had been in England, say, a fortnight, and had got over the various degrees of mental shock which would, no doubt, have prostrated him at the beginning; and supposing the head master put to him the question what education was for and what we were all being trained towards, I believe the ancient Greek would have no hesitation in saying that we were all being trained to be citizens. I believe that my ancient Greek would think that almost the whole object of education was to make us feel that we are parts in some great whole, to which we are proud to belong, and which is engaged on some great work."—*Times*.

CANON PAPILLON, lecturing at Manchester University, said that much of the educational awakening that had taken place in England in recent years was a revival, in spirit if not in letter, of the educational ideals of ancient Greece. In the essentially practical system of ancient Rome, too, there was a good deal that was common with English feeling. Quintilian had much of interest and suggestiveness for Englishmen to-day. Turning to the development of education in England, Canon Papillon spoke of the value of the writings of Locke and Milton, and showed that many of the ideals expressed in them were still those of educational reforms to-day. Our educational Utopia (he said) was a system that made for virtue, learning, and good citizenship, which regarded the formation of character as the chief end. Was our present educational machinery bringing us any nearer to this goal? In one direction there was real danger that progress might be choked by red-tape and officialism; in another there were welcome signs that even Whitehall had its eyes turned towards the light of high ideals. In the pamphlet of suggestions for teachers issued by the Board of Education in 1905 and in the preface of the Code might be found paragraphs that breathed the spirit of high educational ideals. If the spirit of such utterances could break through the husk of official routine, perhaps even the Board of Education might point the way to Utopia.—*Manchester Guardian*.

SIDE by side with learning to think was learning to express thought. There was something very pathetic in men of thought who seemed to find it almost impossible to express their thoughts. Nothing, on the other hand, was more pleasing than to find people in public as well as in private life, who could express clearly and unmistakably the thoughts which they possessed. In schools, therefore, the children should learn the art of using language, orally or in writing, as it should be used. The rudiments of that knowledge would already have been acquired in the primary school, but it was a long step from the rudiments of expression to expression at its best. Before they acquired that facility, they would have to acquaint themselves with the works of the men who from time to time had expressed their noblest thoughts most nobly. In

other words, they must acquire a knowledge of literature, which meant the acquisition not only of some knowledge of prose writings, but also of poetry. There are some people, Sir Edward continued, who, in their utilitarian view of life, think that the study of poetry in youth or at any other time is a pure waste of human energy and time. It is not so. Poetry is the expression of what is noblest in human existence—namely, the noblest thoughts of the human mind, and the poetic expression of those thoughts is expression at its best, in its most beautiful form, in the form which is most living, most memorable, most telling. We forget a great deal of the prose we read; fortunately much of the poetry which we read by its rhythm, by its beauty, by its imagination clings to the human mind, and in all education that is worth calling education, there must be this element of poetic expression.—Sir Edward Anwyl, distributing the prizes at Llandudno School.—*Manchester Guardian*.

MR. WALTER RUNCIMAN, opening new schools built by the trustees of the new Earswick Village Trust, York, the plans of which were prepared by Mr. Raymond Unwin, said he would place that school easily at the top of the list of all the schools he had seen in the country. The example of having the classrooms thrown open to the fresh air was well worth copying in town and country. In visiting town schools, he had often found the atmosphere absolutely repulsive and impossible to keep clear because of the noise and bustle of the streets. This was one of the gravest problems to be solved in London. The bad atmosphere was as bad for the teachers as for the children. He believed that open walls had a beneficial mental as well as physical effect. There was benefit also in having small classrooms instead of the old crowded rooms, for in the smaller rooms the teachers would have a chance of dealing with the children individually. Individual knowledge and individual sympathy would become one of the ordinary incidents of their daily avocations.—*Manchester Guardian*.

THE third performance of the Westminster Play was given on Wednesday, December 18, before a large and appreciative audience. The play chosen this year was the "Famulus," a Westminster version of Terence's "Eunuchus." Mr. R. S. Partridge, who represented the swaggering Thraso, and Mr. H. C. Rambant (we had almost said "Miss"), who was exceedingly clever in the part of Pythias, carried off the highest honours. The part of the toady Gnatho was very well done by Mr. J. M. Troutbeck. These actors seem to be less oppressed by the burden of their responsibility, and, by acting more, to live more in the spirit of the piece than did Phaedria (played by Mr. R. E. D. Cargill) and Thais (Mr. W. B. W. Durrant). The exacting part of the slave Parmeno was well performed by Mr. W. J. N. Little, and Mr. N. E. Barraclough looked well in the rôle of Chaerea. But the acting was all through on a very high level. Before the play the Prologue spoke his words with befitting ease and dignity. The Dean of Durham must have felt an especial pleasure in the kind words which recorded his new honour. The epilogue, that brilliant and amusing *farrago libelli*, has already been extensively quoted in the daily Press. A single-taxer, a special correspondent, a lady novelist, a post-impressionist, and a band of Orangemen were among the actors. The *Times* and the *Times* supplements—"Argentina opibus gaudeat ipsa suis"—Norwich floods, picture palaces, American connoisseurs, Engine-driver Knox, non-existent sanatoria—"nimium ne crede Georgo"—the Post Office and the telephone, and many other topical allusions came under review. The march of the Orangemen was delicious:

PA. Comites attendite. Terram  
Alternis pedibus concutite. THE. Agmen ego  
Duca: immo forsan postrenus tutior ibo.  
PA. Sic. Dextrorsum oculos vertite: iter facite.

A post-impressionist picture is examined: "Quid volt haec pictura? domusne? an candida virgo?" Of the many brilliant adaptations from the classics we select three. "Nemo repente fuit callidus agricola," says the special correspondent to the land-taxer. He himself at the Durbar has seen "Castrâ quot exornata, inscriptaque nomine Begum signa"; while the lady novelist, wearied by the daily paper, exclaims, "Lectorem assiduum hae rumpent, mihi crede, columnae."

## THE DOCTRINE OF FORMAL TRAINING IN THE LIGHT OF MODERN RESEARCH.

By FRANK SMITH, B.A., B.Sc.

THE doctrine of formal training—that is, the theory that mental power acquired by exercise at one kind of material is available when the pupil is confronted with other material—is one of the most persistent ideas in the development of educational theory. It is found already occupying an important place in Plato, where, for instance, we are told "that where a ready acceptance of any kind of learning is an object, it will make all and every difference whether the pupil has applied himself to geometry or not": in other words, the study of geometry has the effect on a pupil of producing a general quickness of apprehension. Similarly Plato shows that the important soul qualities of the pupil may be produced by certain specific studies, and he is thereby able to build up a perfect school curriculum.

This doctrine of formal training has persisted through the centuries. Built up on a crude understanding of experience, it acquired definite psychological support from the "faculty psychology" of the eighteenth century. This theory divided the mind into separate faculties—memory, observation, reasoning, and so on, and it was held that each faculty could be trained by suitable material. Hence it was argued that, as a pupil must be accurate in mathematics, or observant in science, or logical in grammar, then when he studied these subjects he was thereby training his general power of accuracy, or of observation, or of reason. So, when later the pupil came to face the problems of life, he would be equipped just in so far as he had studied those school subjects which had developed the mental powers required.

As education in the beginning was largely specific, and pupils were prepared directly for the walk of life which they would ultimately take up, the doctrine was not of very great practical importance. Latin was taught because it was indispensable, and other subjects were chosen on equally direct grounds. But, with the increased complexity of life and the extension of school education, these simple issues disappeared. Specific education became more and more difficult, and a choice had to be made between different parts of knowledge as school subjects. The doctrine of formal training claimed to solve the problem. As reasoning power was essential, Euclid was retained. Moral discipline and power to concentrate were expected to result from grappling with the difficulties of Latin and Greek, and so these subjects were regarded as of first importance. If it was discovered that scholars lacked some definite quality, relief could be sought at once by modifying the curriculum, and by increasing or reducing the number of hours given to the various subjects of study.

The first blow to the theory came with the abandonment of the "faculty psychology." This is now a discarded doctrine. It is not correct to speak of the mind as though it consisted of various faculties which need separate and special training. We have not a faculty of discrimination, or of memory, or of observation. This is proved by the fact that a person never loses his power of discrimination or of memory as a whole. We can only speak of these mental powers in terms of the subject-matter of knowledge. Thus, a person may remember the names of objects and completely forget their use. He may remember names, but be quite unable to remember faces. It is the same with other mental powers. Cases are known where a person has lost the power of discriminating between two objects that touch his hand, and yet has retained the ability to discriminate between two visual or other sensations. These facts lead us to the conclusion that improvement in one kind of memory, or of discrimination, does not necessarily imply improvement in another kind of memory or of discrimination. Children who learn verse by heart "in order to train the memory" are really only training the memory for that kind of subject-matter in which the training has taken place, and there is no guarantee that the improvement will be transferred to any other kind of material.

The destruction of the faculty psychology, however, actually occurred when the doctrine of formal training was most



strongly held in schools, and indeed there are certain phrases among schoolmasters, even to-day, which have come down from the discredited theory. These phrases consist of vague generalizations which have never been analysed by those who use them, and are contrary to ascertained fact. For the doctrine of formal training is not only built on a false psychology, its contentions are also unsupported by practical results. We have abundant proof on all hands that the scientist is not always the best general observer; the mathematician is not always most accurate in general life. A country child, on visiting the city, will be found to hear less than the town child, yet they have had the same training in hearing, and both may have the same auditory acuity. The difference lies in the fact that they have been trained to hear *different sounds*. In our own case, we have had training in judging the speed of vehicles all our lives, yet the advent of motor cars caused us some disturbance. We did not find it easy to carry over our speed discrimination to them: we had to have some practice with the motor cars themselves. The truth is that skill acquired with one range of experience is specific. A habit is a specific response to a definite stimulus. The effect of practice is not that similar stimuli bring about the same reaction, but that the one stimulus brings about its definite and specific reaction more easily and quickly. So it is that the chemist is generally an excellent observer of *chemical facts*, but he may be blind to all others. The grammarian may reason brilliantly about grammatical rules, and yet be hopelessly irrational in the realm of politics.

The reaction against the formal training theory has not been lacking in vigour. Abuse was poured on it from all quarters. The schools were blamed for perpetuating hoary fallacies, and schoolmasters were condemned as blind followers of tradition. An educational book of ten or fifteen years ago was wont to assume no little dogmatism in condemning everything connected with the theory.

But of late there has been a modification of this attitude. In the first place, there has been some slight revival of a modified faculty psychology, though this must not be associated with the older theory. There is a school of psychologists who insist on the importance of the *act* of consciousness as compared with the *content* of consciousness. While the opponents of formal training have pointed with much assurance to the localization of brain functions, these modern psychologists are emphasizing the unity of the Ego which performs the separate acts of consciousness. Both principles must be kept in mind, and their proper synthesis is likely to lead to the most satisfactory account. Thus, while it is true that there is not one faculty of memory, it is not less true that there is only one memorizer.

In the second place, among the complex facts that come under our notice we are bound to admit that some plausibility can be found for the formal training theory. Some individuals seem to have a general habit of punctuality or of neatness, and to be able to transfer this power to any new activity. Of course, we know contrary cases by the score: the woman who is neat in her dress but untidy in the house, and the scholar who is accurate in arithmetic but careless in science. Bagley has put forward a theory to account for these cases. He maintains that whilst a habit is specific, and improvement in it cannot be transferred to other material, yet an *ideal* is general, and will function until a new habit is formed. Thus a person may have an *ideal* of neatness, and this will give the motive to acquire a neat habit in every department of experience.

Now inasmuch as all human action must strike inwards, and as mental processes are so intimately connected together, it is not difficult to imagine that transference, or some process like transference, is at any rate not impossible. There are common elements in any two disparate mental functions. A pupil has a certain *attitude* to his task which is of tremendous importance in determining the results he achieves. Now, this attitude acquired with one subject-matter may be at work when some other subject-matter is studied, and will determine very largely the early course of the new activity. So far, then, we may agree with Thorndike that "a change in one 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." But it should be

noted that this is strictly not transference at all, though the effect will be similar.

The immediate problem, then, alike for the psychologist and for the teacher, is: To what extent does transference of training occur? If our scholars have daily practice in memorizing verse, how far will their improvement be carried over to memorizing prose, or general class-instructions, or even faces? In the light of our present knowledge we should certainly expect some improvement in memorizing prose, but we should be doubtful about the class instructions, and openly sceptical about the faces. The problem really divides itself into an unlimited number of small problems, for the subject-matter of each exercise may be varyingly different from the subject-matter in which the first improvement is gained, and therefore no general statement would cover all the cases.

It is significant of the change that has come over our attitude to educational theory that modern investigators are attempting to settle this question by accurate measurement. It is not enough for them to determine that improvement gained from memorizing one form of material is transferred "to some extent" to some other material: their aim is to determine the extent exactly, and to express it once for all in numbers. These quantitative methods are growing in extent and accuracy every day. The results so far obtained are not always uniform, but the refining process is at work, and greater accuracy is to be expected. Some day we shall know exactly how far improvement in one direction of mental activity transfers to some other mental activity: and these relationships will be expressed in a series of numbers. Thus, in the problem of memory already enunciated, it might happen that "memory improvement in verse" was transferred to memorizing prose to the extent of five per cent., to class instruction to the extent of one-tenth per cent., and to faces not at all. These relationships could be then simply expressed by the co-efficients 5, 0.1, 0, respectively.

Obviously there are some problems which are too difficult to admit of solution by our present methods. Thus the claim that a classical training gives a pupil the ability to command men, to govern tributary races, may be true or false; we cannot say. The experiments which might be devised to determine the question would take many years to perform, and indeed would be of such great perplexity that the possibilities of error would be enormous. There are many simpler problems to be solved first, and in answering them the way will be prepared for the solution of the larger problems.

The practical application of the facts as we know them are obvious. First, it is certain that transference of improvement does not take place to anything like the extent that has been claimed for it, and therefore the qualities that we hope to see in our pupils must be trained by direct methods: they do not come by a mysterious inner transference.

Secondly, we may look for transference, or something like it, between two operations that have common elements. Hence, if we seek to prepare pupils for their life work we must aim more and more at emphasizing those elements which are common to school and to life alike; in this sense only can school training be held to prepare directly for life.

The general problem is thus unsolved, but it is in process of solution, and the facts that are already established are built on a firm basis. We are not likely to adopt again either one or the other of the extreme views that were formerly held; we must proceed slowly, and accept those facts only which will bear rigorous analysis, and which have been established by investigators working independently of one another.

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THERE will now be two secondary schools in Wales at which no fees are charged. The secondary school at Ferndale, in the Rhondda Valley, has been free for some years. The new secondary school at Merthyr, which is to be opened this month, will also be free.

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THE ARCHBISHOP OF CANTERBURY, addressing the scholars of the King's School, Canterbury, on the subject of the public schools, said: "It is the naturalness, the simplicity, the straightforwardness, the total absence of mystery which belong to our public-school life that give it its main character."

## THE CHURCH'S RELATION TO THE SECONDARY SCHOOLS.\*

By H. CRADOCK-WATSON, M.A.,  
Head Master, Merchant Taylors School, Crosby.

My subject to-night in the terms prescribed for me is "The Relation of the Church to the Secondary Schools." Let us be quite clear as to our meaning. The term "Secondary schools" (an ambiguous and unsatisfactory title) means *all* schools in which a secondary education is given—i.e., education between the elementary or primary and the University or tertiary stage. The term therefore includes all the great public schools of the country—those magnificent schools which have turned out, especially during the nineteenth century, the upright, manly, and self-reliant race of men who built up so courageously, and have administered so honourably, our great world-empire. The debt that the nation, and one may almost say the world, owes to these schools in the past can never be forgotten. But in addition to these schools there has grown up largely in the present century all over the country—more particularly, perhaps, in the North of England—another type of school also giving a secondary education. These are of more than one kind—(1) those established and financed by the Local Authorities, whether County or Borough, such as the Municipal Technical and Council secondary schools; (2) old grammar schools taken over by the Local Authority and "reorganized," practically, therefore, new schools; and (3) ancient endowed schools (like my own, for instance), now working under the Board of Education Regulations and in receipt of a Parliamentary grant, but in no way under the Local Authority.

As these three classes of schools are all in different ways under external control, they may be called, for convenience' sake, "State schools, as distinct from the independent "public schools" usually so called. Of girls' schools I say nothing, simply because they are outside my experience. The numbers educated in each type of school deserve our attention. The larger public schools, namely the Nine, together with some twenty others that "have not bowed the knee" to the Board of Education, contain about thirteen thousand boys. The other eighty-five smaller schools given in "The Public Schools Year Book" educate, perhaps, about seventeen thousand more; and of these a fair proportion no doubt (I cannot say what) do not come under the Board's Regulations, but in the schools working under the Board (i.e., the "State" schools), according to the Board's last Report (1910-11), there are now being educated—and I invite your attention to these numbers—about eighty thousand boys and sixty-five thousand girls (nearly one hundred and fifty thousand in all).

These, then, are the "big battalions" that we have to enlist "on the side of God." The future of the nation is with them. They have in their midst the 10 or 25 per cent. holders of "free places," *the pick of the democracy*. Great are our responsibilities; great is our opportunity. It is a vital question for the character of the whole nation what kind of religion is being inculcated in these schools—our public schools and "State" schools. We must remember that "religious instruction," to use the regulation phrase, is not always or by any means the same thing as *the teaching of religion*. In the public schools, to take them first, we have generally had since their foundation Church teaching. They were up to quite recently largely staffed by men in Holy Orders. The "ark of the covenant" was safe in their hands. Times have changed. Are we satisfied with the present state of affairs? For that matter, are we altogether satisfied with past results?

We congratulate ourselves that there is no "religious question" in the public schools, such as has vexed elementary

education and, still more, political platforms; and that in the public schools peace reigns. But is it peace or only "a solitude"? Let us go to the ordinary "Divinity" lessons in too many schools for an answer. There are brilliant exceptions, but they are only exceptions. Is there no "religious difficulty"? How is it we get the constant complaint of the dearth of candidates for Holy Orders? They are drawn, as a rule, from the public-school class. Is there not a dwindling of religious influence in our public life? No, we cannot leave the public schools out of our consideration. The result of our Church teaching in them is not what it should be. This teaching, one may safely say, has been too often either old fashioned and inadequate, or of a neutral and colourless character that could carry no conviction and inspire no spiritual life. Religious peace has been purchased too dear. *The Church has lost a generation*. We have much to do here to recover lost ground; to train the teachers of the future before we can make any advance.

In the other schools, the "State" schools as I have called them, undenominational religious instruction is generally the rule. And it is this fact that troubles us. What does the Church propose to do? In speaking of "the Church" we are too apt to think of it as a corporate body organized for collective action, and the loyal Churchman is perhaps filled with enthusiasm at the thought of the Church militant going into action, with drums beating and colours flying, in a campaign against Secularism and Undenominationalism. The spectacle is magnificent, but it is not—business. The age of Crusades is past. Metaphors are dangerous things to play with, but I mean that the danger of all corporate action is that it tends to inspire and arouse antagonism. The primitive gregarious instinct of humanity is always to fight against another crowd. Religious fervour still takes this form in some parts of the kingdom. This is a danger we must avoid. In plain English, it is much easier to put up the backs of Councils and secular authorities, and to provoke opposition and mistrust, than to allay them. Our policy must rather be what is known in modern diplomatic language as "pacific penetration," or to put it still more mildly, let us say "*pacific permeation*." In other words, it is to individual action that we shall look; to personal effort rather than to a public program or a "plan of campaign." Organizations tend to become rigid, committees to divide responsibility. If we are to win, it will not be a question of strategy, but of tact and conciliation. This is work for the "rank and file" all over the country; for this is a "soldier's battle."

What are we fighting for? Is it to introduce distinctive Church teaching into the "State" (or undenominational) schools? It is being urged, I know, at the present time that the law or the Board of Education Regulations give parents the right to request such instruction for their children, which may be given provided it is not paid for out of public money. The right is clear, and is so laid down in the Education Act of 1902. But what is the right worth? Are we to demand at the point of the bayonet, so to speak, that our children shall be taught to be loyal members of the Church of England? Or, putting it more broadly, are we to depend upon a grudging concession—for that it must often be—for our children to be brought up in a definite creed? Putting it on the lowest level, will it really pay to enforce this right? Can we get, to state it bluntly, Christianity from an atmosphere of contention? It cannot be good policy to fight on such lines.

But assuming we overcome our difficulties and secure our concession, what is it we ask for? Is it the teaching of the Church Catechism on which we lay such stress? The knowledge of the Catechism I recognize is a kind of "Symbolism,"—a test of Churchmanship, and as such to be taken into account; but if we take the individual boy and consider the spiritual and moral value of teaching him the Catechism, what precisely does it amount to? One can only draw on one's own experience in these matters. I have tried to analyse honestly my own recollections of *learning* the Catechism and to estimate its influence on me, and I find it hard

\* A paper read at the Church Congress at Middlesbrough, October 3, 1912.



to believe that it had any appreciable effect in the formation of one's character. Many will challenge this conclusion, but what I believe to be the truth is that the associations of the Catechism lesson—the atmosphere in which it was taught, the home influences closely interwoven with question and answer, with the dignified and beautiful (though to the child somewhat incomprehensible) phrasing—these have a very great influence, all the greater that it cannot be defined. But are we going to get this atmosphere and influence under the conditions of secondary-school life? Have we secured it in the public schools? Can we get it in the "State" schools? That, it seems to me, is the real issue. Here, again, it is largely a question of the teacher. Without him we are fighting for a shadow. Syllabuses and courses of instruction are but "paper guarantees." It is "the man behind the guns" who counts.

But if we have not got our teachers under the public-school system in our Church atmosphere, then surely there is something wrong in our methods; and we must cast about and take our bearings again. In teaching a formal Catechism to the child, are we not beginning at the wrong end? Is it not a tradition from the ages of authority, of compulsory orthodoxy? In our mathematical and science teaching we no longer start with all the old axioms; we have largely substituted inductive for deductive methods. The child is led to discover the truth for himself. A truth so grasped becomes a part of his nature. A truth that merely rests upon external authority may easily be dislodged; and our spiritual development must be to some extent parallel. To put it briefly, even at the risk of some misunderstanding, a creed is the coping-stone rather than the foundation of a rightly ordered religious education. Of course, I recognize that we cannot be altogether consistent in these matters. Children will still learn a good deal by heart, both in the religious as in other spheres, which they cannot fully understand until later; but we must remember that the value only comes in at the later stage with the deeper knowledge. If we stop short at that stage, then we have gained little or nothing by the earlier process. It is the next stage that is the important one, whether this be the Sunday School, the Confirmation Class, or the Sixth Form Bible lesson.

In all our teaching we must realize that we live in a critical age—an age of unrest and inquiry. The old landmarks are going, and in every sphere authority is challenged. Nothing is accepted because "it is." This has its painful side, of course. When the new wine is fermenting in the old bottles there are bound to be unpleasant moments of tension and even disruption. But it has also its good side. Pain is better than paralysis; and even strife than apathy and stagnation. All this stir, this working of a new leaven, is a challenge and a call to the Church to adapt her methods of teaching to the new conditions.

What, now, is the Church's position in regard to the schools—both public schools and "State" schools? In regard to the first she has both rights and duties; in regard to the second she has duties but not rights. What is conceded to her voluntarily is a privilege and not a right. In the public schools, which are primarily Church foundations, we may expect distinctive Church teaching—*e.g.*, the teaching of Church history and the study of the Prayer Book; in the "State" schools we have only, for the most part, the Scripture lesson. It is to the Scripture lesson, in both classes of school, properly used, that we shall look for our real religious teaching. It is from the life of the school, properly ordered, that we shall get our true religious training or education in religion. By religion I mean a right attitude towards God, and, arising from that, a right attitude towards our neighbour.

The Bible lesson "properly used" and the school life "properly ordered," I have said. The Bible lesson without the right atmosphere is of little use. The right atmosphere cannot exist without the right teaching. Both are interdependent; both depend on the teacher. It is on the teacher and his training that we must concentrate. This is the

strategic point for our future advance. It is a truth so obvious as to be the merest truism that the teaching of any subject is practically valueless unless the teacher is competent. And yet, are we not in practice ignoring this when we demand denominational teaching before we have ensured the competence of the teacher? Do we not too often ignore it when we send our own sons to public schools, and expect them to get a "sound and religious education" without making any inquiry as to the qualifications of the master who gives the "Divinity" lesson? And yet the qualifications required are of a very high order. To teach the Bible well in these days demands a considerable equipment of knowledge on the part of the teacher, if he is to deal properly with the historical and critical questions alone that are bound to be raised, for the modern child is nothing if not critical. We shall not *raise* difficulties, but we must *meet* them. Not only special knowledge is required, but something far harder to find; I mean the necessary religious conviction. Does the average schoolmaster satisfy these conditions? The answer is that the teacher feels his weakness, and he is mending it in the right English way by self-help. This Easter, for example, a Conference was held at Cambridge which was organized by the younger generation of schoolmasters to discuss "Scripture Teaching in Secondary Schools."

Let me quote a few words from the preface to the Report of the Conference (since published under the above title by the Cambridge University Press). "This Conference represented no organized society and knew no distinctions of denominational creed. The common purpose of all the members was to discover the best methods of Biblical instruction in the light of modern scholarship." Is not this a sign of the times? The preface goes on to say, "Two points seem quite clear: first, that the *positive* element in modern Biblical criticism is of enormous value to-day; and, secondly, that the average man knows exceedingly little about it." This is a candid confession, but we have with it the remedy—the determination to learn. And this attitude itself—this moral earnestness—which does, I am sure, characterize the assistant master in our secondary schools of all types, is in itself a religious element of great value. When this is coupled with the new scholarship we are a long way towards success. Again, a vacation term for Biblical study at Oxford, held this August, was attended, I notice, by over two hundred and fifty students. This, and movements like the Students' Union, show how eager the rising generation are to improve themselves in this respect. Here is work for the clergy—*i.e.*, for individual clergy—by lectures, discussion societies, &c., to teach "the teacher," and so to "permeate" school life. It is the personal "touch" that we want.

The dull Bible lesson of the past has much to answer for. To how many the Bible still remains a dull book! But it will not be a dull book any longer in the hands of these keen teachers, who have drunk of the new learning. The Higher Criticism has given us a fresh perspective, and has restored the interest to what was so often in the past "dry bones." Lists of the Kings of Israel and Judah and measurements of the Tabernacle have no spiritual value just because they are "in the Bible"; but these were too often the stones that were given us for bread in the past. We no longer have to look on the prophets as obscure riddlers whose meaning was only to be read in some distant future. We see now the Hebrew prophets speaking in difficult Oriental language, no doubt, but with a definite message for the men of their own day; and, therefore, if we read them aright, with a Divine message for us too; not merely, I mean, as individuals, but as a nation.

Again, we no longer look on a Jacob or a Joseph, a David or a Solomon as venerable but often unreal figures moving in a refulgent atmosphere. Medieval stained glass has much to answer for here. We see them now as "flesh and blood," men of like passions with ourselves. We learn from their faults as well as from their virtues. This is what makes the Old Testament such an excellent book of "moral in-

struction." We give our moral lessons indirectly. Try to teach a boy morality directly and you are apt to make a "prig" of him, from which Heaven defend us! Example is better than precept; and the Old Testament is full of examples and unconscious lessons, but it needs some skill, both scholarship and imagination, to bring them out. We must remember the natural lines of a boy's development. It follows to some extent the development of the race. The "human boy" is still semi-barbaric; he is in the "Viking" stage, and we must not "force the pace." Higher ideals must reveal themselves gradually to him. God's progressive revelation of Himself in the Old Testament shows us the right path.

When we come to the New Testament our task becomes harder if our teaching is to be real and sincere, free from conventional commonplaces which make no appeal to the young boy. To put before the average schoolboy the figure and example of Jesus Christ in the Gospels in such a way as to appeal to him—I say it with all reverence—is a difficult task. It needs knowledge, it needs imagination, it needs sympathy. For the child in the nursery, in his Garden of Eden, it is comparatively easy to paint the right picture; and at the other end of the scale, to the grown man, study and, above all, experience will reveal it. But for the boy, pulsing with life and energy and many pagan virtues, I say again it is a task of supreme difficulty. Scholarship may help us—as Prof. Swete in a most inspiring paper at Cambridge reminded us—to restore the portrait of our Lord, "dimmed and blurred by the dust of years"; but that alone, as we all know, is not enough. It must depend on the character and personality, the religious conviction and sincerity of the master if the boy is to realize that virtues which seem to him so remote from his life mean something to those whom, in other ways, he looks up to; and can be made a part of a man's or boy's life without making a "prig" or a "milk-sop" of him. We have got somehow to associate for him his ideal of the "good sportsman" with the life of Christian endeavour. How few of us, alas, are equal to the task!

To return to my main contention—the atmosphere of school life is the all-important thing, whether in the public school or the "State" school. In the former we *have* our chance; in the latter we can only get it "by the will of the people." Are we going to be content with a concession grudgingly given, with a mere *modus vivendi*, a compromise based on a minimum of concord? No. Such a compact based on mutual distrust would speedily wreck a business concern, and it certainly cannot be made the foundation on which to build up Christian faith and brotherhood. If we are to have the right atmosphere in the school we must have the right atmosphere outside; we must have a good understanding with other denominations, an *entente cordiale* between Church and Chapel. In practice this exists all over the country. Why will political platforms not recognize this? Clergy and Nonconformist ministers work together not only in social movements and on Local Education Committees, but also on Boards of Biblical Study and educational conferences. Common work in a common cause proves a wonderful solvent of religious differences. The force of Christian gravitation is a mutual one, and mutual knowledge brings about mutual respect. In my own school where I have large numbers of Nonconformists, and where, by the way, we do teach the Catechism (at the parents' request) in an optional class, I call into our counsels both Church of England clergy and Nonconformist ministers. We have a "round-table conference," but *no one sits at that table who has not "a stake in the country"*—i.e., a boy in the school; for they alone know the facts and the conditions. This is "pacific permeation."

We must recognize that there is some distrust of the Established Church among other bodies, justified or not; a feeling that we sometimes put Churchmanship before our common Christianity, "the cart before the horse." This feeling we have to get rid of, even if we have to surrender

something—a claim, for example—for distinctive Church teaching in the "State" secondary schools. But if, by concentrating on all that unites us rather than on what divides, we can get anything like the real religious atmosphere we want in school life, we have gained more than we can possibly lose. Shall we lose anything? Let us have more confidence in our own cause than that, for we have our definite creed behind us. The schools are but preparing the ground for the clergy to sow the seed, and we school masters are only the "minor orders." A Church whose charter is freedom, which has inscribed on its banners *Magna est veritas* must always flourish in an atmosphere of liberty. Competition has its value in religion, as in commerce, as in Nature itself. "Survival of the fittest" is God's own law for man. It is for us Churchmen to see that the children of the Church, under God's grace, are "the fittest."

## CORRESPONDENCE.

### THE TEACHING OF ELEMENTARY GEOMETRY.

To the Editor of "The Educational Times."

DEAR SIR.—At the present time teachers of modern languages, teachers of geography, teachers of mathematics, and one might almost say teachers of every subject in the secondary-school curriculum, find themselves in the dilemma of not knowing what to teach and how to teach it in order to satisfy the "powers that be."

As a teacher of elementary mathematics, I am decidedly doubtful as to the best method to adopt in teaching geometry, in view of the recently published suggestions of the Board of Education.

Many of these suggestions are undoubtedly good, and calculated to inculcate at an early stage, and with little difficulty, the principles of the subject. The conditions for the congruence of triangles can be clearly brought within the purview of the beginner, and also the relations between the angles formed, when parallel lines are cut by a transversal, without formal proof. Once these fundamental notions are obtained, it is quite easy to press on with the work. All this may be quite true, and most modern mathematicians agree that it is so. Then why should there be any suggestion of retracing one's steps to learn these propositions for examination purposes? With a mathematical association to which most prominent mathematicians belong, keenly interested in the most modern methods of teaching the subject, ought it not to be possible to induce the examiners of the public bodies to rigidly exclude from their papers any question asking for formal proof of "congruence" and fundamental "parallel" theorems? It is true that some examining bodies always do so, but it would be a simple matter for the examining bodies of Oxford, Cambridge, London, College of Preceptors, and others to state in their syllabuses that these propositions will not be given for proof.

Personally, I should prefer to see all geometry papers exclude set propositions altogether. Then we as teachers of geometry should be obliged to see that the real principles of the subject were understood, and our pupils would get a real grasp of the ideas of the science. As matters stand, how easy it is for pupils to pass in geometry by merely "cramming" the propositions!

Against this, I fear, there might possibly be some outcry on the part of those who sympathize with the boy of ordinary ability who would find a difficulty in passing on such a paper; but, at the same time, I fancy it would be quite possible to arrange that teachers of geometry shall not be prevented from properly carrying out the recent enlightened suggestions from fear of examination results.—Yours faithfully,

H. J. LARCOMBE, B.Sc., L.C.P.,  
Sir Thomas Rich's School, Gloucester.

THE Head Master of Friars School, Bangor, on the occasion of his prize distribution, spoke of the "incapacity, malevolence, and fraud which are characteristic of Welsh education." The Governors of the school have placed on record the fact that "they do not associate themselves with" the Head Master's remarks.

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MR. RUSKIN has defined Hope as "the recognition by true foresight of better things to be reached hereafter, whether by ourselves or others; necessarily issuing in the straightforward and undisappointed effort to advance, according to our proper power, the gaining of them." ("Fors Clavigera.")

The definition is perhaps expressed in somewhat cold and measured language, foreign of course to the writer's usually ardent style, but for that very reason testifying to his desire for accuracy and precision in the terms employed, and inclining the serious reader to study his words with special care. Those who are willing to spend such pains over them will find that they cover a good deal of ground and are suggestive of some valuable reflections. Without enlarging at any great length on Mr. Ruskin's definition of Hope, it is worth while to note three points on which he lays some stress.

In the first place, the better future is to be recognized by true foresight. Mere empty optimism, where the wish is father to the thought, and disagreeable possibilities, from lack of sense or lack of courage, are ignored, is not to be dignified by the name of Hope. In the second place, the better future hoped for may be for others as well as for ourselves, an addition that will have a special meaning for those who have care of the young, and whose anxieties frequently centre in their future far more than in their own. Lastly, the quality that is genuinely worthy of the title of Hope necessarily implies an invincible resolution to pursue without wavering or flinching any reasonable aim.

Mr. Ruskin's far-reaching but careful definition was doubtless intended to be applied to any and every relation of life, but in a paper designed for an educational journal it may, I hope, be regarded as excusable if the application be restricted to the case of those who are engaged in educational work; and, though most of the problems touched upon may concern other branches of education and be as applicable to girls' schools or to colleges as to boys' schools, it is these last, in which my own experience has been gained, that will be primarily in my thoughts.

No one will be prepared to deny that, as in all other departments of life, so in school life, hopefulness is a most desirable thing, and no one who has even a slight acquaintance with a schoolmaster's difficulties will fail to observe that he, perhaps more than men in any other profession, succeeds in his work almost in proportion as he possesses, whether by nature or by definite self-discipline, a large supply of that sober hopefulness defined by Mr. Ruskin. Of course, everyone has a certain measure of hope in his composition, otherwise he would make absolutely no effort; and such a phenomenon as an entirely inactive man is almost unthinkable. But the schoolmaster must have a particularly rich store of hope, as the drafts upon him are very constant and often very large. At all times he is liable to be brought face to face with natures in his boys that tempt him to give up all hope for their futures, and to relegate them to a limbo of the ineffective, or even of the unimprovable. There is a certain levity of manner, for instance, that is particularly disheartening to observe. We are apt to call it shallowness or silliness, and other suchlike disparaging names, and to take it for granted that there is no fire or fibre in the nature which can redeem it from utter vacuity, and make it capable of accomplishing any solid work in later life. But, fortunately for both schoolmasters and schoolboys, such melancholy judgments are frequently shown by experience to be altogether at fault, and one of the first lessons that a young master may be expected to learn is that

hasty impressions as to character are extremely risky, and that the keenest eye, after all, may not pierce the outermost shell of a nature to the hidden kernel within.

A constant and lively belief in his own fallibility with regard to the real characters and capabilities of his boys, so far from depressing him by a sense of his own limitations, ought to act as the most salutary tonic on the wise schoolmaster. But for this perception that he may be wrong, few men of fine feeling could resist the frequent temptations to despondency presented by the complexities and disappointments with which they are confronted in their dealings with the thoughtless, the callous, the untrustworthy, the vicious.

I can never be sufficiently thankful that a lesson as to the danger of premature judgments was taught me in the early years of my apprenticeship. In the large school to which I had been appointed directly after taking my degree was a boy who was neither clever nor stupid, and against whose moral character no serious charge had ever been brought. In fact, if it had not been for one peculiarity, he might have been difficult to describe, so entirely ordinary in all else and undistinguished was he. But he had one distinctive feature: he was to all appearance entirely devoid of seriousness—and he rarely ceased laughing. Now, no one but a prig would grudge a boy his reasonable share of fun. A bright, merry lad with a keen sense of the ludicrous is, or ought to be, a refreshment to the sometimes parched soul of the pedagogue; but, when the merriment is perpetual and the laughter chronic, he finds it hard to resist the conclusion that they betoken a shallow and frivolous disposition, and then that which might have cheered only saddens or exasperates him. I confess that in the case of the boy whom I have mentioned this last was the effect on me, and it was with shame and contrition that a few years afterwards I learned that this unpromising trifter, as I had thought him, was in reality a hero. After leaving school he threw himself with ardour into the work of starting and managing a boys' club, over the members of which he exercised a powerful influence, and when he died, in early manhood, he left a name honoured and revered not only by the boys for whom he had spent himself, but by all who had heard of his self-sacrificing life.

Most schoolmasters probably learn similar lessons on the duty of being hopeful, even when it seems unreasonable and almost weak to indulge the sentiment. For myself, I am profoundly grateful for the fact that my first lesson (however often I may have forgotten it in practice since) was taught me so soon after I became a schoolmaster.

Sometimes, however, cases of malpractices occur, so serious that for the sake of the other boys expulsion is the first step necessary, but it need not be the last. A friend of mine, who was head master of a great school, told me that he had had to deal with a particularly distressing case of depravity for which he had been obliged to expel the culprit. But he did not leave him to his fate. He communicated with a man who had made a scientific study of young offenders and claimed to be able often to succeed in reforming their characters. He stipulated however that, before admitting the boy to his school, he should be assured of some redeeming trait in him, and my friend had considerable difficulty in recalling one. At length he remembered that, when the sentence of expulsion was pronounced, the boy had expressed some sorrow for the grief that would be felt by his widowed mother; and with this small glimmer of hope he secured his admission to the new school and a fresh start in life.

Another type of character that sometimes appears and sorely tries the patience of a large-hearted schoolmaster is that of the close-fisted and self-centred boy. To generous natures the merest hint that in some instance they had failed in liberality would be a grievous wound, but in dealing with a nature such as this there must be no shrinking when the opportunity occurs from the utmost plainness of speech if there is to be any hope of helping the boy to avoid the inhuman vice of meanness. The worst of it is that a boy of this temperament is so absorbed in his own interests and so impervious to the wholesome influence of public opinion that his wise treatment is particularly difficult, and makes the most serious calls on the hopefulness as well as the sympathy and patience of the man who would attempt to befriend him.

I spoke just now of the wholesome influence of public opinion, but everyone knows that public opinion exerts

another and a very unwholesome influence also, and it is to combating this latter that a great part of a schoolmaster's hopefulness and energies may well be directed. Not unfrequently he can, by touching a boy's pride or by enlisting his enthusiasm, help him to establish his independence and to defy the tyranny of foolish or harmful school traditions and shibboleths which had enslaved him.

But there is, it must be admitted, a considerable proportion of temperaments that even in the simple years of boyhood embrace, as if by instinct, the conventional, which, of course, is often the less elevated, less generous, and less intelligent view of many questions, the bad taste or the folly of which it must be the constant endeavour of the master to reveal and to combat. And here he will have to draw more largely upon his reserves of courage and hopefulness than in almost any of his emergencies.

Let me give one example of this unquestioning subservience to public opinion. Till about fifty years ago it was a rooted belief in most public schools that there was something weak and unmanly about music. So at Rugby we had a paid choir of tradesmen in chapel, as it would have been unbecoming in us to engage in so girlish an occupation, and it was only the eager zeal of reforming masters that abolished the tradition; just as at Harrow, where a similar prejudice prevailed, it needed the hopeful and enterprising spirit of a John Farmer to sweep it away. This, however, after all, is only an instance of a comparatively harmless schoolboy notion, but every master of experience knows that far more dangerous notions may assail the minds of his boys and grievously affect their moral tone, and that, if he doubts or temporizes in his action the prospects of early success will be seriously lessened, and the school code of honour or purity may be materially lowered.

So far I have ventured to dwell on the urgent need of confidence and a high courage in the schoolmaster only, but the occasion arises, and arises frequently, when he must not merely be hopeful himself, but must endeavour to communicate something of his own spirit to a despondent boy. What the difficulty of such a task is, those alone know who have attempted it. The low spirits and dejection so painful to contemplate, because so unnatural to boyhood, must have a cause. Perhaps it may be physical, and, if so, removable by judicious medical treatment. But more often probably the cause lies deeper, and the melancholy and self-distrust are hereditary. In that case it is only too likely that the boy has been nurtured from childhood in an atmosphere of gloom and despondency, and the duty of cheerfulness and courage has never been impressed upon him. To deal with such a temperament will clearly need all the tact and sympathy, but also all the firmness and clear speaking of which the master is capable. He will have to demolish the usual arguments of the "What is the use of it?"—"Other fellows are often just as bad" order, which may be called the weaker outworks of the fortress. But the stiffest fight will come when (as is almost sure to happen) he is confronted by the despairing plea that no man and no boy can contend with Nature, who dooms some to be optimists and others pessimists, and from her final sentence there is no appeal.

This doctrine held by the majority of despondent people may be described as no ordinary outwork, but as the key to the whole position, and the master will have accomplished little till it is won. How he will advance, what artillery he will employ, each man will decide for himself; but he will leave no means untried to shatter the deadly doctrine of fatalism which denies the freedom of the will and repudiates the fundamental teachings of Christianity. Only one word more on this subject. If the master finds after all that he makes no impression, or but little, by his arguments and his appeal, he yet has one weapon with which he can continue the contest, and that is the inspiration of his own hopefulness.

Those who have read Sir Francis Younghusband's recent book "Within" will remember how grateful he was for the strength and encouragement derived from the sympathy of friends and even of acquaintances at the time of his serious accident. "One lady," he writes, "really put courage into me by telling me what courage I was showing." If this gallant middle-aged soldier, reared in the rough school of military life, could thus feel that a stranger's sympathy had helped to nerve his will and give him confidence to meet an



approaching trial, is it not more than likely that the earnest desire of a trusted friend would exert a far more potent and enduring influence on the unformed will and plastic character of a boy?

I began this paper with a quotation from Mr. Ruskin; let me end it with another. Writing, in "The Stones of Venice," of Giotto's figure of Hope in the Arena Chapel at Padua, he adds that Hope "of all the virtues . . . is the most distinctively Christian . . . and above all others it seems to me the testing virtue—that by the possession of which we may most certainly determine whether we are Christians or not."

### THE VILLAGE DOMINIE: A PASSING TYPE.

By Rev. J. B. STURROCK, M.A.

THERE he comes, walking briskly down the bald village street, which looks fairly well in the bright morning sunshine. He is smartly got up, with light trousers, swallow tail coat, fancy tie, and shining hat. His face is beaming with brightness, as he keeps nodding to passing acquaintances, or exchanges with them the usual greetings. He does not stop to talk with them, as he is timed to be at the schoolroom by a certain minute, and has a long standing character for punctuality to preserve intact before his scholars. Besides, he feels the importance of his mission in life, and would not exchange places with the Prime Minister of Great Britain, as may be seen in his whole bearing. He does not shuffle along the side walk with head drooping and eyes cast down, but takes the middle of the street, where he can be seen of all men; and there, with head well thrown back and shoulders squared as if on parade, he paces along with smartness and yet with dignity. He looks his friends straight in the face when he meets them, for he has no skeleton at home and is not conscious that he has done anything of which he need be ashamed before his fellows—evidently a pure, upright, honourable man, who would scorn to tell a lie or do anything mean. That straightforward look proclaims him no sneak or busybody, and the kindly smile which keeps hovering on his face tells of the warm heart that beats within his breast. The children are not afraid of him; for, as he passes them, they look into his face with bright dancing eyes, whilst he pats them on the head and speaks cheerily to them, calling them all by their Christian names. He is evidently fond of them, and deems it a joy to serve them with his best.

Having reached the door of the schoolroom as the clock strikes nine, he takes the key from his pocket with a deliberation which is meant to be educative on the eager crowd of youngsters who surround him. It is slowly turned in the lock, the door is gently opened and put well back, and then he enters the room, walking as if on hallowed ground and looking supremely happy. He is followed by a mixed crowd of boys and girls, who seat themselves on long benches placed in front of the desk, into which he gets and waits patiently until there is perfect stillness. Then he offers up a short prayer, in which he asks a blessing on the labours of the day, and commends to God any of the children who are absent through sickness; the roll is called, and the work of the school begins.

This does not put any exciting strain on him, as the branches taught are only reading, writing, and arithmetic; and the children are all under twelve years of age. When they have reached that advanced stage of life, they are withdrawn from his kindly care, the girls being kept at home to assist in household duties, or hired out to neighbours for light work; while the boys are sent "to herd" the cattle, or make themselves useful in other ways at the farms round about the village. He does not, therefore, spend time and strength in getting up the lessons before school hours, but comes fresh to the primer and Bible every morning. The first is in the hands of the younger children, and the second occupies the attention of the more advanced pupils. The arithmetic never goes beyond the rule of three, and the writing just touches small text. He has never more than seventy children on the roll, and is in no dread of the visit of an inspector. The only day on which he feels nervous is the one that brings round the annual examination, when the two ministers put in an appearance and question the children in the presence of the

parents. School Boards had no existence in his time, and the absurd idea of payment by results had not occurred to any sane man.

In the schoolroom he has it, therefore, his own way, and teaches as he pleases. But he does teach. His whole heart is in his work from beginning to end, and his enthusiasm tells upon the dullest scholar. He keeps everyone busy, and irritation is visible on him only when he sees signs of idleness in any before him. That he cannot stand, and punishment is instantly meted out for it with the tawse. This bit of leather he keeps coiled up in his coat pocket, but its ends are not hardened by the fire, as he has not the least touch of cruelty in his disposition. Only on the hands of the offender is it laid, never on the head or body, for he has command of himself, and punishes with all the deliberation of a judge. Once, indeed, according to the traditions of the playground, he did lose his temper; but, alas for his dignity! as in hastily making for an offender, he tripped over some obstacle and fell heavily on the floor. He must have been badly hurt in his feelings by that fall, for he had a great amount of self-respect (some would have called it self-importance); and the accident must have done him good, for he was never known after that to give way to passion.

Dear, good old man! I see him yet standing at his desk, contemplating his youthful charge with evident pleasure and pride. Why was it that he was not allowed to remain there to the close of life, and die in peace, murmuring a blessing on his bairns? He might have been spared in that terrible march of improvement which is ever going on, just to show to a new generation what like the old Scotch dominie was in out-of-the-way places. But, no, he had to go, when the country wakened up to the necessity of providing a better elementary education for its children, and commenced that series of reforms which has brought us two inestimable boons, a Code and a School Board.

The wrench from his old associations nearly broke his heart, and, had it not been for the kind offices of his friends, who interested themselves in his welfare, he would have slunk away to some big city as a discredited man, and hid himself there from all who knew him in the heyday of his power and popularity. They got him the situation of Inspector of the Poor in the district where he had so long laboured, and the new post suited him to a T. He was still a man of some consequence among the people, who looked up to him as he busied himself in making the necessary inquiries for the guidance of the Board and carrying into effect the resolutions of his superiors.

It was when he had been in that situation for many years that I saw him, for the first and last time, after I had left the village school. The family to which I belonged had migrated to a neighbouring town, where I received an education which fitted me for college. I had patiently trudged through the long curriculum of eight years, which is imposed upon all who would enter upon the ministry in connexion with the Scottish Presbyterian Churches, and had just been settled in my first charge, when I determined to visit the scenes of my youth and my early friends. Both were a good deal changed since I had been there before, and it was with feelings somewhat saddened that I left the village to make my way to the official residence of the Inspector of the Poor. It stood at the intersection of the two main roads of the parish, and commanded a pretty view away to the south-east, over a bright, broad river and undulating ground well cultivated and wooded, with here and there a substantial farm-steading, cosy hamlet, and fine mansion. It was covered with ivy and honeysuckle, and in the garden in front were many of those rich-scented plants and flowers of which our grandmothers were so fond. The door was opened by a tidy old servant, who showed me to the parlour, where the old man, spectacles on nose, was busy amid a mass of papers which littered the table. He rose on my entrance and stood looking at me curiously, as I had not sent in my name. When, however, I had given him my name he sprang towards me and shook me warmly by the hand, exclaiming again and again: "And you haven't forgotten your first teacher?" His lip quivered and the tear glistened in his eye many a time as we afterwards lived over the old days in a give-and-take conversation. And when I left I had the satisfaction of feeling that there was one in that little cottage who would be my friend and well-wisher as long as he lived.

## THE CAMP FIRE GIRLS OF AMERICA.\*

By Dr. LUTHER H. GULICK,

Director of the Department of Child Hygiene of the Russell Sage Foundation, New York City.

CULTIVATION of a love of the beautiful in life is one of essentials in the development of a child's character. As essential as mental training or bodily exercise, it is fundamentally related to the development of the soul, the others to the mind and the body. Beauty, romance, and adventure are to be found in the actualities of daily life. To awaken the mind of the girl to this fact is the aim of the Camp Fire Girls' Movement, an organization recently established in America.

The Camp Fire Girls seem, at first glance, to work chiefly for the furtherance of a healthy, out-of-door life under conditions similar to those planned for the boy scout. Through the success of the Scout movement for the boy, a demand arose for a corresponding organization for the girl. A literally similar organization for girls has not proved feasible in America. Girls require a certain amount of romance to make things attractive, a condition which is not so necessary to the boy. By the use of poetic form and symbolism, the aim has been to make the significant acts of life less commonplace, and by this means to remove that sense of drudgery so closely allied to the work of the home, the office, or the school. The especial form of organization adopted tends to awaken an interest and appreciation in those things which make for character-building.

The Camp Fire Girls of America organization is divided into three ranks or degrees, promotion to be achieved by the winning of honours for efficiency in domestic activities, health-forming habits, and a more perfect appreciation of the significance of every seemingly prosaic act of daily life. The first rank is that of the Wood Gatherer. Any girl is eligible for this, the only requirements being an understanding of the Law of the Camp Fire, which is: Seek beauty, give service, pursue knowledge, be trustworthy, hold on to health, glorify work, be happy.

The next rank is that of the Fire Maker. To achieve this, a girl must serve as a wood gatherer for three months, and a certain number of requirements are to be met with demanding knowledge and efficiency of a practical sort; such as "Mend a knitted under-garment and hem a dish towel"; "Keep a written classified account of all money received and spent for at least one month"; "Refrain from candy and sodas between meals for at least one month"; "Name the chief causes of infant mortality in summer, and tell how and to what extent it has been reduced in at least one American community"; "Know the career of some woman who has done much for the country or state." Added to this the candidate must present twenty elective honours selected from a list coming under such branches of activities as Homecraft, Health, Nature-lore, Campcraft, Handcraft, Business, and Patriotism. These honours are won by reaching a certain efficiency, measured by a set standard. The outward and visible symbol of these achievements is denoted by beads of different colours for the several activities, to be ultimately woven into a necklace, and worn with the ceremonial costume at the monthly meeting, which is known as the Council Fire. Fifteen additional honours from this same list must be presented for the third rank, that of the Torch Bearer.

The Homecraft honours have been given the most prominent place in the organization; by making feminine activity attractive girls are taught to like these things. During all ages domestic instinct feeling has been distinctly woman's;

it has become basal to femininity itself. By glorifying work, girls are shown the beauty and significance of domestic accomplishments.

Protection of infant life is the basis of racial improvement, and is as essential to national progress as other economic necessities. While not making a direct appeal to this problem, the winning of Babycraft honours forms an underlying plan, calculated to influence much of the preventable infant mortality. "Know how milk should be prepared for a six-months-old baby"; "Know what is good milk for a baby a year old, and how it can be tested"; "Know how much a baby should grow in weight each week for the first six months, in height for the first year; the relation of weight to disease and vitality"; "Know and describe three kinds of baby cries, and what they each mean"; "Care for a baby for an average of an hour a day for a month." These things may be learnt in schools, but the personal knowledge gained by association with the little brother or sister in this capacity can be mastered as under no other conditions with as much significance. Preparation for the duties of home and motherhood are no less indispensable than preparation for a trade or profession. This movement promises to serve as a valuable contribution to the problem.

In the Health and Athletic activities, honours are given more through the object of forming health-producing habits than from desire to put a girl to any tests: thus, honour is won by walking forty miles in ten days, to be won by walking to and from office or school; while running a mile in any speed does not win recognition. By giving honours for Business activities much of the sense of drudgery connected with the daily routine of office or factory is removed. Honour is given for an article made entirely, or in part, in regular employment, showing skill, speed, or taste; for money earned not in regular employment, such as by raising mushrooms, chickens, or securing subscriptions to magazines, thus installing in the girl an appreciation of the value of actually earning.

The Camp Fire Girls' organization is not one for any definite kind of girl; it is for all girls with honours sufficiently simple to meet requirements of all localities. Its aims are to promote among young girls the power of organization, the ability for "team work"; to develop in girls a new sense of responsibility as regards their work and relation to the community; to teach girls to keep accounts, that they may learn something of their own financial affairs to meet the new economic conditions facing women both at home and in the community.

We have tried to create a social organization so simple that it can be carried on by average people; so adaptable, it will fit the needs of city and of country, of rich and of poor; so beautiful, it will attract and hold the affection of the girls; so useful in content, it will serve the needs of those various organizations working in the interest of girlhood; so timely, that it will be of service in the readjustment of woman's new relation to the world.

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SIR EDWARD ANWYL, who is Chairman of the Central Welsh Board, a body that has gained a reputation for its stringent school examinations, speaking the other day at Pengam, said that "examinations hinder the study of some subjects."

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MR. M. E. SADLER, in an interview with a representative of the *Yorkshire Post*, said that "the new secondary schools are developing that corporate life which is a strong mark of the great English boarding schools, and combining with it the varied intellectual opportunities which modern life requires."

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MR. LYTTLETON, Head Master of Eton, speaking at a prize distribution at Slough, said the pre-eminence of our public-school system was owing to "the spirit of trust in the children, and liberty combined with discipline."

\* Reprinted from *The Child*, by permission of the Editor, Dr. Kelynaek.



## CURRENT EVENTS.

MR. CYRIL LODOWIC BURT has been appointed by the London County Council as Psychologist in the Education Department, at a salary (working half-time) of £300 a year.

MR. EVAN SMALL, who recently resigned the post of Director of Education in Derbyshire, has been appointed Chief Examiner to the Minor Scholarships Committee of the Joint Scholarships Board, in place of Mr. E. E. Pinches, who held this post up to the time of his death.

AT Bedford College Miss C. F. E. Spurgeon will give a course of ten lectures on "The Art of Writing, or Style," on Saturday mornings, at 10 o'clock, beginning on January 18, 1913. The course is open without fee to teachers in London. Applications for tickets should be made to the London Education Offices, Victoria Embankment, W.C.

PROF. M. J. M. HILL, who for some years has been endeavouring to bring into general use a modification of Euclid's method of treating the theory of proportion, will give a course of ten lectures at University College on Tuesdays, at 6 p.m., beginning January 14. All teachers in London schools may attend on the payment of a registration fee of 1s.

THE weekly paper, *Education: Primary, Secondary, and Technical*, which has hitherto cost 3d., begins its tenth year of issue at 1d.

THE North of England Education Conference will be held at Nottingham on January 2, 3, and 4.

MR. F. G. SNOWBALL, M.A., has been appointed temporary Head Master of King Edward VII School, Lytham.

THE Annual Report of the Oxford University Extension Delegacy shows that there has been an increased demand for lectures on Economics and Political Science.

MR. TAYLOR DYSON has been appointed Head Master of King James's Grammar School, Almondbury.

AT a cost of £30,000 the London County Council has prepared a scheme for the erection of a new secondary school for three hundred boys in North Kensington.

THE "Bible Study Week" will be held for the third time next Easter (March 22 to 29) at Claydon, Bucks. Information will be sent on application to Miss B. Leahy, Claydon House, Steeple Claydon, S.O., Bucks.

MR. E. W. LOVEGROVE has been appointed Head Master of Ruthin Grammar School.

AT the Conference of Educational Associations, to be held at the London University, there will be a special meeting, organized by the College of Preceptors, on Friday, January 10, at 2 p.m., to consider the position of private schools.

THE *Music Student* for January gives an account of the Jaques-Dalcroze system of Eurhythmics, together with many opinions and criticisms from well known educationists and musicians.

MRS. SKEAT has presented to King's College, London, the library of the late Prof. Skeat.

MR. EDWIN TATE has given to the Battersea Polytechnic £7,000, the interest on £5,000 of this sum to be used for scholarships, and the interest on the remaining £2,000 to be devoted to the purchase of books for the Tate Library, which was also given by Mr. Tate.

THE London County Council has arranged to hold its seventeenth annual conference of teachers from elementary and secondary schools

and technical institutes on Thursday, Friday, and Saturday, January 2, 3, and 4, at Birkbeck College, Chancery Lane, E.C. There will be two meetings on each day, from 11 a.m. to 1 p.m. and 2 p.m. to 4 p.m.

THE following is a curious sample of law-court humour. In reply to the Judge, Mr. Colam said the school was what was known as a secondary school. His Lordship: "A provided school? There are schools where education is a secondary object." (Laughter.) Mr. Colam: "That is not the sense meant in the Act." (Laughter.)

MR. W. M. GRUNDY, of Loretto School, has been appointed Head Master of Abingdon School, in place of the Rev. T. Layng, who is resigning his post next April.

THERE are eighty-seven training colleges for teachers in public elementary schools, with 12,138 students. The State pays an annual grant of about half a million.

## THE COLLEGE OF PRECEPTORS.

## MEETING OF THE COUNCIL.

A MEETING of the Council was held at the College of Preceptors, Bloomsbury Square, W.C., on December 14. Present: Sir Philip Magnus, President, in the chair; Prof. Adamson, Dr. Armitage Smith, Mr. Bain, Rev. J. B. Blomfield, Mr. Brown, Miss Dawes, Prof. Dixon, Mr. Eagles, Mrs. Felkin, Mr. Hawe, Miss Jebb, Rev. R. Lee, Mr. Longsdon, Mr. Pendlebury, Mr. Rushbrooke, Rev. C. J. Smith, Mr. Starbuck, Rev. J. Twentyman, Mr. Wagstaff, Mr. White, Mr. Wilson.

The minutes of the last meeting were confirmed.

The Secretary reported that the number of entries for the Christmas Certificate and Lower Forms' Examinations was about 5,000, and the number of entries for the Christmas Diploma Examination about 450.

Diplomas were granted to the following, who had satisfied all the prescribed conditions: Licentiate—Brother Denny; Associateship—Miss Gertrude Kimpton and Mr. Charles Frederick La Rose.

On the recommendation of the Finance Committee, it was resolved (a) that Mr. Hodgson should receive a life pension on his retirement from the Secretaryship of the College at Lady Day, 1913; (b) that Mr. George Chalmers, the present Assistant Secretary, should be appointed Secretary in succession to Mr. Hodgson; (c) that a grant of £10 should be made to a life member of the College from the College Benevolent Fund; and (d) that the method of presenting the College accounts should be modified.

The resignation of Mr. E. A. Butler, a member of the Council and one of the three Vice-Presidents, was accepted with very great regret.

Alexander Mackenzie, D.Sc., F.C.S., Ph.D., was appointed an additional Examiner in Chemistry.

The following books had been presented to the College since the last meeting of the Council:—

By the CITY AND GUILDS OF LONDON INSTITUTE.—Report of the Department of Technology for the Session 1911-12.

By A. & C. BLACK.—Barrett and Nunn's First Class-Book of Chemistry: Speight's Sentinel Hours.

By BLACKIE & SON.—Blackie's Standard Shilling Dictionary; Barbe's In Byways of Scottish History; Grove's Daudet's Lettres de mon Moulin (Contes Choisis); Fry's Morris's The Writing on the Image; Rose's The Rise of Democracy; Storr's An Elementary Study of Acids; Yeld's A First Virgil.

By W. B. CLIVE.—Fry's Junior Geography; Hosking's School Gardening.

By HACHETTE & Co.—Thomson and Yates's English Lessons on the Gouin Method, First Book for Children.

By the OXFORD UNIVERSITY PRESS.—Clarke's Six Contes par René Bazin; Furneaux and Pitman's Tacitus Annals V, VI, XI, and XII; Minchin's Hydrostatics (2 vols.); Quiller-Couch's Selections from Bacon's Essays; Shorter's Elementary Practical Physics, Parts I and II; Wynne-Edwards and McCutcheon's Notes on the Hebrew Prophets.

By RIVINGTONS.—Smith's British History, Part I.

Calendar of the University College, Nottingham.

Calendar of the University of Wales.

RETURN OF REGISTRATION FEES.—The Board of Education announce that they will be prepared to return registration fees to teachers whose names appeared on Column B of the old Teachers' Register, provided that applications reach the Board of Education before the end of February next.

## REVIEWS.

*Eton in the Seventies.* By the Hon. Gilbert Coleridge.  
(7s. 6d. net. Smith, Elder.)

"Another book about Eton!" is the first exclamation which Mr. Gilbert Coleridge's volume is likely to provoke; and certainly it is rather an alarming suggestion that he makes, that "each decade should have its history" of our chief public school. Nay, more; for it seems that Mr. Coleridge was encouraged in his work by the fact that another book dealing with the same period—viz., "Eton under Hornby"—appeared while he was preparing his notes, and he felt it incumbent on him to correct the erroneous picture which this book conveyed. So eventually we must face the prospect of each decade having not only its history, but its rival histories of Eton; and then will not Harrow, Rugby, and the other public schools all demand the same?

We are glad to recognize, however, that "Eton in the Seventies" is a very readable book; and the present writer, whose acquaintance with the school dates from about the same period, has had many of its scenes brought back to his mind very vividly through Mr. Coleridge's descriptions, not least in the chapters that deal with "College Chapel," "Masters," "Cricket," and "Itinerant Faces." Incidentally we may remark that, in his stories of masters, many of which are amusing enough, Mr. Coleridge has shown less consideration than some earlier writers, including the heretical author of "Eton under Hornby," in holding up to ridicule certain "beaks" who, though now retired from Eton, are still living, and likely enough to study these annals of the decade which they so adorned. College servants and Brocas "cads" are supposed to be fair game for satirical remembrance; but even here we could wish that the memory of Powell, the purveyor of footballs to the boys, had been more tenderly treated. He was a dear old man; no mere itinerant, but as much a part of the school as many of the masters, and the present writer still cherishes among his Eton papers a letter of thanks he received from him for some trifling gift.

It is worthy of note that, though there are chapters on the river, cricket, the rifle corps, &c., there is no mention of the Beagles; from which we may deduce, perhaps, that Mr. Gilbert Coleridge, like his brothers, Lord Coleridge and Mr. Stephen Coleridge, is not a devotee of "sport."

Perhaps the chief fault of the book is that it is not written from any very definite standpoint. Mr. Coleridge complains that "Eton under Hornby"—which seems, from his rather frequent references, to have got somewhat on his mind—"savours too much of the doctrinaire," but "Eton in the Seventies" has no special savour at all. Nor, in truth, do its pictures of Eton confute those of the other book; on the contrary, they tend to confirm what was there written of the lack of discipline, the idleness, and the irreverence of the Eton boys of forty years back. Take, for instance, the admission that "to procure someone to answer for you at 'absence' [i.e. the roll-call] was an easy matter: when your name was called he simply got behind a tall fellow, waved his hat in the air, answered 'Here, sir,' and the thing was done." We can testify that it was often done; but think what an insight such a fact gives into Dr. Hornby's notions of government!

Then, again, if the behaviour in chapel was as bad as Mr. Coleridge represents it, why need he warn "future generations" against believing the other writer? It is rather unsettling to find Mr. Lyttelton, the present Head Master of Eton, himself contributing some reminiscences to this chapter, in which he makes fun of the sermons, and of the very voices, of his predecessors in the pulpit. "At the end of twenty-five minutes," he says, with reference to a sermon by old Bishop Chapman, "we listlessly sauntered out." No doubt we did; but if the sermon occupied only twenty-five minutes we must have been unusually lucky on that occasion. We well remember "sauntering out" after sermons of more than double that length, and making some strong remarks as we sauntered.

Then there was Psalm cxxvi, which, in Mr. Coleridge's time as in ours, led to trouble because it had become a practice among the boys to take up the refrain "For His mercy

endureth for ever" with such lusty shouting as to drown the voices of the choir. This led, Mr. Coleridge says, to a new and less lively chant being substituted, and he gives both. But, on studying the tune which he quotes as the noisy one, we find, with surprise, that it is tameness itself to the one which we remember as in use in the late sixties; so it would seem that the school, robbed of its first favourite, must have fought a running fight for several years with dogged perseverance.

Such was the Eton of the seventies, when Mr. Lyttelton was a boy there. And what of the Eton of to-day, when Mr. Lyttelton is its Head? That will be a question for the future historian; but we will hazard the opinion that, if Mr. Lyttelton, possessing as he does a close sympathy with what Mr. Coleridge calls "the Eton spirit," and also considerable sympathy with what is not quite the same thing, the modern spirit—if a head master thus doubly qualified cannot reform Eton, no one can reform it. But *absit omen!* We had better close these remarks with the words used by Mr. Coleridge and all good Etonians: *Floreat! floreat!*

*An Introduction to Psychology, more especially for Teachers.*  
By T. Loveday and J. A. Green. (3s. 6d. net. Clarendon Press.)

Considering the share Prof. Green is taking in the newer developments of experimental pedagogy, it is surprising to find the treatment of psychology in this book carried on so exclusively on the old lines. The authors appear to be prepared for our surprise: they tell us in the preface that they "have not included chapters on subjects of direct pedagogical interest, such as fatigue or tests of intelligence, or generally on the application of the methods of experimental psychology to pedagogical research. The reason is partly that we do not wish to add to the size of the book until its usefulness has been submitted to a wider practical trial than is within our power, and partly that an intelligent appreciation of experimental methods and results is impossible for students until they have a sufficient grounding in general psychological theory." It may be doubted whether the experimental approach may not be preferable, but in any case we must take the authors' frank statement of purpose, and see how far they have been successful in carrying it out. On this point there need be no hesitation. The work is well done. As a piece of descriptive psychology at the elementary stage, the book leaves little to be desired. It is of a good workable size—252 pages of text and 13 pages of appendix. The arrangement is very satisfactory, and the style, if a little heavy, is eminently clear.

The idea of purpose gets the place its fundamental importance merits, and practically dominates the plan of the book. While the point of view is that of Prof. Stout and his school, use has been made of all the newer insights on the subject. In particular, Mr. McDougall's work on instincts and the emotions has had the attention it so well deserves. While there is no parade of authorities in the text, each chapter is followed by a list of references for further reading, so that the student has the means supplied for verification and elaboration. All the psychological conventions are observed, but the authors have not allowed their work to become commonplace, as is witnessed by the excellent use they have made of the Hobbean "wild ranging of the mind." On minor points there will probably be difference of opinion. Not everyone will agree that "the old adage that example is better than precept is doubly true." Example is more powerful than precept. It does not follow that it is better. As a matter of fact, teaching by precept is freer and may lead to higher results than teaching that is limited to example. The distinction our authors make between "imaging" and "imagination" may be regarded as unnecessary by the orthodox, but for our part we welcome the distinction as a useful means of marking a real difference between processes that students are apt to confound. In dealing with attention the notion of "absorption" might have been introduced with advantage. In the last chapter, "Self and Character," we have quite a remarkably clear exposition of a very difficult subject in a space that would have been quite insufficient had it not been for the excellent preparation the reader has received in the preceding pages.

The book belongs to that newer class of textbooks that supply the student with material for applying what he learns in the text. The second appendix is made up of seventeen sets of exercises in which the authors show a good deal of ingenuity in providing problems on which students may practise. These are excellent for class discussion, but some of them must, from the nature of the case, be unsuitable for the private student. They are such that no key can be provided. They must be resolved by the actual intercourse between the living teacher and the living pupil. The text, however, is quite suitable for the private student, and the book may be honestly commended as a specially efficient instrument for class instruction.

*Education: a Survey of Tendencies.* By A. M. Williams, M.A. (3s. net. Glasgow: Maclehose.)

Were it not for the preface the reader would be in doubt about the kind of reader to whom Mr. Williams makes his appeal. It appears that he hopes to meet the needs of two very different classes: "young students," and the general reader who desires "an account of the evolution and nature of a great public service." This is a difficult team to drive, and it cannot be said that Mr. Williams quite succeeds in his task. He rightly enough complains that education is too often considered to be a matter of "far off things," that have nothing to do with the schools of to-day. But a good deal of what he has to say treats of schools from a point of view that is hardly suitable for young students. Mr. Williams, in fact, tries to combine in one volume two different kinds of book. Prof. Thorndike's recently published "Education: a First Book" would meet the case of the young student, while Prof. Findlay's "The School" makes the definite appeal to the general reader. It does not seem possible to unite in one book such different points of view. On the whole, Mr. Williams's main appeal is to the general reader. There does not seem to be any very definite plan in the work. Its seven chapters are entitled "What Education Means," "The School is Reflected in Society," "The Limits of the School," "The Fundamentals of the School," "The Curriculum," "The Citizen as School Manager," "The Teacher." The 207 pages of text are supplemented by a score of pages of appendixes.

The individual chapters of the book are exceedingly well written. The matter is well arranged and is in itself of much interest. We have here the reaction of a keen intelligence upon matter with which experience has made it familiar. Mr. Williams is very happy in his illustrations. He has evidently a very well stored mind, and finds in literature all sorts of unexpected analogies. He finds "the whole business of education in a nutshell" in a three-line sentence from "Robinson Crusoe." Sir Walter Scott and George Eliot, and Dickens and Charlotte Brontë, are all brought under contribution, with the happiest results. Many of the ordinary complaints against the school are taken up and vigorously dealt with—such, for example, as the widespread fallacy based upon the schoolboy's inability to find himself at home in his new surroundings during the first interview in his prospective employer's office.

Dr. Hayward would find here an excellent opportunity for the application of his *Anpassung*. The reader is constantly rewarded by coming across striking *obiter dicta*, but these make him wish that the author had worked out in greater detail certain points of high interest and importance. We had intended to quote one or two of these, but, after completing the reading of the book, we found that there was no index, surely an unpardonable omission in a book of this kind. Though not meant for advanced students, a book that emphasizes tendencies ought to have taken some notice of the reaction against the doctrine of formal training, and the marked tendency of the present time towards experimental methods in education. A merit of the book is the skill with which the reader is kept always in touch with the practical. It is no defect that many of the author's illustrations are drawn from Scottish education. The comparisons between English and Scottish education are in every way valuable, and an elaborate diagram by way of a "Conspectus of Educational Organization in Scotland" (1904) is one of the most useful parts of the Appendix.

*Theory of Groups of Finite Order.* By W. Burnside, M.A., F.R.S. (15s. net. Cambridge University Press.)

Finite Order Group Theory, in the abstract, if not in its entirety, is a branch of mathematical research to which only in very recent years English mathematicians have devoted serious attention. In fact, the original edition of the present work may be looked upon as one of the leading pioneers in its special direction. A glance even at the second edition, which is now under review, suffices to indicate the illuminating character of the progress made in the development of the theory during the fifteen years which have elapsed since the appearance of the earlier volume. The author has in no sense departed from his original intention of investigating the theory of the subject apart from its applications, but whereas in the former issue no account of the theory of groups of linear substitutions was included, simply because it failed to furnish material assistance to the writer's needs, now the march of investigation has transformed it into a specially fruitful source of information from Mr. Burnside's point of view.

The five chapters now devoted to the theory of groups of linear substitutions, namely Chapters XIII—XVII, are substantially responsible for the large increase in the bulk of the new volume as compared with its predecessor. In the main, the contents of the first edition remain in the form familiar to its readers; they have, however, undergone a certain amount of rearrangement, and some modification with regard to notation; and, furthermore, the text in parts has been both revised and enlarged. The real changes, however—and these are such as to enhance very greatly the importance and the literary value of the work—lie in the additional subject matter, of which a very brief summary is all that is possible in this place.

Chapter XIII discusses in some detail the nature of a *linear substitution*, and defines a *group* of such substitutions, distinguishing carefully between what are known as *reducible* and *irreducible* groups respectively. Chapter XIV takes up the theory—mainly due initially to Frobenius—of the representation of a group of finite order as a group of linear substitutions. A discussion of group characteristics, with which the name of Frobenius is even more intimately associated, forms the subject of the fifteenth chapter, together with an investigation of other important points of theory—for example, the calculation of characteristics and the composition of irreducible representations. Chapter XVI is occupied with applications of the theory of groups of linear substitutions and of group characteristics; but it must be understood that the applications are made for the definite object of arriving by means of them at special results bearing on the abstract theory of the subject, not merely for illustrative purposes. The last of the group of new chapters discusses the invariants of groups of linear substitutions.

The portion of the treatise which deals with the graphical representation of a group was delightfully illustrated in the first edition of the work; nevertheless, in the case of more than one of the principal diagrams, as now reproduced, there is an added beauty as a result of the use of greater depth of tone in the darker parts of the figure in question.

*A New Latin Grammar.* By E. A. Sonnenschein, D.Litt. (2s. 6d. Clarendon Press.)

Prof. Sonnenschein has here embodied most successfully the recommendations of the Joint Committee on Grammatical Terminology, of which he was himself Chairman. The many teachers who have been anxious of late to carry out those recommendations will find this volume most valuable and helpful. Instead of making the usual sharp division between *accidence* and *syntax*, Prof. Sonnenschein has called his first part "Forms and their Chief Meanings," and has given a simple account of the prominent uses of the forms as introductory to the study of the forms themselves. Much of the old lumber of *accidence* has disappeared altogether, while details have been relegated to an appendix. The *accidence* is presented clearly to the eye and without unnecessary

repetitions, while points to be specially marked are given in black type with very good effect. Much use throughout has been made of English derivatives.

We feel a little doubtful as to whether much is gained by the new classification of the principal parts of verbs according to the final sound of the stem from which they are formed. Reduplication seems to be passed over without comment, other than that such perfects are formed from a different stem. The perfect participle passive has been substituted very wisely for the supine. The author's views on the subjunctive are already well known through his pamphlet on "The Unity of the Latin Subjunctive," and naturally the application of his theories to a school book has been awaited with interest. In many respects considerable simplification has resulted, while the usages have been confined to those that a pupil comes across in his reading of authors like Caesar and Virgil. We have no hesitation in recommending this grammar for use in upper forms.

## GENERAL NOTICES.

### CLASSICS.

*An Elementary Greek Grammar.* By the Rev. E. E. Bryant, M.A., and E. D. C. Lake, M.A. (Oxford University Press.)

Messrs. Bryant and Lake, of Charterhouse, are certainly moving on the right lines in their "Elementary Greek Grammar." As Mr. Frank Fletcher states in his short preface, "the omission of the unessential has been the guiding principle of the book," which is intended to help boys rapidly over the initial stages of Greek Grammar, with a view to hastening on to the reading of a text. The Grammar is divided into four stages, distinguished by differences of type and other marks, with the idea of thereby avoiding the encumbrance of boys' brains with exceptional and rare words or forms before they have learnt the elementary and ordinary. The arrangement of the matter, with but little on each page, should help towards a clearer grasp of the subject, and presuming, as is stated in the preface, that the boys who use the book will be beginning Greek at a more advanced age than used to be the custom, it ought to prove an acceptable grammar to the Classical Master.

"Dent's Latin Readers."—*Cornelia.* By E. V. Arnold, Litt.D., and J. W. E. Pearce, M.A. (1s. 4d.)

Under this title Messrs. Arnold and Pearce have compiled in Latin quite an attractive selection of incidents in Roman history, which *Cornelia*, the mother of the Gracchi, is supposed to relate to her two young sons. The Latin appears to be more correct than is always the case with the textbooks of the advocates of the direct method, though it is questionable whether *socium omnium regni* is permissible for *totius regni*, on page 62, for instance. It is, perhaps, a little hard to believe that the average boy in his second year's course of Latin would be quite equal to translating these stories as intended. There are useful questions to be answered orally, appended to each chapter, and a good vocabulary.

*Horace, Epistles I.* Edited by F. G. Plaistowe, M.A., and J. F. Stout, B.A. (1s. 6d. University Tutorial Press.)

The Notes, which profess "to elucidate the subject-matter of the Epistles," fulfil their purpose adequately, though at times there is some rather unnecessary detail in them for a book which is intended for those who have "passed the stage of needing help in elementary grammatical points."

*Fragmenta Classica Papyracea.* Edited by Arthur S. Hunt, Fellow of Queen's College, Oxford. (3s. Clarendon Press.)

These newly discovered fragments from the plays of Sophocles and Euripides, as arranged and annotated by Mr. Hunt, will be of interest and value to the advanced classical scholar. The work is done with a care well worthy of the high standard of the Oxford Texts, and one can only regret that it can be appreciated by so few.

"The Loeb Library."—(1) *Euripides*, Vols. I and II. With English Translation by A. S. Way. (2) *Terence*. In two vols. With English Translation by John Sargeant. (5s. net. Heinemann.)

The editors of the "Loeb Library" are to be congratulated on the excellent start they have given to their series with the texts and translations of Euripides and Terence. In either case the translators have succeeded in giving us both a literary and a literal translation of the originals: no easy combination. Mr. Sargeant seems to have caught the spirit of Terence excellently, and his translation, while appropriately colloquial, is never slangy. In the Euripides, Mr. Way has produced a very sound verse translation: perhaps he has been more successful with his blank verse than with

his anapestic choruses: but on the whole they read well. Certainly, for those whose classics have grown rather rusty, there could hardly be a pleasanter and less irksome way of renewing acquaintance with old friends. Both books contain excellent short prefaces, and they are admirably got up.

*The Elizabethan Translations of Seneca's Tragedies.* By E. M. Spearing. (2s. net. Heffer.)

Seneca was looked upon by the Elizabethans as an admirable model, and, crude and melodramatic as his tragedies were, they yet exercised a very important influence on the development of the English drama. Unfortunately the translations of the period are very rare and difficult of access. In her able treatise Miss Spearing gives an account of the chief characteristics of the various translators, and quotes instances of their verse which are full of interest. The vocabulary of Heywood contained many Latinisms such as "frete," for "sea" or "flood" (Lat. *fretum*), "impery," "dominion" (Lat. *imperium*), and many others. Amongst curious translations is that of *caeruleus* as "marble," by Studley, who applies this epithet to both sea and sky, and thus evidently associated the idea of "blueness" with "marble."

*Caesar, Gallic War, II, V.* Edited by A. N. Allcroft, M.A. With an Introduction by Lt. M. Penn, M.A. (2s. 6d. University Tutorial Press.)

This volume contains in small compass all that is essential for the study of these two books of Caesar's Commentaries. Mr. Penn's admirable introduction gives particularly full and clear notes on the Roman Army of this period. The notes on the text seem clear and adequate. Much care has been taken in elucidating the structure of Caesar's Bridge and in his interpretation of the *sublaeae* the editor puts forth a new theory which has much to commend it. We may suggest, however, that to the youthful student a picture of the bridge would have been of great assistance in addition to the plan and section given. These latter have the names printed in such small type as almost to require a magnifying glass.

*Livy, Book I.* Edited by H. J. Edwards, C.B., M.A. (3s. 6d. Cambridge University Press.)

We have nothing but praise for this fresh volume of the Pitt Press edition of Livy. It is a most welcome addition to those already issued, and has been placed in very able hands. It contains an excellent introduction on the early history of Rome and the gradual development of the City State. In dealing with the Servian Reforms the editor has drawn up a clear table indicating the distribution and rating of units as attributed to Servius Tullius, and comparing the details given by Livy with those of Dionysius.

*Homeri Opera. Vol. V: Hymns, &c.* Edited by T. W. Allen. (4s. paper; 4s. 6d. cloth. Clarendon Press.)

This volume completes the Homer of the Oxford Classical Texts. Besides the Hymns, to which a few not usually given have been added, we find here the two sportive "Homeric" pieces, "The Booby" and "The Battle of the Frogs and Mice," the Cyclic Fragments, and the Lives. It will be a great satisfaction to scholars to add to their shelves this volume, with its carefully revised text and able critical notes.

*Tacitus Histories. Book I.* Edited by M. Alford. (4s. 6d. University of London Press.)

The most noticeable features of this edition are the careful and scholarly grammatical notes throughout, while in the Introduction considerable space is devoted to the chief syntactical characteristics of Tacitus. For the help of the teacher reference is given to no less than four standard grammars. Special efforts have been made to elucidate all technical, civil, or military terms, and thus obviate the vagueness so often found in the real meaning of quite common words. The agreements and differences between the narratives of Plutarch and Suetonius and that of Tacitus are noted from time to time.

### MATHEMATICS.

*Projective Geometry.* By William P. Milne, M.A., D.Sc. (2s. 6d. Macmillan.)

An excellent and stimulating little textbook, from which students entering on their training in the subject of projective geometry will have every opportunity of obtaining a thorough grasp of the principles underlying the theory considered. The writer gives not only a scholarly treatment of the theme, but brings to bear on it the lucid methods of exposition which are characteristic of a gifted teacher. The volume is attractive in appearance, usefully illustrated, and affords an ample supply of exercises.

*Advanced Calculus.* By Edwin Bidwell Wilson, Ph.D. (20s. net. Ginn.)

Having undertaken the combined and arduous task of author and compiler, Dr. Wilson has succeeded in producing a volume which will probably be warmly welcomed by many teachers of classes in advanced mathematics. In it they will find pleasantly treated a large selection of material capable of undergoing further elimination

and adaptation, so as to afford valuable courses of instruction suited to varied classes of students. The topics discussed may be classed broadly under the headings of Differential Calculus, Differential Equations, Integral Calculus, and Theory of Functions. A very large choice of problems has been provided for the use of the student, and an index adds greatly to the value of the textbook.

*Examples from "A Geometry for Schools."* By F. W. Sanderson, M.A., and G. W. Brewster, M.A. (1s. 6d. Cambridge University Press.)

A reprint of all the exercises given in the authors' useful course in elementary geometry. The answers to the problems are included.

(1) *Tables of Logarithms and Anti-Logarithms to Five Places.* Student's Edition. By E. Erskine Scott. (5s. net.) (2) *Tables of Logarithms, Anti-Logarithms, and Reciprocals.* (1s.) (C. & E. Layton.)

Of these two publications the former is an adaptation of Mr. Scott's well known large volume which has now been before the public for a long course of years. The present issue reproduces all that students ordinarily require, the tables being reprinted from the stereotypes of the 1892 edition. It has been brought out in a convenient form. The latter publication is a handy little pamphlet containing useful four-figure tables of logarithms, anti-logarithms, and reciprocals.

(1) *A New School Geometry.* Part I. By Rupert Deakin, M.A. (1s. Mills & Boon.) (2) *Practical Geometry.* By Sidney A. Switzer. (2s. Methuen.)

(1) Though in the main Mr. Deakin is in sympathy with modern methods and the textbooks that correspond to them, yet he believes that the pendulum has swung too far, and in his "New School Geometry" he frames a first course in the subject on modified lines. Just at present all is tentative, but in any case the author has produced a little book that is both interesting and suggestive.

(2) Mr. Switzer's "Practical Geometry" is, we are told, written for the art student who, as regards elementary texts on geometry, is less well provided than the science student. The volume is well produced and fully illustrated by clear, if not specially highly finished diagrams. Once more, however, we must put in a plea for absolutely precise language; once more we desire to lay stress on the educational value of giving and requiring demonstration of the validity of every construction. Our implied criticism applies to both volumes, but is less often called for in Mr. Deakin's more theoretical treatise.

*Arithmetic for Schools and Colleges.* With Answers. By F. C. Boon, B.A. (4s. Mills & Boon.)

The text has much to recommend it, facts being presented to the student clearly in general, and at times in a form marked by helpful touches of originality. A very large supply of exercise material is afforded, and is suitable partly for oral, partly for written work. As compared with many textbooks of like standard, the work appears in a somewhat unattractive dress; the type, however, is large and clear.

*Elementary Trigonometry.* By F. T. Swanwick, M.A. (4s. Cambridge University Press.)

An interesting preface clearly indicates the general plan of the work. Although we are not fully in accord with the author's views as to the best method of developing the subject, we believe that the course of study suggested by him is calculated to lay the foundations of a sound knowledge of the science. Excellent features of the volume are the preliminary attention paid to "approximate arithmetic," and the stress laid on the importance of preserving the balance of *dimensions* throughout any given calculation or series of calculations.

*Practical Mensuration.* By A. J. Dicks, B.A., B.Sc. (Elementary, 8d.; Intermediate, 8d., limp cloth. Complete, without Answers, 1s. 4d.; with Answers, 1s. 6d., full cloth. Nisbet.)

The elements of the subject are usefully treated from an experimental and practical standpoint, and the course possesses the advantage of requiring simple apparatus only.

*An Introduction to the Lie Theory of One-Parameter Groups.*

By Abraham Cohen, Ph.D. (5s. net. Heath.)

This small treatise—an interesting and very valuable addition to the earlier literature on the subject—brings within reach of the junior English-speaking college student an English version of the more elementary portions of Lie's Theory of Groups. The author of the compact little text confines his attention almost exclusively to one-parameter groups and their relation to the theory of the differential equations which are invariant under them. In his able treatment of his subject Dr. Cohen often adheres closely to the general and detailed development of the theory adopted by the master himself. To form a useful conception of the volume the student must become directly acquainted with its pages.

*Intermediate Physics.* By W. Watson, A.R.C.S., D.Sc., F.R.S., Assistant Professor of Physics at the Royal College of Science, London. (Pp. xiii, 564. 6s. net. Longmans.)

This book is designed not so much to be an introduction to the

author's well known larger textbook as to meet the needs of students—especially students of Medicine and Engineering—who will not pursue physics beyond an intermediate stage. Prof. Watson has wisely decided that this aim is best secured by omitting a good many of the topics which are generally found in quasi-encyclopaedic books of the Ganot type, and by giving the space thus saved to the consideration of modern developments, such as radioactivity, wireless telegraphy, and other matters of present practical importance. It will generally be admitted that the principle has proved successful, and that those sections of his work are the most valuable in which he applies it most boldly and systematically. For example, the whole of the treatment of heat is contained in 124 pages, yet in this space Prof. Watson contrives, while sacrificing nothing which is essential or of more than historical importance, to give an account of the theory of heat engines fuller and better than any we have met in an elementary textbook, and, moreover, to illustrate adequately the application of this theory to modern steam and petrol motors. The section on Magnetism and Electricity (151 pages) offers an even better example of judicious selection and compression. Praise must also be given to the order and method of treatment of this important subject. The author recognizes that in these days the dynamo is the common source of electric currents, and relegates the primary battery to a position suitable to its actual importance. But, while the aim and general execution of the work are to be warmly commended, certain serious weaknesses must also be pointed out. The fundamental notions of velocity and acceleration at a given moment are treated with a looseness which the need of brevity hardly excuses. The formula for a rotating body,  $T = I\omega$  (Prof. Watson substitutes the Latin character for the sacred  $\omega$ ), is given dogmatically, although it can quite easily be deduced from the energy equation. Similarly, the student is asked (page 315) to accept the formula for the focal length of a lens,  $1/f = (n-1)(1/r_1 - 1/r_2)$ , without any proof that the relation follows from the laws of refraction, although simple demonstrations are available. There should be here at least a reference forward to page 346, where, in a special case, the result is shown to follow from the wave theory. The statement on page 440, that, in an electric current, "the function of the wire is [solely] to direct the flow of energy," is hardly in accordance with the present views of physicists. It is to be hoped that the call for a second edition will ere long give the author the opportunity of removing such blemishes from an otherwise excellent book. The illustrations are numerous and good.

#### FRENCH.

*Exercices Pratiques d'Articulation et de Diction.* By Théodore Rosset. Pp. 204. (2 fr. 50 c. Grenoble: Comité de Patronage des Etudiants Etrangers. London: Hachette.)

This, the third edition of Prof. Rosset's well known book, will be welcome to many, as it is issued in two forms. One, as before, employs the alphabet of the Société des Parleurs de France, and the other that of the Association Phonétique Internationale. A preface of fifteen pages is full of useful hints. The first part (forty-one pages) consists of exercises on consonants and vowels alone and in various combinations. The second part (ninety-five pages) contains passages in prose and verse, with the phonetic transcript on the opposite page. An appendix (eight pages) contains a prose passage illustrating the use of the *liaison*, borrowed from Roschwitz and Passy.

(1) *Le Blocus.* By Ereckmann-Chatrian (pp. 156). (2) *Nouvelles Gènesaises.* By Töpffer (pp. 171). (3) *Le Capitaine Pamphile.* By Dumas. Edited by A. R. Florian. (Pp. 175.) (1s. 6d. each. Rivingtons.)

These are three volumes in a new series entitled "Florian's French Grammatical Readers." They are edited on the Direct Method and aim, as the title of the series indicates, at careful grammatical instruction. "Le Blocus" is an example of Series A (elementary) and contains a French-English vocabulary; the other two of Series B (more advanced), with no vocabulary, but a few notes in French and exercises for retranslation. The general plan is the same in both series. The text has been slightly altered and is divided into sections of about a page, with *questionnaire* and grammar rules, with examples opposite. At frequent intervals are longer sections without questions or grammar, for rapid reading. Exercises on grammar and further *questionnaires* follow the text, which again are followed by a formal grammar in French. The vocabulary, in two columns, is set too closely and in too small a type; the text is also set too closely, though the size of the type is good. Series A "presupposes a knowledge of regular verbs (not the subjunctive) and some acquaintance with common irregular verbs." The grammar taught is: personal and relative pronouns, the infinitive, the tenses of the indicative, the past participle, and some uses of the subjunctive. The text in A occupies 89 pages, 30 of which are concerned with questions and grammar. The exercises occupy 18 pages, the grammar 27, the vocabulary 20. The plan of putting the grammar opposite the passage on which it is based is good. In most instances the selection of passages on which to base the grammar is skilful; in a few it is forced. There must be



a fair number of instances, if this method is not to be as artificial as the older methods. When it is a case of revising constructions already taught, it is another matter; then an instance or two may suffice. In the exercises, many questions can be too readily done by copying the text, so that they are not suited for work out of class. It is not easy to see why a *questionnaire* occurs here as well as opposite the text; but some of the questions do involve grammar points that have just been taught, without calling the pupil's attention to them, and this is useful. It is probably helpful to set out the grammatical forms and rules opposite the passage on which they are based, as well as to put them altogether in a grammar at the end. The actual treatment of the grammar is undistinguished: e.g. the importance of the infinitive is rightly insisted upon; but on pages 5, 17, 135, there is no attempt to divide and simplify by classification; we have merely lists of the verbs followed by infinitives without a preposition. The *Parfait* occurs on page 15, illustrating the use of *être* with *aller*, *venir*, &c. Neither here nor in the grammar is any principle given; we have merely lists. On page 126 we have the heading "Verbes Neutres," but no explanation of the term. Further, we can find nothing in the exercises or the grammar to indicate the importance of the *Parfait*. For the agreement of the past participle we have, again, only a formal rule, and no reminder of the agreement when conjugated with *être*. There is no explanation of the use of the *cadille* or of the inserted *e*, of the double *l* and *t*, of the grave accent, of the forms *moi*, *toi* (direct object with the imperative). *Gender*s are treated only according to endings.

Series B contains about a hundred pages of text, of which 30 are concerned with questions and grammar—mainly the subjunctive. The exercises (including retranslation) occupy 26 pages; the grammar 31 pages; the notes (explanations of words and phrases in French) 11 pages. Apart from the treatment of grammar, the series contains attractive features. Has Mr. Florian weighed the advantages of lightening the grammar in Series A, by transferring to B all subjunctive uses and the agreement of the past participle with the object?

*Tales from Molière.* Arranged and adapted by M. Ceppi. (Pp. 195. With Vocabulary and Notes, 2s.; text only, 1s. 6d. Bell.)

A life of Molière occupies 3 pages; 123 pages are occupied by the stories of "Le Bourgeois Gentilhomme," "L'Avare," "Les Fourberies de Scapin," "Le Médecin malgré lui," "Le Malade Imaginaire," "Les Précieuses Ridicules." These are well done; though, in spite of the example of Lamb's "Tales from Shakespeare," it is open to doubt whether it may not be more profitable to defer a study of plays till the pupil is able to grapple with a shortened edition of the plays themselves, such as Mr. Ceppi has provided elsewhere. The *questionnaire* (23 pages) is concerned chiefly with the story. The vocabularies are arranged to correspond to the pages of the text, and contain many elementary words, and are each followed by notes giving translations and calling attention to idioms and constructions. We notice that on page 151 *peu* is not translated; on page 158, "*lui aussi*" is the emphatic pronoun, used with *aussi*," is not a satisfactory note, nor, on page 192, is "faites alors admirer à ces demoiselles." The dative in this construction represents the agent, the doer of the action. The vocabulary to page 47 does not give "hulk" under *galère*. The plan of giving references to previous pages where the construction occurs is to be recommended.

*Tales by Victor Hugo.* Edited by H. N. Adair. (Pp. 112, illustrated. 1s. Bell.)

This volume consists from episodes from "Les Travailleurs de la Mer." The text occupies 71 pages, 12 of which are filled by illustrations and *questionnaires* coming at irregular intervals. The text is ingeniously condensed; some of the gaps are filled by summaries; and the schoolboy is not exacting in such matters if his interest is once roused. The occasional notes in French at the foot of the page explaining sense or construction are capricious. The exercises (13 pages) contain retranslation and direct method questions dealing mostly with the use of words and phrases, the change of tense, and word-formation. The vocabulary (in two columns) occupies 23 pages. The whole is well printed, but the margins are narrow.

*Continents, Cities, Hommes.* New French Reading Book. By C. C. Perry and A. Turquet. (Pp. 200. 2s. Macmillan.)

Here we have *La Race Humaine* (5 pages), *L'Asie* (55 pages), *L'Europe* (19 pages), *Paris au IV<sup>ème</sup> et V<sup>ème</sup> siècles* (7 pages), *La Peste de Londres et Le Grand Incendie de Londres* (13 pages), *Le Siège de Vienne par les Turcs (1683)* (14 pages), *Frédéric le Grand* (45 pages), *Napoléon* (46 pages), *Gordon* (10 pages). At the end of each section are notes in French explaining words and phrases. These present the usual difficulties; some are successfully overcome by recourse to translation.

*Science French Course.* By C. W. Paget Moffatt. (Pp. 305. 3s. 6d. University Tutorial Press.)

Grammar occupies 120 pages; general pieces, 35; mathematics, 21; physics, 48; chemistry, 20; botany, 16; zoology, 18; geology, 15. The grammar is of the commonplace type. It is not clear why it should be included; Science French has no grammar to itself and no exercises are based on it.

*Key to Dent's Further Exercises in French Grammar.* By F. M. S. Batchelor and H. E. Berthon. (Pp. 72. 2s. 6d. net.)

These may be useful to teachers who are uncertain, e.g., about the use of the subjunctive and certain tenses of the indicative, as well as to students working alone. There is a misprinted page 13, note.

*A Rudimentary French Composition Book.* Edited by Clara A. Fairgrieve. (Pp. 83. 1s. Harrap.)

Ten pages of French pieces, followed by retranslation; 24 pages of English pieces, followed by vocabularies and notes (41 pages). Ought anyone to be doing "composition" who needs these notes? Page 43: "is walking, use the present indicative"; page 50: "said nothing, use the past definite, and place *ne* before the verb, *rien* after."

*Emile*, Tome II. By J. J. Rousseau. (Pp. 214. 1s. net. Dent.) This volume of Dent's series, "Tous les Chefs-d'œuvre de la Littérature française," contains Books III and IV of "Emile" (120 pages); and the "Profession de foi du Vicairé Savoyard." The advantages of this cheap edition of French masterpieces are too obvious to need discussion. The text is clearly and carefully printed. The reviewer has noted very few errors, but it is a pity that so small a type has been selected. It tries the eyes severely.

#### GERMAN.

*German Dictionary.* By Max Bellows. (3s. 6d. Longmans.)

This dictionary is arranged on similar lines to the "French Pocket Dictionary" by J. Bellows, father of the author. The chief features of their system are: (1) the distinguishing of the genders by means of printing them in different type; (2) the arrangement of German-English and English-German concurrently on the same page; (3) various ingenious devices for referring nouns and verbs to the paradigms given at the beginning of the work. Mr. Bellows includes not only many common proverbial and idiomatic expressions, but also many of the terms now in use in such modern mechanical sciences as aviation and automobilism. It seems a most complete and useful work, and the type is clear.

#### SCIENCE.

*South African Geology.* By E. H. L. Schwarz, Professor of Geology at the Rhodes University College, Grahamstown, South Africa. (3s. 6d. net. Blackie.)

Summarizing in a concise form the main elements of South African geology, this book will be found exceedingly useful to all who wish to commence a study of this section of the work; but the first three chapters on Descriptive, Dynamic, and Tectonic, or Structural Geology, can be read with advantage by all students, the various principles and phenomena being remarkably well explained and illustrated by examples taken from South African experience. The last chapter, on Stratigraphical Geology, deals entirely with the South African formations. In dealing with the cosmical aspect of the subject, the planetismal hypothesis is made a special point of. The illustrations are extremely good, and it would be impossible for the subject-matter to be more clearly dealt with.

The July number of *Science Progress in the Twentieth Century* (5s. net. Murray) maintains the high standard of excellence hitherto set by this quarterly journal, and the reader is sure to find something of interest, no matter what his special branch of science may be.

*A Textbook of Physics.* By H. E. Hurst, M.A., B.Sc., Assistant in the Helwan Observatory, and R. T. Lattey, M.A., B.Sc., Assistant Master, Royal Naval College, Dartmouth. Vol. I, *Mechanics and Heat* (3s. 6d.); Vol. II, *Sound and Light* (3s. 6d.); Vol. III, *Magnetism, Statical Electricity, and Current Electricity* (4s. Constable.)

These volumes are intended to follow closely the course of study recommended for candidates taking the London Matriculation and Inter-Science Examinations, and are also suitable for Oxford and Cambridge Locals. They are well got up, and the illustrations are especially clear and numerous. A noteworthy feature is the insertion in the text of numerous worked examples based on actual experiments, in addition to the ordinary symbolic representations of the formulæ; in fact the mathematical portions are particularly clear, and all important formulæ have been printed in thick type. It is a pity that the section on Mechanics has not been more fully treated, as this would have materially increased the value of the work; but apparently only those portions of mechanics essential for a proper understanding of the other parts of the work have been inserted. Taken generally, there are few apparent mistakes in the books, but in the mechanics section the unit of length has been stated as incapable of definition, and then defined a few paragraphs later; work has been expressed as so many foot-pounds weight; and the kinetic energy stored up in the moving parts of a machine has been incorrectly classed as lost energy. A mistake that should not escape notice, and which should be rectified in any further edition, is with reference to the index, which has been arranged for the independent paging of the several sections, whereas in each volume of the present issue the paging is continuous, and the index consequently almost useless. Numerous examples are given throughout the work for the student to practise on, and the source of each example is appended.



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*Theoretical and Physical Chemistry.* By S. Lawrence Bigelow, Ph.D., Professor of General and Physical Chemistry in the University of Michigan. (7s. 6d. net. Duckworth.)

To deal with a subject of such enormously wide scope within the limited space of a single volume is by no means an easy task, but the author of this comprehensive volume has surmounted the difficulty most admirably, and the result is a book whose only fault, if it is a fault, lies in the fact that it is, perhaps, a little too comprehensive. But, as the author states in his preface, the chief difficulty in compiling such a book has been just what to insert and what to omit, the title of almost every chapter being the title of a book, some of them in several volumes. Every book should have an object, and the primary object of this book is to put before the student—not the elementary student, but the student who has already had a fair amount of training in elementary physical and chemical principles—just sufficient information to enable the general principles of the more extended subject to be fully appreciated, and so form a stepping-stone to more advanced study. To enable this general idea to be fully realized, the subject-matter is almost entirely descriptive, and where mathematical reasoning and formulæ have had to be inserted care has been taken to ensure that the mathematics is reduced to the simplest form; so that, although the higher study of the subject may bristle with mathematics, the reader of this book need have nothing to fear in that direction.

The book is subdivided into four sections. The first (three chapters) deals with the definitions and general principles of science; the second (seven chapters) relates to the question, "What are the ultimate constituents?" and deals with the atomic and molecular theories, spectroscopy, and radioactivity; the third (nine chapters) explains the properties of gases, liquids, and solids, with special reference to osmotic phenomena and solutions generally; the last section (eleven chapters) deals with the various processes by which "substances become what they are," and includes two chapters on Electro-chemistry and one on Actino-chemistry. The book can be well said to be a perfect encyclopedia of information.

*A Classbook of Physics. Part III: Heat.* By R. A. Gregory, Professor of Astronomy, Queen's College, London, and H. E. Hadley, B.Sc., A.R.C.S., Principal of the School of Science, Kidderminster. (1s. Macmillan.)

A collection of simple heat experiments, well graduated, and suitable for beginners. The majority of the experiments chosen are

qualitative only and require comparatively simple apparatus for their demonstration. The explanatory matter is perfectly lucid, and the diagrams excellent. A book to be recommended.

*The Work of Rain and Rivers.* By T. G. Bonney, Sc.D., LL.D., F.R.S. (1s. net, cloth; 2s. 6d. net, leather. Cambridge University Press.)

This excellent little book, which should need no recommendation to ensure a ready sale, forms a welcome addition to the Geology Section of the Series of Cambridge Manuals of Science and Literature. Teeming with interesting information on a fascinating subject, it will be appreciated by all who read it.

## GEOGRAPHY.

*Business Geography.* By J. Hamilton Birrell, M.A., Fellow of Royal Scottish Geographical Society, Boroughmuir Higher Grade School, Edinburgh. (Pp. 208, 55 diagrams. 1s. 6d. net. Ralph, Holland.)

This book forms an excellent introduction to economic and commercial geography. Its statistics are the most recent, and its graphical analyses are clear and useful. The life histories of numerous commodities of commerce form a valuable feature. Its many facts are presented in a thoroughly scientific and educational manner.

"The New Outlook Geography."—*The Home of Man. Part II. Europe.* By W. C. Brown, M.A., Head Master of the Tollington School, and P. H. Johnson, B.A., House Master of the Tollington School. (Pp. 236, 113 Figs. 1s. 6d. Harrap.)

The merit of this publication should give it a leading place in any list of geography textbooks. It is human throughout, even to the extent that the most widely used punctuation mark appears to be the note of interrogation. The diagrams, maps, and photographs are numerous and good. The book is a very satisfactory companion to the excellent Part I, "British Isles," by the same authors. It is well printed and evidently a good wearing manual, and we strongly recommend its adoption in the lower and middle forms.

"The Oxford Geographies."—Edited by Dr. A. J. Herbertson. *The Elementary Geography. Vol. V: North and Central America and the West Indies* (Pp. iv, 152. 1s. 6d.) Vol. VI: *The Southern Continents.* (Pp. vi, 186. 1s. 9d.) Both by F. D. Herbertson, B.A. (Clarendon Press.)

These two useful middle form books complete the continental parts

of this particular series, and retain the best features of the earlier volumes. The subject-matter is interesting and possesses more literary merit than is usual in such textbooks. The four coloured maps are conveniently arranged for ready reference, and the questions closing each chapter have been carefully chosen to yield a thorough recapitulation of each part of the books. Vol. V has thirty illustrations, and the style is rather more advanced than that of Vols. III and IV. Vol. VI has fifty-seven illustrations and deals very fully with the resemblances and differences which exist among the southern continents.

*The Essentials of World Geography for Junior Students.* By J. F. Unstead, M.A., D.Sc., Lecturer in Geography, Goldsmiths' and Birkbeck Colleges, and E. G. R. Taylor, B.Sc., Lecturer in Geography, Clapham Training College. (Pp. 248, 73 Figs. 2s. G. Philip.)

This work is a valuable epitome of geographical facts for the student who is forced to bring his geographical study to a close at an early age, yet, at the same time, the book would form a suitable first text for the older pupil who intends to take up advanced work in some specialized portion of the subject. Its chief sections, in order, deal with cartography and mathematical geography, geology, geomorphology, climatology, while the remaining half of the book deals with the globe as the "home of man." Although the title leads us to understand that it is a junior book, yet it contains much new material which will necessitate and repay a second reading. The volume is obviously the product of careful preparation and, for the purposes indicated, should prove of distinct value.

#### MISCELLANEOUS.

*Insurance Agents' Accounts.* By A. H. Maclean, Chartered Accountant. (2s. 6d. net. Gee, 34 Moorgate Street, E.C.)

The author has in view mainly such insurance agents—and these probably form the majority—as carry on "some other business to which that of insurance agent is merely ancillary." But, in any case, the method here set forth will undoubtedly prove most advantageous in the keeping of insurance records. Mr. Maclean speaks from an adequate practical experience.

*Celtic Stories*, by Edward Thomas (2s., Clarendon Press), is a delightful retelling of the famous tales of Cohoulin, Deirdre, and half-a-dozen more, in their medieval form. The "Mabinogion," of course, has been laid largely under contribution, as well as some later collections. The volume is beautifully printed and tastefully got up.

*Heroes of Wales*, from Arthur and St. David down to Sir Hugh Owen, are pleasantly commemorated by W. Jenkyn Thomas, M.A., Head Master of the Hackney Downs School, with a number of interesting illustrations (1s. 4d., Horace Marshall).

Messrs. McDougall issue a series of six volumes—"Our Own and Other Lands"—which fairly claims to make geography a living subject. Special attention is given to the relation of natural configuration, to the development (and decay) of industries and towns, and to the land and sea routes of trade and commerce; and the intimate correlation of geography with history is steadily kept in view. The maps and illustrations are abundant and most useful.

Messrs. Blackie publish an excellent series—"Lands and their Stories"—in six volumes, providing a fully correlated scheme of history and geography teaching, essentially on the concentric method. The treatment is comprehensive, bringing out vividly the industrial, commercial, and social developments. The style is unusually good. The illustrations are plentiful and most varied. In the later volumes the coloured plates reproduce many famous pictures chosen from the national and municipal and other collections. The type and the get-up are admirable.

Mr. Edward Arnold issues "Builders of History" in six handy volumes in limp cloth (8d. each). They present the history of England in a series of judiciously chosen biographies, with a good many illustrations. They constitute a most attractive series of supplementary historical readers.

Mr. Arnold also publishes a very agreeable and stimulating "Silent Reading Series" in three volumes (1s. each). The first volume is devoted to general readings in prose and poetry; the second to geography and travel; the third to history and biography. The passages are of real literary value, and explanatory notes and questions are appended. There are some illustrations in each volume.

*Maps: How they are Made and how to Read them.* By H. N. Dickson, M.A., D.Sc., Professor of Geography, University College, Reading. (6d. Bacon.)

A paper-covered 66-page book of three chapters, dealing with map-making appliances, map construction and map reading, and illustrated by fifty-five clearly printed diagrams. If only for the contents of the last twenty pages, it should be in the hands of the pupils of the lower and middle forms. The volume gives a very useful introduction to the subject at a low price.

## PUBLICATIONS RECEIVED.

### EDUCATION.

- Educational Administration and Criticism. A Sequel to the Holmes Circular. By F. H. Hayward, D.Litt. With a Preface by John Adams, LL.D. Ralph, Holland, 7s. 6d. net.
- Educational Classics.—Froebel's Chief Writings on Education. Rendered into English by S. S. F. Fletcher and J. Welton. Edward Arnold, 4s. 6d. net.
- Blackie's Library of Pedagogics.—Education and National Life. By Henry Dyer. 1s. net.
- Historical and Educational Papers and Documents of Ontario, 1842-1861. Vol. V. By J. George Hodgins.
- Educational Series.—The Teacher's Companion. By Brother de Sales. Training College Lecture Notes, with blank pages for Student's Notes. Longmans, 2s. 6d. net.

### CLASSICS.

- Oxford Elementary Classical Readers.—Selections from Cicero: his Letters, Speeches, and Treatises. Edited, with Historical Introduction, Note, Vocabulary, and English Exercises, by W. D. Lowe, D.Litt. Clarendon Press, 1s. 6d.
- Loeb Classics.—(1) Cicero: Letters to Atticus. With an English Translation by E. O. Winstedt, M.A. 3 vols. (2) Sophocles. Vol. I. English Translation by F. Storr. (3) The Greek Bucolic Poets. English Translation by J. M. Edmonds. (4) Apollonius Rhodius: The Argonautica. English Translation by R. C. Seaton. (5) Appian's Roman History. Vol. I. English Translation by Horace White. Heinemann, 5s. net each, cloth.
- The Oxford Book of Latin Verse. From the Earliest Fragments to the end of the Fifth Century A.D. Chosen by H. W. Garrod. Clarendon Press, 6s. net; India paper, 7s. 6d. net.

### FRENCH.

- Massard's Series of French Readers.—Quatre Contes. Par Prosper Mérimée. Rivingtons, 1s. 6d.
- (1) Test Papers in French. By K. H. Bird. 1s. (2) Little French Classics: Mémoires de Saint-Simon; Le Lac de Gers (Töpffer); Austerlitz (Thiers). 4d. each. (3) Le Texte Expliqué. Selected and edited by E. J. A. Groves. 2s. Blackie.
- Harrap's Modern Language Series.—(1) Extraits des Prosateurs Français (1800-1870). Edited by J. E. Mansion. 2s. 6d. (2) Contes et Légendes. Première Partie. By H. A. Guerber. 1s. 6d. (3) Le Jeu de l'Amour et du Hasard. Par Marivaux. Edited, with Introduction, Notes, and Vocabulary, by Alcée Fortier. 1s. (4) Molière en Récits. By M. L. Chapuzet and W. H. Daniels. 1s. 6d.
- Dictionnaire Etymologique de la Langue Française. By L. Clédat. Hachette, 4 fr.
- Chefs-d'Œuvre Series.—J.-J. Rousseau, Lettres Ecrites de la Montagne. Dent, 1s.
- French Phrases for Advanced Students. By Edward J. Kealey. Pitman, 1s. 6d. net.
- Le Cid. Par Pierre Corneille. With Portrait, Introduction, Vocabulary, and Notes by Colbert Searles. Ginn, 2s.

### GERMAN.

- Harrap's Modern Language Series.—(1) Eine Modernes Aschenbrüdel. Von Elise Bake. Edited by Luise Delp. 1s. 6d. (2) Agnes Bernauer. Ein Trauerspiel von Friedrich Hebbel. Edited by M. Blakemore Evans. 1s. 6d.
- Blackie's Little German Classics.—(1) George Halay (Gerstäcker) (2) Helden des Altages (Ernst Gahn). (3) Eigensinn (Lustspiel: Roderich Benedix). (4) Die Flut des Lebens (Adolf Stern). 6d. each.
- Hosfeld's New Practical Method for learning the German Language. Revised edition, with Vocabulary. Hirschfeld, 3s.
- Oxford German Series.—Graded Exercises in German Prose Composition. Based on a brief survey of Modern German History. By Josef Wiehr. Frowde, 3s. 6d. net.
- German Poems (1800-1850). Edited, with Introduction and Notes, by John Scholte Nollen. Ginn, 4s.
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### SPANISH.

- A Spanish Grammar, with Practical Introductory Lessons. By Alfred Coester. Ginn, 5s. 6d.

(Continued on page 34.)

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"I wish to thank you for your courtesy in presenting to the Provincial Library of British Columbia a copy of your List of Schools. I need scarcely assure you that the volume will be carefully preserved on our shelves for future reference."

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- Aids to the Writing of English Composition. For Boys in the Lower Forms of Public Schools. By Fred W. Bewsher, M.A. (St. Paul's School). Bell, 1s. net.
- The Story Thread. By Edith Kington, M.A. Illustrated by Peter Campbell. Ralph, Holland, 1s.
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(Continued on page 36.)

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Readers desiring to contribute to the Mathematical columns are asked to observe the following directions very carefully:—

- (1) To write on one side only of the paper.
- (2) To avoid putting more than one piece of work on a single sheet of paper.
- (3) To sign each separate piece of work.

A General Theorem about Positive Series.

By F. TAVANI.

If  $\lim_{n \rightarrow \infty} \left( \frac{\sqrt[n]{a_n}}{n} \right) > 0$  the series  $\sum_{n=1}^{\infty} \frac{1}{a_n}$  converges. If  $\lim_{n \rightarrow \infty} \left( \frac{\sqrt[n]{a_n}}{n} \right) = 0$ , then, in order that  $\sum_{n=1}^{\infty} \frac{1}{a_n}$  may converge, it is necessary that there be a number positive < 1 for which  $\lim_{n \rightarrow \infty} \left( \frac{a_n^{(1+\alpha)}}{n} \right) = \infty$ , if this number  $\alpha$  is not an infinitesimal quantity the series  $\sum_{n=1}^{\infty} \frac{1}{a_n}$  is convergent.

Let us recall the relations:

$$(I) \frac{1}{a_1^\alpha} + \frac{1}{a_1^{\alpha-1}(\rho-1)} \text{ low lim } [a_{n+1} - a_n]_{n=1}^{\infty} > \sum_{n=1}^{\infty} \frac{1}{a_n^\alpha}$$

$$> \frac{1}{a_1^{\alpha-1}(\rho-1)} \text{ upp lim } [a_{n+1} - a_n]_{n=1}^{\infty}$$

$$(II) \frac{1}{a_1} + \frac{1}{\sqrt{a_1} \text{ low lim } [\sqrt{a_{n+1}} - \sqrt{a_n}]_{n=1}^{\infty}} > \sum_{n=1}^{\infty} \frac{1}{a_n}$$

$$\frac{1}{\sqrt{a_1} \text{ upp lim } [\sqrt{a_{n+1}} - \sqrt{a_n}]_{n=1}^{\infty}} *$$

in which we have, by hypothesis,

$$a_1 < a_2 < a_3 \dots a_n < a_{n+1} \dots a_x, \quad a_x = \infty,$$

if  $\lim_{n \rightarrow \infty} \left( \frac{\sqrt[n]{a_n}}{n} \right) > 0$  also  $\lim_{n \rightarrow \infty} (\sqrt[n]{a_n} - \sqrt[n]{a_{n+1}}) > 0$ , and the first part of

(II) shows the convergence of  $\sum_{n=1}^{\infty} \frac{1}{a_n}$ .

To prove the second part, we write the second part of (I) under the form

$$\sum_{n=1}^{\infty} \frac{1}{a_n} > \frac{1}{[a_1^{(1+\alpha)}]^{1+\alpha}} > \frac{1}{[a_1^{(1+\alpha)}]^\alpha} \alpha \text{ upp lim } [a_{n+1}^{(1+\alpha)} - a_n^{(1+\alpha)}]_{n=1}^{\infty}$$

If there is not a number  $\alpha$  such that

$$\lim_{n \rightarrow \infty} \left( \frac{a_n^{(1+\alpha)}}{n} \right) = \lim_{n \rightarrow \infty} [a_{n+1}^{(1+\alpha)} - a_n^{(1+\alpha)}]_{n=1}^{\infty}$$

becomes infinite, the said limits remain finite however small  $\alpha$  may be, and in the last member of the last relation the denominator is a quantity indefinitely small; therefore  $\sum_{n=1}^{\infty} \frac{1}{a_n}$  diverges.

To prove the last part of the theorem we write the first part of the relation (I) under the form

$$\frac{1}{[a_1^{(1+\alpha)}]^{1+\alpha}} + \frac{1}{a_1^{(1+\alpha)} \alpha \text{ low lim } [a_{n+1}^{(1+\alpha)} - a_n^{(1+\alpha)}]_{n=1}^{\infty}}$$

$$> \sum_{n=1}^{\infty} \frac{1}{[a_n^{(1+\alpha)}]^{1+\alpha}} = \sum_{n=1}^{\infty} \frac{1}{a_n},$$

in which, as by hypothesis, we have

$$\lim_{n \rightarrow \infty} \left( \frac{a_n^{(1+\alpha)}}{n} \right) = \infty, \quad \text{also} \quad \lim_{n \rightarrow \infty} [a_{n+1}^{(1+\alpha)} - a_n^{(1+\alpha)}] = \infty,$$

Therefore the low lim  $[a_{n+1}^{(1+\alpha)} - a_n^{(1+\alpha)}]_{n=1}^{\infty}$  corresponds to a finite value of  $n$  and it is finite. Moreover  $\alpha$  is not an infinitesimal quantity by hypothesis; therefore, according to the last relation,  $\sum_{n=1}^{\infty} \frac{1}{a_n}$  converges.

The generality of this theorem is remarkable, as there is only one class of series to which the method here indicated does not apply, viz., those series  $\sum_{n=1}^{\infty} \frac{1}{a_n}$  for which  $\lim_{n \rightarrow \infty} \left( \frac{\sqrt[n]{a_n}}{n} \right) = 0$ , and such

\* The Educational Times, January 1911.



that  $\lim_{n \rightarrow \infty} \binom{n^{1+(1+\alpha)}}{n} = \infty$ , where  $\alpha$  is a quantity indefinitely small;

an instance of this class is  $\frac{1}{n^{1+\alpha}}$ , while  $\frac{1}{n \log n}$  is an instance to which the theorem applies showing the divergence of the series.

An extension of the theorem to the class of series mentioned as exception is possible by introducing new conditions, and thus we can reach a general proposition considering the whole class of the positive series.

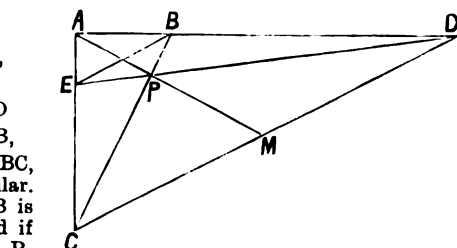
**17306.** (W. F. BEARD, M.A.)—ABC is a triangle, right-angled at A; D, E are points in AB, AC such that AD.AB = AC<sup>2</sup>, AE.AC = AB<sup>2</sup>. Prove that DE passes through the foot of the perpendicular from A on BC.

[It is not possible to publish all of the numerous solutions sent in.—Ed.]

*Geometrical Solutions* (I) by JAMES BLAIKIE, M.A.; (II) by M. D. GOPALACHARI; (III) by V. V. SĀTYANARAYAN.

(I) Since  
 AB.AD = AC<sup>2</sup>  
 and AE.AC = AB<sup>2</sup>,  
 we have  
 AB/AC = AC/AD  
 = AE/AB,

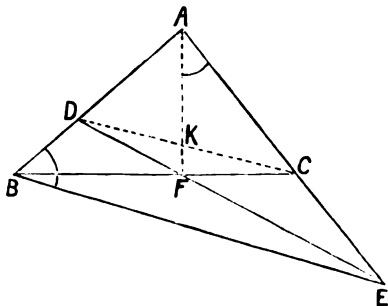
and the triangles ABC, ACD, AEB are similar. It follows that EB is parallel to CD, and if BC, ED meet in P, we know that AP bisects CD in M; and, since CAD is a right-angled triangle,



$$\angle DAM = \angle ADM = \angle ACB.$$

Therefore DAM is complementary to ABP, and AP is perpendicular to CB.

(II) Because  
 AD.AB = AC<sup>2</sup>,  
 $\angle ACD = \angle ABC$ .  
 AC.AE = AB<sup>2</sup>.  
 Therefore  
 $\angle ABC = \angle AEB$   
 =  $\angle ACD$ .



Therefore DC is parallel to BE.

$$\triangle BDF = \triangle CFE.$$

$$AD/DB = \triangle AFD/\triangle BFD = AC/CE = \triangle AFC/\triangle CFE.$$

But  $\triangle BFD = \triangle CFE$ ; therefore  $\triangle AFD = \triangle AFC$ . Therefore DC is bisected by AF; therefore DK = KC.

The angle A being a right angle, KA = KC. Therefore  $\angle KAC = \angle DCA = \angle ABC$ .

Hence AF is perpendicular to BC.

[Rest in Reprint.]

**17304.** (Professor K. J. SANJANA, M.A.)—From any point on a fixed normal of a central conic three normals are drawn to the conic. Prove that the vertices of the triangle formed by the tangents at the feet of the normals lie on a conic.

*Solutions* (I) by Professor E. T. NANSON; (II) by W. F. BEARD, M.A.; (III) by T. P. TRIVEDI, M.A., LL.B., and Professor J. C. SWAMINARAYAN, M.A.

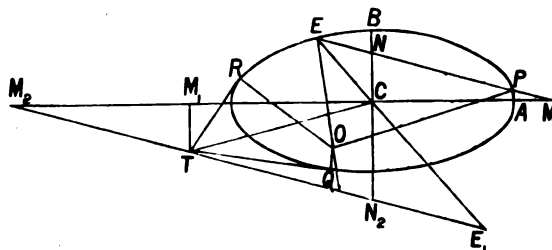
(I) If normals at contacts of tangents from P to a conic meet on a fixed line, the locus of P is a cubic. For the tangent at any point cuts the locus in three points because from the intersection of the given line with the normal at the point three other normals can be drawn.

Now if the fixed line is itself a normal, the cubic locus clearly breaks up into the tangent at the foot of the normal and a conic, and the result stated in the question follows immediately.

(II) Let E be the fixed point, and let OP, OQ, OR be the other normals from any point O on the normal at E.

Let EP meet CA, CB at M, N. Produce EC to E<sub>1</sub>, making

E<sub>1</sub>C = 2EC. Draw E<sub>1</sub>N<sub>2</sub>M<sub>2</sub> parallel to ENM to meet CA, CB at M<sub>2</sub>, N<sub>2</sub>. Bisect M<sub>2</sub>N<sub>2</sub> at T, and draw TM<sub>1</sub> perpendicular to CA.



Because E<sub>1</sub>M<sub>2</sub> is parallel to EP, and CE<sub>1</sub> = 2CE, therefore

$$CN_2 = 2CN \text{ and } CM_2 = 2CM;$$

therefore  $CM_1 = CM$  and  $TM_1 = CN$ .

Therefore T is the pole of QR. (Durell's *Geom.*, Vol. II, Th. 202.)

But CT, TE<sub>1</sub> are equally inclined to CA, CB.

Therefore T lies on the rectangular hyperbola, having CE<sub>1</sub> as a diameter and its asymptotes parallel to CA, CB.

Similarly the poles of PQ, PR lie on this conic, and this is true for all such poles, as O moves along the normal at E.

[Rest in Reprint.]

**11686.** (Professor SCHOUTE.)—Trouver (1) trois coefficients binomiaux consécutifs qui forment une progression arithmétique; (2) quatre coefficients binomiaux consécutifs qui forment une proportion géométrique. Démontrer qu'il ne peut exister trois coefficients binomiaux consécutifs qui soient en progression géométrique ou en progression harmonique, ni quatre coefficients consécutifs qui soient en progression arithmétique.

*Discussion* by Lt.-Col. ALLAN CUNNINGHAM, R.E., Rev. E. J. E. HOWLETT, M.A., and others.

(1) Let  $(x + y)^n$  be the binomial, and (for shortness) write  $n = \alpha + \beta$ .

$$\text{Then } C_{\alpha-1} = n! \div \{(\alpha-1)!(\beta+1)!\}, \quad C_{\alpha} = n! \div \{\alpha!\beta!\},$$

$$C_{\alpha+1} = n! \div \{(\alpha+1)!(\beta-1)!\}$$

are three consecutive binomial coefficients; and, if these be in arithmetical progression, then

$$C_{\alpha-1} + C_{\alpha+1} = 2C_{\alpha}.$$

On reducing fractions and cancelling out  $n!$ , this gives

$$\alpha(\alpha+1) + \beta(\beta+1) = 2(\alpha+1)(\beta+1),$$

whence

$$(\alpha-\beta)^2 - (\alpha+\beta) - 2 = 0.$$

Any values of  $\alpha, \beta$  satisfying this equation give solutions.

To obtain positive integer solutions of  $\alpha, \beta, n$ , the above equation gives

$$\alpha = \frac{1}{2} \{2\beta + 1 \pm \sqrt{8\beta + 9}\},$$

so that  $\sqrt{8\beta + 9}$  should be an integer. Thus

$$(\alpha, \beta, n) = (5, 2, 7), (9, 5, 14), (14, 9, 23), (20, 14, 34), \dots;$$

and  $n = 7$  gives  $C_5 = 35, C_6 = 21, C_7 = 7$

$$n = 14 \text{ gives } C_9 = 3003, C_7 = 2002, C_{10} = 1001$$

which are in arithmetical progression.

Next, to try if four consecutive binomial coefficients  $C_{\alpha-1}, C_{\alpha}, C_{\alpha+1}, C_{\alpha+2}$  can be in arithmetical progression, requires

$$C_{\alpha} + C_{\alpha+2} = 2C_{\alpha+1}$$

(in addition to the previous results). Here

$$C_{\alpha+2} = n! \div \{(\alpha+2)!(\beta-2)!\}.$$

Reducing, as before, gives

$$(\alpha+1)(\alpha+2) + \beta(\beta-1) = 2(\alpha+2)\beta,$$

whence

$$(\alpha-\beta)^2 + 3\alpha - 5\beta + 2 = 0.$$

But the previous work gave

$$(\alpha-\beta)^2 - (\alpha+\beta) - 2 = 0.$$

Hence  $\alpha - \beta + 1 = 0$ , and also  $\alpha + \beta = -1$ , which involve  $\alpha = -1, \beta = 0$ , an impossible result (as  $\alpha$  is essentially a + integer).

This proves that four consecutive binomial coefficients cannot be in arithmetical progression.

Next, to try if the three coefficients  $C_{\alpha-1}, C_{\alpha}, C_{\alpha+1}$  can be in harmonic progression. This requires

$$1 \div C_{\alpha-1} + 1 \div C_{\alpha+1} = 2 \div C_{\alpha}.$$

Reducing, as before, gives

$$\beta(\beta+1) + \alpha(\alpha+1) = 2\alpha\beta, \text{ whence } (\alpha-\beta)^2 + (\alpha+\beta) = 0,$$

which has no solutions in + integers of both  $\alpha, \beta$ .

Next, to try if the three coefficients  $C_{\alpha-1}, C_{\alpha}, C_{\alpha+1}$  can be in geometric progression. This requires

$$C_{\alpha-1} \cdot C_{\alpha+1} = C_{\alpha}^2.$$

Reducing, as before, gives

$$(a+1)(\beta+1) = a\beta,$$

whence  $a + \beta + 1 = 0$  and  $n = a + \beta = -1$ .

This is the only value of  $n$  which satisfies the condition.

And, with this value ( $n = -1$ ), the coefficients are  $+1, -1, +1, -1, \dots$ , ad inf.; so that the whole series is a geometric progression of ratio  $r = -1$ .

(2) To find four consecutive coefficients  $C_{n-1}, C_n, C_{n+1}, C_{n+2}$  forming a "geometric proportion."—The meaning of this phrase is not quite clear. If it means that

$$C_{n-1} : C_n = C_{n+1} : C_{n+2},$$

this will be found to lead (on reduction) to the same result as the last, viz.:  $n = a + \beta = -1$ , and that no other value of  $n$  suffices; and, with this value ( $n = -1$ ), every set of four consecutive coefficients satisfies the condition.

The PROPOSER writes:—My Question (11686), proposed more than 20 years ago, wants a correction, as in (2), by a slip of the pen, "geometrical proportion" has been substituted for "arithmetical proportion." In the original version the condition of the part (2) is  $C_{n-1} + C_{n+2} = C_n + C_{n+1}$ , leading to the cubic equation

$$a(a+1)(a+2) + \beta^3 - \beta = (a+2)(\beta+1)(a+\beta+1).$$

I mention, e.g., the solution  $(a, \beta, n) = (1, 5, 6)$ , giving the four consecutive binomial coefficients 1, 6, 15, 20, satisfying the Question.

17858. (J. J. BARNIVILLE, B.A.)—If  $\Sigma(a^2 + bc) = 0$ , prove that  $(\Sigma a)^7 - \Sigma a^7 = 34(abc)^2(a+b+c)(a+b)^3(b+c)^3(c+a)^3$ .

Solutions (I) by A. M. NESBITT, M.A.; (II) by PULINBIHARI DAS, M.A.

(I) We may take  $a, b, c$  as the roots of

$$x^3 - px^2 + p^2x - r = 0.$$

Hence  $a^{n+2} - pa^{n+1} + p^2a^{n+1} - ra^n = 0$ ;

so that  $s_{n+3} - ps_{n+2} + p^2s_{n+1} - rs_n = 0$ .

Denote  $s_k/p^k$  by  $\sigma_k$ , and let  $r = p^3\rho$ ; thus

$$\sigma_{n+3} = \sigma_{n+2} - \sigma_{n+1} + \rho\sigma_n;$$

further  $\sigma_0 = 3, \sigma_1 = 1, \sigma_2 = -1, \sigma_3 = 3\rho - 2$ .

In the following table if A, B, C, D be the values of any four consecutive  $\sigma$ 's, we have  $D = C - B + \rho A$ .

$\sigma_0 = 3$	$\sigma_9 = 3\rho^3 - 9\rho^2 + 9\rho - 2,$
$\sigma_1 = 1$	$\sigma_{10} = 10\rho^3 - 20\rho^2 + 10\rho - 1,$
$\sigma_2 = -1$	$\sigma_{11} = 11\rho^3 - 11\rho^2 + 1,$
$\sigma_3 = 3\rho - 2$	$\sigma_{12} = 3\rho^4 - 8\rho^3 + 18\rho^2 - 12\rho + 2,$
$\sigma_4 = 4\rho - 1$	$\sigma_{13} = 13\rho(\rho - 1)^3 + 1,$
$\sigma_5 = 1$	$\sigma_{14} = 21\rho^2(\rho - 1)^2 - 1,$
$\sigma_6 = 3\rho^2 - 6\rho + 2$	$\sigma_{15} = 3\rho^5 + 15(\rho - 1)^2 - 2,$
$\sigma_7 = 7\rho^2 - 7\rho + 1$	$\sigma_{16} = 16\rho(\rho - 1)^4 + 4\rho^4 - 1,$
$\sigma_8 = 4\rho^2 - 1$	$\sigma_{17} = 34\rho^2(\rho - 1)^3 + 1;$

and, finally,

$$(\Sigma a)^7 - \Sigma a^7 = 34p^2r^2(p^3 - r)^3.$$

Now  $\Pi(b+c) = \Pi(p-a) = p^3 - p^2\Sigma a + p\Sigma bc - abc = p^3 - r$ .

Hence the theorem is proved. [Several other results of at least equal interest may readily be got, e.g.,  $(\Sigma a)^3 = \Sigma a^3$ .]

(II) Putting  $a + b + c = -d$ , we have the given condition  $\Sigma(a^2 + bc) = 0$  readily equivalent to

$$a^2 + b^2 + c^2 + d^2 = 0;$$

therefore if  $\Sigma$  denotes the sum of similars for all the four quantities  $a, b, c$ , and  $d$ , we have  $\Sigma ab = 0$ ,

$$\Sigma abc = abc + d(bc + ca + ab) = abc - (a + b + c)(bc + ca + ab)$$

$$= -(b + c)(c + a)(a + b) = k \text{ say};$$

therefore  $a, b, c$ , and  $d$  are the roots of

$$x^4 = kx - abcd.$$

Substituting in the above equation  $a, b, c$ , and  $d$  for  $x$ , and adding up, we have  $\Sigma a^4 = -4abcd$ .

Also multiplying both sides of the equation by  $x$ , and then substituting and adding, as above, we have  $\Sigma a^5 = 0$ , because  $\Sigma a$  and  $\Sigma a^2$  are each zero.

Similarly by dividing by  $x$  and then substituting and adding, we have  $\Sigma a^3 = 4k - \Sigma abc = 3k$ .

To find  $\Sigma a^{17}$  we raise both sides of the equation to the fourth power, then multiply by  $x$ , and then substitute and add as above; we have, therefore,

$$\begin{aligned} \Sigma a^{17} &= k^4 \Sigma a^5 - 4k^3 abcd \Sigma a^4 + 6k^2 a^2 b^2 c^2 d^2 \Sigma a^3 - 4k a^3 b^3 c^3 d^3 \Sigma a^2 + a^4 b^4 c^4 d^4 \Sigma a \\ &= -4k^3 abcd(-4abcd) + 6k^2 a^2 b^2 c^2 d^2 \cdot 3k \\ &= 34k^3 a^2 b^2 c^2 d^2. \end{aligned}$$

Putting  $a + b + c$  for  $-d$ , and the value in  $a, b$ , and  $c$  for  $k$ , and changing signs, we have

$$(a + b + c)^{17} - a^{17} - b^{17} - c^{17} = 34a^2 b^2 c^2 (a + b + c)^2 (b + c)^3 (c + a)^3 (a + b)^3.$$

It may also be seen from the theory of partial fractions that the coefficient of  $x^m$  in the expansion of  $(4 - kx^3)/(1 - kx^3 + abcdx^4)$  gives the value of  $\Sigma a^m$ .

An Interesting Proof of Euclid I, 27.

By J. WALMSLEY, B.A.

I.

The author has not observed this proof by means of superposition elsewhere in the course of examination of numerous books, &c. Although that circumstance is by no means decisive as to novelty in geometry, the method may possess advantages for modern purposes which have been very generally overlooked. It has been successfully tried with learners.

Theorem.—When a transversal to two straight lines makes equal alternate angles with them, the two straight lines are parallel.

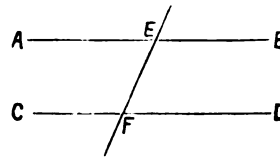


FIG. 1.

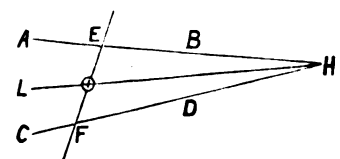


FIG. 2.

Let the transversal EF (Fig. 1), make with AB, CD the angle AEF equal to the alternate angle EFD.

Then AB is parallel to CD.

Assume they are not parallel but meet, as in Fig. 2, at H.

Take O the mid-point of EF and draw HO perpendicular to EF.

Then suppose the triangle FOH turned round O till OF coincides with the equal straight line OE.

Because the angle OFH = the angle OFE (by hypothesis), therefore FH falls along EA; and because the angle FOH = the vertically opposite angle EOL, therefore OH falls along OL.

Now FH and OH meet; therefore, also, EA and OL meet when produced through A and L.

This is impossible, since EA and OL also meet at H.

Hence AB is parallel to CD.

QUESTIONS FOR SOLUTION.

17486. (Professor E. J. NANSON.)—If  $\alpha, \beta, \gamma$  are the trilinear coordinates of a point, find the surface integral of  $\alpha^{-1}\beta^{-1}\gamma^{-1}$  over the area of the triangle of reference.

17487. (A. W. H. THOMPSON.)—If  $p, p'$  be the perpendiculars from two points on the tangent of a curve,  $t, t'$  the perpendiculars on the normal, and  $d\psi$  the inclination of consecutive tangents, show that the indefinite integral

$$\int p p' Id\psi = I_0 + I_1(p + p') + I_2(t + t') + I_3(p t' + p' t) + I_4 p p' + I_5 t t',$$

where all the I's are intrinsic functions of the curve, and of invariable form. Show that  $I_4 + I_5 = \int Id\psi$ .

17488. (D. M. Y. SOMMERVILLE, D.Sc.)—Each row of a determinant is obtained from the row  $a_1 b_1 a_2 b_2 \dots$  by a transposition of one or more pairs of elements which bear the same suffix. Show that the determinant vanishes.

17489. (C. M. ROSS, B.A.)—Show that the value of the circulant

$$\begin{vmatrix} 1 & x & x^2 & \dots & x^{n-1} \\ x^{n-1} & 1 & x & \dots & x^{n-2} \\ x^{n-2} & x^{n-1} & 1 & \dots & x^{n-3} \\ \dots & \dots & \dots & \dots & \dots \\ x & x^2 & x^3 & \dots & 1 \end{vmatrix} \text{ is } (-1)^{n-1} (x^n - 1)^{n-1}.$$

**17440.** (Lt.-Col. ALLAN CUNNINGHAM, R.E.)—Let

$$N_x = (x^{10} - y^{10}) + (x^2 - y^2), \quad N_{xii} = (x^{12} + y^{12}) \div (x^4 + y^4).$$

Show that  $N = 2(N_x + N_{xii})$  can be expressed in the form  $(T^2 - DU^2)$  for three different values of  $D$ .

**17441.** (J. J. BARNVILLE, B.A.)—Resolve  $x^{10} - 5^5$ ,  $x^{14} + 7^7$ ,  $x^{22} + 11^{11}$ , and  $x^{26} - 13^{13}$  each into three rational factors.

**17442.** (W. W. ROUSE BALL. Cf. Question 6487 solved, *Reprint*, Vol. VII, New Series.)—The problem of the expression of the consecutive integers from 1 upwards, as far as practicable, by the use of four "4's," using only the ordinary arithmetic and algebraic notation, is of some interest. Obviously everything depends on what is meant by ordinary arithmetic and algebraic notation. I assume that normal notation permits the use of brackets, and the symbols for factorials, square roots, and decimals, as well as those for addition, subtraction, multiplication and division, and that it excludes the use of indices (other than first powers) not expressible by a "4" or "4's," and roots (other than square roots used a finite number of times). I take it also that the use of numbers like 44 and 444, which directly introduce a scale of notation, is legitimate, but although a number like 2 is expressible by one "4," I regard numbers like 2 and 22 as inadmissible. On these assumptions we can express every number up to 112; of course, such an expression for 113 may exist, but as yet I have not found it. The next number I fail to express in this way is 157. If we also allow the use of sub-factorials, we can thus express every number up to 877. We can extend the sequence to 1000, with the exception of the numbers 878, 881, 893, 917, 943, 946, 947; and we can carry it on for an additional 100 numbers with the exception of 1019. Note.—The similar problem of four "9's" with normal notation was propounded as long ago as 1859, by W. Whewell to A. De Morgan. The expression in this way of numbers up to 132 presents no difficulty. The problem of four "3's" is open to the same treatment. With the use of sub-factorials we can express every number up to 153; and with the exception of 154 and 173 we can carry the series to well above 300.

**17443.** (Professor J. E. A. STEGALL, M.A.)—It is stated that 65, persons left over one million pounds each during the last ten years, and that their average estate was two millions. Supposing that the average estate of all persons who left any sum beyond one hundred thousand pounds was double of that sum (up to one million pounds, beyond which the given data give the only information available), find the number of persons who died during the last ten years "worth" (1) between £100,000 and £500,000, (2) between £500,000 and £1,000,000.

**17444.** (J. J. BARNVILLE, B.A.)—If

$$p = \Sigma(a^2 + bc), \quad q = (a+b)(b+c)(c+a), \quad \text{and} \quad r = abc(a+b+c),$$

prove that

$$(\Sigma a)^7 - \Sigma a^7 = 7q(p^2 + r), \quad (\Sigma a)^9 - \Sigma a^9 = 3q^2 + 9pq(p^2 + 2r),$$

$$(\Sigma a)^{11} - \Sigma a^{11} = 11q(p^4 + r^2 + 3p^2r + pq^2),$$

$$\text{and} \quad (\Sigma a)^{13} - \Sigma a^{13} = 13q\{p(p^2 + r)(p^2 + 3r) + q^2(2p^2 + r)\}.$$

**17445.** (B. A. SWINDEN.)—Discuss the convergency of the series

$$(i) \quad 1 - \frac{1}{2} + \frac{1}{3} + \frac{1}{4} - \frac{1}{5} + \frac{1}{6} + \frac{1}{7} - \frac{1}{8} + \frac{1}{9} + \frac{1}{10} - \frac{1}{11} + \frac{1}{12} + \frac{1}{13} - \frac{1}{14} + \dots$$

(ii)  $1 + \frac{1}{2} - \frac{1}{3} - \frac{1}{4} + \frac{1}{5} + \frac{1}{6} - \frac{1}{7} - \frac{1}{8} + \frac{1}{9} + \frac{1}{10} - \frac{1}{11} - \frac{1}{12} + \frac{1}{13} + \frac{1}{14} - \frac{1}{15} - \frac{1}{16} + \dots$   
ad inf.,  
in which multiples of 3 are omitted in the denominators; in the case of convergency, find the values of the series.

**17446.** (Professor JAN DE VRIES.)—Let four lines in general position be denoted by  $a, b, c, d$ .  $P$  being any point in space, we draw the line  $s$  through  $P$ , meeting  $a$  and  $b$  in  $A$  and  $B$ ; let  $Q$  be the point harmonically separated by  $A, B$ . Similarly  $R$  may be harmonically separated by  $c, d$ . Examine the complex consisting of the lines  $Q, R$ .

**17447.** (C. E. YOUNGMAN, M.A.)—Each nodal chord of a limaçon subtends a right angle at two points on the curve; prove that the chord joining these two envelopes a cardioid.

**17448.** (Professor K. J. SANJANA, M.A.)—Find the points of inflexion on the following cubics:

$$(i) \quad 2x^3 + 7x^2y + 2xy^2 - 3y^3 - 6y^2 = 0;$$

$$(ii) \quad 25ax^3 = 25a^2y^2 - 390axy - 504x^2 - 7000y.$$

**17449.** (R. F. DAVIS, M.A.)—Upon the major axis of a given ellipse fixed points  $E, F$  are taken equidistant from the centre. Any point  $P$  taken on the ellipse and  $PE, PF$  produced meet the curve again in  $Q, R$ . Prove that the envelope of  $QR$  is an ellipse having the same major axis; and that the point of contact with the envelope is equidistant with  $P$  from the minor axis. [Extension of Question 105 in Dr. A. Clement Jones's *Notes on Analytical Geometry*.]

**17450.** (Professor NEUBERG.)—On considère une parabole  $y^2 = 2px$  et deux droites  $a$  et  $b$  ayant pour équations  $y = ax, y = \beta x$ . Par un point quelconque  $M_0$  de la parabole on mène la corde  $M_0M_1$  parallèle à  $a$ , par  $M_1$  la corde  $M_1M_2$  parallèle à  $b$ , par  $M_2$  la corde  $M_2M_3$  parallèle à  $a$ , par  $M_3$  la corde  $M_3M_4$  parallèle à  $b$ , et ainsi de suite. Calculer en fonction des coordonnées  $x_0, y_0$  de  $M_0$  les coordonnées des points  $M_{2n}$  et  $M_{2n+1}$ .

**17451.** (Professor J. C. SWAMINARAYAN, M.A.)—In the triangle  $ABC, DEF$  is the pedal triangle of any point  $P$ . Prove that

$$a \cdot BD + b \cdot CE + c \cdot AF = a \cdot DC + b \cdot EA + c \cdot FB = \frac{1}{2}(a^2 + b^2 + c^2).$$

Hence, if  $X, Y, Z$  are the middle points of  $BC, CA$ , and  $AB$ , show that

$$a \cdot XD + b \cdot YE + c \cdot ZF = 0,$$

due regard being paid to the algebraical signs of lengths.

**17452.** (N. SANKARA AIYAR, B.A.)—If, on the perpendiculars at  $D, E, F$ , the mid-points of the sides of  $ABC$ , points  $P, Q, R$  are taken such that

$$DP/BC \neq QE/CA = FR/AB,$$

show that the triangles  $PQR, ABC$  are in perspective, and that the axis of perspective envelopes a parabola.

**17453.** (W. N. BAILEY.)— $X, Y$  are two fixed points, and a circle through  $X$  and  $Y$  cuts a fixed straight line through  $Y$  in  $A$ . Another circle touches  $XY$  at  $X$  and cuts  $AX$  in  $B$  so that  $AX = XB$ , and meets the first circle in  $C$ . If a third circle be drawn coaxial with these and with its centre on  $AB$ , then its point of intersection,  $P$ , with a circle through  $B$  and  $X$ , which cuts the circle  $AYC$  orthogonally, is a circle. Show also that the locus of  $C$  is a circle which passes through  $Y$  and the middle point of  $XY$ ; that the circles  $BPX, CPX$  pass through fixed points on the locus of  $P$ ; and that the circles  $APX, BCX$  cut orthogonally.

NOTICE TO CORRESPONDENTS.

It is requested that all Mathematical communications should be sent to the Mathematical Editor,

Miss CONSTANCE I. MARKS, B.A., 10 Matheson Road, West Kensington, W.

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THE LONDON MATHEMATICAL SOCIETY.

Thursday, December 12, 1912.—Prof. A. E. H. Love (President) in the chair.

Messrs. Farid Boulad, S. Lees, E. L. Watkin, P. L. Pethick, and G. B. Jeffery were elected members.

The President referred to the death of Mr. C. J. T. Sowell, elected a member January 11, 1912. The President spoke on Sir George Darwin's connexion with the Society and on his scientific work, and moved a resolution of condolence with Lady Darwin; this resolution was seconded by Sir Joseph Larmor and carried unanimously. The President alluded to the death of Prof. H. Poincaré (honorary member of the Society) and spoke of his scientific achievements; it was resolved that a letter expressing sympathy be sent to the Académie des Sciences.

Dr. H. F. Baker (retiring President) delivered his Presidential address: "On Recent Advances in the Theory of Surfaces."

The following papers were communicated:—

"On a Connexion between the Functions of Hermite and those of Legendre": Mr. H. E. J. Curzon.

"An Extension of a Theorem on Oscillating Series": Mr. G. H. Hardy.

"The Equations of the Theory of Electrons Transformed relative to a System in Accelerated Motion": Mr. H. R. Hassé.

"On the Convergence of Series of Orthogonal Functions": Prof. E. W. Hobson.

"On Mersenne's Primes": Mr. J. McDonnell.

"The Diophantine Equation  $y^2 = x^2 + k$ ": Mr. L. J. Mordell.

(1) "Derivates and their Primitive Functions"; (2) "On Functions and their Associated Sets of Points": Prof. W. H. Young.

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## The Educational Times.

### TEACHERS AND THE PUBLIC SERVICE.

THE question whether teachers shall become Civil Servants is closely bound up with Pensions and Registration. A pension guaranteed by the Treasury, and the qualification of professional training which the Registration Council will demand, indicate that teachers are becoming a corporate body under some measure of State control. The area of influence involved is no small one. In this matter there can be no distinction between secondary and primary; perhaps the tertiary, or University, sphere would be drawn in also. And England, Scotland, and Wales would be on an even footing. A proposal so far reaching and so wide in extent needs careful consideration.

Teachers in public elementary schools, whose education and training are largely paid for by the State, whose salary scales are under the control of Local Authorities and met from public funds, and whose pension is provided by the Treasury, are already to a great extent in the position of Civil Servants. If the State looks after their education, certifies their efficiency, gives grants in aid of salaries, and guarantees a pension, it is obvious that these teachers stand in a close relation towards the State. The distinction between teachers in primary and secondary schools is, in some directions, growing less marked. In the greater number of secondary schools the State contributes towards the cost of education, is beginning to gain some control over the University that grants the certificate, and finds some part of the salary fund. When the State comes to demand a professional qualification and to offer a pension, the relations between secondary teachers and the State will become closer.

It is true that teachers stand in a peculiar relation towards the public. The bricklayer is paid a "living wage" for his work; the grocer sells his tea at a price that gives him also a "living wage." But parents have

never been willing to pay for education, apart from boarding fees, such a sum as shall ensure a "living wage" to the teacher. This fact accounts for the peculiar relation of teachers to the State. Educational endowments, which used to supply the deficiency in secondary schools, have not increased in proportion with the increased demand for secondary education. The State has stepped in to take the place of the pious founder and benefactor of a previous generation. The nation agrees that education is essential, and yet the individuals composing the nation decline to pay a sufficient sum. Therefore the nation, as a whole, must pay by means of taxes.

It by no means follows that, because the teacher stands in a special relation to the State, he must become a public servant in the sense that a Post Office clerk or a Treasury official is a Civil Servant. It is clear that relations are becoming closer and of a more special character; but there is a wide gulf between this and making the teaching profession a branch of the Civil Service. It is felt by some teachers that under Government service they would gain greater security and more comfortable conditions of work. There would be the greater security certainly. It is extremely doubtful if the conditions of service would be improved. Security of tenure is an aim to be sought; yet one may have too great a security. It is not to the holders of absolutely secured posts that we look for displays of power, energy, and initiative. This very sense of security which appeals to a large number of people is an asset in the hands of the State and is considered in the salary paid. One pound a week plus security is worth in the labour market 25s. a week without security. There are some high salaries paid in the Government service; but there are two points to be noted. These higher salaries are comparatively few in proportion to the number of workers; and a man who gets £1,000 a year in a Government office might, had he gone in for commerce, have earned either £5,000 a year or else qualified for an old-age pension. For the sake of security he prefers the guaranteed £1,000.

If teachers were to become Civil Servants, one of two

things, either disastrous, would happen. Either the new status would apply only to teachers in schools inspected by and aided by the State. In this case the larger public boarding schools and all private schools would be left outside the scheme, and there would be a most unfortunate division into public servants and others. The other alternative is that every school should be brought into the State system. Thus, all private schools would be abolished. If Lord Haldane has his way and carries through Parliament an Act which systematizes the administration of education from top to bottom and puts the whole, from primary school to University, under one control, then we may see the infant governess and the University professor members alike of a public service of education; but much water will flow under London Bridge before this is accomplished.

The main argument against the practicability of the desire that teachers should become Civil Servants remains to be stated. It is this: neither the Board of Education nor the Local Authorities are at present prepared to undertake the responsibility. It is not possible to foretell with any accuracy what the demand for teachers will be. It is much more convenient to the Authorities to have a well stocked market from which they may choose as needs arise than to have to say beforehand: In three years' time we shall require so many teachers, therefore we will admit so many students this year to the training colleges. The Authorities have not necessarily the last word on the subject; but they are to-day in a strong position, and the scholastic profession will find it difficult to insist upon becoming Civil Servants in the face of the organized opposition of the administration.

Teachers, it is true, stand in a peculiar position towards the State; and the relationship is likely to become closer. But we do not think that we shall ever become a branch of the Civil Service, nor do we think it wise that we should try to do so.

## NOTES.

THE month of January, always full of educational meetings, has this year been fuller than ever before. The Joint Conference of Educational Bodies (eighteen in number), promoted especially by the Teachers' Guild, and held at the University of London, has been an undoubted success. Great credit is due to the organizers. In addition to this, the Head Masters met at the Guildhall; the Assistant Masters at St. Paul's School; the College of Preceptors in its own building; the L.C.C. Conference at the Birkbeck College; Mathematical and Science Associations at the London Day Training College; the Classical Association at Sheffield; and the Northern Education Conference at Nottingham. Even so we have not exhausted the list. A single meeting reported verbatim would fill our columns. We have reported those that are likely to be of interest to our readers. The meetings that dealt with administra-

*Educational Meetings.*

tive matters, and which passed definite resolutions, can be briefly summarized. In the case of papers and discussions dealing with method, a brief summary is usually misleading and is certainly not of great value.

THE list of New Year Honours includes the name of the Secretary of the Board of Education,

*Sir Lewis Selby-Bigge.*

whose full address is now Sir Lewis Amherst Selby-Bigge, K.C.B. Sir Lewis was educated at Winchester and Christ Church, Oxford. He was Fellow and Lecturer in Philosophy at University College. A barrister of the Inner Temple, he became an Assistant Charity Commissioner in 1894. In 1908 he was made Principal Assistant Secretary of the Board of Education for elementary education. On the retirement of Sir Robert Morant in 1911 he became Secretary. He is fifty-three years of age and the author of several legal works. As Mr. Page said the other day, no teacher may ever hope to obtain any of these honours. But if that be so, the next best thing is that our educational administrators should be honoured. Sir Lewis by his abilities and by his devotion to the public service, as he interprets it, certainly deserves the honour.

LORD HALDANE'S speech at Manchester was largely concerned with educational matters. He said that the Government had now decided to deal with national education in

*Lord Haldane on Education.*

a wide and comprehensive manner. He spoke with due deliberation, after consultation with the Prime Minister and the Chancellor of the Exchequer. His speech is full of generalities and vague phrases; but we think it sufficiently important to reproduce in another column the principal passages. It must not be thought that Lord Haldane is announcing a definite plan that has been accepted by the Cabinet. Matters have not gone so far as that. He has been greatly struck with the confusion that reigns in educational affairs, and he appears to foreshadow an Act of administrative reform which will put all education—primary, secondary, technical, and University—under the control of one authority. That authority may, he suggests, deal with an area larger than the existing county area. One object Lord Haldane has at heart, and that is to make an education at a University more readily available to all students who can profit by it. The task is stupendous, and will need men of imagination. There may be changes at the Board of Education before long.

WHEN, two and a half years ago, Mr. Temple was appointed Head Master of Repton, some surprise was expressed that the governors had chosen a man who was without experience as an assistant master. But so great was the confidence felt in Mr. Temple's known powers that surprise gave way to hope that a strong leader had entered the teaching profession. This hope has been taken away by the announcement in the newspapers that

Mr. Temple had accepted the offer of a Canonry of Westminster, together with the Rectory of St. Margaret's. The announcement proved mistaken; for, on investigation, it appeared that by statute the Rector of St. Margaret's must have been in Priest's Orders for six years, and Mr. Temple was ordained priest in 1909. But it is now evident that Mr. Temple has decided to give up the scholastic profession. It is with very keen regret that we hear this news. It is well known that Mr. Temple's interests are largely in social and educational questions affecting the majority of the nation. Had he decided to remain a schoolmaster, he would have proved a strong leader at a time when the profession needs leaders.

THE question of compulsory Greek came up again at the meeting of the Head Masters' Association, and a somewhat fierce correspondence in the *Times* has resulted. So far

*Compulsory Greek.* as we can estimate the position, we should say that the majority of head masters in secondary schools are undoubtedly in favour of the abolition of Greek as a compulsory subject imposed upon all candidates for a University degree. Some hold that it is unfair on the student of science to make him get up a smattering of this language, and some think that the study of Greek will be strengthened if it is left to those who wish to take it. The reason why the head masters are in favour of the proposal for the new examination at Oxford is that they welcome it as relieving them from the necessity of cramming up unwilling boys in Greek before they go to the University. The proposal makes it possible to leave Greek until they get to the University. Latin, Greek, English, and some mathematics are compulsory subjects in the proposed entrance examination to Oxford; but all the subjects need not be taken before entrance. But, like Mr. Hendy, we regret that history and science should be overlooked.

WE wish that Sir Lewis Selby-Bigge would interpret the duties of a public servant in a wider manner. Speaking at the dinner of the Assistant Masters' Association, he said that Education and the Board of Education are two very different things. Education, he said, kept her banking account at Whitehall, but happily lived where the writ of the Board did not run. If this is so, we would ask: need it be so, and is it good for education that it should be so? We have often pointed out that the Board of Education ought to be in the van of educational opinion and influence. The Board should guide education. We must accept the fact that the President of the Board will always be a politician first, and an educationist secondly and accidentally. But the officers of the Board should yield to none in their knowledge of educational theory and practice. They have exceptional opportunities of gaining experience; they are men of ability; they ought to lead educational opinion.

AN evil tradition persists. Once the duty of Whitehall was to assess grants and pay them. In those days the *Athenæum* could fairly claim that Inspectorships gave the Government an opportunity of patronizing literary men. But to-day an Inspector takes his educational work seriously — prepares for it and keeps himself abreast of modern thought. Sir Lewis told the assistant masters that Civil servants soon learnt to keep silence, especially when they had something interesting to say. Unfortunately, this is true. But we doubt if it need be true. The Board have stores of valuable experience upon the basis of which the officers of the Board must have formed sound judgments. The publications of the Board are often full of interest and exceedingly helpful; but they are suggestive and tentative. In the matter of the Montessori Method, for instance, the Board are careful not to express any opinion. Yet there are officers of the Board familiar with the best methods of teaching infants, versed in the best educational literature, who have a right to give a judgment. Such an utterance would be the considered judgment of a body of men, and would carry more weight than the opinion of any individual. We want the Board to become our leaders, and we do not see that either Parliamentary or educational criticism need deter.

THE need for professional unity was emphasized by Prof. Spencer Wilkinson in addressing the Assistant Masters' Association. He pointed out that it was the natural tendency of a national system of education to become stratified or classified—to become a system of caste or class. In the region of secondary education alone we have four associations differentiated according to status and sex: head mistresses, head masters, assistant mistresses, assistant masters; and other associations differentiated according to the rank or government of the school: conference head masters, association head masters, proprietors of schools, and so on. The College of Preceptors knows of no such distinctions. Prof. Wilkinson evidently had in his mind the union of all grades of schools, primary as well as secondary. This is for the future. For the present we must have a federation of the secondary schools. No sectional association can be really strong, and no federation can do without its press organ, that shall circulate among all its members and express its policy. When a federation is formed the sectional bodies will have as much opportunity for activity as they wish, as sections; but the federation is essential.

DR. ROUSE, in his Presidential address to the Teachers' Guild, took a view of education that was not expected by his audience. He is known for his advocacy of classical studies. His theme on this occasion was that the influence of books was unduly paramount in schools, and that other activities must receive fuller recognition. We cor-

dially agree that education is often understood as meaning the study of books only. This is one side of education, and an important side; but the evil is that the other sides are apt to be overlooked. Games have been put forward as the corrective to a bookish study. But Dr. Rouse thought the value of games to be overrated. He spoke with full approval of the boy scouts. The problem in his opinion was how to give the town boy, living under artificial conditions, "crammed in school, dazed in the street, and left passive in the picture palace," the education that every village boy got for himself. The school plan must be remodelled so that bodily activity may stimulate mental activity. Dr. Rouse is voicing what is felt by a great many people. Change is necessarily slow. At present a boy's school career is estimated by his written answers to questions on books.

THE Civil Service Commission is still actively engaged in hearing evidence, in spite of the six volumes that have already been published. Many and contradictory are the views expressed. At the bottom of all the discontent is the feeling that the gulf between clerks of the first and of the second class is too deep and almost entirely unbridged. Young men, conscious of their powers, find themselves in a position of permanent subordination to other young men who are differentiated only by the possession of a University education and the inheritance of different social traditions. In some cases the higher class has not undergone the examination ordeal that is imposed upon the lower. Lord Haldane's views on this point seem to us sound. He argues that the value of a University training is enormous, and that it is essential for the men who will have to deal with important matters in Government offices. He would therefore meet the natural wishes of the democracy by making the opportunity of University education more readily available. That is to say, the man trained at a University is the better man, but University training must not be limited to the well-to-do.

THE first number of the *British Review* (which absorbs the *Oxford and Cambridge Review*) contains an article by F. M. Atkinson which brings some rather grave charges against the administration of Bristol University. It was at Bristol University that Lord Haldane recently delivered his famous address on "The Functions of the Civic University." On this occasion a number of persons were presented for honorary degrees. These persons were, it appears, selected by the Council. The Senate were not consulted. The object of the article is to point out that, if a University is to maintain its prestige, the Senate must have control over all educational matters. The function of the Council is to deal with finance. Mr. Atkinson says that the value of a Bristol degree is already seriously impaired, and he calls upon the Privy Council to hold an inquiry into the relations of Council

and Court, of Council and Senate, and to define and delimit the respective powers of the University bodies.

A NOVEL and interesting plea for the study of the classics is to be found in the January number of the *Cornhill Magazine*. Under the title of "New Lamps for Old," Mr. C. G. Chevenix Trench relates his experience as an administrator in India. Like all his contemporaries, he had been brought up on classical studies without any clear idea of their value. But in India all was changed. "Mythology is the very air one breathes," he says, "and, thinly disguised, the gods and goddesses of ancient Greece meet one at every turn of the road." "In truth he finds a great reward in India who has been content to tread the stony road leading, through Gradus and Principia, to a degree in the Humaner Letters." Mr. Trench gives many interesting details, and he wonders if the product of the modern side can ever find the same delight in Indian life that he has done. "Can he ever meet a Conic Section faring along the road, and if he did, would he be any happier for it?"

THE Joint Agency for Assistant Masters, among the managing bodies of which is included the College of Preceptors, has had a year of successful working. There has been steady progress in the number of posts filled. The finances are in a sound condition, and the reserve fund grows larger. Mr. F. Charles has resigned the post of Treasurer, and his place has been filled by Mr. Nesbitt. The Agency charges low fees, and is managed by secondary teachers for the benefit of secondary teachers. We believe that the Agency would be able to do still more useful work if all assistant masters looking for posts would send in their names. Head masters make full use of the Agency, and in many cases give twenty-four hours' prior notice. The representatives of the College of Preceptors on the Managing Committee are Mr. R. F. Charles and Mr. C. Pendlebury. The Agency was carried on by the College for many years before the amalgamation into the Joint Agency took place.

A GROUP of Cambridge tutors have written to the *Times* advocating indirect conscription. At Cambridge the proposal would take shape by imposing as a condition upon all candidates for a degree a certificate of proficiency as a Territorial. Another proposal, coming from Oxford, is of wider range. Mr. R. W. Macan suggests that the exercise of the suffrage should be conditional upon service in the Territorial Force. If this proposal were accepted, we should need to institute corps for women. We readily admit that military drill has a certain value physically, and we fully admit that everyone ought to be able physically to help to defend his country from attack, if called upon to do so. But we are opposed to the encouragement of the military spirit, and we feel very sure

that military drill is not the most effective of the many systems of physical exercises that are available. We also object to the phrase "serving the country" as it is frequently used. If, in the present state of civilization, the only people who served their country were the soldiers and sailors, we should soon die of inanition. In the January number of the *English Review* Mr. Frederic Harrison makes a strong appeal for a larger and more effective army, but he considers compulsory military service to be impracticable.

WE wish we had space to deal with all the interesting topics discussed at the Conference of *Reading and Education*. Teachers organized by the London County Council. The Conference is of great value, and a full report will no doubt be published by the Education Committee. Dr. Kerr laid great stress on the fact that reading and writing, though tools necessary for the usual forms of education, were by no means essential. He stated that a proportion of children in the elementary schools would never learn these two arts well enough to practise them with success, and that others would learn them, but forget them immediately on leaving school. This did not mean that such children must remain uneducated. There were other means of education. For many years past the theory of a bookish education has been receiving hard knocks. We are still apt to forget that, although reading and writing are useful arts, they do not in themselves give education. There is an education to be found in a craft. The ploughman, with less knowledge, may be more educated than the city clerk. Fortunately, in the London schools, an increasing number of pupils are having the opportunity of an education through their fingers.

THE Incorporated Association of Assistant Mistresses in Public Secondary Schools, at the *Qualifications for Registration* general meeting, passed a series of resolutions dealing with the qualifications for Registration. They propose that the Registration Council should insist upon a high standard of academic qualification, a year's professional training, and at least a year's experience in a recognized school. A University degree or its equivalent should be demanded from teachers of literary and scientific subjects; a qualification as nearly approaching a degree as possible from teachers of special subjects, such as music, gymnastics, cookery; for Kindergarten teachers the academic requirements should be less stringent. For existing teachers they propose five years' experience in an efficient school, or two years' experience added to training. We think it probable that some such regulations will be made by the Council; but it will have to be considered whether the certificate of the Board of Education will be accepted as equivalent to a degree. The difficulty is to draw up regulations that will be fair to the primary as well as to the secondary branch of the profession.

## SUMMARY OF THE MONTH.

REVIEWING the progress of education since the passing of the Act of 1902, Mr. B. S. Gott, in his Presidential Address to the Association of Directors and Secretaries of Education, said that probably even the authors of that Act scarcely could have realized what effect it would have had, not only on education as a whole, but more particularly on secondary education. In 1902 there were in the recognized secondary schools 44,576 pupils, in 1903-04 there were nearly 86,000, and in 1910 over 145,000. The number of schools had increased from 418 in 1902 to 862 in 1910. In view of the large amount of building which was going on at the present time there was little doubt that this number would, in the very near future, exceed a thousand. But it was not to numbers so much as to the rapid strides in the type of education given that he desired to draw attention. With the provision of more adequate funds it had been found possible to provide an adequate staff of men and women fully equipped and better trained, although even in the present their training was too often at the expense of pupils in their classes, who were devoting their time and their energy to the work of education—men and women who were regarding education as a science worthy of the best efforts of the human race, and were determined that those in their charge should have every opportunity given them of being adequately prepared to fight life's battles.—*Morning Post*.

At the meeting of the National Home-Reading Union, the chairman, the Rev. J. E. Flower, said that the object of the Union was to cultivate the soul of the nation. This object might be carried out sanely or otherwise, and in his opinion the methods of the Union were sane. At the same time it was difficult to get people in some cases to see what their position really was in the matter. He remembered that on one occasion they were invited to a city in the Midlands and were entertained by one of the most distinguished Professors of the local University. He was afterwards told by their host that a certain member of the Council had asked him rather anxiously: "Do you know anything about these people? Are they cranks?" (Laughter.) Their host was able to reassure him on this point, and they themselves could assure all concerned that they were not cranks, but that they set about their work in the sanest manner possible. They believed in the reading of literature—real literature, that was to say, as distinguished from the vast mass of trash that was foisted on a long-suffering public—and they sought to encourage such reading among all classes of the community.—*Morning Post*.

At the annual meeting of the Classical Association, held this year at Sheffield, the Master of Trinity College, Cambridge, took as the subject of his presidential address, "Some Remarks on Classical Writers: Their Translators and their Imitators." He recalled the fact that the Association met on the anniversary of the birth of Cicero, 2019 years ago. Dr. Butler confessed to two convictions which might appear antagonistic or even incongruous. He believed that the languages of Greece and Rome had both matter and form of unique and lasting value, and that the teaching of these languages by translation, both from and into prose and verse, was for those to whom it was well adapted an admirable and priceless training which it would be a folly and a calamity to destroy. His other conviction was that, for those members of the cultured classes who would never be Latin or Greek scholars, the teaching of translations from the classics should form a prominent part of all modern education. At the same time he submitted that the teaching of the classical languages should be limited to those who were able to profit by it.—*Times*.

At the meeting of the Classical Association, a suggestive paper by the Rev. A. Ailinger, of Bombay, entitled "Why not Latin?" or "Latin the Future Esperanto of the Cultured World," was read by Prof. Postgate (Liverpool). The paper

stated that the need for an international language could not be denied. The very fact that an artificial language like Esperanto had met with such an enthusiastic response seemed to augur well for the chances of Latin. If Esperanto succeeded in firing the imagination of Englishmen, Russians, and Spaniards, why not Latin? For a thousand years it was an international language and stood the test brilliantly. They did not propose that everybody should study Latin, but that those for whom it formed a part of their education, such as clergymen, doctors, and lawyers, should study it again in a rational manner. Further, they did not mean to push Latin at the expense of the modern language. But for a *lingua franca* it was eminently suited. Was it the daydream of a visionary that an educated Englishman should again be able to carry on a conversation in Latin with an educated German, Frenchman, or Spaniard?—*Morning Post*.

At the meeting of the Association of Public School Science Masters, Dr. T. P. Nunn said that human progress was one long story of increasing and widening effort. It was a tale of the pursuit of ideals. Thus literature illustrated one of the main roads of human advance, and constructional work was another. They would find that the only real criterion of the introduction of science into the curriculum was that the function of the school was to bring the pupil into sympathetic relation with the character of human effort. That was why literature must be always part of the curriculum, while constructional work taught the pupil how to wrestle with actual facts. The aim of science teaching, therefore, was to take the pupil along the main road of advance. The disciplinary value of science teaching was that they were treading the pathways of the great minds. The mind could not be hammered into shape like steel, but science should be taught because of its profoundly human element. Science was an attempt to find out what is and why it is.—*Morning Post*.

In reading a paper to the Northern Education Conference, the Rev. William Temple, Head Master of Repton and President of the Workers' Educational Association, dealt with the work of that body in relation to the continued education of adults. He said that the essays which the students wrote, essays often written under very great difficulties in workmen's cottages, where it was difficult to obtain peace and quiet except late at night, and written by men who were physically weary with their day's work, were the most remarkable feature. A very considerable amount of the work shown in these essays was pronounced by distinguished scholars to be equal in value to the work done in Oxford by men who took a first class in the Honours History School. That proved that a vast amount of intellectual capacity was going to waste in England for lack of opportunity. It also proved what he believed to be a new point—that men who had only had an elementary education, and no secondary, could none the less do work of a University type at the proper age. They had not the knowledge which they would have had if they had been at school, but apparently their intellectual capacity had gone on growing. No doubt this was only true of those whose minds had been alert, and who had taken a prominent part in the life of their town or trade union, or the like, but it was as true of unskilled as of skilled labourers.—*Manchester Guardian*.

DR. GERALDINE HODGSON read a paper entitled "The Theory of the Primrose Path" at the meeting of the Association of University Women Teachers. She urged that teachers were mistaken in trying to make everything too easy, and said that the worst fallacy was that which denied that plain, disagreeable effort could ever be an effectual instrument for good. While we had no right to strip education of its indigenous difficulties, we might relieve it of its gathered repulsiveness due to our dullness or stupidity or blundering unselectiveness. It was not softness and mildness, but bracing and disciplining which were wanted by a generation which drugged itself on the approach of physical pain, sacrificed what it called its principles for fear of giving offence, and had little or no notion of going without anything that it really desired.—*Times*.

## THE INCORPORATED ASSOCIATION OF HEAD MASTERS.

A LARGE number of head masters met in the comfortable Council Chamber at the Guildhall on January 7 and 8. Several changes among the officers of the Association were announced. Dr. McClure, who has been joint Hon. Secretary since the resignation of Dr. R. P. Scott in 1903, had resigned in order to take an extended holiday. Canon Swallow, who had been joint Hon. Secretary since 1895, had resigned on his acceptance of clerical preferment. The new joint Hon. Secretaries are Mr. R. F. Cholmeley, of Owen's School, and Mr. Jenkyn Thomas, of Hackney Downs School. Mr. W. G. Rushbrooke, who was unfortunately absent from the meeting, remains the Treasurer. Canon Swallow becomes the President for this year.

After an address of welcome to the Association by the Lord Mayor, Canon SWALLOW delivered his Inaugural Address. This was largely a retrospect of the twenty-one years during which the Association has been established. For although this was the twenty-second Annual Meeting, Canon Swallow said that the Association had practically reached its majority at that meeting, because the first annual meeting was held a very short time after the formation of the Association. He spoke of the early difficulties with the Head Masters' Conference and of the danger lest the two bodies should have become mutually exclusive of one another. The danger was largely obviated by the work of Canon Bell. He reminded his audience of the very great influence the Association had had and of its share in bringing about the Act of 1902. In this connexion he paid a tribute to the activity of Dr. R. P. Scott. The Association had worked with the administrative bodies, especially with the Board of Education, and it owed a debt of gratitude to the City of London and to the City Companies for their co-operation.

### REGISTRATION OF TEACHERS.

The PRESIDENT moved from the chair:

That this Association welcomes the establishment of the Teachers' Registration Council as an important step towards the creation of a teaching profession having control of its own membership.

This was carried without discussion.

### PENSIONS.

On the subject of pensions, three resolutions were carried:

(1) That this Association acknowledges with satisfaction the sympathetic reception given by the President of the Board of Education and the Chancellor of the Exchequer to the claim for the establishment of a superannuation fund for teachers in secondary schools.

(2) That this Association is of opinion that the State should contribute to such a fund on a higher scale than at present proposed.

(3) That the Board of Education be asked to include in the proposed Superannuation Bill a clause giving a general power to Local Education Authorities and governing bodies to establish schemes for providing supplementary pensions and retiring allowances.

The resolutions provoked some discussion and it was evident that there were differences of opinion. On the one hand it was urged that pensions should be left to governing bodies, and on the other hand it was held that any local schemes for pensions would interfere with free movement on the part of assistant masters. There was also a feeling that pensions should be in proportion to the amount of salary. The present proposals are that pensions should be based on a "flat rate" and that a sum of £100 a year should be secured to all masters, whatever their grade or salary may be. Mr. BARBER thought that the Government should be urged to make a higher payment towards the fund, as the salaries of assistant masters would not permit them to make any large annual payments. Mr. Madeley looked askance at State pensions. They did not know where such a principle would lead them.

### EXAMINATIONS.

Mr. JENKYN THOMAS introduced a series of resolutions on the report of the Consultative Committee on the subject of



examinations in secondary schools. There was some discussion about the trouble caused by the multiplicity of examinations and about the ineptness of examiners. With a few minor amendments the resolutions were carried. They are (as amended):

That (1) this Association welcomes the Report of the Consultative Committee on Examinations in Secondary Schools as a complete and incontrovertible presentment of the injury done to secondary education by the present multiplicity of external examinations.

(2) It cannot, however, approve of the establishment of a new composite Examination Council.

(3) This Association requests the Board of Education, in co-operation with the Teachers' Registration Council, to confer with the Universities and professional bodies with a view to the institution of common entrance examinations.

(4) This Association approves of the establishment of a Secondary School Certificate to be awarded to pupils who have (a) attended an inspected secondary school or schools for at least three years after the age of twelve; (b) passed an examination conducted with the concurrence of the Board of Education; and (c) remained in school until the age of sixteen, provided that the Universities and professional bodies accept such certificate in lieu of their own entrance examinations.

(5) This Association cannot approve of the establishment of the proposed Secondary School Testamur, regarding as inadvisable the official award of such certificate to pupils below the age of sixteen. It is further of opinion that the methods proposed for the award of the certificate are absolutely unworkable.

(6) Acting teachers should, in the opinion of this Association, be adequately represented on examining bodies, and that examiners should have had sufficient experience of actual teaching in schools.

#### THE TRAINING OF TEACHERS.

Mr. CHOLMELEY moved—

That this Association welcomes the proposal of the Board of Education to encourage, in addition to the present system of training, the institution of a system based from the beginning upon actual school work, and urges the Board to proceed without delay with the necessary steps for making this proposal effective.

This was carried without opposition. The terms of the Board's proposal were not made public, as they are not to be officially issued until the opinion of the head masters is known. But it appears that the proposal is based on the fact that the University graduate is often unwilling or unable further to postpone earning a salary. He wishes to begin work so soon as he has taken his degree. It seems then that he would enter a school, receiving perhaps half salary, and do some teaching; but he would have opportunity of watching other teachers and of reading books on educational theory.

#### RESPONSIONS.

Before the business was begun on the second day, the news of Canon Bell's death had been received. Canon SWALLOW moved a vote of condolence, which was accepted in sympathetic silence. Mr. COOKSON, of Magdalen College, Oxford, then made a statement in reference to a letter from the Vice-Chancellor of the University of Oxford dealing with proposed changes in the entrance examination for the University. Mr. Cookson explained that for the first time Oxford proposed to establish a University entrance examination and to call it Responsions. The examination at present called by this name would be abolished. For the new examination it was proposed to have five subjects. Four of these—English, Latin, Greek, and some Mathematics—would be compulsory; the fifth could be chosen from among a long list of subjects. The special point about the proposal was that a boy could take four of the subjects at entrance, and leave one till later. Practically this meant that a boy could leave the study of Greek until he was at the University. But he would not be fully matriculated, nor would he be allowed to proceed with his degree subjects until he had passed in Greek. The overwhelming feeling of the meeting was opposed to compulsory Greek, but the proposal was accepted as affording some relief. But Mr. Hendy regretted that the University should hold up a standard which omitted History and Natural Science. Dr. McCLURE moved the resolution, the first part of which was carried unanimously, and the second part, expressing

regret that Greek was still required, was carried with two dissentients. The resolution was divided into two parts:

(1) That this Association thanks the Vice-Chancellor of the University of Oxford for his courtesy in submitting for its consideration the proposed new scheme of examination for Responsions; but, while welcoming this scheme and giving thereto a general approval, it desires further opportunity of considering the details thereof in Committee.

(2) The Association, however, regrets that Greek is still required from all candidates for the examination.

#### GOVERNMENT SERVANTS.

Dr. McCLURE introduced a discussion "to consider the extent to which it is desirable or practicable for secondary-school masters to become Government servants." Dr. McClure thought the time was not yet ripe for a resolution on this subject, and he was careful to avoid the use of the term "Civil Servant." He pointed out that an increasing number of schools were receiving Government grants and seeking Government inspection. This meant increased control on the part of the Board of Education, and this control, whether good or bad, was destined to increase. At one time the secondary schools looked with some suspicion upon the interference of the Board. Now there was a feeling of greater confidence, and more control was being invited. No one could forecast the immediate future of secondary schools. The formation of the Registration Council, the demand for professional training which that Council might enforce, and the granting of pensions by the State—these matters would have an important influence, and one could not tell how this influence would act. The question to consider was whether a system by which teachers became the servants of the State was good or bad. If it destroyed freedom of action it would be bad. He asked for information as to the influence of the State in Germany upon the teachers' initiative.

The matter was discussed at some length, and various opinions were voiced. Some speakers urged that in Germany the teacher had great liberty and freedom. It was pointed out by Mr. Walde that in becoming Government servants the teachers might lose the fire of enthusiasm that they now possessed; but on the whole he was in favour of making teachers public servants.

#### SALARIES OF ASSISTANT MASTERS.

On this subject Mr. A. A. SOMERVILLE, of Eton, was invited to address the meeting. His able and eloquent speech was listened to with sympathy.

Mr. Smith moved:

That it is urgently necessary to establish adequate salary scales in secondary schools, due regard being paid to the cost of living in different districts.

This was carried.

#### OTHER BUSINESS.

In addition to the administrative business the Meeting heard two papers on school subjects. Mr. BARTON read a paper entitled "The Appreciative Treatment of Literature in Secondary Schools," and Mr. DAWES read a paper on "The Teaching of German." The following resolutions were also carried:

That this Association regrets that the efficiency of secondary education is seriously impaired by the early age at which pupils leave school. It appeals to parents to give their sons the full benefit of the later and most useful years of school life, and to employers to encourage a longer stay in school by giving preference among candidates for appointments to those who can produce evidence of regular attendance and satisfactory progress at a recognized efficient secondary school at least up to the age of sixteen.

That this Association regrets that the Civil Service Commissioners encourage premature withdrawal from secondary schools by appointing boy clerks at the age of fifteen, especially as the conditions of their appointments are so unsatisfactory.

That this Association regrets the lack of any working arrangement between different Local Education Authorities in England to continue the scholarships (or free places) of any pupils whose parents move from one administrative area to another; and hopes that such arrangement may be effected as may be extended later on to the whole of the United Kingdom.

In reference to the latter resolution, authority was given to the mover, Mr. J. L. PATON, to approach the County Councils Association and the Association of Municipal Corporations on the subject.

### THE INCORPORATED ASSOCIATION OF ASSISTANT MASTERS.

THE Annual General Meeting of the Incorporated Association of Assistant Masters was held at St. Paul's School on January 3. During the past year the membership has increased by about a thousand, and now stands at 4,500. The financial statement shows an income of over £1,600, while the expenditure has been nearly £1,300, leaving about £350 balance on the year's working. The expenses include contributions to the Benevolent, Legal, and Orphan Scholarship Funds. The Chairman for the present year is Mr. J. C. Isard, of Leys School, Cambridge; Mr. G. D. Dunkerley remains Treasurer; Mr. G. H. Heath has resigned the Honorary Secretaryship, and Mr. G. T. Hankin, of King's College School, Wimbledon, has been appointed in his place.

#### THE TEACHERS' REGISTER.

On the subject of the registration of teachers the following resolution was passed without dissent:

That this Association is of opinion that for present teachers the regulations for admission to the Register should provide: (a) that two years' satisfactory experience in recognized secondary schools, or in such schools as may be approved by the Registration Council, be accepted as a qualification; (b) that masters in recognized secondary schools, or in such schools as may be approved by the Registration Council, who have not completed two years' service when the Register is established, be eligible for registration when three years have been completed; (c) that all teachers who can show evidence of ten years' satisfactory service in secondary schools be admitted to the Register.

#### SUPERANNUATION.

Mr. A. A. SOMERVILLE introduced the subject of Superannuation, and told the meeting what the Association had already done in the matter. He paid a tribute to the sympathetic hearing accorded to the views of the Association by Mr. J. A. Pease and the permanent officers of the Board of Education. The Association, said Mr. Somerville, had successfully urged that the pension funds should be invested so as to bring in  $3\frac{1}{2}$  per cent., and, further, had claimed that the State contribution should be raised in proportion to the premium paid by the teacher. But it was not certain that this latter point would be ceded. He then moved the following resolution, which was carried without opposition:

That this Association considers that no system of pensions for secondary teachers will be satisfactory which does not provide (a) that the proportion of the contributions paid by the State be at least as high as in the case of elementary teachers; (b) that the pension be of £100 per annum at least for men at sixty years of age, after thirty-five years of recorded service; (c) that the contributions are paid by (i) the State, (ii) the teacher.

The object of the third section of the resolution is to give teachers all possible freedom in moving from one school to another. If Local Authorities or governing bodies were contributory this freedom would be hampered.

#### EXAMINATIONS.

Mr. HANKIN moved:

That this Association approves of the recommendations of the Consultative Committee on Examinations in Secondary Schools; expresses its gratification that the Committee finds reform possible without adding to the clerical duties of schoolmasters; and recommends the Executive Committee to advocate as widely as possible the adoption of the recommendations.

#### THE ORPHAN SCHOLARSHIP FUND.

Mr. J. V. SAUNDERS (Hymers College, Hull) moved a resolution approving the provision of a scheme for the establishment of scholarships for the children of deceased members of the Association. The resolution also suggested the sys-

tematic collection of subscriptions and donations for the Benevolent and Orphan Scholarship Funds. Mr. P. E. MARTINEAU seconded, and the resolution was approved.

#### THE CHAIRMAN'S ADDRESS.

Mr. S. E. WINBOLT, of Christ's Hospital, the retiring chairman, delivered an address which is so stirring a trumpet call to further activity and which so admirably sums up the work of the Association during the year that we reproduce it in full. He said:—January 1, 1913, finds our Association well on in its twenty-second year, and stronger and more progressive than ever before. During the past year our membership has made some record long jumps, and increased to the tune of just over one thousand; our funds are in a very healthy condition, owing largely to the work of the Finance Committee and the watchful care of our ever-alert Hon. Treasurer; our Executive Committee and its various sub-committees are well attended and efficient. Indeed, the hard work put in at committees by so many members is a striking proof of their loyalty to the Association and to the highest ideals of educational efficiency. But while some are over-worked, others are more or less out in the cold; and the day is near when the ever-growing work of the Association will have to be redistributed, and fresh machinery set up to deal with increasing demands. In this connexion, "Decentralization" will be the watchword.

The Executive Committee in the course of a year has to deal with a varied farrago of matters. Thus, to enumerate some of the points that come uppermost in the mind on armchair reflection, it has had under consideration Parliamentary representation of secondary education, secondary education in Ireland, the federation of secondary associations, pensions, tenure (including arbitrary dismissal and right of appeal to governing bodies), examinations, a "school record," formation of new branches, legal cases, advertising of vacancies, National Insurance Act, payment of salaries during illness, Orphans' Scholarships Scheme, and facilities for the education of sons of assistant masters. To attend regularly the meetings of the Committee is in itself something of a liberal education.

#### REGISTRATION AND SUPERANNUATION.

Of these topics probably the most important, as it is the one which has given the liveliest satisfaction to members of this Association, is the formation of the Registration Council, on which Mr. A. A. Somerville has been chosen to serve as our representative. The work of the Council can hardly yet be said to have begun; but it is the earnest wish of the I.A.A.M. that all parties in the Council may be able to pull together for the furtherance of professional solidarity and efficiency. The history of the Registration movement since the Forster No 2 Bill, of 1869, shows that the conditions of a Register which is to be a success must, for some years, be of a mild, permissive, and inclusive character. This is fully recognized in the three resolutions on to-day's agenda. On the subject of superannuation, also, the Association takes moderate views in the hope that the sweet reasonableness of its demands will smooth the way for the Government. It is willing to believe that only modest benefits can at first be looked for in the shape of retiring allowances; but at the same time hopes that the premiums asked will not be such as to weigh too heavily on poorly paid teachers. When a profession is so poorly paid as that of teachers in secondary schools—and of this the Board of Education's statistics published a year ago are irrefragable proof—is it not perfectly natural that the offer of any benefits, even of pensions, should be scanned very closely by the intended recipients, who cannot for a moment contemplate diminution of their present meagre emoluments, even for Elysium thirty years hence? In the circumstances, the two resolutions on superannuation are strikingly moderate; in fact, the Association, like Warren Hastings, may well be surprised at its own moderation. It may also feel lively satisfaction at the fact that its pioneer work in this direction for many years past is soon likely to culminate successfully.

## THE REPORT OF THE CONSULTATIVE COMMITTEE.

Following on the Report of the Consultative Committee on Examinations in Secondary Schools, the Executive Committee, through its Education Sub-Committee, has been considering this complex question, but has concentrated its attention chiefly on the question "What should be the nature of a School Record?" A settlement of this problem, it was felt, would go far towards smoothing the way for those who aim at reducing and simplifying external examinations. A thoroughgoing report on the subject has been printed, and deserves the careful consideration of all secondary school teachers and the thanks of the members of this Association. The policy of the Association is to advocate, as widely as possible, the adoption of the Consultative Committee's recommendations. Meanwhile the Federal Council is pressing for a conference on the subject to be called by the Board of Education, at which, of course, we shall be duly represented.

## TENURE.

The terms on which assistant masters hold their appointments in secondary schools may be said to have improved during the twenty-one years of our Association's existence; but there is still great room for further improvement. In the first place, it is felt that appointments, at least in schools aided by public money, should be given to the best men, but we doubt if this can be done until more publicity is given when vacancies occur. When an appointment has been made, reasonable terms of service should be agreed upon between governing bodies and their servants; and a fairly definite understanding come to on the subject of extraneous duties, the volunteering for which there is too often a regrettable tendency to make compulsory. In every case of dismissal, the assistant should, if he wishes it, have the right of being heard by the governing body, a principle which some of the more progressive Local Authorities have seen fit to recognize. To dismiss off-hand assistants of long-standing, merely because a school needs reorganization, or because a new head master has been appointed, is an arbitrary procedure. And, apart from dismissal, there are not wanting cases in which head masters still wield autocratic powers arbitrarily and intolerably. For such reasons as these the *A.M.A.* has during the year displayed prominently, on its front page, the names of four schools, and, we believe, with very good effect. This matter of tenure is undoubtedly the most important standing dish on our table. How incessantly we have worked at this subject, and how much we owe to the outspoken criticism of many of our past officers, including Mr. Montgomery and Mr. T. E. Page! We still look forward to a time when the work of thousands of assistant masters will be done in a more genial atmosphere of freedom and independence. Reasonable freedom in the doing of our work is a most genial influence, and a quickening spirit making for more vigorous life all round. Fair dismissal will not be secured by any one enactment, but only by the gradual creation of a proper public opinion in the matter, and by the raising of the status of the whole teaching profession.

## SALARIES.

Among the terms of service, of prime importance, of course, is salary. Of all the professions in this country the worst paid is still that of the schoolmaster. Are we much better off in this respect than we were ten years ago? When week after week I glance down the advertisements in the *Athenæum*, I must perforce doubt it. The salary scale advocated by this Association is £150, rising by automatic yearly increments of at least £10 to £300, and then by yearly increments of £15 to at least £450. This is no news, but one of the facts that must be repeated in season and out of season, and, if necessary, *ad nauseam vel incommo-*

## INSURANCE.

If progress in such matters is slow, we may turn to one sphere of our efforts in which progress has been phenomenal. The Secondary, Technical and University Teachers' Insurance Society was this time last year little more than an idea. Never in the history of our Association has such

enthusiasm and activity been brought to bear on any good work. It must be very gratifying to the Association to find that no less than nine associations of secondary teachers have now thrown in their lot with the S.T.U.T.I.S., and that the membership to-day of our approved society is something like nine thousand; but especially so to Mr. Tidswell, who for years past has manfully fought the battle of Insurance at our General Meetings. His labours have been rewarded by a seat on the Insurance Commission's Advisory Committee, and by the success of the campaign of 1912, in which he was ably supported by Mr. Hankin, Mr. Lunn and Mr. D. Jones, who speedily converted themselves into Insurance Act experts.

## THE ORPHANS' SCHOLARSHIP FUND.

The Association attained its majority in October last, a fact which certainly merits special recognition. Early in the year the Membership Sub-Committee conceived the idea that a fitting way of celebrating this auspicious event would be to found a scholarship fund for the benefit of orphans of our deceased members. It was well not to act precipitately, and it was not till near the close of the year that the Executive passed the outlines of a scheme for the Orphans' Scholarship Fund. To the credit of the fund to-day stands some £200 in cash, and the offer of a few scholarships in good secondary schools. It is a sound beginning, and we cannot doubt that in a year or two we shall be in a position to help towards the education of children in need in the way that obtains among so many trades and professions. This will make yet one more of the iron bands that are beginning to hold together our Association and our profession.

## FEDERATION.

All through the year the idea has been steadily gaining strength that the time is nearly ripe for the formation of a Federation of Secondary Teachers. At the instance of the Executive, the suggestion was brought before the Federal Council, which approved of the principle. However, in the present position of affairs relating to the Registration Council, it was thought best to postpone for a little any such scheme. During the year large and successful meetings representing all kinds of secondary teachers have been held at Liverpool, the University of London, Barrow and Nottingham, and we are contemplating organizing similar gatherings early this year, in Birmingham and London. I had keenly hoped that before I resigned the high office with which you entrusted me a year ago, the Federation of Secondary Teachers would be a working piece of machinery. This was not to be; but the solidarity of secondary teachers is no vain idea, but a project which the initiative of this Association must make an accomplished fact. The National Union of Teachers—and we not less—is anxious to effect a union of all grades of teachers. To this I say, with conviction, that the time for this is not yet, though there may be many occasions on which our cordial co-operation with the N.U.T. may do good. As I said at our General Meeting last Easter, our first business is to put our own secondary house in order. At the present time the best service we can render to national education is thoroughly to organize our own department of it. It ought not to be possible for anyone to say that our secondary teachers' organizations suffer from fewness, feebleness, and ineffectiveness, without being immediately howled down by a shout of well merited derision.

## HEAD MASTERS.

Meanwhile, it is satisfactory to note that our relations with the Head Masters' Association have been cordial, and we have to thank them, among other things, for making an inquiry as to what special facilities there now exist in schools for the education of children of assistant masters. We are on excellent terms with all other secondary associations, including the Secondary Schools Association; and our dealings with the Board of Education are, more than ever, becoming intimate and friendly. The journal of the Association, the *A.M.A.*, has done a good year's work, under its present competent editorship.

In short, the prospects of the Association are particularly rosy. There is any amount of work craving to be done, and an increasing number of keen and able men to do it; and we live in goodwill towards our neighbours. This state of things, I take it, spells, in golden letters of the largest size, the word "Prosperity."

#### THE DINNER.

The dinner held by the Association to celebrate its coming of age was a brilliant success. All former officers had been invited, amongst whom Mr. J. Montgomery, the founder of the Association and now Head Master of Uckfield Grammar School was the most honoured guest. About a hundred and sixty persons sat down to the dinner, and there were some excellent speeches. Prof. Spencer Wilkinson, in proposing the toast of "Education," urged his listeners to abolish the monopoly of classics in the schoolroom and to get rid of the spirit of caste among teachers. He thought it vital to the life of the nation that teaching should become a profession, and that there should be no separation between those of different grades or status. Sir Lewis Selby-Bigge, who replied for the toast, and who then for the first time addressed a body of secondary teachers, paid a high tribute to the work that had been done for teachers by Sir Robert Morant and Mr. Bruce. He also expressed the greatest sympathy with and admiration for teachers; but regretted that the Board of Education and education itself were two very different things. He looked upon Whitehall as the place where Education kept her banking account but not as her home. He rejoiced to think that Education lived where the writ of the Board did not run. He spoke of the limited powers of official administrators and said that officers of the Board soon learnt not to resent criticism and not to open their mouths, especially when they had something interesting to say.

#### MR. T. E. PAGE.

The toast of "The Association" was moved by Mr. PAGE in a speech in which he managed to combine the deepest pessimism with the most brilliant humour. He spoke of the recent distribution of Honours—a distribution in which Sir Lewis had so deservedly shared, and asked whether the whole civilized world would not be shocked if the least of these Honours were to be offered to a schoolmaster. Yet they who wished to know where to find the solid foundations of national greatness, where to seek for the best and safest policy of national insurance, where to look for the art which, not with juggling processes of turning four coppers into nine, but by a true alchemy adding to the true wealth of nations, which consisted chiefly in the character and conduct and capacity of their sons, must look to the schoolmaster.

Mr. WINBOLT, in replying, spoke of the Orphans' Scholarship Fund, which the Association had decided to found to celebrate the twenty-first year since its foundation and appealed for help.

#### MR. FABIAN WARE.

Mr. FABIAN WARE proposed "Officials, Past and Present." He said that the Association did not originate in economic need, and had always refused to narrow down its claims to the purely economic side. When he was a member the Association was a hot-bed of revolution. Every practical reform in secondary education had been initiated either by that Association or by those members of it who had risen to higher spheres. When the Association was formed secondary education was the education of the governing classes. It had ceased to occupy itself solely with those classes, and was devoting itself more and more to the education of all who were able intellectually to benefit from it. English Governments placed at the head of their Education Departments either apprentice statesmen or politicians in the full maturity of their sterility. They could remember a succession of scandals such as that of the Teachers' Register. He believed that before long they would have an attack on their endowments which would shake the whole of their educational system to its foundations. Teachers must trust to themselves and not expect help from politicians.

Mr. J. MONTGOMERY, Mr. R. F. CHOLMELEY, Mr. J. C. ISARD, and Mr. J. L. NORTON responded.

Dr. W. H. D. ROUSE proposed "Kindred Associations," and Dr. H. J. SPENSER replied.

Mr. A. A. SOMERVILLE proposed "The Guests," to which Dr. J. D. McCLURE replied.

## SHOULD TEACHERS BECOME CIVIL SERVANTS?

### DR. MICHAEL SADLER'S VIEWS.

AFTER the Principal of London University, Sir HENRY MIERS, had extended a welcome to the members of the Joint Conference of Educational Bodies, Dr. MICHAEL SADLER, Vice-Chancellor of the University of Leeds, gave the opening address. He took as his subject the question as to whether it would be for the benefit of education that teachers should become Civil Servants. He pointed out that the Civil Service, in its crudest form, was the exact antithesis of a self-governing profession. But there were reasons for the interference of the State. We, teachers, he said, are not a private profession. We deal with problems as vital to the nation as those which confront the Admiralty. Teachers are not economically independent; they receive public money. But on the other hand there are many children, no one knows how many, who are taught by persons who receive no penny of public money. Dr. Sadler felt strongly the real seriousness of the problem. He stated three alternative positions. First, the teaching profession may become (as the medical profession will become) a profession in which a growing number of members will hold office directly from the State. Then there would be a division of the profession into two parts. Those who were Civil Servants and those who taught in private schools or in non-grant-earning public schools. Secondly, and this was the solution that Dr. Sadler preferred, we might be feeling our way towards a new relation between teachers and the State. This relation was difficult to define, but it was imminent. Thirdly, and this proposal he desired to oppose, the great body of teachers might by administrative action be converted into Civil Servants.

It was argued in favour of the latter alternative that education was a national and not a local service, and that therefore all appointments and dismissals should be in the hands of the Board of Education. The example of Germany is quoted in support. Assistant Masters chafe under the present conditions. On the other hand, Head Masters do not want to lose the right of appointment. The National Union of Teachers shows no sign of wishing teachers to become Civil Servants. The Local Authorities do not want to give up the right of appointment. Dr. Sadler dwelt at some length on the disadvantages of this latter alternative. He said that progress had generally come from liberty of experiment and the liberty of the teacher or groups of teachers to work out educational theories in accordance with their individual ideas. All great pioneers, he said, have been disagreeable persons; saints, if you will, but ill-tempered saints, a type of character detested by the official mind. New ideas come through anguish and fighting. State education is apparently sterile in new ideas. The State tends to stifle individual experiment by the weight and momentum of its own machinery.

Dr. Sadler formulated four objections to a State system. If the State took over the administration of education, we should at once have universal scales of salaries, and these would differentiate unfairly between men and women. Secondly, it is impossible to distinguish between primary and secondary, between secondary and technical; therefore, if one branch became Civil Servants, inevitably the whole profession would follow. Thirdly, the religious question would be raised in an acute form. No Government could overcome the intense conviction in which this question was rooted. Fourthly, England could not be treated alone. Scotland and Wales would be involved. The proposal, when investigated, proved to be so enormous and so far-reaching that no Government would undertake the responsibility. He warned teachers that the proposal would not prove a short cut to comfort. The essential thing, he concluded, is personality, and the vigorous growth of this requires freedom.

## CANON BELL.

It is with deep regret that we record the death of Canon Bell, an honoured and useful member of the College of Preceptors for forty-two years and a Vice-President of the Council.

Born on July 9, 1832, at Streatham, George Charles Bell at the age of ten was sent to school at Christ's Hospital, where in due course he became Classical Medallist and gained a leaving Exhibition. In 1851 he went to Oxford with a scholarship at Lincoln College. The next year he won a Foundation Scholarship at Worcester and migrated to that college. His career at the University was a distinguished one: he took a First Class in the Final Classical School and subsequently a First in Mathematics. He gained the Senior University Mathematical Scholarship in 1857, and in the same year became a Fellow and Lecturer at Worcester. Shortly afterwards he took Holy Orders and in 1865 began his remarkable career as a schoolmaster. For three years he was Second Master of Dulwich College, and then for eight years Head Master of his old school, Christ's Hospital, in succession to Dr. Jacob. In 1876 he succeeded Archdeacon Farrar as Master of Marlborough College, a position he held for upwards of a quarter of a century. During his long and businesslike rule the College prospered: the new chapel was built; the playing fields were extended. Among his many qualifications as a Head Master Mr. Bell had an eye for men: many of the masters he appointed themselves subsequently gained Head Masterships. But though a popular and successful Head Master his energy and interest in education were by no means confined to his school. Mr. Bell was one of the first to realize the necessity of the organization of the teaching profession. When his life-work began there were no associations of Secondary Teachers other than the College of Preceptors. There were no colleges for women. The ideal of a higher secondary education for girls seemed still as remote from possible actuality as a scheme of the Utopia. To suggest that teachers in secondary schools should be trained before beginning their work was to stamp oneself as a faddist if not a fanatic. It is not too much to say that the insight, the sympathy, the common sense, and the intrepidity of Canon Bell left their mark on all the movements we have here referred to. It was because he realized that the College of Preceptors stood for the professional union of secondary teachers, for the training of teachers, for the improvement of educational methods, for the raising of the standard of teaching by encouraging schools to submit to public examinations, for the raising of the status of women teachers to that of men, and for the creation of a professional Register, at a time when no other body existed for those objects, that Mr. Bell, in 1871, joined the College of Preceptors and shortly afterwards accepted a seat on the Council. He was a Vice-President from 1872-1876 and again from 1905 until his death at the beginning of this month.

His work for the College was multifarious. Not only was he a fairly regular attendant at the Council meetings, but he did a great deal of still more important Committee work, where his masterly grip of the business under discussion never failed to impress his colleagues. In 1907 he was appointed Revising Examiner in Scripture History. Many members of the College have pleasant recollections of the genial though very businesslike way in which he sometimes presided over the half-yearly meeting, and of his delightfully humorous speeches at the dinner afterwards. To merely enumerate the offices held by Canon Bell and the institutions he largely helped to create, clearly indicates not only his wide sympathy and great power of work, but also the extraordinary progress of the last forty years. In the foundation of the Head Masters' Conference Canon Bell took an active part. When, at a later date, the Incorporated Association of Head Masters was formed, Canon Bell was a prominent member of this also. He was a Vice-President of the Girls' Public Day School Trust and for some years Principal of Queen's College, London. In 1904 he became Chairman of the Teachers' Registration Council.

It is not given to many schoolmasters to live so long a life or a life so full of varied interest, still less to see the ideals of earlier days gradually attain general recognition. It must

have been a great joy to him in later life to feel that his labour for the good of his profession had not been in vain, like the "Happy Warrior"—"to see what he foresaw"—the hopes realized, the principles established.

Mr. Bell became a Canon of Salisbury in 1887, and on his retirement from school work the Drapers' Company presented him to the valuable Rectory of St. Michael, Cornhill, where a memorial service was held on January 10, at which the College was officially represented. He was buried at Marlborough College by his former pupil, the Bishop of London—

"here laid

In rest, in peace, his labour nobly done."

## CORRESPONDENCE.

## FORMAL TRAINING.

To the Editor of "The Educational Times."

DEAR SIR,—Will you permit me—though unable to claim, as Mr. Smith may fairly do, the authority of an able and rising psychologist—to offer some few remarks suggested by his article in your current issue?

If we are to assume, as the result of modern research, that "the qualities we hope to see in our pupils must be trained by direct methods," it would seem reasonable to ask from Mr. Smith some explanation for the existence of certain qualities which appear to develop in the absence of direct teaching. I am thinking in particular of taste in art and literature. Many, perhaps most, of us are not prepared to admit that what was beautiful in our childish eyes is beautiful to us now; and I, for one, am quite unable to see in my youthful appreciations even the germs of what does duty for taste in me to-day. Many, I feel sure, are equally unprepared to see in the precepts or the observed predilections of others the *fons et origo* of our taste; for we are faced in not a few instances by our present complete divergence from the views and the teachings available in our childhood.

Personally I do not think that taste can be directly taught; and I must confess my partial adherence in this matter to the doctrine of formal training—to the theory that a child can and does retain some contribution from all observed beauty towards the making of his touchstone of taste. For this reason, therefore, I support the memorizing of poems, the making of verses, and all other means whereby transference of the kind I have indicated may take place.

With regard to Bagley's restatement of the weakness of spirit and the strength of flesh, I have only to ask Mr. Smith if it is not easier to regard our ideal as innate, and a habit congenial to it as its active expression. Habits completely out of harmony with the innate ideal I conceive to be solely the fruit of direct teaching.

If we had some means of discovering exactly what was the childish ideal, it would be possible to teach in all points directly. As it is, we are compelled to offer as great a variety of mental pabulum as we may in the hope of supplying the right material by accident; or, by the theory of transference, of adding the elements whence may be fashioned the complex of the perfect man.—Yours truly,

SYDNEY H. KENWOOD.

Llaly Place, Gresford, January 14, 1913.

[I am grateful to Mr. Kenwood for his interesting letter, but he goes so very far beyond the limits of a discussion on the doctrine of formal training that I am unable here to deal with all the problems he raises.

The point under discussion is not how literary taste or artistic taste develops in the individual and changes from the child to the adult. What I sought to emphasize in my article was the fact that "taste" is not a general faculty; that literary taste, however and whenever acquired, will not transfer to artistic taste, but each must grow separately. What I meant by the phrase, "the qualities we hope to see in our pupils must be trained by direct methods," was that if we desire scholars to have literary taste, we must seek it directly through the medium of literature, and not through art or music. That these tastes "appear to develop in the absence



of direct teaching" does not disprove my point; it merely emphasizes the fact that education is wider than schooling, and that the educand is more complex than the scholar. The divergence of the scholar from the precepts of his former teachers is a wholly different problem.

Mr. Kenwood does not think that taste can be directly taught. Perhaps not, in the strict sense of the words; but I believe that most scholars can be guided to the places whence literary taste and artistic taste take their origin, and the memorizing of verse is not a *sine qua non* in the process. Mr. Kenwood has nothing but an unproved theory to offer in support of the contrary view.—F. SMITH.]

## CURRENT EVENTS.

THE fifteenth Annual General Meeting of the Moral Education League will be held at the Society of Arts on Friday, February 14, at 8 p.m. Sir William Collins, Vice-Chancellor of the University of London, will deliver an address on "The Place of Volition in Education."

THE London County Council has issued a most interesting handbook giving particulars of visits of children in London schools to places of educational interest. It forms a school guide to the British Museum, Westminster Abbey, and a score of other places, and gives details of country walks and excursions.

MESSRS. GEORGE PHILIP & SON have issued the "Aunsize" Map Rail, at a cost of 3s. 6d. It can be instantly hooked on to the black-board or suspended by cords. It prevents the maps from being damaged and saves the teacher's time.

A SERIES of lectures on "The Newer Aspects of Children's Education" is being organized at 10 Cheniston Gardens, Kensington, W. Mr. John Russell, King Alfred's College, Hampstead, and Mr. Philip Oyler, Morkshin Nature School, Headley, are among the lecturers. Particulars can be obtained from the Secretary at the address given above.

THE London Education Committee have issued a leaflet giving information of the courses of instruction that are provided in London day schools for boys who intend to enter trades with a view to becoming skilled workers, foremen, and managers.

PROF. PATRICK GEDDES is giving a course of five lectures on "The History of Learning" at Crosby Hall. The second lecture is on February 5. Tickets can be obtained from Mr. John Ross, 2 More's Garden, Chelsea.

THE course of lectures on "Greek Art and Life" by Mr. S. C. Kaiues Smith will be continued during the spring. Particulars may be had from Miss Claire Gaudet, 120 Cheyne Walk, Chelsea.

OWEN'S SCHOOL, Islington, which was founded in 1613 by Dame Alice Owen, will shortly celebrate its tercentenary. The Head Master, Mr. R. F. Cholmeley, has opened a fund to set up a new building on the school sports ground to commemorate the occasion. A Committee of Old Boys has been formed to further the movement. The Hon. Secretary is Mr. E. C. Martin, 27 Lordship Lane, Wood Green, London, N.

MRS. RICHARDSON, one of the nieces of the late Lord Winterstoke (formerly Chairman of the Governors), has recently given £5,000 to Mill Hill School.

THE Governors of Mill Hill School have granted the Head Master (Dr. McClure) six months' leave of absence for a much needed rest after twenty-one years' service, and they have appointed Dr. A. S. Way as *locum tenens*. Dr. Way is known as the translator into English verse of the "Odyssey" and parts of the "Iliad," as well as plays of Aeschylus, Sophocles, and Euripides. For ten years he was Head Master of Wesley College, Melbourne, and since his retirement has acted as Examiner and Inspector for the Welsh Central Board. Dr. McClure will resume office in September next.

THE REV. JOHN HENRY ELLIS, of Collingham Gardens, South Kensington, has left, subject to his wife's life interest, the residue of his property, which will amount to not less than £90,000, to the University of Cambridge, "to be enjoyed and applied both as to capital

and income by them for the general purposes of the University, in such manner as they may think fit."

MISS CONSTANCE L. MAYNARD, Mistress of Westfield College, will resign her post at the end of the summer term, 1913. Miss Maynard will then have held her present position for thirty-one years. Her educational experience covers the whole period since the movement for the higher education of women was first initiated. She entered Girton in its earliest days, and was one of the first two women students to take the Moral Science Tripos. She taught for a short time at the Ladies' College, Cheltenham, and then joined her friend Miss Lumsden, LL.D., at St. Leonard's School, St. Andrews. Miss Maynard had already conceived the idea of a resident college for women preparing for the examinations of the University of London which should be founded on a definitely Christian basis, and in 1882 this idea was realized by the foundation of Westfield College by Miss Dudin Brown, Miss Maynard being appointed the first Principal. In 1902 the college was admitted as a school of the University of London in the Faculty of Arts.

SIR A. T. QUILLER-COUCH, the new King Edward VII Professor of English Literature, has been elected to a professorial Fellowship at Jesus College, Cambridge.

MR. C. G. MONTEFIORE has sent £1,900 to make up the £32,000 required by the Board of Education for the retention of the Exchequer grant to Hartley University College, Southampton.

AT a special meeting of the Council of Hartley University College, Southampton, Dr. Alex. Hill, M.D., F.R.C.S., late Master of Downing College, Cambridge, was unanimously elected Principal at a salary of £1,000 a year.

THE REV. JOHN HENSON, Head Master of Haverfordwest Grammar School since 1906, has been appointed Head Master of Hereford Cathedral School, in succession to Prebendary Murray Ragg, resigned. Mr. Henson, who is aged thirty-nine, was educated at Leamington College under Dr. Wood, and at Tonbridge School, and gained honours at Worcester College, Oxford. He has had professional experience at Cheam and Reading Schools, at the latter of which he was House Master and Chaplain.

"AIDS TO FITNESS" is the title of a small sheet issued by the Schools Committee of the National Food Reform Association, 178 St. Stephen's House, Westminster. Dealing in simple language with the Guildhall Conference and some of its lessons for parents and children, it will be found of equal value in the home and on school and house notice-boards. Her Majesty the Queen has been graciously pleased to accept a copy with an expression of her warm thanks. A specimen copy may be obtained by sending a stamped addressed envelope to the Secretary.

ON and after February 1, *Child Study*, the Journal of the Child-Study Society will be published eight times a year—monthly, except in January, July, August, and September, instead of quarterly. The price will be reduced from sixpence to threepence net. The change is made in order to publish more of the papers on child-study read before the branches of the Society, to make them public more quickly, and to keep subscribers in closer touch with current events connected with child-study. Mr. H. Holman is the Editor.

THE KING has been pleased to approve of the appointment of Prof. Ronald Montagu Burrows, Professor of Greek in the University of Manchester, to be Principal of King's College, London.

MR. STANLEY MEASE TOYNE, M.A., Assistant Master at Haileybury, has been appointed by the governors to the Head Mastership of St. Peter's School, York, in succession to Canon Owen. Mr. Toyne is the son of Canon Toyne of Bournemouth, and is thirty-one. He was educated at Haileybury and Hertford College, Oxford, where he took Honours in Classical Moderations and Modern History. He is the author of several works on modern history.

THE authorities of Westfield College (University of London) announce that two scholarships of £50 a year for three years, given by the Drapers' Company, and other entrance scholarships, value £35 to £50, will be awarded on an examination to be held in May. Particulars may be received from the Secretary, Westfield College, Finchley Road, N.W.

THE third of the Lindsey Hall Theological Lectures will be given on Thursday, February 13, at 8.30 p.m., by Rev. Dr. J. Estlin Carpenter (Principal of Manchester College, Oxford). Subject: "Christianity and Comparative Religion"



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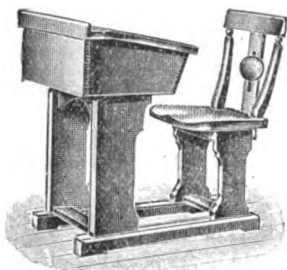
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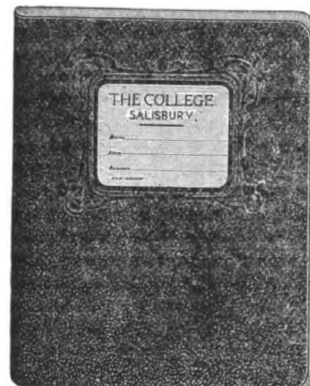
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THERE are three of them: Gable, Dôme, and Shadow. All the names were given by Dôme herself out of the fullness of the knowledge she brought from the other world. Gable is a poetical mispronunciation of the real name; Shadow might well be either a facetious reference to that man's solid bulk, or a hint of the restful, blue-grey splash in the hot desert (the shadow of a great rock in a thirsty land), for he is as a tower of strength to his sister. Her own name, in full, is Dôme Caterre Sennuyes, evolved from the original by processes of the brain unrevealed to adults. It is dignified by the prefix "Mademoiselle" conferred by the child's mother, and all letters must be so addressed. Otherwise, there is grave risk of their being refused.

It is of Dôme that I wish to write. She was two years old six months ago. Gable is not yet of so great an age that his own name, or the names of his brother and sister, may come readily to his lips; and Shadow is merely a good-natured, phlegmatic person, forming a dark background to the delicate colours that might symbolize his sister. Her salient characteristics are extreme sensitiveness, fragility of body, strength of purpose. She is lovely to look upon, with pale, clear skin, dark brown eyes, and red-gold hair that seems to absorb rather than reflect the light of the sun. Her chief delights are cleanliness and tidiness. But, while she abhors dirt and dislikes untidiness, her terrible aversion is from food and drink. The curves of her mouth are of the sensuous order, hinting at the Rossetti type of face, yet she would love to be an ascetic of the ascetics if her careful, patient mother would allow that course. The best part of a meal is the end of it, when she may declare: "Dôme finished. Dôme must wipe up."

There is no delinquency on her part. She drinks from a china cup as fragile as herself, but damage is unknown and never a drop is spilled. It is the overflow from Gable's more solid goblet that needs her attention. Her special duster is requisitioned, and the cleaning begins. An intruding wasp buzzes through the open window, and pursues an erratic course over the breakfast table.

"Go 'way, nasty wasp!" is the rapid command. And then, very impressively, "Dôme never touch nasty wasp."

This rule is had in strict remembrance, for the pest may walk across her hand and she will neither flinch nor attempt to remove it. Nor is there the slightest fear in this. If so dread a creature can be imagined as a wasp the size of a cow, I believe that the maiden would still content herself with the sharp order: "Go 'way, nasty wasp!" And I believe, moreover, that the order would be obeyed.

But if this horrid, imaginary creature had the image of one of the cows that feed in the meadow behind the garden, it would unquestionably find a place forthwith in the affections of the sturdy little heart. The sleek cream and brown animals, with their placid eyes and sweet smell, seem to have a special attraction for this child's delicately poised sensibility, and the swish of their tails may suggest to her, in some dim uncomprehended fashion, the rhythm that makes so strong an appeal to her mother.

"Dôme does love cows. Dôme go close to cows and see cows eat."

It is too much for her father, who is content to stand by with the child in his arms, while the three beautiful animals calmly devour the hay that is stacked against the winter.

At the end of the meadow stands a row of elms, whose leaves in summer time hold the heavy heat. Dôme and the sheep love

the shade of elms, but they love also the marshlands that stretch to the sea, a mile away. The hedge therefore is kept in good repair, and the gate can be neither opened nor climbed, save by the magic power of some very great person. The presence of the spinster aunt is greatly to be desired when the sea is to be visited. She is able to "throw Dôme over the gate," and show the path with comfortable stride.

Often in summer and autumn, and occasionally in winter and spring, there are wonderful excursions to the sea. On the near horizon, some six miles away, lies the fairy coast of Longsea Island, where the Romans used to go for oyster feasts, and where now there are five hundred jerry-built modern houses for each ruin of a Roman villa. I fear that if ever Dôme visits the place she will be disappointed. Palaces she likes, and pigsties, but not streets. It is an idiosyncrasy inherited from her mother.

The sight of the sea is welcomed in various ways.

"Hi, hi!" shouts Gable.

"Sea," remarks Shadow, laconically.

"Big water," says Dôme, in the largest voice she can muster. "Dôme must find water-babies."

There is no difficulty in this task. Water-babies are the small stones and shells that make a golden band between the coarse grass that grows green in the interstices of the sea wall and the brown-black seaweed that floats up with the tide. These water-babies are gathered in a bucket and placed carefully out of reach of the waves. No one knows where she found the name. Some years must pass yet before she reads or even hears of Kingsley, although there is a copy of his wonderful book on her shelves.

One morning in summer, when the heat was almost unbearable and a mist hung over the meadow and the marshes, there was a general clamour for a journey to the sea. Gable shouted his "Hi, hi!"; Shadow proclaimed the urgent craving of his being to paddle; Dôme drooped, like an evening primrose, saying nothing. Their mother promised them a picnic in the afternoon. But when the sun crossed the meridian he threw out a sheaf of angry clouds, and there was hail and lightning and thunder. The garden paths became rivers, the gutters overflowed, the sheep and cattle were terrified. Dôme, however, was jubilant. She unfolded the wings of her spirit and set to work on a plan of campaign. Her mother, coming into the nursery, found her with a towel tied loosely round her neck, and a large straw hat on her head. The child looked up, and said airily: "Dôme must take umbrella—and duster."

Trees were her first love amongst Nature's box of playthings for little children. Again I think it was the rhythmic movement of the smaller branches and their leaves that impressed the young brain. Dôme had a name of her own for trees, which I forget. It is unfortunate that so many things must be forgotten in this life. Half of the poetry slips from the adult mind. The prose alone remains. Indeed, he is perhaps to be accounted fortunate who remembers one half of the beautiful impulses that stir his being. Many of us can find room for only one inspiration in a life-time. Usually, that inspiration has its origin with a child.

Her latest love is the moon. And that is a little curious, in a sense, for I remember that her mother, as a child, feared the moon, although she loved thunder and lightning, declaring the one to be the music of God and the other to be cracks in the floor of heaven, down through which the music filtered to the ears of man. As has been hinted, Dôme loves all—moon, lightning, thunder, and rain; and her version of an old nursery rhyme—

Rain, rain, come again;  
Anoner day go to Spain—

is a happy expression of her delight.

In connexion with the moon, there is a special rite to be performed. Dôme rises at 11 o'clock, when her mother goes to bed, eats very slowly a piece of chocolate which a sparrow would disdain, drinks a tablespoonful of water—"cold water," she calls it in a deep, sleepy voice—and says, half shyly, but with great delight: "Dôme see moon, p'ease."

Then must the curtains be pulled back for the space of two minutes, while the wide eyes drink in the quiet splendour.

"Big, big moon," says the sleep-laden voice. Or, if the great lamp is waning, and the golden light becoming dim:

"Litt'e moon to-night. On'y litt'e moon to-night . . . Dôme must go beeb's . . . Shut all up again."

The curtain are drawn to, and loving arms hold that precious burden close.

"Mother hold Dôme very tight, p'ease."

Can one be surprised that sometimes there are tears in mother's eyes?  
JOHN HENDERSON.

## MEETINGS OF THE PRIVATE SCHOOLS ASSOCIATION.

JOINING with other educational bodies assembled in the London University, the private-school teachers held most successful and enthusiastic meetings. The Annual General Meeting on January 7 listened to a most thoughtful address from the President, Sir RYLAND ADKINS, M.P. The President said he looked forward to the time when not only a primary school, but also a secondary school, would be within reach of every child, maintained by public funds and under public control. None the less did he take deep interest in private schools. He wished to see, by the side of the publicly maintained schools, prosperous and vigorous private enterprise. The story of China and the Roman Empire presented us with the sight of machinery embracing everything in national life, at the price of extinguishing vitality. The dividing line between schools was not a question of public or private, but of schools having assistance from the public purse and schools which received no public money. It was most desirable that pupils should be able to change from one sort of school to the other with no hindrance.

The strength of State-aided schools consists in the elements of certainty, security, and the power organization gives to secure a minimum of education. But those outside a State system have real advantages in respect of (1) Initiative, (2) Flexibility, (3) Personal Touch. These are not the monopoly of any school, but specially found in schools free from State control.

(1) Education is a science, and therefore needs experiment. Experiment can always be done best by schools not subject to outside restriction. Education is an art. The artist who confines himself to "copy" has lost his soul. Mr. Sadler said: "State effort in education, though indispensable under modern conditions, was apparently sterile of new ideas, and tended to stifle individual experiment by the mere weight and momentum of its machinery."

(2) Government-aided schools, to be fair, must have uniformity of fee, curriculum, salary, methods of management. They cannot meet local conditions and needs so well as schools that are free.

(3) Everyone knows that nine-tenths of education is character. This depends largely on the "personal touch," which is prominent in private schools. The distinction between the priest and the prophet is an old one. The former reigns in permanent, carefully regulated organization; the latter in constant recurrence of initiative. Private-school masters are the educational prophets of to-day. They lose much by not being helped by the State. They gain more by being free. They have greater risks than State teachers, but they have greater opportunities. A good private school will be better than a State school. A bad private school will be worse. The present and future of private schools depend, not on Acts of Parliament, or the Board of Education, or careful diplomacy, but on the strong desire of many parents that their children should have *personal* training. There is to-day more than room for both kinds of school. Only by having both sorts can we preserve the sweep and scope of educational effort against the continued tendency to decadence. We need both sorts, "Lest one good custom should corrupt the world."

Dr. SIBLY proposed a warm vote of thanks to Sir Ryland Adkins. He said members of the educational bureaucracy too often were not content with perfecting the public system, but desired to destroy private schools by taking away their independence. The Moral Training Association was agreed unanimously only on two things (1) that the personality of the

teacher is of supreme importance, (2) that State systems tend to fetter that personality.

The vote was seconded by Rev. F. W. AVELING, M.A., B.Sc. and carried unanimously.

#### REPORT OF THE HON. SECRETARY.

Good work had been done in the year by the representatives of the Private Schools Association on the Joint Committee. They, with the representatives of the Teachers' Guild and of the College of Preceptors, had unanimously passed resolutions affecting the future and the welfare of private schools. Most of these resolutions had been accepted entirely by the three bodies represented. The most important deliberations of the Council had been concerning the movement of the Consultative Committee to establish one uniform examination for entrance to all the professions, such examination to be open only to scholars from a recognized secondary school. The injustice of such a scheme is patent. It would close the door to any child from an elementary school, and to all the private-school pupils except from twelve schools. It is almost impossible for a private school to get recognized, however good its work, unless it has unlimited capital. It is expected to have as fine buildings and apparatus as schools paid for by the rates. Such a plan would tend to a dead-level uniformity and increase cramming. A similar scheme tried in Wales is condemned emphatically by the Reports of the Board of Education. "It has been done largely at the expense of the independence of the school, and by a certain sacrifice of the interests of the majority of the children. . . . The Welsh experiment of establishing one school examination may be said to have broken down" (Report for 1911). "It makes it difficult to adapt the curriculum . . . to the peculiar needs of the locality" (1907). "Originality on the part of head masters finds no scope" (1909). The Council is strongly of opinion that the Board of Education should widen the term "efficiency," and consequently the list of efficient schools. The mission of the Private Schools Association in 1913 will be to show the public that as good work is being done for education by schools free from inspection, free from State interference, free from support of the rates, as is being done by the "bounty-fed," "protected" Council schools.

On January 8, in the morning, Rev. CANON MASTERMAN gave a splendid address on "The Educational Value of History." History is the record of human evolution working out the "beast." The distinction between ancient history and modern is sound. Christianity and the Teutonic type of character have guided modern history. The "nation" emerged. Then arose the question how to harmonize loyalty to the nation with loyalty to humanity, group loyalty and human loyalty. The supreme problems of national life are (1) Work, (2) Rest, (3) Worship. The three corresponding departmental sides are (1) Economics, (2) Military History, (3) Religious History (not yet written). The child must be taught that it is not an isolated unit, but a part of a greater whole. Local history is very useful. Never despise the parish pump. The historian is not the antiquarian; for history teaches the past with regard to the present and the future. The value of "influence" should be taught. History is not the inevitable outcome of the *Zeitgeist*. Teaching history should develop sympathy, imagination, truthfulness. (1) Children should be brought into fellowship with noble causes and persons. History is not a glorified *Police News*. (2) We are defective in imagination. Magnanimity depends on it. (3) The historian tries to keep the right balance of truth. The modern press is very slovenly as to facts. A partial historian like Froude does no harm, so long as he does not pretend to be impartial. History and literature should be linked together. History teaching should be brought down to modern times that would lift politics to a higher atmosphere. It should be taught by a man specially interested and instructed in history, as French is taught by a specialist.

Mr. MAXWELL, M.A., LL.B., gave an address on "Examinations in Secondary Schools," pointing out the erroneous course which the Consultative Committee proposes.

In the afternoon the Hon. Mrs. FRANKLIN gave an address on "The Child's Share in its own Education." The child has as real a hunger for learning as for bread and butter, Tabloids of information are bad. Children should get their

knowledge at first hand from books. The Parents' Union had fifteen hundred children in their schools, and thirty or forty private schools used their curriculum. Children of nine relished Plutarch's "Lives" and children of six "The Morte d'Arthur."

The Rev. G. H. MOORE, M.A., gave a paper on "The Influence of School on the Manners of the Child." We were less rough in our manners than those of a generation or two ago, but the influence of the teacher seemed not to touch the pupils after leaving school so much as it ought. Teachers should look on their characters as having greater influence on the children than their skill in imparting knowledge.

All these papers were followed by animated discussion.

#### MEETING OF TEACHERS IN PRIVATE SCHOOLS.

On January 10 a conference, summoned by the College of Preceptors at the instance of the Private Schools Section, was held to consider the position of private schools in view of possible legislation or administrative action by the educational authorities. Dr. F. ARTHUR SIBLY, in the chair, was supported by the members of the sectional committee and by the Rev. F. W. Aveling, M.A., B.Sc., and Mr. S. Maxwell, M.A., LL.B., representing the Private Schools Association. The audience, though not very numerous, was thoroughly representative, many having travelled far in order to be present. Dr. Sibly explained clearly the different proposals as to registration, leaving certificate, and pension scheme, showing how these are likely to be prejudicial to private enterprise unless some meaning can be attached to "efficiency," which will prevent the exclusion of many excellent schools from the general scheme.

The following resolution, introduced by Mr. MILLAR INGLIS and Mr. MAXWELL, was passed unanimously:

That this Conference desires to warn the owners of efficient private schools of the dangers which beset them, and to urge upon them the necessity for organized action in defence of their interests and ideals.

A motion by the Rev. F. W. AVELING, supported by Mr. T. S. WHITE, dealt with the best methods of securing the recognition of those private schools which could satisfy reasonable requirements as to accommodation and staff. This provoked considerable discussion, and drew an eloquent and inspiring speech from Mr. JOHN BAYLEY, of Wellington College. Finally the motion was withdrawn in favour of one proposed by Mr. G. P. DYMOND and supported by Mrs. FELKIN and Mr. KING.

That this Conference desires that the *original* resolutions of the Joint Committee of the College of Preceptors, the Teachers' Guild, and the Private Schools Association should be regarded as the basis of negotiation with the Board of Education, and expresses the hope that a joint deputation of these three bodies will bring them before the Secretary of the Board at an early date.

This met with the cordial approval of the meeting, which was throughout alive and practical, and we feel sure that the Council of the College, in calling this Conference, has done much to encourage those who have the cause of private schools at heart, and to further the cause itself, while we believe it is bound to result in an accession of strength to one or to both the bodies represented at the Conference.

Mr. JOHN GEORGE HOLLWAY, who was at Rugby with Tom Hughes and who figured as one of the characters in "Tom Brown's Schooldays," died at his residence at Worthing on December 30, 1912, in his ninetieth year. Mr. Hollway was one of the seconds in the famous fight between Tom Brown and Slogger Williams, the circumstances of which were recalled in the *Times* of October 1 upon the occasion of the death of the Rev. Augustus Orlebar, who was the original of Tom Brown himself. Mr. Hollway was a member of Dr. Arnold's house, and played in several Rugby football matches against the "Rest" of the school.

## THE MODERN LANGUAGE ASSOCIATION.

ASSOCIATIONS associate with one another. Communication is no longer evil. The splendid isolation of educational societies is a lost cause. The Conference Week, so long projected, has opened the year 1913 with thirteen adherent associations, free from numerical superstitions. An educational orgy someone called it; an educational banquet, another, at which it would be possible to taste of almost every course, so deftly had the bill of fare been constructed.

Nor need those who do not like a mixed diet have gone away unsatisfied. The Modern Language Association, for example, devoted two whole days to foreign dishes, served in some instances with classic and native seasoning. The President, witty and wise, supplied Attic, and Celtic, salt. More than one speaker showed that the enjoyment of new-fangled foreign kickshaws had not spoilt his taste for the old-fashioned joints of Hellas and Rome, for the roast beef of old England.

Comprehension, not exclusiveness, was the note of the meeting, a recognition of the qualities of others and of their necessity to ourselves. The Modernist ploughs no lonely furrow. Modern culture, he knows, is rooted in the soil tilled by the Greek and the Latin. He has his part in the harvest housed by the phonetician and the elocutionist, by the philologist and the man of letters, by the geographer and the historian.

The President's address was marked by this comprehensive spirit: "An education based upon a knowledge of Nature and upon living languages is the best education for the majority of citizens in a modern State, and such an education must be national, not international, not cosmopolitan. Its aim must be the ability to employ and enjoy the mother tongue, and its supreme achievement to give the good citizen a mastery of the mother tongue." Should not the Public School Science Masters' Association and the English Association applaud? "This position brings us up against the so-called Classicists, the too timid friends of Greek. We have had a bitter experience in Oxford, where those too few—but true—believers in the intrinsic merits, the essential utility, the indestructible charm of Hellenism and Hellenic studies have been overborne and silenced for the nonce by the cacophonous cries of craftsmen and temple-sweepers shouting: 'Great is compulsion. Great is the irreducible minimum of Greek. Great is the image that fell from heaven. Great is Artemis Diana of the Oxonians.' There is more of the fine spirit of the true Hellenes in the modern's light cavalry than in the whole phalanx of the compulsory Greeklings. The ancient Greeks were 'monoglots.' From Homer to Demosthenes not one of their great men of letters shows any knowledge of barbaric—that is, non-Hellenic—languages; but they were thorough masters of the mother tongue and the national literature." Here again the English Association might applaud. "For my Alma Mater to believe that a subcutaneous injection of a minimum of Greek into everyone is a *sine qua non* for the maintenance and spread of Hellenic studies is a lamentable *non sequitur*. Analogy points to an exactly contrary result. You vaccinate everyone to arrest the spread of small-pox. Our compulsory inoculation with a minimum dose of Greek letters is the chief factor in arresting the growth and development of a genuine enthusiasm and fever for Greek culture." Part, at any rate, of the Classical Association could applaud here.

The President then spoke of the value of the "actual vision" of antiquities and art, of the value of history and geography, and of translations. Would any member of the Classical, Historical, Geographical, or English Associations refuse to applaud here? A few days ago the Master of Trinity was once again speaking in favour of translations before the Classical Association. Mr. Stanley Leathes, the "arch-examiner," has chosen the right moment for his articles in the *Times Educational Supplement*; it is evident that the moment is ripe for the association of history with literature. Miss Ryan spoke of it in her paper as new. It is not new. It has always been the practice of many sound teachers, who will be encouraged by this general recognition of the soundness of their practice. Mr. Mackinder may desire to annex

history for geography; the Modern Language Association desires an *entente cordiale*, if not an alliance, with both.

The President concluded with the history of the progress of modern language studies at Oxford since the Taylorian foundations of 1847. He reminded his audience that the insidious proposal in 1894 to admit Letto-Slav raised the fear of the invasion of Oxford by the Balkan barbarians, so that no foreigner was admitted till 1903. This led to the disastrous severing of English from modern language studies. "There is a prospect of their immediate fusion at the very moment when the Balkan barbarians are coming to their own in another way." The news of this victory for the true faith was followed later by Mr. Cloudesley Brereton's announcement of another triumph, the foundation by the London County Council of two chairs at the University of London, one for Modern French and one for French Life and History.

The papers on "The Literary Element in the Teaching of Modern Languages" and that on "Rostand" were a sufficient answer to the old gibe against *courier* French so often repeated by the classicists and other critics of modern languages and modern methods.—Miss ASU reminded her audience that, of the many who learn modern languages, but few have the opportunity of speaking them. For the many the reading of books must be the goal. Foreign books open a new window to the pupil and give wider sympathies as well as wider knowledge. The choice of books, then, is important. Molière, for example, must not be attempted too early. The enjoyment of literature postulates ease in reading. In examinations co-ordination is required; too often, unrelated books are set—e.g., "Les Femmes Savantes" and a work by Erckmann-Chatrian.—Miss RYAN remarked that, when examinations come in at the door, ideals fly out of the window. The seventeenth century should be chosen before the nineteenth. The vocabulary is smaller; it is the culminating point of French literature; the society of the time is concentrated; a knowledge of the time before Rousseau is essential; modern criticism can be read at the same time. Intensive teaching of the nineteenth century is not so necessary. Pupils feel readily at one with the Romantics.

Mr. KITTSON urged the teacher of French to become a Frenchman for the time—i.e. to be courteous, chivalrous, and intellectually vivacious. He must sparkle. The chief difficulty in understanding French is that the Frenchman can never be serious. His serious work is full of sparkle—e.g. Pascal or Voltaire. In teaching German the master will have as his ideal the geniality, the inflexible industry, the enthusiasm, the unflinching devotion to duty of the German. These qualities he may illustrate in reading "Der Schatzgräber" or "Das Lied von der Glocke." History may be taught—in conjunction with a large part of literature (e.g. the Seven Years' War)—with "Lenore" and "Minna von Barnhelm."

The importance of literature, and of contemporary literature, was further driven home by Sir HUBERT JERNINGHAM'S paper on "Rostand" with its discussion of the poet's art and moral ideals. Rostand's debt to Coquelin was well emphasized. That literature is no paper art was illustrated at another educational meeting by Mr. Granville Barker. Sir Hubert Jerningham's audience must have regretted that he did not read more of Rostand's verse.

Prof. CAZAMIAN'S paper on the political development of the modern Frenchman brought out the community of ideas between the English and the French. The Frenchman is becoming serious, as we may see in "Jean Christophe." His mind is occupied with the improvement of his country. Like the Englishman, he is cross-questioning himself in order to understand himself better, to win the victory over himself; "d'autres peuples sont occupés à s'affirmer, à s'imposer." In this self-discipline English games are playing their part. Youthfulness attracts both nations. Tolerance, respect for law, self-control increase. The courageous calm during the Morocco crisis, which excited the admiration of Englishmen, seemed quite natural in France.—The teacher of modern languages will draw a private moral for himself from all this. He must keep closely in touch with foreign lands if his teaching is not to become antiquated.

And how is the ideal of the Modernist to be attained? This question was discussed by Miss FOWLER and Prof. MILNER BARRY in papers on "Modern Language Courses at



the University, with Special Reference to Teachers," and by Mr. CLOUDESLEY BRERETON in "Suggestions for Improvements in the teaching of Modern Languages." One point deserves special notice—the demand that part of the University course shall be taken at a foreign University.

The number of speakers on the various subjects for debate proves the keenness of the modern language teacher. Criticism he does not shirk, but it is fitting to end with the note of friendly association. At the dinner of the Modern Language Association the President referred to his forty years' fight against the critical Oxford spirit, and suggested that mutual admiration was not altogether unwholesome. We may hope that the era of suspicious specialization is drawing to a close.

## THE GEOGRAPHICAL ASSOCIATION.

THE officers of this Association should feel highly gratified at the remarkably good attendances that marked the meetings at the University of London on Thursday, January 9. The proceedings fully occupied both the morning and afternoon sessions. At the former the chair was taken by Mr. H. J. MACKINDER, M.P., who, after a paper had been read by Mr. C. B. Fawcett on "The Teaching of the Cycle of Land Forms in School," opened a discussion on "The Teaching of Geography and History as a combined subject."

A General Meeting occupied the first part of the afternoon's proceedings, and after the business set out in the agenda had been satisfactorily transacted the new President for the ensuing year, Prof. E. J. GARWOOD, M.A., delivered his presidential address on "Arctic Glaciers and Glaciated Features of Britain." This was followed by a short description and exhibition of a set of inexpensive instruments for teaching the elements of geographical surveying in schools by Mr. E. A. REEVES, Instructor in Surveying to the Royal Geographical Society.

### THE CYCLE OF LAND FORMS.

Mr. C. B. FAWCETT began his paper on "The Teaching of the Cycle of Land Forms in School" by laying stress on the fact that, in order to overcome the difficulties experienced in obtaining a ready conception of the ordinary terms applied to land surface features, it was essential that some system of classification be adopted which was at the same time simple and yet capable of wide explanation. The Geographical Cycle, or as it was sometimes termed, the Cycle of Land Forms, secured a convenient and sound basis for such a system, for by its adoption the sequence of incidents that resulted from processes in land changes—especially, for example, from such a process as erosion—might be readily grouped and fully explained. To illustrate this point he gave a detailed summary of the many changes that were associated with surface formations, changes which might be regarded as simply dependent on, or as functions of, structure, process and time. In particular he directed attention to those changes which are included under the general term "erosion" as being of most importance from the educational standpoint. A conception of the development of land forms during successive cycles of time could, he said, form an effective aid to education, but to enable the student to put such opportunities as were afforded to the best possible advantage he must be trained to use his eyes, for, as he emphasized, no amount of descriptive power on the part of the teacher could compensate for want of observation on the part of the student. Practical work was essential, but if it was to be effective it must be thorough. Detailed observations over relatively small areas were of more educational value and importance than incomplete notes on a widely extended area. Teachers should therefore select some simple stream or valley and allow students to follow its course for not more than a mile or so, taking notes, and sketches where applicable, of all changing features in the

contour of the ground; variation in direction of flow, changes of level, rate of flow, change of gradient and so on, afterwards using these notes and sketches to assist them in their own deductions. The adoption of a systematic course applied to a small area such as indicated should, he inferred, make a sound basis for a more extensive survey. This method of instruction would be rendered more efficient if students had the additional help that is to be derived from the use of good maps, and it might even be extended to develop the facility of reading a land surface from maps alone. Pictures also would be found useful in the elementary phases of the work, but such pictures should be illustrative of scenery rather than mere line diagrams, and well constructed scale models could be used with advantage. The whole idea of the cycle of land forms was to form a standard of comparison and lead to a ready conception of the gradual development of land surface features, so that constant reference and comparison should be made with the terms adopted in the cycle. From the practical point of view if a stream or valley was influenced by change of geological formation so much the better, for a knowledge of the geological epoch was useful, and when coupled with a knowledge of surface conditions would enable the student to form an approximate estimate as to the geological age of the land forms he was studying; to place them, that is to say, in their chronological order as old, mature or young, information would be of immense importance in appreciating the extent of the influence exerted by the topographical conditions of a country or locality on its economic arrangements; the situations of its industrial centres; the distribution of its population and the arrangement of its internal routes of communication, matters which hardly came within the limits of purely physical geography.

### HISTORY AND GEOGRAPHY.

Mr. H. J. MACKINDER, in opening the discussion on "The Teaching of Geography and History as a Combined Subject," said that what he was about to deal with was a question of great importance, since History and Geography were now being introduced as a joint subject in some syllabuses, and he considered that a great opportunity was being offered for evolving a real combination which would lead eventually to some really progressive educational work. Personally he was not an advocate for teaching the two subjects jointly so far as the training schools were concerned, but he did consider that in the upper half of elementary and in the lower tiers of secondary education these subjects could advantageously be taken in combined form provided the teacher responsible knew both subjects, and above all knew them efficiently. To those who might raise the objection that too much was being demanded of the teacher he would reply that such a criticism was based on purely temporary difficulties, so that by the steering of a carefully laid course it was not impossible to reach the end in view. Turning his attention to the aim in teaching, teachers, he said, had far more to do than to arouse an interest in Nature and in the laws of Nature, although this was undoubtedly a great thing and one that would impart a deal of pleasure in after life. What they had to keep in mind were the three fundamental elements of education; the teaching of the three R's; the training, by apprenticeship or otherwise, necessary to give a means of livelihood, and lastly the instruction that was calculated to produce good citizens, instruction that would give that sense of proportion and perspective of outlook that could only be derived from their own study of the humane letters. To know the rudiments of geography or history, as such, was not an essential feature in education. What was wanted was such a combination of the two as would give a knowledge of the world, for to nine out of ten of the children who would eventually constitute the people of this country and be responsible for carrying on its traditions the thing that mattered was an outlook, a roused curiosity with regard to the world in general, a knowledge, that is to say, of time and space, those fundamental world characteristics. To visualize, then, any particular event, time

and space constitute the necessary elements. To fully appreciate the significance of the recent affair in the Balkans, which was the result of consequences in the past and might have consequences in the future, not only must there be a firm conception of the geographical environment but it must be possible to trace the sequence of events from the past out of which they come. The fundamental idea of the whole scheme of training was to give to the student that power which would enable him to distinguish claptrap from reality, which would instil in him that sense of proportion which was the necessary factor in the selection of the important in the affairs of life. Admittedly this was a high aim and one that would necessitate the cultivation of a wider outlook in order to meet it. The ultimate aim, then, of the teacher must be to make neither the geographer nor the historian of the child, but to transform him into that ultimate ideal, the good citizen.

## ASSOCIATION OF ASSISTANT MISTRESSES IN PUBLIC SECONDARY SCHOOLS.

### TWENTY-NINTH ANNUAL MEETING.

THE Association of Assistant Mistresses was one of the thirteen Associations which took part in the Conference week held from January 6 to 11, at the University of London. The idea of such a conference of educational Associations emanated from the late Mr. Herbert Garrod, and was carried out for the first time this year. In common with many of the other Associations concerned, the first part of the proceedings at the Annual Meeting was private to A.A.M. members, but after the transaction of necessary business the meeting was thrown open.

The various reports of the work of the Association during the past year dealt with matters of peculiar interest, especially in three directions. The formation of the Secondary, Technical and University Teachers' Insurance Society, the advance made with regard to pensions for teachers, and the establishment of a Teachers' Registration Council were educational events in which the A.A.M. had its full share. In consequence of the Insurance Act, secondary teachers determined to form an approved society of their own. This is now a flourishing institution with between nine and ten thousand members, with Dr. McClure as Chairman, Canon Lyttelton, Sir John Bethell, and Sir Arthur Haworth as trustees.

Considerable advance has been made with the question of pensions for secondary teachers. During the early part of the year the Joint Pensions Committee was engaged in trying to produce a workable scheme of superannuation. On May 9 the Chancellor of the Exchequer kindly consented to receive a deputation. Mr. Lloyd George said he was prepared to assist teachers in grant-aided schools, but as yet he has not seen his way to including teachers in other schools, not even in those recognized by the Board of Education as efficient. The President of the Board has since appointed a Departmental Committee to consider the matter. Miss Lees, on behalf of the A.A.M., gave evidence before this Committee on October 24. It is impossible as yet to say what the final details of the scheme will be.

Last year saw also the issue of an Order in Council for the formation of a Teachers' Register. The Registration Council now exists, and is a very representative body—each of the four classes of University, Secondary, Technical, and Elementary teachers having 11 representatives. The A.A.M. is very grateful to Miss Lees for undertaking the arduous work of representing the Association on this Council. At its next meeting the Registration Council begins its real work, namely, the consideration of the qualifications necessary for admission to the Register. This, therefore, formed the main subject of discussion on Saturday last, as it is important that the wishes of the Association should be known to its representative. As far back as 1906 the A.A.M. had declared in favour of a high standard of academic qualification, a year's

training of some kind, and at least one year's experience in a school recognized by the Board of Education as efficient. Resolutions reaffirming this declaration were now again passed unanimously. In the light, however, of the experience gained since 1906, it was felt advisable to express a more definite opinion as to the nature of the high standard of qualification desired, especially as there is now far greater specialization among teachers than obtained seven years ago. The following resolutions, introduced by Miss Lees, were agreed to unanimously:—

That a University degree or its equivalent should be required of all those engaged in teaching ordinary literary or scientific subjects.

That for all those engaged in teaching special subjects, such as gymnastics, needlework, cookery, art, music, &c., the appropriate qualifications most nearly corresponding to a degree should be required.

That teachers engaged in Kindergarten and other forms of preparatory teaching should also be allowed special qualifications, with less stringent academic requirements.

The meeting then proceeded to consider a problem which presents far greater difficulties—namely, the case of existing teachers and the qualifications that should be insisted on before they are admitted to the Register. It was felt that many of those who had been teaching from twenty to thirty years might very well not have "a University degree or its equivalent," and also that many a teacher who had not been to a training college would still be a valuable member of the profession from the fact of the experience gained during twenty or more years of teaching in an efficient school. After considerable discussion, the following resolutions were passed:

That special conditions should be made for existing teachers who apply for registration within one year after the date of application is fixed. (a) Five years' experience in schools recognized as "efficient" by the Board of Education, or capable of satisfying the Registration Council that they are efficient; or (b) Training, in addition to two years' experience in schools recognized as efficient by the Board of Education, or capable of satisfying the Registration Council that they are efficient.

The last business of the private part of the meeting was the consideration of the threatened curtailment of holidays in certain secondary schools. Miss CLEAVE (Grey Coat Hospital) moved the resolution:

That in the opinion of this Association it is necessary for the good working of a secondary school that adequate holidays be allowed, and that this Association considers that a minimum of thirteen weeks is essential.

She pointed out that in the north of England the holidays were already sometimes less than thirteen weeks; that some Local Education Authorities hardly realized the necessity of a certain length of holiday, if scholarship was to be maintained and the freshness of the teaching was to be unimpaired. In some cases Education Authorities seemed to think that the work of the teacher was done as soon as the school closed and were genuinely surprised to hear that teachers prepared their lessons. The resolution was carried unanimously.

The second part of the meeting, thrown open to other Associations, began with the address of the President, Miss I. M. DRUMMOND, of the North London Collegiate School. She took for her subject "The Scientific Study of living things as an element in Education." She regretted that there was so little real training in biological thought, and urged that Biology not only provides a sound training of the mind but enriches the mental content, and that never was it more necessary than in the present day to have a high ideal of a liberal education.

This was followed by an address from Miss H. L. POWELL, Principal of St. Mary's College, on "The School's Preparation for Vocation." Miss Powell, in an inspiring speech, argued that the function and aim of schools should be first, by means of a liberal education, to produce good and capable men and women, who, thus trained, would be able to devote themselves afterwards to the further study necessary for any special career on which they might decide. She then sketched in general terms her conception of a liberal education.

The meeting closed with a hearty vote of thanks to Miss Powell, proposed from the chair and carried with acclamation.

## THE MATHEMATICAL ASSOCIATION.

THE Annual Meeting of the above Association was held on January 8 at the London Day Training College, Southampton Row, and was very well attended. It opened with an able and interesting address by the President, Prof. E. W. HOBSON, who spoke on the subject of "Elementary Geometry," laying some stress on the misunderstanding, the confusion even, which has arisen as a consequence of the failure to distinguish clearly and consistently between theoretical or abstract geometry and practical or physical geometry. To take a single example, consider the lavish waste of time implied by all the oft-repeated efforts to achieve what is now proved to be impossible, namely, the trisection of the *general* angle and the quadrature of the circle by pure Euclid. The *construction* of points by the aid of instruments is a practical and physical process, and is therefore liable to the errors incidental to all work executed by means of material implements and mechanical contrivances. The *determination* of points, as Euclid defined them, is an idealized operation capable only of being carried out mentally, and even then the visualized images appear as the imperfect diagrams which we draw. The speaker proceeded to discuss the possibility of dispensing with the ruler and retaining the compasses only for all Euclidean constructions. Enunciating a short series of connected problems of which the solutions were briefly indicated, he showed that, although we can in Euclidean geometry determine a point in three different ways—namely, (1) as the intersection of two straight lines, (2) as an intersection of a straight line and a circle, (3) as an intersection of two circles—yet the first and second methods may be reduced to the third, and hence the cardinal points of any Euclidean figure may be constructed with compasses only. In one respect, however, methods (2) and (3) are inferior to (1), since either of them determines, in general, a pair of alternative points, whereas (1) determines a unique point. The President indirectly drew attention to this ambiguity by his reference to Euclid's solution of Prop. I of the first Book of the "Elements." The complexity of figures which would arise from the exclusive use of (3) can be greatly reduced by geometrical dexterity, and it was recommended that within due limits clever pupils should be encouraged to apply not only the above ideas, but also other modes of performing Euclidean constructions with the aid of one instrument only instead of two. The subject naturally suggested allusion to Mascheroni, Adler, Poncelet, Steiner, and others, who have devoted attention to investigations of the kind.

A paper on "Map Projections," illustrated by a series of excellent lantern slides, followed the Presidential address. Mr. E. M. LANGLEY, who gave it, indicated briefly some of the principal types of projection, discussing their application to the preparation of maps and astronomical diagrams.

One more item completed the morning program—namely, a somewhat exhaustive paper of a practical character dealing with the relation of a purely mathematical training to a career successful from a worldly point of view. This was contributed by Prof. G. H. BRYAN, but, owing to his unavoidable absence, it was read by Mr. C. Pendlebury. The prospects of the purely mathematical expert are, we are told, extremely limited. Inside the teaching world good appointments demanding an intimate acquaintance with mathematics alone are few as compared with the number of those who aspire to obtain them. Outside the profession of teaching the outlook is far worse. On the other hand, the proficient mathematician who has also had the advantage of a training in applied science can command much, and his knowledge of mathematics is an invaluable asset to him. This paper gave occasion for some general discussion, but the time available was very short.

At the afternoon session various business details first occupied the attention of the meeting. Those present cordially approved the nomination by the Council of Sir George Greenhill, F.R.S., to be President of the Association for the years 1913 and 1914. They also accorded an enthusiastic vote of thanks to Prof. Hobson, who has held the same office during the past two years, and who now becomes a Vice-President and an honorary member of the Association. A ballot took place for the election of two ordinary members of

the Council, Mr. W. E. Paterson and Mr. C. O. Tuckey obtaining the largest numbers of votes.

The afternoon papers bore directly on the school teaching of mathematical subjects. Mr. G. ST. L. CARSON'S suggestive paper on "Intuition," more especially in its relation to the teaching of Geometry, promoted considerable discussion as to what the term "intuition" really implies, and the extent to which a teacher is to accept as such the many "intuitions" of his individual pupils. The President held the view that the word "intuition" is variously interpreted by our great thinkers, and he supported his argument by referring to Locke's definition of the term as "an innate idea" comparing this with the use of the German *Anschau* as an equivalent. The remarks of the several speakers, and notably those of Prof. HOBSON, constituted a very valuable discussion.

In her able paper which followed Miss M. E. BARWELL pleaded for the inclusion in the school teaching of mathematics of some of the history of the subject. She maintained that by a connexion of the history of the growth of mathematics with instruction in the various branches of the science, the interest of the pupil is kindled and maintained, so that a study, say, of arithmetic or algebra ceases to be that of a subject apparently shut off from capability of development, and becomes that of a structure whose past growth furnishes a promise of further expansion. Moreover, the pursuit of mathematical knowledge is by this means endowed with the fascination of a living environment. Miss Barwell illustrated her paper by diagrams, one of which showed the Egyptian mode of representing a number extending into millions. Prof. HOBSON remarked that in one respect the cumbersome Egyptian method is superior to the Roman notation, for the former is entirely additive in principle, whereas the latter involves subtraction as well as addition.

The final paper was contributed by Dr. W. P. MILNE, and dealt with the teaching of scholarship candidates in secondary schools. He deprecated the way in which he considers that the needs of the specially bright pupils have been overlooked of late as compared with those of the rank and file in our schools, for the improvement in whose teaching such strenuous efforts have been and are being made. Nevertheless, it is to the brilliant few that we must look for our future strong men and women. On transference to the University the scholarship holder suffers incalculably, we are told, on account of the absolute discontinuity between the school and University methods. Dr. Milne takes a decidedly pessimistic view of the situation, and it was therefore consoling and reassuring to hear the modified opinions of later speakers. Whilst fully admitting that the existing conditions are far from satisfactory, they could yet note a steady improvement in them and could take a hopeful view of the future.

An interesting exhibition of books and objects bearing on mathematical and scientific work had been arranged by the Mathematical Association in conjunction with the Association of Public School Science Masters. Amongst the exhibits we must not linger, but in their relation to his paper we may venture to call attention to Mr. E. M. Langley's useful cardboard models, and to his excellent drawings of various projections of solid figures. These have all been designed to aid the teaching and study of solid geometry and kindred subjects. With the help of a small and extremely simple instrument a stereoscopic effect was obtained in the case of the flat drawings. They ceased to appear flat and created the impression of being skeleton solids.

THE appeal which was recently issued with a view to raising a memorial to the late Sir Nathan Bodington, who was Principal of the Yorkshire College and first Vice-Chancellor of the University of Leeds, has evoked a gratifying response. A total of over £1,000 has already been received in subscriptions varying from 5s. to £50. In addition, it is understood that a portrait of the late Vice-Chancellor, which is to form part of the memorial, will be presented privately.

"By failing to use the language of the hearth (Welsh) in teaching the infants," says the annual report of His Majesty's Inspectors on education in Flintshire, "the school is made a strange and uncomfortable place for them."

## THE EDUCATIONAL POLICY OF THE GOVERNMENT.

### SPEECH BY LORD HALDANE.

THE Lord Chancellor delivered a speech at Manchester on January 10. A great part of this speech dealt with education. The proposals indicated are so important that we think it worth while to reproduce from the *Manchester Guardian* the greater part of those passages in the speech which referred to education. Lord Haldane said:—In these days, when, I rejoice to think, education is the order of the day everywhere in all civilized countries, other nations are competing with us and coming up on our heels, and it is not by slackening effort or being behindhand that we can do what is necessary to be done. The problem of the coming generation is a problem which we have to face. It is the problem which we have been considering, and which I am now going to say to you—I say not casually, or with any light sense of responsibility, but after consultation with the Prime Minister and with the Chancellor of the Exchequer. We have decided that this question is the next and the most urgent of the great social problems which we have to take up. Of course, it is education, and in what I am going to say I say after consultation not only with Mr. Asquith and Mr. Lloyd George, but also with my colleague and friend Mr. Pease, with whom I have been in very close consultation over this matter. Speaking for myself, I long ago took off my coat to this business. I have been for four years chairman of a Royal Commission on University Education, which has been a great education to me, because I have learnt how utterly chaotic and backward is the state of education, elementary, secondary, and higher, in this country. My colleagues and I feel that the time has come when a step forward must be taken on no small scale, and the Chancellor of the Exchequer sent you a second message that his heart is in this question just as it was in the insurance question. He is ready to throw himself into it with wholeheartedness.

### AN AFFAIR OF THE SPIRIT.

Education to some has represented a religious controversy; to others dreary figures about salaries and pensions to teachers. This arises partly from the fact that the nation has never been sufficiently interested in education to stir up its leaders about it. The leaders have not thrown themselves into the question of education sufficiently to stir up the nation. I think the time has come for the leaders of the nation to make an effort. That is what the Prime Minister thinks and what the Chancellor of the Exchequer thinks. How is it to be done? Education, if it is to be interesting, must be an affair of the spirit. It must be an endeavour to raise the intellectual, moral, and spiritual faculties of the people—of those children for whom we are deeply responsible who will constitute the future generation, and on whose superiority to the generation of to-day depends the superiority of the country over its competitors, its growing competitors in the days that are to come. It is worth while making a sacrifice to bring about this result, and it is worth while making it the third of those great stages in the solution of the social problem with which we set ourselves to deal. Do not let us be under any illusions. It is a tremendous question—this question of education—when taken up on a very large scale. It is a costly question to take up. But I wish to point out to you that the expenditure is productive expenditure. Again, I say that in looking at the balance-sheet of this matter you must not look only at the debit balance. To have a nation such as this educated as it should be means that your chance for old-age pensions will be smaller, because there will be fewer people left in that class. Your income tax will yield more, because there will be more people to tax. The taxes will yield more because the production of the country will be more. Education means increasing the power of production, and social shortcomings will be less with an educated people. If you put these things together, and if you add to them that we must increase and keep up the increase of the capacity of the country in the production of the world, then I say that the case for education on a great scale, even though it involves some sacrifice, is irresistible. No doubt this has been an

expensive year. We have spent twenty millions on social reform, and I am not sure that that was not a very economical expenditure. . . .

### MAKING EDUCATION INTERESTING.

Education depends on making things interesting to the boy and girl who are being educated. It has been a dull subject, and what we mean to try to do is to make it an interesting subject. I wish we had Matthew Arnold again among us to write of education as he wrote of it thirty-five years ago, and to be our prophet with his instinct for what is real and what is genuine. I wish we had him to give an exposition which would have gone far to enlisting the sympathies of many who think too little about education. You know there are a great many people who do not like education. The rate-payer does not like it, and I have a great sympathy with the rate-payer, as his burden has been very heavy. What is going to be done for the next generation must not be done at the expense of the rate-payer—of that I am certain. But, on the other hand, if we have not Matthew Arnold we have one or two object lessons. I come from a country where democracy is very largely in evidence, where the barriers between class and class are much less than they are here. We believe in education as a tradition. We love education, and we have a University for every million and a quarter people, whereas you have only a University for every three and a half million. People go by what is called the educational ladder from the bottom to the top, and what has been true of Scotland has become true of Wales. The Welsh people have organized their education system so as to make it thoroughly interesting to the democracy, and the democracy subscribe to it—to University, colleges and schools—and do things of which my friend Lord Sheffield knows, and on which he looks with envy. That being so in Scotland and Wales, I do not see why we should not make it so in England. But if we are to make it so, we must make it quite plain what education means to the democracy.

### WORKING FROM THE TOP DOWNWARDS.

I come to another thing which is most important. We must work from the top downwards. We have a wealth of high educational material which we can bring to bear. That, of course, means we shall have to constitute larger areas than those of counties. It may be that we shall have to group together those counties in which the University interest may centre for secondary schools and for the training of teachers. A great deal is being accomplished in every direction. Let me say that the progress that is being made, and that has been made, is very remarkable. First of all you have your great civic Universities. Those Universities have made enormous strides. The Manchester University has made enormous strides. The Liverpool, Leeds, Sheffield, Bristol, and London Universities have made great strides. Newcastle, that is now part of the University of Durham, has made immense strides, and the result is that there are now eight new Universities, which I call civic Universities, for all the energy of civic life is thrown into their organization. Then you have the University of Wales, and two more Universities in Ireland, and you have four Universities in Scotland. So that you have the machinery through which we can work from the top. There can be no doubt as to the success of the Act of 1902, for which I have always had a weak side. It has done enormous work to enable education to become a wider subject by altering areas and breaking down barriers between elementary and secondary education. That has prepared the ground. And, finally, as regards secondary education, which is our worst and weakest spot, something has been done.

### TEACHERS: THE RELIGIOUS QUESTION.

Then there is the question of teachers. We depend greatly upon the quality of our teachers, and we must turn attention to improving our teachers by making the profession more popular. There are the new Universities with increased scope and value, and I think we ought to be able to do something substantial in that direction. You will ask me what about the religious question, which I have not mentioned. My answer is that if we can make education the main element in it, if we can put that before our minds to the diminution of everything else, we shall take the religious question in our

stride. I do not think it difficult to find a solution as we go along to the religious question. Try to deal with it in the abstract and you will find yourself up against fixed bayonets, the bayonets of the Established Church and of Nonconformists; but take the thing from a larger point of view and you will find these things settle themselves and will find a disposition to give rather than to take in order to gain something which is essential in the interest of the whole nation, and which represents what is real in our national life.

#### GREAT REFORM TO BE ACCOMPLISHED.

I have sketched out to you a very formidable program, but we take the view that this is perhaps the most important of the social problems that remain—not the only one, for there is that of the land and others to deal with, but this great question of national education goes to the root of the future. We feel on ourselves as the Government a sense of deep obligation to grapple with it, and the Prime Minister and Mr. Lloyd George have authorized me to tell you that is their view. I am not speaking altogether in the air, for we have been busy with the experts for some time, and I should not have ventured to speak to you if we had not seen pretty clear the path along which we were going. When you come to work out these things comprehensively it is marvellous how the difficulties disappear, and speaking for myself, if the Liberal party will back us up, and, above all, if the country will back us up, I see no reason to despair of our accomplishing, and accomplishing rapidly, such a reform in our educational system as shall put us at least on a level with any other nation in the world. If we can do that we shall get back all the money we spend on it and more, and morally as well as intellectually we shall deserve well of the generation which follows us. The Liberal party has done a great deal of work, and it is only because we feel that we still enjoy the confidence of the country that we can put our hands to this colossal undertaking—for it is a colossal undertaking if we do it on the largest and most thoroughgoing scale. It is because it is so great a task and because it appeals to some of us as a task of supreme importance that I have ventured to take up so much of your time to-night in speaking of it. We are not as young as we were. Some of us are getting white, and others are getting rheumatic, but we have still enough energy to go on for a bit. If you will back us up in this new undertaking, this new addition to the program of the Liberal party, then I think I can promise you that it will not be for want of zeal that we shall not go on with it up to that moment when we see there are young and strong hands ready to take the banner from our hands, and to bear it along the path which we have tried to tread hitherto.

## THE COLLEGE OF PRECEPTORS.

### ADJOURNED MEETING OF THE COUNCIL.

An adjourned meeting of the Council was held on January 25. Present: Sir Philip Magnus, President (in the chair), Prof. Adams, Dr. Armitage-Smith, Mr. Bain, Mr. Barlet, Rev. J. B. Blomfield, Mr. Brown, Mr. J. L. Butler, Miss Crookshank, Miss Dawes, Mr. Eagles, Mrs. Felkin, Mr. Hawe, Mr. Millar-Inglis, Mr. Longsdon, Mr. Morgan, Mr. Pendlebury, Mr. Rushbrooke, Mr. Starbuck, Mr. Vincent, and Mr. Wilson.

On the announcement of the death of the Rev. Canon Bell it was resolved that a letter should be sent to Canon Bell's family expressing the Council's deep regret, and their high appreciation of the valuable services he had rendered to the College as a member and Vice-President of the Council.

Diplomas were granted to the following, who had satisfied the prescribed conditions:—*Licentiate*ship: William James Mulholland and Lionel Francis Wallis. *Associate*ship: Andrew Ohlsson.

The report of the Honorary Secretary of the Private Schools Section of the College on the Conference which was held at the University of London, on January 10, was submitted. The substance of the report appears on page 65.

## THE COLLEGE OF PRECEPTORS. HALF-YEARLY GENERAL MEETING.

THE ordinary Half-yearly General Meeting of the members of the Corporation was held at the College of Preceptors, Bloomsbury Square, on Saturday, January 25. Sir PHILIP MAGNUS was appointed Chairman. In the absence of the Secretary, the advertisement convening the meeting was read by the Assistant Secretary.

The CHAIRMAN said they would all hear with regret that their Secretary was extremely unwell and had not been at the College for some little time. They could only hope that he would soon be restored to health and be able to help them by his advice and assistance during the remainder of his term of office.

The Report of the Council was laid before the meeting and was taken as read, a copy having previously been sent to every member of the College. It was as follows:—

#### REPORT OF THE COUNCIL.

The Council beg to lay before the members of the College the following report of their proceedings during the past half-year:—

1. The Fortieth Annual Series of Lectures for Teachers, which commenced on February 13 and ended on December 11, comprised a Course of Twelve Lectures on "The Psychology essential to Efficient Work in Schools," and a Course of Twelve Lectures on "Schoolroom Practice." Both Courses were delivered by Prof. J. Adams. 51 students took tickets for the first course, and 63 for the second. In addition, 25 tickets were issued for single lectures, and a number of members of the College attended.

2. At the Summer Examination of Teachers for the College Diplomas, which was held in the last week in August, the number of candidates who presented themselves was 279. For the Christmas Examination the number of entries is about 450. During the past half-year the Diploma of Licentiate has been conferred on 19 candidates, and that of Associate on 78, who had satisfied the prescribed conditions.

3. For the Christmas Certificate and Lower Forms Examinations, which were held in the first week in December, the number of entries was about 5,000. The Professional Preliminary Examination for Certificates recognized by professional bodies was held in the second week in September, and was attended by 222 candidates.

4. The Council are glad to be able to report that the rearrangements with regard to the publication of the College Examination papers, which were announced in the last Report, will result in a substantial gain for the finances of the College.

5. The Council have conducted, on behalf of the Newfoundland Council of Higher Education, the Associate, Intermediate, Preliminary, and Primary Examinations of the Newfoundland Council. They have also conducted, on behalf of the Grenada Board of Education, an Examination of Teachers in School Management.

6. (a) During the past half-year seven members have been elected, one member has withdrawn, and eleven holders of the College diplomas who were admitted to certain privileges of membership under Sect. II, cl. 5 of the By-Laws have ceased to be qualified. The Council regret to have to report the death of the following members:—Miss M. E. Findlay and Mr. G. F. C. Vernon, A.C.P.

(b) In accordance with the announcement which appeared in the last report, the Council are organizing Sections among the members of the College representing the several branches of the profession from which the members are drawn. Three sections have already been formed, viz., the Head Mistresses' Section, the Assistant Masters' Section, and the Private Schools' Section, and each of these Sections has appointed a Committee to advise the Council on matters specially affecting the Section.

(c) At the request of the Private Schools' Section of the College, the Council have arranged for a Conference on the present position of Private Schools to take place on January 10. The Conference will form part of the program of the Conference Week of Educational Associations, which is to take place at the University of London during the week commencing January 6.

7. Meetings of Members were held in October and November. At the October Meeting a Lecture on "The Play Motive in the Higher Classes in the School," was given by Dr. T. Percy Nunn, M.A.; at the November Meeting a Lecture on "Science Teaching and the Home Arts," by Mrs. S. Fryant, D.Sc., F.C.P. Reports of the Meetings have been published, as usual, in *The Educational Times*.

8. During the past twelve months about 1,200 volumes have been issued to members. Considerable additions have been made to the Library during the year. The Library is now in course of re-organization by the withdrawal of books which, on careful examina-



tion, are found to be of little use to the members. As soon as the process has been completed, the preparation of a new catalogue will be taken in hand.

9. Grants amounting to £30 from the Benevolent Fund have been made to beneficiaries during the past half-year.

10. The Council regret to have to report the retirement of the Secretary, Mr. C. R. Hodgson, who was appointed to the office in November, 1874, and who has served the College for more than thirty-eight years. With a view to ascertaining how best to mark their appreciation of the valuable and efficient services which Mr. Hodgson has rendered to the College and to the cause of Education during this long period of time, the Council referred the matter to the Finance Committee, and on the recommendation of that Committee they have decided to give him a life pension of such amount as the financial position of the College will permit. The Council are sure that the members of the College will approve the action they have taken. The Council, after careful consideration, have appointed Mr. George Chalmers, the present Assistant Secretary, to be Secretary to the College, and have every reason to believe that he will prove an efficient officer.

11. (a) Representatives of the Council have taken part in the work of the Teachers' Registration Council, the Federal Council of Secondary Schools Associations, the Joint Scholarships Board, the Provisional Committee of the Secondary, Technical, and University Teachers' Insurance Society, the Joint Scholastic Agency, and the Joint Agency for Women Teachers.

(b) The Teachers' Registration Council, which was constituted by Order in Council on February 29, 1912, held its first meeting on October 4, when the Right Hon. A. H. Dyke Acland was elected Chairman of the Council. Arrangements are being made for the accommodation of the Registration Council in the College building. The Registration Council will occupy two rooms on the first floor as offices, and their meetings will be held in the Lecture Hall.

The Report was considered paragraph by paragraph and adopted.

The CHAIRMAN, in commenting on the Report, in reference to Paragraph 6 (a), said that, since the Report was written, the Council had heard with deep regret of the death of Canon Bell, and it had been decided at a meeting of the Council that a letter of condolence should be sent to the members of his family expressing appreciation of the services Canon Bell had rendered, and the regret, not only of the Council, but of all members of the College, at his death. Paragraph 10 was most important. It expressed the regret of the Council at the retirement of their Secretary, Mr. Hodgson, which regret was very much increased by the reason for his retirement. Mr. Hodgson, having been appointed in November, 1874, had served the College in the capacity of Secretary for thirty-eight years. It was very satisfactory to the Council to be able to report that they were enabled to offer Mr. Hodgson a life pension before he was taken ill. The Council had expressed in a formal resolution their just appreciation of the services he had rendered during the whole of that time to the College, and, through the College, to the cause of education generally. There was no doubt whatever that his work in connexion with the College was of the greatest value and that he had been most energetic and indefatigable in his endeavours to advance its interests.

The Rev. J. S. BRUCE said that, as a member of the College who had had the pleasure of working with Mr. Hodgson, he would like to express, and no doubt he was expressing, the feeling of other members and also of the staff, their great appreciation of Mr. Hodgson's diligence in the service of the College and his courtesy to those who were under him. He himself had known what a privilege it was to work with Mr. Hodgson for twenty-seven years.

Professor ORCHARD paid a warm tribute to the retiring Secretary's high character, ability, energy, and courtesy. Mr. Hodgson possessed in an unusual degree the various qualities that were requisite in an ideal Secretary of an institution. He felt sure that all the members would rejoice that the Council was making the provision for Mr. Hodgson which he thoroughly deserved, and their warmest wishes would follow him in his retirement.

The following letter, addressed to the Chairman, had been received from Mr. Barrow Ruie:—

In consequence of a cold it will be impossible for me to attend the meeting of the College on Saturday afternoon. This I deeply regret, especially as reference will be made to the approaching retirement of our Secretary.

As the member of the Council senior in age, and whose

unbroken continuity of service as a member thereof has extended over more than forty-nine years, I have had exceptionally favourable opportunities of estimating the many and various services which Mr. Hodgson has rendered. It is therefore a pleasure, and certainly my duty, to bear evidence to the work which he has done. His loyalty to the College and to the Council, his most punctual and systematic attention to even the minutest details of his work, his unflinching courtesy, his conspicuous abilities, and the active and successful part which he has taken in developing and extending the influence and usefulness of the College in this and other lands are worthy of the highest commendation. Most sincerely do I hope that the financial resources of the College may justify the granting of such a pension as would be a due recognition of his services during more than thirty-eight years.

Mr. CRICHTON and Mr. THIRLBY asked whether the post of Secretary had been advertised.

The CHAIRMAN said the Council had considered very carefully the best means of filling the vacancy, and they came to the conclusion that it was extremely important that continuity of action should be maintained. They felt that there was no one more conversant with the work or more capable of carrying it on than the Assistant Secretary, Mr. Chalmers, who was spoken of in the highest possible terms by Mr. Hodgson when he was resigning his post. In many instances vacancies were advertised, but often this was done owing to the necessity of conforming to some condition contained in a charter or by-law. In this case there was no such condition, and to invite a number of persons to send in testimonials when the Council were satisfied that the work of the College would be faithfully and well carried out if it were entrusted to the Assistant Secretary seemed to them a course of action which, on the whole, was not justifiable; and for that reason, having regard also to the strong recommendation made by Mr. Hodgson and to Mr. Chalmers's long and faithful service, they thought it right to appoint him to the office, and he believed the members of the College would approve.

Mr. CRICHTON suggested that it would be exceedingly interesting to all the members if the reports of the College representatives on other bodies were printed with the report of the Council.

The CHAIRMAN said it seemed a very useful suggestion, and he thought it ought to be considered by the Council.

The TREASURER, in submitting the statements of account, said they were similar in form to those which had been presented in former years, but some improvements had been introduced in details. For instance, the statement of assets and liabilities was more complete. In future the whole of the accounts would be presented in a form more in accordance with modern practice. In order that this reform might be effected in a satisfactory manner, it might be necessary to hold the General Meeting later in the year, so that exact amounts might be submitted instead of estimates. In the statement of the assets, the value of the leasehold premises had been revised. At the outset the actual cost of the building, £12,500, was set down, and, acting under expert advice, the Council had allowed for depreciation by deducting 5 per cent. every year from the amount remaining at the beginning of that year. This process had gone on for twenty-five years, and in last year's balance-sheet the amount appeared as £4,428. 7s. 10d. It seemed to the Council that this was an under-estimate, and they accordingly directed that a new valuation should be made. The result of that valuation, which was made by Messrs. Roddick, Colvin, & Clark, of 4 Adelphi Terrace, on January 4, was now before the meeting. The value now given was considerably higher than that which was put down last year, and was more in accordance with the actual fact. If the balance brought down at the beginning of the year were compared with the balance on December 25 last, it would be seen that the total of the expenditure exceeded the total of the receipts by nearly £500. A considerable part of this deficit, however, was apparent rather than real; for, while the statement included expenses but not receipts of the Christmas examination held in 1911, it included receipts, but only part of the expenses for the Christmas examination held in 1912. The exact amount of those expenses could not be ascertained at the date of the audit. This year also there was an unusually large amount of examination fees outstanding on December 25. When all necessary adjustments had been made which were



necessitated by the obligation the charter imposed on the College of balancing the accounts at Christmas, and by the practice of holding the General Meeting before the exact amount of the debts and credits could be ascertained, there remained a deficit of about £300 on the operations of the year. Part of this deficit was the result of the increased expenditure on *The Educational Times*, which was necessary in order to secure an improvement in the journal, and which the Council hoped would ultimately prove advantageous to the College from the financial point of view as well as in other respects. Then there was a contribution of £20.10s. towards most useful work done by other bodies. The greater part of the deficit, however, occurred in connexion with examination work. There had been some decline in the entries, and on the other hand the proportionate cost of the examinations had increased by reason of the introduction of improvements. In future the charges would be higher in order to provide for the extra expenditure, and therefore future financial comparison with the current year would show more satisfactory results. Passing from "receipts and expenditure" to "assets and liabilities" it would be seen that they had no cause to be anxious about the position of the College. The liabilities were fully stated, and the values of the securities given in the statement were the actual market values on January 4. It would be seen therefore that the finances were in a satisfactory state, and that the College was at the present time worth more than £21,000.

In reply to a suggestion that the accounts should be audited by professional accountants, the TREASURER said that they were compelled by the terms of the charter to employ three members of the College as Auditors. If they employed a public auditor they would be duplicating the work and incurring unnecessary expense. The present system had answered satisfactorily so far—in fact, exceedingly well—and he thought they might congratulate themselves on the way in which the work had been done.

The TREASURER having replied to various inquiries concerning details in the accounts,

Mr. VINCENT desired, as a member of the Finance Committee, to say that Dr. Armitage-Smith had devoted an enormous amount of time and trouble to the accounts during the past year. The procedure was determined by the charter, and members ought to know that Dr. Armitage-Smith had made a very great effort to present his accounts in a better and more suitable form than in former years, and that it was intended to effect further improvement. Changes of that kind required time. He did not think the meeting realized the magnitude of the reform the Treasurer had proposed. The meeting was held early in January and the last examination took place in December, so they had the anomaly that some receipts and expenditure connected with the December examination would appear in another report. Now the Treasurer suggested that the meeting should be held at a later time, and that reform itself would save a great many of the questions that were now being asked, as the accounts would then give a clearer statement of the real position of the College. He himself had attended all the Finance Committee meetings he possibly could, and he could assure members that the matter had received very thorough attention from the Committee, and that Dr. Armitage-Smith deserved their very warmest thanks for the work he had done.

The statement of accounts was then adopted.

The Dean presented his report, which had been printed and circulated among the members. It was as follows:—

#### THE DEAN'S REPORT.

In addition to the general statement of the examination work of the College during the past half-year, which has been embodied in the Report of the Council, I have now to submit to you, in detail, the statistics of the various examinations.

The Christmas Examination of candidates for Certificates was held at 129 Local Centres and Schools from the 3rd to the 7th of December. In the United Kingdom the Examination was held at the following places:—

Aylesbury, Bath, Beccles, Bentham, Bewdley, Biggleswade, Birmingham, Blackpool, Bournemouth, Brentwood, Bridlington, Brighton, Bristol, Cardiff, Carlisle, Carmarthen, Carnforth, Cheltenham, Chepstow, Chichester, Chulmleigh, Clapham, Clifton (Bristol),

Crewe, Croydon, Ealing, Eastbourne, Edinburgh, Exeter, Falmouth, Four Oaks, Fulwood, Glasgow, Gravesend, Harlow, Harrogate, Hastings, Heaton Moor, Hereford, Herne Bay, Holsworthy, Horsea, Hutton, Inverurie, Jersey, Knowle (Bristol), Leeds, Liverpool, London, Maidstone, Manchester, Margate, Muswell Hill, Neath, Newcastle-on-Tyne, Newport (Mon.), Newquay, Northampton, Norwich, Nottingham, Ongar, Penketh, Plymouth, Portsmouth, Reading, Richmond-on-Thames, Ripley (Surrey), St. Anne's-on-Sea, St. Ives (Cornwall), St. Leonards-on-Sea, Scarborough, Selby, Sevenoaks, Sheffield, Shirley, Shoreham, Southampton, Southend, Southport, Sunderland, Taunton, Torquay, Towcester, Walton (Liverpool), Welshpool, West Norwood, Weston-super-Mare, Wisbech, Woodford, Worthing, and York.

The Examination was also held at the following Colonial and Foreign Centres:—Jerusalem; Batticaloa, Colombo, and Manipay (Ceylon); Rangoon (Burma); Kingston (Jamaica); St. George's (Grenada); St. Lucia and St. Vincent (B.W.I.); Bloemfontein, Cala, Grahamstown, Johannesburg, Klerksdorp, Kroonstad, Mafeking, Oakford, Potchefstroom, and Uitenhage (South Africa); Accra (Gold Coast); Abeokuta (S. Nigeria); Nairobi (B. E. Africa); and Zanzibar.

The total number of candidates examined (not including those examined at Colonial and Foreign Centres—between 520 and 530) was 2960—2374 boys and 586 girls.

The following table shows the proportion of the candidates at the recent Christmas Examination who passed in the class for which they were entered:—

		Examined.	Passed.	Percentage.
BOYS.	First Class .....	261 .....	179 .....	69
	Second Class ...	854 .....	518 .....	61
	Third Class .....	765 .....	617 .....	81
GIRLS.	First Class .....	148 .....	55 .....	37
	Second Class ...	143 .....	97 .....	68
	Third Class .....	271 .....	224 .....	83

The above table does not take account of those candidates who obtained Certificates of a lower class than that for which they were entered, nor of those (518 in number) who entered for certain subjects required for professional preliminary purposes.

The number of candidates entered for the Lower Forms Examination (not including 195 examined at Colonial Centres) was 1016—632 boys and 384 girls. Of these, 479 boys and 258 girls passed, or 76 and 67 per cent. respectively.

At the Professional Preliminary Examination for First and Second Class Certificates, which was held from the 3rd to the 5th of September at Aberdeen, Birmingham, Blackburn, Bristol, Cardiff, Edinburgh, Leeds, Liverpool, London, Manchester, Newcastle-on-Tyne, and Nottingham, 216 candidates presented themselves. The number of candidates examined at these Professional Preliminary Examinations during the year was 577.

The Summer Examination of Teachers for the College Diplomas took place on the 26th of August and five following days at Belfast, Birmingham, Bristol, Dublin, Leeds, Liverpool, London, Manchester, Newcastle-on-Tyne, Plymouth. The Examination was also held at Bangalore, Dehradun, Ghoragulli, Jubbulpore, Lucknow, Madras, and Simla (India); Lagos (S. Nigeria); Hong-Kong; Manila (Philippine Islands); Port Mourant (British Guiana); and Waterville (Maine, U.S.A.). It was attended by 279 candidates—210 men and 69 women. On the results of this Examination 19 candidates obtained the Diploma of Licentiate and 79 that of Associate.

The Christmas Examination of Teachers for the College Diplomas took place on the 30th of December to the 9th of January at Banchoy, Belfast, Birmingham, Bristol, Dublin, Leeds, Liverpool, London, Manchester, Newcastle-on-Tyne, Plymouth. The Examination was also held at Gibraltar; Bandikui, Bangalore, Bombay, Etawah, Lucknow, Manora, Meerut, and Mussoorie (India); Bathurst (Gambia); Konakry (French Guinea); Hong-Kong; and Perth (West Australia). It was attended by 430 candidates—336 men and 94 women.

Practical Examinations to test Ability to Teach were held in February, May, and October. At these Examinations 16 candidates presented themselves, and 15 obtained Certificates.

The number of schools examined and inspected during the year under the Visiting Examination and Inspection Schemes (A) and (B), was 4.

The Council have conducted, on behalf of the Newfoundland Council of Higher Education, the Associateship, Intermediate, Preliminary, and Primary Examinations of the Newfoundland Council. The examinations were held at 157 Centres in Newfoundland on the 17th to the 22nd of June, and the numbers of candidates examined in the several grades were as follows:—Associateship, 90; Intermediate, 698; Preliminary, 1367; Primary, 1373.

The Council have conducted on behalf of the Grenada Board of

Education the Examination of teachers for Second Class and Third Class Certificates in School Management.

The Report was adopted.

The meeting then proceeded to the election of twelve members of the Council, to fill the places of the twelve retiring by rotation, and three auditors.

The CHAIRMAN having appointed Mr. BEAVEN and Mr. WALTERS to act as scrutators, the voting papers were distributed, and the election was proceeded with. On the scrutators presenting their report, the following were declared to be elected:—

MEMBERS OF COUNCIL.

- A. W. Bain, B.A., B.Sc., F.I.C., F.C.S., Fairlight, Muswell Rise, Muswell Hill, N.  
 J. L. Butler, B.A., The Douglas School, Vittoria Walk, Cheltenham.  
 E. M. Eagles, M.A., Enfield Grammar School, Enfield, N.  
 Mrs. A. J. Felkin, 30b Lexham Gardens, Kensington, S.W.  
 Rev. R. Lee, M.A., Southcote, Elm Grove Road, Ealing Common, W.  
 Sir Philip Magnus, M.P., B.A., B.Sc., F.C.P., 16 Gloucester Terrace, W.  
 C. Pendlebury, M.A., Arlington House, Brandenburgh Road, Gunnersbury, W.  
 W. G. Rushbrooke, LL.M., B.A., 13 Cathcart Hill, N.  
 A. P. Starbuck, B.A., St. John's College, Green Lanes, N.  
 Rev. Canon Swallow, M.A., The Mall House, Wanstead, Essex.  
 W. Vincent, Loughton School, Loughton.  
 J. Wilson, M.A., 121 Claremont Road, Forest Gate, E.

AUDITORS.

- J. Blake Harrold, F.C.A., A.C.I.S., 61 Streatham Hill, S.W.  
 H. Chettle, M.A., Stationers' School, Hornsey, N.  
 A. E. C. Dickinson, M.A., LL.D., L.C.P., Grove House, Highgate, N.

A vote of thanks to the Chairman concluded the proceedings.

## REVIEWS.

### EDUCATIONAL.

*The Psychology of Educational Administration and Criticism; a Sequel to the Holmes Circular.* By F. H. Hayward. With a Preface by John Adams. (Pp. 592. 7s. 6d. net. Ralph, Holland.)

It is not going too far to say that this is one of the recent books on education which ought to secure the attention of the educational reader of every type. In the original sense of the term, it ought to receive the criticism of all connected with education—teachers, parents, members of Education Authorities, Inspectors of schools. For the book presents problems of the first magnitude in education, and suggests solutions. The practical Englishman will at once inquire: Can the solution at once be carried out? We know what this implies. It means: Can anything more be done educationally without increasing the rates and taxes? Dr. Hayward's book will not satisfy the modern Englishman, because he looks at the question from an educationist's point of view—viz.: How can the educational machinery of administration become a living educational soul? Perhaps it cannot. But that is the language of despair, and Dr. Hayward is an optimist. To be an optimist, educationally, is in itself almost a virtue, and never more so than to-day, when "the educational problem" is supposed to be comprised within religious disputes and bickerings. But Dr. Hayward knows that "it takes a soul to move a body," and he believes that it is possible to humanize and psychologize the whole of the bureaucratic machinery of education; beginning, let us say, with the Minister of Education and the Board of Education, and proceeding, in every degree, to the lowly officers of the lowliest Education Authority. He is not afraid of creating Frankenstein. He believes so firmly in the vitalizing power of educational science that he thinks even officialdom and bureaucracy can be transfigured by it if they will once give themselves up to its claims. Or, in other words, he looks on education as a religion which can transfigure a spirit of the highest human endeavour and noblest intellectual research, as well as spiritual force, in the really thoroughly

developed educationist. Dr. Hayward's plea, therefore, is a new manifesto for the training, not only of the teacher, but also for all who have to administer education—the Board of Education officials and, above all, for the Inspectors of the schools. His thesis can be put in a sentence: Humanize educationists by the cultivation of their knowledge and sympathy, in accordance with the highest educational science of the times. Permeate all practitioners and participants with the spirit of skilled research, and create the practical pieties of education as based upon the highest mark of educational practice brought into the alembic of educational thought.

Dr. Hayward tries to show how England could transfigure its educational organization and institutions by transforming teachers and officials into philosopher-educationists. It is the idea of a thinker of enormous courage. To the man who enjoys long journeys of thought and is exhilarated at the prospect of future experiences, though at present he is too tired by the day's work to do more than think of the next step for the morrow, Dr. Hayward's book will be read with avidity. It is impossible to enter into detailed criticism on such a fertile book in a short notice. Topics such as freedom of movement for educational ability and skill in the way of "promotion," the establishment of a clearing-house for educational ideas submitted from the teachers and officials of Local Educational Authorities, new tests of a more educational nature than examinations by which to select the more responsible teachers and higher officials, new suggestions for administrative possibilities in educational codification, construction, creation—will be eagerly discussed by educational enthusiasts. The views on salaries alone are sufficient to attract the attention of most teachers—at least as a basis of discussion. Dr. Hayward, in our opinion, misjudges his strength. He seems to suppose he is strong in attack on other people's views. We think that he is wrong. He is much stronger and much more helpful in his attempts at positive construction. This portion of his work, without his criticisms on other educational thinkers and their works, would once more illustrate the old formula: "The half is greater than the whole." Nevertheless, we congratulate Dr. Hayward on a very stimulative work. We congratulate also the London County Council Education Committee on having an Inspector of the mental grip, and, above all, the educational enthusiasm and forward-looking hopes.

- (1) *Froebel's Chief Educational Writings.* Rendered into English by S. S. F. Fletcher and J. Welton. (2) *Pestalozzi's Educational Writings.* Edited by J. A. Green, assisted by Frances A. Collie. Both volumes under the general editorship of J. W. Adamson. (4s. 6d. net each. Edward Arnold.)

These two volumes read together give an excellent idea of the principles underlying a school of educational thought that has exercised, and is exercising, a powerful influence both here and in America. Pestalozzi is much the bigger man of the two, a point on which Prof. Green leaves us in no doubt. Mr. Fletcher speaks of the "excrescences" due to Froebel's personality, but Prof. Green places Pestalozzi on a pedestal. "The secret of Froebel will be found in Pestalozzi. Froebelian self-activity is neither more nor less than Pestalozzian spontaneity. The very phrases which are peculiarly associated with the name of Froebel were used by Pestalozzi: 'Learn by doing'; 'Live for our children'; 'Making the inner outer.'" On the other hand, when Pestalozzi happens to learn anything from another, "here again the disciple is better than his master." Each of our editors does his best for his author, but the truth is that both volumes must be read by the student before he can understand the school to which both authors belong. To be sure, Prof. Green declines to have his author labelled. Pestalozzi must be regarded as *hors de concours*. His "principles were, however, too fundamental to form a school of practice. He stands outside of and above party." The trouble is that, in spite of this apparent arrogance, we cannot help feeling that Prof. Green is right. Probably Mr. Fletcher himself agrees with his colleague. He has done his best for Froebel, but it is evident that he sees weaknesses as well as merits.

In books of this kind the text is more important than the introduction; indeed, the purpose of the series is to make

students acquainted with the actual writings of the authors selected. Yet there is room for the skill and intelligence of the editor and translator. In both volumes the introduction would be better placed at the end. No student who is making his first acquaintance with the authors could understand these introductions till he has read the text. This is perhaps less true in the case of Mr. Fletcher's contribution. For the sketch of the historical and philosophical background against which Froebel is to be presented may be of real help to the reader even on his first perusal of the text. It will be noted that this criticism applies merely to the use to be made of the book. The introductions are in themselves in both cases excellent.

The usual chronological table that characterizes the series is to be found in both books, but the Pestalozzi volume has no bibliography. Why does Mr. Fletcher exclude from his list of books Dr. F. H. Hayward's "Educational Ideas of Pestalozzi and Froebel"? To be sure, it is used as a text-book, but so are several of the books that find a place in the list. It is curious to find in the same series two different ways of spelling—and by implication, we suppose, of pronouncing—the adjective derived from Froebel's name. Mr. Fletcher adopts "Froebelian," while Prof. Green contents himself with the more familiar "Froebelian."

As in the other volumes of the series, the selections are well made and the translations exceedingly good. Mr. Fletcher has taken more liberties with the text than has Prof. Green, but this is exactly as it should be; for, clumsy as Pestalozzi's German may be, it is usually straightforward and capable of being expressed by corresponding English words. With Froebel the reader has little to thank a translator for who merely gives a verbal translation. It is here that Mr. Fletcher's profound knowledge of German allied to Prof. Welton's command of fluent English, earns the gratitude of the reader. Though their task is somewhat lighter, Prof. Green and Miss Collie make an equally efficient collaboration.

*A History of Geographical Discovery in the Seventeenth and Eighteenth Centuries.* By Edward Heawood, M.A., Librarian to the Royal Geographical Society. (12s. 6d. net. Cambridge University Press.)

This is a most important addition to the "Cambridge Geographical Series." The previous seven volumes deservedly rank as authoritative works in their several departments, and the present contribution excellently maintains the standard. The Age of Great Discoveries has claimed many students, but the less dazzling period which followed, and which meant the "filling in of patches," has hitherto been somewhat neglected. Summarizing the chief events of the sixteenth century, Mr. Heawood traces out the decline of Spanish and Portuguese influences and clears the ground for the development and clash of Dutch and English maritime authority, while interesting aspects of French exploitation of northern North America and of Russian conquest of Siberia are dovetailed into the narrative.

The balance throughout is striking, for no explorer who did definitely good work is neglected, and vivid pen pictures make each individual a living personality. So much is contained in the book that a summary is difficult. The partial suspension of exploration activity towards the middle of the seventeenth century, its quickening a century later, the impetus given by the work of Cook, the unveiling of the Pacific Ocean, and the reduction of the unknown areas of Asia, are but a few of the points which the author places before us in a fascinating and convincing manner. In short, every one of the four hundred odd pages of letterpress is interesting and readable. The book throughout bears the stamp of long and painstaking labour and critical analysis of original material. It is a veritable storehouse, and yet the arrangement, partly chronological and partly divisional, allows of ready reference, while the double-columned fifty-page index is much more than a mere table of contents. Fifty-seven well chosen illustrations are used, and the many copies of original maps, with their quaint orthography and draughtsmanship, possess a peculiar value of their own. The history will long rank as a standard work, and should be found on the reference shelves of all geographical departments.

## GENERAL NOTICES.

### MATHEMATICS.

- (1) *Analytical Geometry. A First Course.* By C. O. Tuckey and W. A. Nayler, Assistant Masters at Charterhouse. (Pp. xiv and 367. Cambridge University Press.) (2) *An Introduction to Algebraical Geometry.* By A. Clement-Jones, M.A., Ph.D., Senior Mathematical Master at the Bradford Grammar School. (Pp. 548. 12s. Clarendon Press.)

(1) In spite of the apparent equivalence of their titles, these books are almost startlingly different from one another. The authors of the first admit that they have chiefly in view the boy who cannot devote much time to mathematics, and they direct the "specialist" on to Salmon after they have done with him. The author of the second aims, in effect, at supplanting the great master as far as the more elementary parts of the subject are concerned, and his work is an "introduction" to the "Higher Plane Curves rather than the "Conic Sections." But, though the two books have singularly little in common, each is in its own way unusually interesting and should appeal successfully to its particular public. Messrs. Tuckey and Nayler are uncompromising representatives of the "new" methods of mathematical teaching, and, in conducting their students over the chosen ground, pay scant attention to the ancient landmarks or the traditional proprieties. They begin with the eminently sensible assumption that their readers have already become practically familiar with the elements of the subject from the study of graphs. Their first few chapters aim, therefore, at consolidating and extending this earlier knowledge rather than at establishing its foundations systematically. Thus, the standard equations of the straight line and conic sections all appear in the first eight pages. In the second chapter the differential coefficient is introduced as the measure of the "gradient" of the tangent at any point of a curve, and is applied not only in problems concerning tangents and normals, but also to the discrimination of points of inflexion. At a rather later point polar and parametric equations are studied as a means of extending the student's repertoire of curves as well as a method of investigating further properties of the familiar forms. The systematic deduction of the theory of the conic sections from focus-directrix definitions, &c., does not appear until halfway through the book and is dealt with in sixty pages, including the examples in the text. The last chapter extends the previous methods to tridimensional geometry. The ordinary equations for the plane and straight line are taught together with the usual manipulations for determining the relations between given planes and lines. The book-work ends with brief references to the standard equations of surfaces of the second degree. An excellent feature of the book is the constant application of the theory to investigations of a practical character, such as the accurate drawing of curves, the graphic solution of equations, and the representation of the plan and elevation of solid forms. Occasional notes on the occurrence of curves in physical phenomena, engineering structures, &c., help to keep up the atmosphere of reality, and should often provoke the young student to make profitable further inquiries. There is a large collection of examples well adapted to the aim and scope of the book, including many that have been set in Army papers and in examinations of similar type.

(2) Dr. Clement-Jones also professes to write for "the beginner," but his demands in respect of preliminary mathematical equipment may be judged from the fact that he uses determinant notation in his first chapter. The distinctive character of the book is its systematic completeness and its logical rigour. From these qualities its strength and weakness alike spring. There are few textbooks written for junior students in which so high an ideal of mathematical thinking is held up and so consistently pursued. The young mathematician who works through these five hundred pages will gain not only mastery of the technique of the subject, but also a clear, broad, and philosophical knowledge of its principles which will be of the utmost value in his later studies. The drawback is that the author has not found a way of achieving these results except by a teaching method unsuitable to any but students either of considerable mathematical ability or of unusual docility. The first 124 large and rather closely printed pages are devoted entirely to the point and the equation of the first degree. This section of the work closes with a chapter on homogeneous coordinates, points at infinity, and the straight line at infinity. The discussion is better than anything of the kind which we have seen in an elementary textbook, but it comes before any mention of the equations of the circle and other conics, even in their simplest forms. Nearly a hundred pages more are devoted, with the same patient and philosophical thoroughness, to the circle before (on page 222) the general equation of the second degree is at length reached. Chapters follow on the parabola, the central conic, polar coordinates, line coordinates and tangential equations, "miscellaneous theorems," and, finally, on linear and areal coordinates. The workmanship is throughout admirable. There are many valuable

novelties of detail and a very large number of well graded examples. No teacher of boys or girls up to and beyond scholarship standard could fail to profit greatly by a careful study of the book. But the beginners for whom it is really suitable are, we fear, as few as they are precious.

*The Teaching of Mathematics in Secondary Schools.* By Arthur Schultze. (5s. 6d. net. Macmillan.)

This book contains the substance of some of the author's lectures in New York University, and is intended to help the inexperienced teacher. He avows in the preface a propagandist intention—namely, to make "mathematical teaching less informational and more disciplinary." In Chapter II, on the value and aims of mathematical teaching, he explains this conception, and boldly challenges the contrary view, which "sensational pedagogues" have accepted too readily from over-sure psychologists. A rather amateurish discussion of this question—in which, nevertheless, some important qualifications of the "widely advertised discipline theory" are usefully emphasized—ends with an italicized pronouncement which is dangerously like an impenitent reassertion of the fallacy of formal training in its worst form. During the rest of his task the author is dealing with matters in which he is much more at home. No young teacher can fail to profit from a study of the chapter on the foundations of mathematics, nor to find much help for his daily work in Chapters VI to XVII, which deal in an eminently practical way with the teaching of geometry. It is unfortunate that the author was unable either to consider other branches of mathematics in equal detail or to proportion his treatment to the space at his disposal. As it stands, the book is badly unbalanced, and hardly justifies the generality of its title. The single chapter on Algebra (Chapter XX) is sound as far as it goes, and contains useful criticisms of errors which are prevalent in the treating of the elements of this subject. The final chapter, on Trigonometry (15 pages), is too short to be of much value, but contains a useful account of the method of solving triangles by decomposing them with right-angled triangles.

#### GERMAN.

*German for Beginners.* By Hélène Lotka, Queen Mary High School, Liverpool. (1s. 6d. Heffer.)

This book is on the Direct Method and is suitable for younger children. The author intends it to be supplemented by a reader, but (as is usual in books in the Direct Method) the grammar is introduced in connexion with passages of consecutive prose, which are carefully graded in difficulty of vocabulary and construction. The grammar itself is clear and systematic. The print is very large and clear—roman type only being used—and the book is illustrated.

*Wieland der Schmied.* Edited by A. E. Wilson, Assistant Master at Winchester College. (1s. 6d. Oxford University Press.)

The book is printed in large, clear type and is suitable for pupils who have learnt German for a year. The construction is varied and quite idiomatic, and there are only a few out-of-the-way words and expressions, in spite of the fact that the story is adapted from the old Saga. At the end of the book are vocabularies and short notes, besides questions in German on the text.

#### HISTORY.

*The Lascaris of Nicaea: The Story of an Empire in Exile.* By Alice Gardner, Lecturer and ex-Fellow of Newnham College, Cambridge. With eight illustrations and a map. (7s. 6d. net. Methuen.)

Miss Gardner is in the front rank of British workers in the too-much-neglected field of historical research in the Byzantine period. The present monograph, like three or four preceding ones, is a scholarly and conscientious piece of work. It covers fifty-seven years—from the Latin conquest of Constantinople in 1204 to the recovery of the city by Michael Palaeologus in 1261. During this interval the evicted powers established themselves at Nicaea, some forty miles eastward in Asia Minor; and it is the history of the exiled Empire at this centre under four rulers—Theodore Lascaris I, John Vatatzes, Theodore Lascaris II, and Michael Palaeologus—that Miss Gardner narrates. John III (Vatatzes Ducas) came in as husband of the first Theodore's daughter, Irene; and Michael Palaeologus, though not only not a Lascaris, but the perfidious and brutal ouster of the true Lascaris heir, is necessarily included as the actual recoverer of Constantinople and the achiever of the Lascaris ideal. We agree with Miss Gardner, against Finlay, in regarding the Nicene Empire, and consequently the Empire of the recovered Constantinople, as the legitimate representatives of the Byzantine Government, both in policy and in dignity. "Put briefly, the interest of those who maintained the Empire in exile until it could be restored to its lawful centre and natural habitation lies in the fact that they professed to be, and in a sense they were, Romans and at the same time Greeks, contending, with ultimate success, against 'Latins' and 'Barbarians.'" If the statement looks curious, this is merely because Byzantine history has not yet found its way into the school and college curriculum; and for the same reason many of the names, even of distinguished personages, will appear strange even to cultivated readers. But, for

all that, the period shows influences and illustrates tendencies that have contributed to the formation of modern civilization, and will no doubt show more when it is more fully explored. The three introductory chapters place the reader in position to appreciate the history of the Lascaris rulers, and the final chapter is devoted to a survey of literature and art under the dynasty. The ecclesiastical influences of the time are naturally interwoven with the political history. An extremely careful and able monograph.

*The Personality of Napoleon.* The Lowell Lectures, delivered at Boston in February-March 1912. By J. Holland Rose, Litt.D., Reader in Modern History, University of Cambridge. (5s. net. G. Bell.)

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*Tennyson: Poems published in 1842.* (Pp. 288. Henry Frowde. 2s. 6d. net.)

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*Five Centuries of English Poetry.* By Rev. George O'Neill, S.J., M.A. (Pp. 368. 3s. 6d. net. Longmans.)

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### CLASSICS.

Cornelii Taciti Annalium. Libri V, VI, XI, XII. With Introduction and Notes abridged from the larger work of Henry Furneaux by H. Pitman, M.A., Lecturer in Classics at the University of Bristol. Clarendon Press, 3s. 6d.

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- Pitman's Ideal Syllabus. Progress and Report Book. Compiled by J. E. Ellson, Head Master of the Childerley Street Central School, Fulham. 1s. 6d.
- How to Speak and Read. By J. Bruce Alston. Being Notes on the Management of the Voice for the use of Teachers, Preachers, and Public Speakers generally. Blackie, 2s. net.

FICTION.

- Where are you going to . . . ? By Elizabeth Robins. Heinemann, 6s.
- Driftwood. By Kenneth Weeks. George Allen, 3s. 6d. net.
- Deering of Deal; or, The Spirit of the School. By Latta Griswold. (A story of school life in the U.S.A.) Macmillan, 6s.
- Hereward the Wake, by Charles Kingsley; Deep Down, by R. M. Ballantyne; The Lighthouse, by R. M. Ballantyne. Blackie, 1s. each. Illustrated in colour.
- Teddy's Adventures. By Mrs. Henry Clarke. And Other Tales (for young readers). Blackie, 9d.
- The Children's Prize Library.—This library is issued by Everett & Co., at 7d. for each volume. The books are well produced in good type, bound in cloth, with coloured inlay and title-page. They are reprints of old favourites, and will be welcomed by many young readers. We have received: (1) Little Women and (2) Good Wives, by Louisa M. Alcott; (3) Grimm's Fairy Tales; (4) Hans Andersen's Fairy Tales; (5) Fairy Tales from the German Forests, by Frau Arndt; (6) Alice in Wonderland; (7) The Heroes and (8) Water Babies, by Charles Kingsley; (9) Hepsy Gipsy and (10) A Girl of the People, by L. T. Meade; (11) What Katy Did and (12) What Katy Did at School, by Susan Coolidge; (13) The Red Grange, by Mrs. Molesworth; (14) The Basket of Flowers, by C. von Schmid; (15) The King of the Golden River, by John Ruskin.

MATHEMATICS.

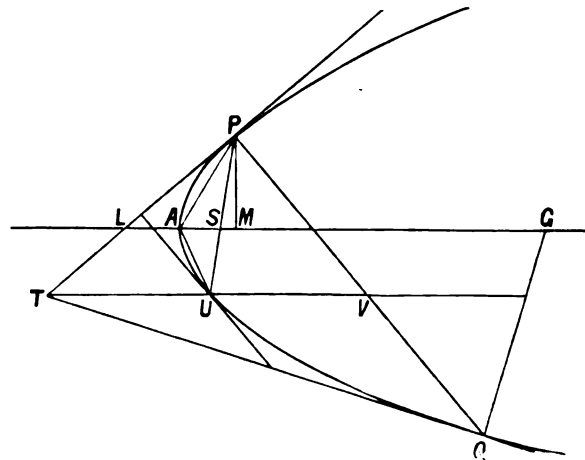
Readers desiring to contribute to the Mathematical columns are asked to observe the following directions very carefully:—

- (1) To write on one side only of the paper.
- (2) To avoid putting more than one piece of work on a single sheet of paper.
- (3) To sign each separate piece of work.

17232. (M. T. NARANIENGAR, M.A.)—If the normal at P meet the parabola in Q, and the normal at Q the axis in G, show that APQG is cyclic.

Solutions (I) by Professor R. SHINIVASAN, M.A.; (II) by R. F. DAVIS, M.A.; (III) by C. M. ROSS, B.A.

(I) Let the tangents at P and Q meet in T; draw the diameter TUV cutting the curve in U and PQ in V. It is clear that the



tangent at U bisects PT at right angles on the directrix. Also, if PT cuts the axis in L, the triangles PLM and PTQ are similar. Therefore  $LM/PM = PT/PV$ , i.e.  $\frac{1}{2}(LM/PM) = PT/2PV$ , i.e.

$$AM/PM = PT/PQ.$$

Therefore the triangles AMP and TPQ are similar.

Therefore  $\angle PAM = \angle PTQ = 90^\circ - \angle TQP = \angle PQG$ .

Therefore P, A, Q, G are concyclic. [Rest in Reprint.]

17869. (J. J. BARNIVILLE, B.A.)—(1) Reduce

$$(x^{14} + x^7 + 1)/(x^2 + x + 1)$$

to the form

$$A^2 + 3B^2 = C^2 + 7D^2;$$

(2) Reduce  $(x^6 - x^5 + 2x^3 - 4x^2 + 4x)^2 + (x^5 - 2x^4 + 2x^3 - 4x + 8)^2$

and  $(x^6 - x^5 - x^4 + 5x^3 - 7x^2 - x + 23)^2 + 2(x^5 - 2x^4 + x^3 + 4x^2 - 11x + 10)^2$  to the form  $A^2 + 7B^2$ .

Additional Solution by T. STUART, M.A., D.Sc.

These three questions are mainly illustrations of the fact that

$$\prod_{r=1}^{n-1} (x^n - a^r)$$

is expressible (if  $n$  is prime) in the form

$$\prod_{r=1}^{n-1} (x - a_r) = P^2 - (-1)^{(n-1)/2} nQ^2,$$

where  $P$  and  $Q$  are polynomials in  $x$  with rational coefficients, provided  $a_1, a_2, \dots, a_m$  are roots of an equation with rational coefficients.

(1) If  $\alpha$  and  $\beta$  are the roots of  $\theta^2 + \theta + 1 = 0$ , this function is

$$= \frac{(x^7 - \alpha^7)(x^7 - \beta^7)}{(x - \alpha)(x - \beta)} = (x^6 + x^5\alpha + \dots + \alpha^6)(x^6 + x^5\beta + \dots + \beta^6)$$

$$= (P + \alpha Q)(P + \beta Q)$$

[where  $P \equiv x^6 - x^4 + x^3 - x + 1$ ,  $Q \equiv x^5 - x^4 + x^2 - x$ ]

$$= P^2 - PQ + Q^2 = (P - \frac{1}{2}Q)^2 + 3(\frac{1}{2}Q)^2;$$

therefore

$$A = x^6 - \frac{1}{2}x^5 - \frac{1}{2}x^4 + x^3 - \frac{1}{2}x^2 - \frac{1}{2}x + 1,$$

$$B = \frac{1}{2}(x^5 - x^4 + x^2 - x).$$

Again  $4 \left( \frac{x^7 - a^7}{x - a} \right) = (2x^4 + x^2a - xa^2 - 2a^3)^2 + 7(x^2a + xa^2)^2$   
 $= [(2x^3 + x - 2) + a(x^2 + x)]^2 + 7[a(x^2 - x) - x]^2$

with a similar expression for  $4(x^7 - \beta^7)/(x - \beta)$ .

Hence  $C = x^6 - \frac{1}{2}x^5 - x^4 - x^2 - \frac{1}{2}x + 1$ ,  $D = \frac{1}{2}x(x^4 - 1)$ .

(2) a. Let  $\alpha$  and  $\beta$  be the roots of  $\theta^2 + 2\theta + 2 = 0$ , then

$\frac{x^7 - \alpha^7}{x - \alpha} = (x^6 - 2x^4 + 4x^3 - 4x^2 + 8) + \alpha(x^5 - 2x^4 + 2x^3 - 4x + 8)$ ;

therefore

$\frac{(x^7 - \alpha^7)(x^7 - \beta^7)}{(x - \alpha)(x - \beta)} \equiv \frac{x^{14} + 16x^7 + 27}{x^2 + 2x + 2} = (x^6 - x^5 + 2x^3 - 4x^2 + 4x)^2 + (x^5 - 2x^4 + 2x^3 - 4x + 8)^2$ .

Also

$4 \left( \frac{x^7 - \alpha^7}{x - \alpha} \right) = [(2x^3 + 2x - 8) + \alpha(x^2 + 2x - 4)]^2 + 7[a(x^2 - 2x) - 2x]^2$ .

Hence  $4A = (2x^3 + 2x - 8)^2 + 2(x^2 + 2x - 4) - 2(x^2 + 2x - 4)(2x^3 + 2x - 8) - 7[2(x^2 - 2x)^2 + 4x(x^2 - 2x) + 4x^2]$ ,

or  $A = x^6 - x^5 - 3x^4 + 4x^3 - 6x^2 - 4x + 8$

and  $B = x^5 - x^4 + 2x^2 - 4x$ .

This function is also obviously

$= (x^6 - x^5 + 4x^4 - 10x^3 + 8x^2 - 4x + 8) - 7(x^5 + 2x^4 + 2x^3 - 4x^2 + 4x)^2$ .

(2) b. Similarly if we take  $\alpha$  and  $\beta$  to be roots of  $\theta^2 + 2\theta + 3 = 0$ , we have

$\frac{x^7 - \alpha^7}{x - \alpha} = (x^6 - 3x^4 + 6x^3 - 3x^2 - 12x + 33) + \alpha(x^5 - 2x^4 + x^3 + 4x^2 - 11x + 10)$ ;

therefore  $\left( \frac{x^7 - \alpha^7}{x - \alpha} \right) \left( \frac{x^7 - \beta^7}{x - \beta} \right) = \frac{x^{14} + 86x^7 + 37}{x^2 + 2x + 3} = (x^6 - x^5 - x^4 + 5x^3 - 7x^2 - x + 23)^2 + 2(x^5 - 2x^4 + x^3 + 4x^2 - 11x + 10)^2$ .

Now

$4(x^7 - \alpha^7)/(x - \alpha) = [(2x^3 + 3x - 12) + \alpha(x^2 + 2x - 2)]^2 + 7[3x - \alpha(x^2 - 2x)]^2$ , with a similar expression for  $4[(x^7 - \beta^7)/(x - \beta)]$ ; therefore the second function is  $A^2 + 7B^2$ , where

$A/4 = (2x^3 - x^2 + x - 10)^2 + 2(x^2 + 2x - 2)^2 - 7[(x^2 + x)^2 + 2(x^2 - 2x)^2]$ ,

i.e.,  $A = x^6 - x^5 - \frac{7}{2}x^4 + 2x^3 - \frac{7}{2}x^2 - 9x + 27$

and  $B = x^5 - \frac{1}{2}x^4 + \frac{3}{2}x^2 - 9x$ .

It is also obviously

$= (x^6 - x^5 + 7x^4 - 19x^3 + 21x^2 - 9x + 27)^2 - 14(x^5 - 2x^4 + 3x^3 - 6x^2 + 9x)^2$ .

Note.—By Mr. Davis's method (*The Educational Times*, Nov. 1, 1912), the problem in (2) is reduced to solving (e.g.) the equations

$a^2 - b^2 + 7(c^2 - d^2) = 4(x^6 - x^5 + 2x^3 - 4x^2 + 4x)$ ,

$ab - 7cd = 2(x^5 - 2x^4 + 2x^3 - 4x + 8)$ ,

and, to effect this,  $a$  must be assumed to be a cubic, and  $b, c, d$  quadratic functions (with integral coefficients) of  $x$ . This gives us ten equations between the ten parameters involved, and their determination is not easily effected (except by trial). The same method when applied to express (e.g.) the function

$(x^{12} - x^{11} + 2x^9 - 4x^8 + 4x^7 - 8x^5 + 16x^4 - 16x^3 + 32x - 64)^2 + (x^{11} - 2x^{10} + 2x^9 - 4x^7 + 8x^6 - 8x^5 + 16x^3 - 32x^2 + 32x)^2$

in the form  $A^2 - 13B^2$  would apparently lead to very complicated analysis.

*Note on the Cuspidal Tangents of the Envelope of the Pedal Lines of a Triangle.*

By E. G. HOGG, M.A.

The polar of any point  $P(a', b', \gamma')$  with respect to the circle  $S \equiv a\beta\gamma + b\gamma\alpha + ca\beta = 0$  is

$L \equiv a(b\gamma' + c\beta') + \beta(ca' + a\gamma') + \gamma(a\beta' + b\alpha') = 0$ .

If  $L$  pass through the isogonal conjugate of  $P$ , then the locus of  $P$  is the cubic

$C \equiv a^2(b\beta + c\gamma) + \beta^2(c\gamma + a\alpha) + \gamma^2(a\alpha + b\beta) = 0$ .

Eliminating  $\alpha$  between  $S$  and  $C$ , we have the following cubic in  $\beta : \gamma$  for determining the intersections of the two curves:—

$c(c^2 - a^2)\beta^3 + 3bc^2\beta^2\gamma + 3b^2c\beta\gamma^2 + b(b^2 - a^2)\gamma^3 = 0 \dots (1)$ .

The functions  $G$  and  $H$  of this cubic are

$G \equiv a^2bc^2 \{ b^3(c^2 + a^2) - (c^2 - a^2)^2 \}$ ,  $H \equiv -a^2b^2c^3$ ,

whence  $G^2 + 4H^3 = -16\Delta^2a^4b^2c^4(c^2 - a^2)^2$ ,

where  $\Delta$  is the area of the triangle  $ABC$ . The roots of (1) are therefore real, i.e.  $C$  meets the circle  $S$  in three real points besides the vertices of the triangle  $ABC$ . Let these points be  $X, Y, Z$ .

The tangent at  $X$  will pass through its isogonal conjugate: the isogonal conjugate of any point on the circle  $S$  lies at infinity in a direction perpendicular to the pedal line of the point; hence the pedal line of  $X$  is parallel to the radius through  $X$ . Let  $O$  be the orthocentre of the triangle  $ABC$  and  $M$  its circum-centre. The pedal line of  $X$  bisects  $OX$ ; it is also parallel to  $MX$ . Hence it bisects  $OM$ , i.e. it is a tangent to the tricusp which is the envelope of the pedal lines of the triangle, and it passes through the centre of the tricusp. Hence the pedal line of  $X$  is a cuspidal tangent of the tricusp. [Rest in Reprint.]

17164. (R. F. DAVIS, M.A.)— $ABC$  is an isosceles triangle having the sides  $AB, AC$  equal. From a point  $Q$  in the base  $BC$  produced the perpendicular  $QN$  is let fall upon  $AB$ , intersecting  $AC$  in  $P$ . Prove that, if  $BQ^2 = 4AP \cdot AC$ , then  $CP = PN$ .

Geometrical Solutions (I) by PHILIP T. STEPHENSON, B.A.; (II) by J. MACLEOD, I.S.O.

(I) Bisect  $BQ$  in  $T$ . Draw  $NE$  perpendicular to  $BQ$ . Make  $AR = AB$  in  $BA$  produced so that  $RCB$  is a right angle.

Therefore  $BT \cdot TN = AP \cdot AB$ .

But  $TE/TN = AN/AP$ ;

therefore  $BT \cdot TE = AN \cdot AB$ ;

therefore  $RN^2 - NB^2 = QE^2 - EB^2 = QN^2 - NB^2$ ;

therefore  $RN = QN$ ;

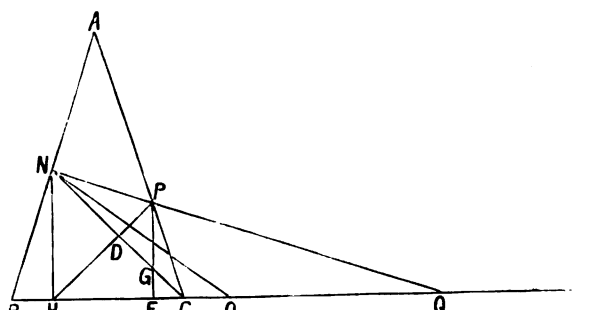
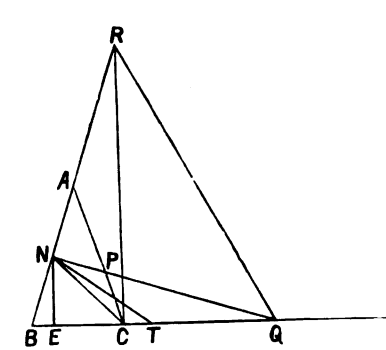
therefore  $\angle NQR = \frac{1}{2}$  a right angle.

Therefore, from cyclic quadrilateral  $NCQR$ ,  $\angle NCR = \frac{1}{2}$  a right angle.

Therefore  $\angle NAP + \angle NPA = 2 \times (\angle NCP + \angle PCR)$ .

But  $\angle NAP = 2 \times \angle PCR$ , since  $AR = AC$ . Therefore  $\angle NPA = 2 \times \angle NCP$ ; therefore  $\angle PNC = \angle NCP$ . Therefore  $CP = PN$ .

(II) Let  $OB = OQ$ ; also let  $HN$  perpendicular to  $BC$ .



$ON : BN = AC : CB$ ;  $ON : HN = AP : PN$ .  
Hence  $ON/BN \cdot ON/HN = AC/CB \cdot AP/PN$ .  
Hence, from hypothesis,  $BN \cdot HN = CB \cdot PN$   
and  $BN : CB :: PN : HN$ ;  
and  $CBN$  being equal to  $HNP$ , each being  $\frac{1}{2}\pi - \frac{1}{2}A$ , triangles  $CBN$  and  $PNH$  are similar.  
 $HP$  is perpendicular to  $NC$ .  
For  $\angle DHC = \frac{1}{2}\pi - \angle NHP = \frac{1}{2}\pi - \angle NCH$ ;  
therefore  $\angle FGC = \angle DHC$  and  $\angle DGF + \angle DHF = \pi$ ,  
and  $\angle HDG + \angle HFG$  must  $= \pi$ ;  
therefore  $\angle HDG = \frac{1}{2}\pi$ .  
Suppose now  $CP > PN$ ; then  $\angle CPH > \angle HPN$ .  
But  $PF$  being the perpendicular let fall from  $P$  on  $HC$ , it is evident  $HPC = NHP + \frac{1}{2}A$ .  
Hence  $2NHP + \frac{1}{2}A + HNP > \pi$ , or  $2NHP > \frac{1}{2}\pi$ ;  
hence  $NHD > DHC$  and  $ND > DC$  and  $PN > PC$ ;  
but, by hypothesis,  $PC$  is greater than  $PN$ , which is impossible.

In the same way PC can be shown not to be less than PN. Hence they are equal.

*Trigonometrical Solution by Major C. H. CHEPMELL (late R.A.).*

Call AB or AC = r.

AP = s ;

therefore

$$BQ^2 = 4rs.$$

Call  $\angle BAC = \theta$  ;

therefore

$$\angle NQB = \frac{1}{2}\theta.$$

Then

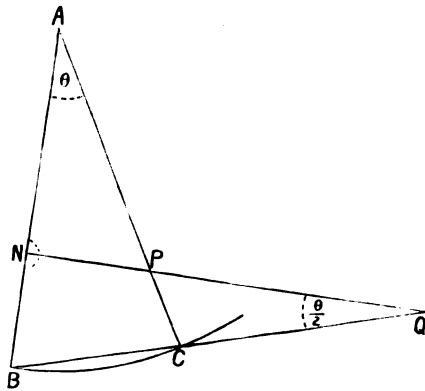
$$NB = r - s \cos \theta$$

$$= BQ \sin \frac{1}{2}\theta ;$$

$$r^2 + s^2 \cos^2 \theta - 2rs \cos \theta = 4rs \sin^2 \frac{1}{2}\theta ;$$

$$r^2 + s^2 - s^2 \sin^2 \theta - 2rs \cos \theta = 2rs - 2rs \cos \theta ;$$

$$r^2 + s^2 - 2rs = s^2 \sin^2 \theta ; \quad r - s = s \sin \theta ; \quad \text{or } CP = PN.$$



[Rest in Reprint.]

**12888.** (W. J. DOBBS, M.A.)—In considering the motion of a railway train, suppose that (1) the driving force of the engine cannot exceed a given value  $mf$ ,  $m$  being the mass of the train, (2) in starting, the driving force of the engine has this constant value, until it is working up to its full horse-power, (3) after this, it continues working at this rate, and (4) the resistance to motion is constant and equal to  $ma$ ; show that (i) the velocity  $v$  at the end of time  $t$  from the start is given by

$$\log(1 - v/u) + v/u = \log(1 - a/f) + a/(f - a) - at/u,$$

where  $u$  is the maximum velocity attainable, and (ii) the space described in time  $t$  is  $ut - au^2 \{ 2f(f - a) \}^{-1} - v^2/2a$ ,

where  $v$  is to be determined from the first equation.

*Solution by C. W. ADAMS.*

If  $P$  be the full horse-power and  $t_0, s_0, v_0$  the values of  $t, s, v$  when this is first reached,

$$v_0 = (f - a)t_0, \quad v_0^2 = 2(f - a)s_0, \quad \text{and } P = mfv_0.$$

For the subsequent motion

$$mfv_0 = P = m(\dot{v} + a)v = mau = m(\ddot{s} + a)\dot{s}.$$

$$\text{Hence } v_0 = au/f, \quad t_0 = au/f(f - a), \quad \text{and } s_0 = a^2u^2/2f^2(f - a).$$

With these initial conditions we can integrate the equations

$$v\dot{v} + av - au = 0 \quad \text{and} \quad \dot{s}\dot{s} + as - au = 0$$

and obtain the two results as stated.

**17405.** (C. M. ROSS, B.A.)—Eliminate  $x, y, z$  from the equations  $y^2 + yz + z^2 = a^2, z^2 + zx + x^2 = b^2, x^2 + xy + y^2 = c^2, xy + yz + zx = 0$ .

*Algebraical Solutions (I) by C. W. ADAMS and W. G. BICKLEY; (II) by Lt.-Col. ALLAN CUNNINGHAM, R.E.*

*Geometrical Solutions (III) by PHILIP T. STEPHENSON, B.A.;*

*(IV) by H. D. DRURY.*

$$(I) \quad 2x(x + y + z) = b^2 + c^2 - a^2,$$

$$\text{but } 4(yz + zx + xy)(x + y + z)^2 = 0;$$

$$\text{therefore } 2(a^2 - b^2 + c^2)(a^2 + b^2 - c^2) = 0;$$

$$\text{therefore } a^4 + b^4 + c^4 = 2(b^2c^2 + c^2a^2 + a^2b^2).$$

(II) Call the four equations A, B, C, D. Then

$$A + B + C + 3D = 2(x + y + z)^2 = a^2 + b^2 + c^2,$$

whence  $x + y + z = \pm \{ \frac{1}{2}(a^2 + b^2 + c^2) \}^{1/2} = K$ , suppose.

Also form  $(C - B), (A - C), (B - A)$ , and divide by  $K$ . Hence

$$(y - z) = (c^2 - b^2)/K \dots\dots\dots (E),$$

$$(z - x) = (a^2 - b^2)/K \dots\dots\dots (F),$$

$$(x - y) = (b^2 - a^2)/K \dots\dots\dots (G).$$

Here  $F - G$  gives  $y + z - 2x = (2a^2 - b^2 - c^2)/K$ , whence

$$3x = K - (2a^2 - b^2 - c^2)/K \quad \text{and} \quad x = (b^2 + c^2 - a^2)/2K,$$

with similar results for  $y, z$ .

Substituting these  $x, y, z$  into any one of A, B, C, and reducing, gives  $a^4 + b^4 + c^4 - 2b^2c^2 - 2c^2a^2 - 2a^2b^2 = 0$ ,

which breaks up into factors

$$(a + b + c)(-a + b + c)(a - b + c)(a + b - c) = 0,$$

so that some one of these factors must = 0.

[Rest in Reprint.]

**17898.** (Professor K. J. SANJANA, M.A.)—Solve the following problem geometrically, showing that the straight ruler and compasses are not sufficient for the solution:—Through a given point in the plane of two fixed intersecting straight lines draw a straight line whose intercept between the lines is of given length.

*Remark by R. F. DAVIS, M.A.*

Let  $E$  be the given point through which it is required to draw a straight line  $PQ$  intersecting the given fixed straight lines  $Ox, Oy$  in  $P, Q$  respectively, in such a manner that the intercept  $PQ$  is of given length.

Let  $U$  be the middle point of  $PQ$ .

Since  $PQ$  passes through  $E$ , the locus of  $U$  is a hyperbola whose centre is the middle point of  $OE$  and whose asymptotes are parallel to  $Ox, Oy$ .

Since  $PQ$  is of constant length, the locus of  $U$  is an ellipse whose centre is at  $O$  and whose axes are the bisectors of  $Ox, Oy$ .

$U$  is therefore determined as the intersection of two loci—a hyperbola and an ellipse; the solution is therefore quartic and cannot be obtained by straight ruler and compasses.

**17406.** (A. W. H. THOMPSON.)—At a point of a helix  $\Delta$  is the shortest distance between consecutive principal normals. If  $s$  be the element of arc at the point, show that  $\Delta s$  is ultimately constant.

*Solution by W. G. BICKLEY.*

Let the equations of the helix be in cylindrical coordinates

$$r = a, \quad z = b\theta.$$

Then if  $P_1, P_2$  are  $z_1\theta_1, z_2\theta_2$ ,

The normal at  $P_1$  passes through the axis and is perpendicular to it, and so also does that at  $P_2$ ;

therefore in the proposed notation  $\Delta = z_1 - z_2$ .

$$\text{Also } s^2 = \{ a(\theta_1 - \theta_2) \}^2 + (z_1 - z_2)^2 = (z_1 - z_2)^2 \{ a^2/b^2 + 1 \};$$

$$\text{therefore } s = (z_1 - z_2) \cdot (a^2 + b^2)^{1/2} / b;$$

$$\text{therefore } \Delta/s = b/(a^2 + b^2)^{1/2} = \text{constant}$$

for finite arcs as well as for infinitesimal ones.

**17416.** (W. F. BEARD, M.A.)—If the Simson line of a point passes through the opposite end of the diameter through the point, then it also passes through the centroid.

*Solutions (I) by the PROPOSER and W. N. BAILEY;*

*(II) by KESHUB DAS DE and V. V. SATYANARAYAN.*

(I) With the usual notation let  $PQ$  be a diameter such that the Simson-line of  $P$  passes through  $Q$ .

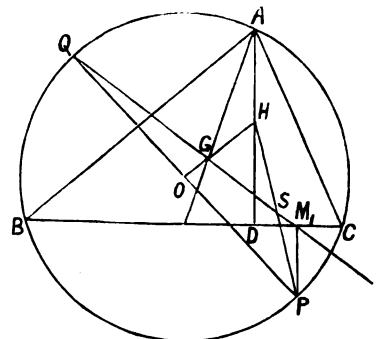
Bisect  $PH$  at  $S$ , thus  $QS$  is the Simson-line of  $P$ .

Let  $QS$  meet  $OH$  at  $G$ .

$HO, QS$  are medians of the triangle  $HPQ$ ;

therefore  $OG = \frac{1}{3}OH$ .

Thus  $G$  is the centroid of the triangle  $ABC$  and lies on the Simson-line of  $P$ .



(II) Let  $P$  be a point on the circum-circle,  $POF$  a diameter,  $O$  the centre of the circle, and  $H$  the orthocentre of  $ABC$ .

Let  $FGE$ , the Simson-line of  $P$ , intersect  $OH$  and  $PH$  in  $G$  and  $E$  respectively.

We have, by Menelaus' theorem,

$$PF \cdot OG \cdot HE = OF \cdot GH \cdot EP;$$

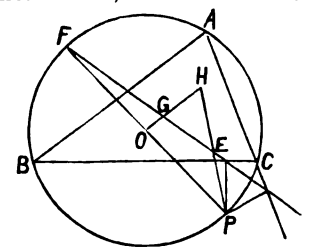
but that  $HE = EP$  is well known;

$$\text{therefore } PF \cdot OG = OF \cdot GH;$$

$$\text{but } PF = 2OF;$$

$$\text{therefore } GH = 2OG.$$

Hence  $G$  is the centroid of the triangle  $ABC$ .



QUESTIONS FOR SOLUTION.

17454. (C. M. ROSS, B.A.)—Find the value of the multiple integral

$$\iiint \dots \int \frac{dx_1 dx_2 \dots dx_n}{[1 - (x_1^2 + x_2^2 + \dots + x_n^2)]^{\frac{1}{2}}}$$

the integral being extended to all positive values for which  $x_1^2 + x_2^2 + \dots + x_n^2 > 1$ .

[See Williamson, *Integral Calculus*, p. 320.]

17455. (Rev. T. R. TERRY, M.A.)—If the number of integers less than  $x$  and prime to it be represented by  $\phi(x)$ , show that  $\phi(xy) > \phi(x)\phi(y)$  when  $x$  and  $y$  have any common factor.

17456. (B. A. SWINDEN, B.A.)—Expand in powers of  $x$  the product  $\pi(1-x/p^2)^{-1}$ ,

in which  $p$  takes all positive prime integral values between 2 and infinity.

17457. (J. HAMMOND, M.A.)—The number of regular star-shaped  $n$ -gons is  $\frac{1}{2}\phi(n) - 1$ , where  $\phi(n)$  is the totient of  $n$ . In particular, when  $n$  is prime the number is  $\frac{1}{2}(n-3)$ . A proof is required.

17458. (R. F. DAVIS, M.A.)—Prove that the determination of the shortest distance between two skew lines in space reduces to the following plane problem: find a point P on Oz and a point Q on Oy, such that  $PQ^2 + \lambda^2 \cdot AP^2$  is a minimum,  $\lambda$  being a constant and A a given fixed point on Oz. Discuss the solution by analysis and by geometry, noticing that two independent variables are involved. Also verify the fact that the shortest distance between two skew lines in space is perpendicular to both of them. [See Dr. Somerville's Question 17344, July, 1912.]

17459. (Professor NEUBERG.)—On donne trois points A, B, C et une droite  $d$  extérieure au plan ABC. M étant un point mobile sur  $d$ , on mène par chaque arête du trièdre MABC un plan perpendiculaire à la face opposée; les trois plans ainsi menés se coupent suivant une même droite MD. Trouver la surface engendrée par MD.

17460. (C. E. YOUNGMAN, M.A.)—A circle touching a cardioide cuts it again at the ends of a chord through the cusp; show that its centre lies on the double normal.

17461. (Professor E. J. NANSON.)—If the chord PP' of the conic S' touches the conic S, show that the chord of contact of the second tangents from P, P' to S touches  $\Theta'S = 4\Delta F$ .

17462. (Professor K. J. SANJANA, M.A.)—A chord of a conic goes through a fixed point, and its extremities are severally joined to two given points in the plane of the conic; find the locus of intersection of the joining lines. Examine the case when the chord is fixed in direction, and find when the locus reduces to a curve of the second degree.

17463. (C. E. MCVICKER, M.A.)— $\kappa$  is any point in the plane of a triangle;  $\kappa D, \kappa E, \kappa F$  are drawn at right angles to the sides. If a conic be drawn through D, E, F, and having its centre half-way between  $\kappa$  and the orthocentre, show (i) that this conic is an ellipse whose major and minor axes are the greatest and least distances of  $\kappa$  from the circumference of the circum-circle, (ii) that this ellipse is the locus of the orthopoles, with respect to the triangle, of all lines drawn through  $\kappa$ .

17464. (W. F. BEARD, M.A.)—TP, TQ are tangents to a parabola, and the circle TPQ meets the curve again in P'Q'. Prove that (i) PQ, P'Q' meet on the directrix; (ii) if T' is the pole of P'Q', TT' is bisected at the focus.

17465. (A. M. NESBITT, M.A.)—A variable parabola has double contact with the ellipse  $x^2/a^2 + y^2/(a^2 - c^2) = 1$ , and its vertex traverses the line  $y = c$ . Find the locus of the pole of the chord of contact.

17466. (W. N. BAILEY.)—A point P is taken on the circum-circle of a regular polygon having an odd number of sides. Show that the sum of the distances of P from alternate vertices including the two adjacent vertices is equal to the sum of its distances from the remaining vertices of the polygon.

17467. (G. JAGO, M.A.)—ABC and DFF are two triangles having AB = DE, AC = DF, and angle BAC greater than angle EDF. Show that angle ABC <, =, or > DEF, according as the sum of angles ACB, DFE <, =, or > two right angles.

17468. (R. F. DAVIS, M.A.)—If P, Q divide the base BC of a triangle ABC isotomically, and AP, AQ meet the circum-circle again in p, q, prove that pq passes through a fixed point on BC.

17469. (H. D. DRURY.)—The perpendiculars of a triangle ABC are produced to meet the circum-circle in points D, E, F respectively. Starting from A, and going round the circle in a counter-clockwise direction, trisect the arc ABD, and let P be the point of trisection next to A; then trisect the arc BCE, and let Q be the point of trisection next to B; lastly trisect the arc CAF, and let R be the point

of trisection next to C. Show that, if we start from A and go round the circle in a clockwise direction, R will trisect the arc ACD, Q the arc CBF, and P the arc BAF, and the triangle PQR is equilateral.

17470. (Professor JAN DE VRIES.)—Find the condition that the circum-centre of a triangle may lie on the in-circle.

17471. (Professor J. C. SWAMINARAYAN, M.A.)—If  $A + B + C = 180^\circ$ ,

$$\begin{aligned} &\text{prove the identity} \\ &\text{cosec } A (\sin^4 A - \sin^2 B \sin^2 C) [\sin(B - C) - \cos C \sin(C - A) \\ &\quad - \cos B \sin(A - B)] \\ &+ \text{cosec } B (\sin^4 B - \sin^2 C \sin^2 A) [\sin(C - A) - \cos A \sin(A - B) \\ &\quad - \cos C \sin(B - C)] \\ &+ \text{cosec } C (\sin^4 C - \sin^2 A \sin^2 B) [\sin(A - B) - \cos B \sin(B - C) \\ &\quad - \cos A \sin(C - A)] = 0. \end{aligned}$$

Also point out the important geometrical truth which it represents.

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It is requested that all Mathematical communications should be sent to the Mathematical Editor,

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Mr. E. H. Neville was elected a member.

Profs. J. W. Nicholson, P. J. Henwood, and Mr. A. M. Grundy were admitted into the Society.

Dr. Bromwich reported that in the last session the number of members had increased from 292 to 305.

The President alluded to the death of Prof. Paul Gordan, an honorary member of the Society.

The following papers were communicated:—

“*Proofs of certain General Theorems relating to Orders of Coincidence*”: Prof. J. C. Fields.

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# CLASS LISTS

## OF CANDIDATES WHO HAVE PASSED THE CERTIFICATE EXAMINATION OF THE COLLEGE OF PRECEPTORS.—CHRISTMAS, 1912.

The list of successful candidates at the Colonial Centres will be published in the March number of "The Educational Times."

[Throughout the following Lists, bracketing of names implies equality.]

### PRIZES.

#### FIRST CLASS [or SENIOR].

##### General Proficiency.

1. Rogans, J. A. (Isbister Prize.) Oakes Institute, Walton, Liverpool.
2. Damsell, G. F. (Pinches Prize.) Oakes Institute, Walton, Liverpool.
3. Sanders, F. E. Oakes Institute, Walton, Liverpool.
4. Mitchell, G. A. Oakes Institute, Walton, Liverpool.

##### English Subjects.

1. Bolton, H. F. Hutton Grammar School.
2. Waylett, J. R. Croydon High School for Boys.

##### Mathematics.

1. Rogans, J. A. Oakes Institute, Walton, Liverpool.
2. Sanders, F. E. Oakes Institute, Walton, Liverpool.

##### Modern Foreign Languages.

[Not awarded.]

##### Classics.

[Not awarded.]

##### Natural Sciences.

1. Rogans, J. A. Oakes Institute, Walton, Liverpool.
2. Damsell, G. F. Oakes Institute, Walton, Liverpool.

#### FIRST CLASS [or SENIOR]—continued.

##### Taylor-Jones Prize for Scripture History.

- Prior, H. R. T. Norwich High School for Boys.

##### "Eve Silver Medal" for Proficiency in German.

[Not awarded.]

#### SECOND CLASS [or JUNIOR].

##### General Proficiency.

1. Bartlett, J. C. Portsmouth Boys' Secondary School.
2. Hunter, W. Tollington School, Muswell Hill, N.
3. Wolff, C. V. Tollington School, Muswell Hill, N.
4. Guttridge, G. H. Wilmslow College.

##### Soames Prize for Scripture History.

- Bedwell, Miss E. E. Pemberton College, Upper Holloway, N.

#### THIRD CLASS.

##### General Proficiency.

1. Pool, F. E. Newquay College.
2. Wells, G. P. Private tuition.
3. Henderson, Miss J. T. Crouch End High School and College, Hornsey, N.
4. Hainsworth, J. R. Newquay College.

The following is a List of the Candidates who obtained the FIRST and SECOND PLACES in each Subject on FIRST CLASS PAPERS. (Only those who obtained Distinction are included.)

#### Scripture History.

1. { Brooks, R. J. Grosvenor College, Carlisle.
- { Clarke, Miss V. E. Towcester School.

#### English Language.

1. { Bolton, H. F. Hutton Grammar School.
- { Denison, R. E. Manor House, Clifton, Bristol.

#### English History.

1. { Mahoney, Miss M. Private tuition.
- { Miles-Cadman, C. F. Private tuition.
- { Mitchell, G. A. Oakes Institute, Walton, Liverpool.
- { Waylett, J. R. Croydon High School for Boys.

#### Geography.

1. Darrah, H. Mount Radford School, Exeter.
2. Bolton, H. F. Hutton Grammar School.

#### Arithmetic.

1. Hargreaves, C. Oakes Institute, Walton, Liverpool.
- { Finch, J. Oakes Institute, Walton, Liverpool.
- { Piper, A. E. Private tuition.
- { Sanders, F. E. Oakes Institute, Walton, Liverpool.
- { Tanton, C. H. St. Leonards Collegiate School, Croydon High School for Boys.
- { Waylett, J. R.

#### Algebra.

1. Arnold, T. J. B. Norwich High School for Boys.
2. { Bolton, P. L. Hutton Grammar School.
- { Sanders, F. E. Oakes Institute, Walton, Liverpool.

#### Geometry.

1. { Mitchell, G. A. Oakes Institute, Walton, Liverpool.
- { Rogans, J. A. Oakes Institute, Walton, Liverpool.

#### Trigonometry.

1. Rogans, J. A. Oakes Institute, Walton, Liverpool.

#### Mechanics.

1. Hargreaves, C. Oakes Institute, Walton, Liverpool.
2. { Damsell, G. F. Oakes Institute, Walton, Liverpool.
- { Darrah, H. Mount Radford School, Exeter.

#### Book-keeping.

1. Bunnell, S. A. Shoreham Grammar School.
2. { Dyer, J. M. Shoreham Grammar School.
- { Piper, A. E. Private tuition.
- { West, F. A. Shoreham Grammar School.

#### Mensuration.

1. Rogans, J. A. Oakes Institute, Walton, Liverpool.
2. Sanders, F. E. Oakes Institute, Walton, Liverpool.

#### French.

1. Boisselot, R. C. A. The Grammar School, Ongar.
2. Boudoin, M. A. Springside House School, Gorvy, Jersey.

#### German.

1. Denison, R. E. Manor House, Clifton, Bristol.

#### Latin.

1. Denison, R. E. Manor House, Clifton, Bristol.

#### Light and Heat.

1. { Doré, C. U. Shoreham Grammar School.
- { Kershaw, J. Private tuition.

#### Magnetism and Electricity.

1. { Bolton, H. F. Hutton Grammar School.
- { Faux, A. V. Southport Modern School.
- { Rogans, J. A. Oakes Institute, Walton, Liverpool.

#### Chemistry.

1. Bracegirdle, G. A. Private tuition.
2. Mitchell, G. A. Oakes Institute, Walton, Liverpool.

#### Botany.

1. Llewellyn, W. Private tuition.

#### Drawing.

1. { Biggs, Miss C. M. Crouch End High School & College, Hornsey.
- { Grant, A. J. S. Charlecote, Worthing.

#### Music.

1. Regan, L. W. A. St. Peter's Choir School, Eccleston Street East, S.W.

#### Political Economy.

1. Miles-Cadman, C. F. Private tuition.

#### Shorthand.

1. Piper, A. E. Private tuition.
2. Witting, S. N. Wheeler's Scarborough Grammar School.

#### Domestic Economy.

1. Williams, Miss G. E. Private tuition.
- { Edmunds, Miss B. Cardiff and S. Wales School, Cardiff.
- { Robson, Miss M. Private tuition.
- { Roe, Miss D. E. Ravensworth School, Scarborough.
- { Scott, Miss S. T. Crouch End High School & College, Hornsey.

## CLASS LIST—BOYS.

N.B.—The small italic letters denote that the Candidate to whose name they are attached was distinguished in the following subjects respectively:—

a. = Arithmetic.	du. = Dutch.	gr. = Greek.	ma. = Magnetism & Electricity.	s. = Scripture.
al. = Algebra.	e. = English.	h. = History.	ms. = Mensuration.	sc. = Elementary Science.
b. = Botany.	f. = French.	he. = Hebrew.	mu. = Music.	sh. = Shorthand.
bk. = Book-keeping.	g. = Geography.	i. = Italian.	nh. = Natural History.	sp. = Spanish.
ch. = Chemistry.	ge. = German.	ir. = Irish.	p. = Political Economy.	tr. = Trigonometry.
d. = Drawing.	geo. = Geology.	l. = Latin.	ph. = Physiology.	w. = Welsh.
do. = Domestic Economy.	gm. = Geometry.	lt. = Light and Heat.	phys. = Elementary Physics.	z. = Zoology.
		m. = Mechanics.		

The small figures <sup>1</sup> and <sup>2</sup> prefixed to names in the Second and Third Class Lists denote that the Candidates were entered for the First and Second Classes respectively.

In the addresses, Acad. = Academy, C. or Coll. = College, Coll. S. = Collegiate School, Comm. = Commercial, Conv. = Convent, Elem. = Elementary, End. = Endowed, Found. = Foundation, H. = House, Hr. = Higher, Inst. = Institute, Int. = International, Inter. = Intermediate, Poly. = Polytechnic, Prep. = Preparatory, P.-T. = Pupil-Teachers, S. = School, Sec. = Secondary, Tech. = Technical, Univ. = University.

## FIRST CLASS [or SENIOR].

## Honours Division.

Rogans, J. A. *a. al. gm. tr. ms. f. lt. ma. ch. d.*  
Oakes Inst., Walton, Liverpool

Damsell, G. F. *e. a. gm. m. f. ch.*  
Oakes Inst., Walton, Liverpool

Saunder, F. E. *a. al. gm. ms. ch.*  
Oakes Inst., Walton, Liverpool

Mitchell, G. A. *e. h. a. al. gm. ms. ch.*  
Oakes Inst., Walton, Liverpool

Hargreaves, C. *a. al. gm. m. ms. d.*  
Oakes Inst., Walton, Liverpool

Bolton, H. F. *s. e. g. al. f. ma.* Hutton Gram. S.

Waylett, J. R. *h. g. a. al. gm.*  
Croydon High S. for Boys

Darrah, H. *s. g. a. al. m. ch.*  
Mount Radford S., Exeter

Bradley, W. *a. al.*  
Tollington S., Muswell Hill

Piper, A. E. *a. bk. sh.* Private tuition

Bolton, P. L. *e. a. al.* Hutton Gram. S.

Pilkington, P. *f.* Hutton Gram. S.

Arnold, T. J. B. *a. al.*  
Norwich High S. for Boys

Denison, R. E. *e. a. al. f. gel.*  
Manor H., Clifton, Bristol

Willders-Lewis, H. C. *a. al. f.*  
Croydon High S. for Boys

Sykes, B. *ch.* Hutton Gram. S.

Hewitt, J. H. *d.* Grosvenor Coll., Carlisle

West, F. A. *a. gm. bk. lt.* Shoreham Gram. S.

Tanton, C. H. *a.* St. Leonard's Coll. S.

Hubbard, J. W. *al.*  
Castle Hill S., West Ealing

Toomey, D. P. Tollington S., Muswell Hill

Anderson, G. F. *e. al.*  
Croydon High S. for Boys

Miles-Cadman, C. F. *s. e. h. a. p.*  
Butley, near Tunstall

Prior, H. R. T. *s. e.*  
Norwich High S. For Boys

Roff, E. A. Private tuition

Fugeman, W. A. Tollington S., Muswell Hill

Gowers, C. A. Tollington S., Muswell Hill

Spark, A. J. Argyle H., Sunderland

Starling, J. E. Tollington S., Muswell Hill

## FIRST CLASS [or SENIOR].

## Pass Division.

Cadiach, E. E. *s.*  
St. John's Coll., Finsbury Park

Partridge, A. T. Private tuition

Watson, F. B. *e. f.*  
Southdown Coll., Willingdon, Eastbourne

Cadwalader, A. J. *d.* Hutton Gram. S.

Dyer, J. M. *a. bk.* Shoreham Gram. S.

Robertson, C. H. *a.*  
Highfield S., Muswell Hill

Potter, G. H. *a.*  
Oakes Inst., Walton, Liverpool

Cunningham, A. P. Hutton Gram. S.

Doré, C. U. *gm. lt.* Shoreham Gram. S.

Grant, A. J. S. *d.* Charlecote, Worthing

Grimsditch, H. B.  
Oakes Inst., Walton, Liverpool

Morpeth, S. *a. al. f.* Newcastle Modern S.

Fazackerley, R. J. The Jersey Modern S.

Cartmel, S. M. Hutton Gram. S.

Roskell, J. Hutton Gram. S.

Livermore, I. O. St. Mary's Coll., Harlow

Milroy, A. A. *a. al. gm.*  
Oakes Inst., Walton, Liverpool

Ashton, E. *d.* Hutton Gram. S.

Kernick, O. *al. lt.* Newquay College

Turvey, N. Penketh School

Finch, J. *a.* Oakes Inst., Walton, Liverpool

Graham, N. *f.* Hutton Gram. S.

Faux, A. V. *ma.* Southport Modern S.

Wilkins, W. Hutton Gram. S.

McAllister, K.  
Oakes Inst., Walton, Liverpool

Witting, S. N. *a. al. sh.*  
Wheatley's Scarborough Gram. S.

Soutter, L. J. Tollington Park Coll., N.

Brown, F. A. S. Norwich High S. for Boys

Bell, W. D. *al.*  
Oakes Inst., Walton, Liverpool

Sole, A. E. *a.* Shoreham Gram. S.

Wood, J. Hutton Gram. S.

Rowse, E. A. *s. d.* Newquay College

Macdonald, A. C. *lt.*  
Tollington S., Muswell Hill

Firkin, R. E. St. Mary's Coll., Harlow

Kershaw, J. *lt.* Private tuition

Parsell, J. E. Oakes Inst., Walton, Liverpool

Lyon, A. V. H. The High S., Brentwood

Redman, R. Hutton Gram. S.

Bunnell, S. A. *bk.* Shoreham Gram. S.

Jones, C. B. Oakes Inst., Walton, Liverpool

Bye, E. Margate Comm. S.

Staples, E. A. St. John's Coll., Finsbury Park

Skelton, H. *d.*  
St. Martin's Gram. S., Scarborough

Gorrie, W. C. Oakes Inst., Walton, Liverpool

Horne, J. L. Hutton Gram. S.

Phillipps, R. S. Tollington S., Muswell Hill

Pitchford, A. R. Shoreham Gram. S.

Adams, T. R. Beccles College

Simpson, F. W. *ch.* Private tuition

Greaves, G. H. Commercial Coll., Acton

Maxted, A. H. Brunswick H., Maidstone

Harrison, C. *s.* Penketh School

White, G. Newquay College

Page, J. Oakes Inst., Walton, Liverpool

Kelsey, V. Gram. S., Margate

Langrish, T. H. Shoreham Gram. S.

Strohmenger, G. R. Tollington S., Muswell Hill

Taylor, T. *lt.* Tollington S., Muswell Hill

Seferian, A. M. Gram. S., Chorlton-cum-Hardy

Brooks, R. J. *s.* Grosvenor Coll., Carlisle

Chick, J. H. T. The High S., Brentwood

Cunningham, E. H. Hutton Gram. S.

McConnell, W. F. Shoreham Gram. S.

Moore, J. R. The Palace S., Bewdley

Regan, L. W. A. *mu.* St. Peter's Choir S., S. W.

Reilly, D. C. Commercial Coll., Southport

Taylor, G. C. The Palace S., Bewdley

Johnson, W. H. Commercial Coll., Southport

Barker, E. B. *s.* Southport Modern S.

Mercer, E. C. Oakes Inst., Walton, Liverpool

Hands, R. H. J. St. Leonards Coll. S.

Reid, G. F. Southport Modern S.

Nock, H. S. The Palace S., Bewdley

Ling, W. B. *d.* Norwich High S. for Boys

Rush, J. Grosvenor Coll., Carlisle

Schaeffer, H. G. *s.* St. John's Coll., Finsbury Park

de Silva, J. P. *s.* St. Joseph's Acad., Kennington Rd., S. E.

Le Moignan, P. G. *f.* Harleston H., St. Lawrence, Jersey

Spedding, J. H. Municipal Secondary S., Bolton

Wade, H. L. *d.* Norwich High S. for Boys

Wright, W. S. St. Winifred's, Torquay

Gibson, W. R. Argyle H., Sunderland

Buck, D. W. Beccles College

Parry, R. G. W. Tollington S., Muswell Hill

Tate Oundle School

Edwards, D. T. Commercial Coll., Acton

Smith, E. L. *lt.* Tollington S., Muswell Hill

Welsh, E. L. Tollington S., Muswell Hill

Romeril, G. H. *f.* The Jersey Modern S.

Warburton, A. G. Tollington S., Muswell Hill

Porteous, H. R. Richmond Hill S.

Fisher, H. *d.* Private tuition

Jelleries, L. J. *e. g.* Higher Grade S., Mountain Ash

Page, J. O. The Palace S., Bewdley

Morgan, W. D. Old College, Carmarthen

Bewsher, F. A. The Philological School, Southsea

Latham, F. C. B. *e.* Shoreham Gram. S.

Dean, N. E. St. Mary's Coll., Harlow

Horscroft, S. a. Brunswick H., Maidstone

Brown, J. G. Hoe Gram. S., Plymouth

Forbes, A. S. Westminster School

Jenkins, A. G. Private tuition

Jennings, A. T. A. Bishopston Comm. S., Bristol

Jenkins, D. Private tuition

Sparkes, G. H. Old College S., Carmarthen

Bather, J. R. Oakes Inst., Walton, Liverpool

Lewis, F. Hutton Gram. S.

Randall, P. Private tuition

Horncastle, H. J. Dorset H., Sevenoaks

Green, C. A. *d.* Private tuition

Pegler, H. A. Croydon High S. for Boys

Blankley, C. H. St. Leonards Coll. S.

Charnock, R. W. Oakes Inst., Walton, Liverpool

Cooper, C. W. Brondesbury Coll., N. W.

Collins, W. C. Tollington S., Muswell Hill

Lee, S. E. Private tuition

Hutson, D. J. Barton S., Wisbech

Hunt, J. Hutton Gram. S.

Sharnan, W. S. Private tuition

Slade, A. J. Steyne S., Worthing

Worthington, D. H. Croydon High S. for Boys

Norris, A. G. Chichester Gram. S.

Hadrill, C. I. Tollington Park Coll., N.

Bamford, J. L. Southport Modern S.

Souter, J. L. Tollington Park Coll., N.

Panes, H. D. Bishopston Comm. S., Bristol

Tilbury, H. W. The Philological S., Southsea

Tanton, K. F. St. Leonards Coll. S.

Llewellyn, W. *b.* Private tuition

Scotlick, D. A. Private tuition

Taylor, H. Croydon High S. for Boys

Owen, R. G. Clark's Coll., Cardiff

Williams, J. S. Private tuition

Yeoman, J. H. Greystones S. for Boys, Scarborough

James, J. Old College S., Carmarthen

Giles, L. F. Cambridge H., Camdeu Rd., N.

Reycroft, H. V. Boys' Coll. S., Aldershot

Brooks, H. C. Tollington Park Coll., N.

Baker, F. P. The Gram. S., Ongar

Moore, S. The Palace S., Bewdley

Pugh, H. N. Gram. S., Chorlton-cum-Hardy

Fishburn, J. Shoreham Gram. S.

Knowles, T. Barton S., Wisbech

Oxnam, J. A. Hoe Gram. S., Plymouth

Stanton, H. M. A. Barton S., Wisbech

Calvert-Jones, P. G. Private tuition

Jenkins, A. H. Advanced Elem. Boys' S., Merthyr Tydfil

Dymond, J. J. Hoe Gram. S., Plymouth

Stanton, R. G. O. Barton S., Wisbech

Davies, J. Private tuition

SECOND CLASS [or JUNIOR].

Honours Division.

Bartlett, J.C. h.d. l. ch. d. Portsmouth Boys' Sec. S.
Hunter, W. al. l. TOLLINGTON S., MUSWELL HILL
Wolf, C.V. al. l. ch. d. TOLLINGTON S., MUSWELL HILL
Fishburn, J.E. al. Shoreham Gram. S.
Guttridge, O.H. al. f. WILMSLOW COLLEGE
Trevorrow, J.P. al. NEWQUAY COLLEGE
Baldwin, H.H. al. f. Mercers' School, E.C.
Wigfield, W.M. s. h. al. ms. TOLLINGTON PARK COLL., N.
Fuller D.M. al. f. ge. Shoreham Gram. S.
Pywell, L. al. gm. ms. f. Shoreham Gram. S.
Hill, E. al. f. Mercers' School, E.C.
Borrowdale, W.G. al. d. ARGYLE H., SUNDERLAND
Eglington, D.C. al. d. The Modern Coaching Coll., Wallington
Watson, C.B. al. gm. ms. St. John's Coll., Finsbury Park
Funnell, E.R. U. d. TOLLINGTON S., MUSWELL HILL
Broderick, H. al. gm. d. WILMSLOW COLLEGE
Bell, W.R. s. al. al. gm. OAKES INST., WALTON, LIVERPOOL
Horton, J.E. al. Private tuition
Pilkington, W.G. s. f. Hutton Gram. S.
Border, A.E. ARGYLE H., SUNDERLAND
Henderson, F.E. U. Greystones S. for Boys, Scarborough
Milburn, L. al. al. gm. ARGYLE H., SUNDERLAND
James, H.C. gm. d. The High S., Brentwood
Priest, B. s. al. al. St. Martin's Gram. S., Scarborough
Hardern, G.D. s. d. Penketh School
Taylor, W.H. al. gm. OAKES INST., WALTON, LIVERPOOL
Fisher, H.G. f. Lawrence Coll., Birmingham
Wright, W.H. al. f. Mercers' School, E.C.
Anthony, A.A. al. gm. OAKES INST., WALTON, LIVERPOOL
Bishop, C.D. al. f. Merchant Taylors S. Bradford, S.V.
Southdown Coll., Willington, Eastbourne
Baker, A.B. f. d. Mercers' School, E.C.
Hobbs, H.P. Steyne S., Worthing
Vokins, G.C. TOLLINGTON S., MUSWELL HILL
Copeland, G.F. ch. al. TOLLINGTON S., MUSWELL HILL
Teal, G.H. g. al. d. Lawrence Coll., Birmingham
Crellin, H.J. al. gm. Cranbrook Coll., Ilford
Summers, O.E. al. d. Wilson Coll., Stamford Hill
Grayson, J.K. gm. f. Bancroft's S., Woodford
Stride, W.A. J. gm. Esplanade H., Southsea
Ashdowne, K. al. Froebel H., Devonport
Macqueen, E.N. TOLLINGTON S., MUSWELL HILL
Gladding, C. f. Southdown Coll., Willington, Eastbourne
Marques, L.A. s. f. Penketh School
Mortimore, H. s. f. Penketh School
Prentice, H.V. f. Steyne S., Worthing
Dean, G.G. na. Shoreham Gram. S.
Denison, L.A. al. Manor H., Clifton, Bristol
Herd, S.B. al. gm. OAKES INST., WALTON, LIVERPOOL
Clark, A.R. d. TOLLINGTON S., MUSWELL HILL
Harman-Brown, F.G. f. Private tuition
Ward, H.A. s. Southport Modern S.
Barker, V.H. U. TOLLINGTON S., MUSWELL HILL
Blake, C.K. Mercers' School, E.C.
Jones, J.A. f. Mercers' School, E.C.
Weeden, W.A. U. TOLLINGTON S., MUSWELL HILL
Baxter, C. al. Upholland Gram. S., Orrell
Williams, G.E. TOLLINGTON S., MUSWELL HILL
Bodenham, H.N. The College, Weston-super-Mare
Cartledge, S. Shoreham Gram. S.
Dunbar, R.J. V. f. Mercers' School, E.C.
Moat, D.K. al. bk. Shoreham Gram. S.
Oliver, G. s. Margate Comm. S.
Egerton, A.P.H. f. d. Private tuition
Gould, C.F. s. Wallingbrook S., Chumleigh
Price, H.D. d. Brighton H., Clifton, Bristol
Rosenberg, R.S. Heaton Moor College
Macgregor, R.A. U. TOLLINGTON S., MUSWELL HILL
Roberts, G.H. al. Private tuition

SECOND CLASS [or JUNIOR].

Pass Division.

Taylor, E.C. d. Brunswick H., Maidstone
Kerr, R. e. f. Merchant Taylors S.
Mitchell, T.A. d. Hoe Gram. S., Plymouth
Reed, W. al. f. Private tuition
Shenton, C.L.R. al. Froebel H., Devonport
St. Ledger, J.H. d. The Modern S., Gravesend
Taylor, G.E. d. St. Aubyn's, Woodford Green
Stevens, L.A.E. Froebel H., Devonport
Black, R.C. Shoreham Gram. S.
Caden, H. al. gm. ch. Private tuition
Friendship, L.F. d. Brighton H., Clifton, Bristol
Green, J.F. ARGYLE H., SUNDERLAND
Lindsay, K.H. Mercers' School, E.C.
Rushton, G. Southport Modern S.
Winner, C.P. Wallingbrook S., Chumleigh
Adams, F. al. Shoreham Gram. S.
Caddell, J.L. The Modern S., Gravesend
Pigott, E. Mercers' School, E.C.
Thompson, W.E. Leighton Hall S., Carnforth
Woods, A. The Jersey Modern S.
Browning, M.P. al. Private tuition
Drury, J.B. Private tuition
Luscombe, L.A. al. gm. f. Private tuition
Mather, A.R. al. WILMSLOW COLLEGE
Spark, E. s. ARGYLE H., SUNDERLAND
Wanless, T. Newcastle Modern S.
Blatchford, H.T. U. Hoe Gram. S., Plymouth
James, G.A. al. Wilson Coll., Stamford Hill
Lawrence, F. Paddington High S. for Boys
Morgan, M. Greystones S. for Boys, Scarborough
Smith, H.T.B. al. The Jersey Modern S.
Hills, A.E. Godwin Coll., Margate
Marques, B. sp. 17 Ellerker Gardens, Richmond
Pearson, E.A. Private tuition
Phillips, C.G.R. Shoreham Gram. S.
Darby, A.L. TOLLINGTON S., MUSWELL HILL
Edmonds, E.P. Willington Coll., Stamford Hill
Lewis, T.J. 76 Richmond Rd., Cardiff
Miller, J.E. d. ARGYLE H., SUNDERLAND
Negus, J.T. f. Cranbrook Coll., Ilford
Wilkins, R. Hutton Gram. S.
Holmes, J.F. s. al. Southdown Coll., Willington, Eastbourne
Beer, A. TOLLINGTON S., MUSWELL HILL
Bragg, G.M. Private tuition
Price, G.M. Mercers' School, E.C.
Joye, L.J.H. Private tuition
Rowcroft, C.J. f. Southport Modern S.
Scott, A.C. Norwich High S. for Boys
Boulton, N.V. Norwich High S. for Boys
Guebel, M. d. Croydon High S. for Boys
King, F. na. Shoreham Gram. S.
Wills, J. d. Grosvenor Coll., Carlisle
Bonnett, E.J. al. St. Paul's S., W. Kensington
Cheel, E.S. TOLLINGTON S., MUSWELL HILL
Denison, C.H. Manor H., Clifton, Bristol
Morriss, H. Southdown Coll., Willington, Eastbourne
Parker, F.D. Esplanade H., Southsea
Crumpler, H.S. al. Boys' High S., Wareham
Redgrave, W.T. s. Norwich High S. for Boys
Robertson, R.D.F. al. Private tuition
Shaw, J.A. Private tuition
Cats, L.V. al. Mercers' School, E.C.
Motum, E.G. Norwich High S. for Boys
Owen, W.G. Private tuition
Rowse, I.A., al. Newquay College
Sykes, W.A. al. gm. f. Private tuition
Martin, H.E. d. Commercial S., Maidstone
Raby, V.H. s. al. Newquay College
Taylor, E. The Gram. S., Ongar
Teasdale, T. Grosvenor Coll., Carlisle
Zappert, T.H. f. Mercers' School, E.C.
Bland, E.M. TOLLINGTON PARK COLL., N.
Reyes, F.A. Southdown Coll., Willington, Eastbourne
Leonard, S.M. The High S., Brentwood
Shoemaker, E. bk. Shoreham Gram. S.
Cambrook, H. f. Mercers' School, E.C.
Dobner, L. Margate Comm. S.
May, A.G. Private tuition
Watson, S.E. Greystones S. for Boys, Scarborough
Wood, A. Newquay College
Dewar, R.P. Private tuition
Fouraker, L.F. Private tuition
Jackson, G.H. Private tuition
Baldwin, R. St. Dunstan's Coll., Margate
Cross Griffiths, W. Birmingham Central Secondary S.
Mina, S.F. al. f. Private tuition
Page, P.C.H. The High S., Brentwood

Anderson, G. d. Norwich High S. for Boys
Ashton, F.R. al. Dorset H., Sevenoaks
Gardiner, S. s. Southport Modern S.
Timperley, R.M. al. gm. County Secondary S., Crewe
Hazelton, W.E. Gram. S., Wallingborough
Withers, T.E. Private tuition
Hillman, H.J. The College, Weston-s. Mare
Mortimore, L. s. Penketh School
Muzafar, A.K., St. Paul's S., W. Kensington
Tozer, H.H. Boys' High S., Wareham
Tuffee, S.E. d. The Modern S., Gravesend
Blenkiron, A.V. Croydon High S. for Boys
Cocker, F.C. Private tuition
Glaisher, K. f. Private tuition
Glazebrook, W.H. Shoreham Gram. S.
Graham, A.W. Hutton Gram. S.
Kienast, F.M. Oxenford H., St. Lawrence, Jersey
McIlroy, J.R. s. Private tuition
Newton, S.E. Mercers' School, E.C.
Robinson, R.R. Simon Langton Boys' S., Canterbury
Croyden, S.B. TOLLINGTON S., MUSWELL HILL
Larkin, F.W. Private tuition
Pearce, A.E. Private tuition
Savery, H.M. Private tuition
Thomas, S. Hoe Gram. S., Plymouth
Wood, W.A. f. St. Olave's Gram. S., S.E.
Coupe, W.T. al. Gram. S., Fulwood, Preston
Lewer, A.G. S. Shoreham Gram. S.
Sutton, W.D. TOLLINGTON PARK COLL., N.
Vogt, H.V. al. d. Private tuition
Walton, R.W. al. Penketh School
Bygott, E. Whitechurch Gram. S.
Conway, H. Southampton Boys' Coll. and High S.
Ingram-Johnson, R.J.T. Private tuition
Lewis, A.E. d. Southdown Coll., Willington, Eastbourne
Mulliner, R.A. Southport Modern S.
Osmer, E.B. Private tuition
Pierce, S. Hutton Gram. S.
Piper, N. ARGYLE H., SUNDERLAND
Salsbury, F.R. Private tuition
Watson, G.H.G. TOLLINGTON S., MUSWELL HILL
Young, R. Shoreham Gram. S.
Bartle, A.F. al. Private tuition
Coates, F.H. St. Martin's Gram. S., Scarborough
Holden, W.B. bk. Shoreham Gram. S.
Hunter, R. Newquay College
Palmer, H.G. al. Springside H., Gorey, Jersey
Reid, S.A. Wilson Coll., Stamford Hill
Williams, L.F. Mercers' School, E.C.
Wilson, L.W. f. Private tuition
Cambrook, L. f. Mercers' School, E.C.
Harris, C. St. J. Private tuition
Lockier, A.E. OAKES INST., WALTON, LIVERPOOL
Narvin, N.V. Croydon High S. for Boys
Patterson, J.R. OAKES INST., WALTON, LIVERPOOL
Smees, F.H. Wilson Coll., Stamford Hill
Turner, C. OAKES INST., WALTON, LIVERPOOL
Douglas, J. al. Private tuition
Guilding, W.J. Private tuition
Livesey, H.H. Hutton Gram. S.
Milton, W.E. Mount Radford S., Exeter
Morley, E.L. Shoreham Gram. S.
Mourant, C. The Jersey Modern S.
Walker, J.H.W. Shoreham Gram. S.
Belt, F. The Haughton S., York
Clarke, R.H. TOLLINGTON S., MUSWELL HILL
Forsyth, C. f. Private tuition
Lane, M. f. The Jersey Modern S.
Martin, P.R. C. Private tuition
Rogers, W. OAKES INST., WALTON, LIVERPOOL
Watson, N.H. 107 Normount Rd., Newcastle-on-T.
Abier, C.F. f. The Jersey Modern S.
Carruthers, G.S. Grosvenor Coll., Carlisle
Courtneidge, C. f. University College S., Hampstead
Le Marquand, H.S. Merchant Taylors S., E.C.
Levinstein, D. al. Rutherford Coll., Newcastle-on-T.
Murray, R.A. Newcastle Modern S.
Smith, B.C. Springside H., Gorey, Jersey
Turvey, J.H. Penketh School
Bettinson, S. s. Barton S., Wisbech
Chamberlain, R. St. Mary's Coll., Harlow
Foy, E.R. St. Helen's Coll., Southsea
Soar, J.A. Wilson Coll., Stamford Hill
Sutcliffe, J.E. TOLLINGTON S., MUSWELL HILL
Boisselot, R.C.A. f. The Gram. S., Ongar
Pickford, H.A. Shoreham Gram. S.
Potter, G.A. al. OAKES INST., WALTON, LIVERPOOL

Bugg, J.N. al. St. Mary's Coll., Harlow
Forsyth, C. Southampton Boys' Coll. & High S.
Holmes, E.S. Godwin Coll., Margate
James, S.W.B. ch. Alenby H., Derby
Liddocot, R.O. Hoe Gram. S., Plymouth
Lloyd, F.B. Private tuition
Pendlebury, C.W. al. Private tuition
Tollemache, D.H. Shoreham Gram. S.
Bardrick, H.G.V. Shoreham Gram. S.
Bo Gyi Southdown Coll., Willington, Eastbourne
Bradfield, L.F. High S. for Boys, Romford
Harrison, T. Leighton Hall S., Carnforth
Hepworth, E.E. f. Newcastle Modern S.
Norgate, R. Norwich High S. for Boys
Phillips, S.G. TOLLINGTON S., MUSWELL HILL
Sercombe, H.B. al. St. Mary's Coll., Harlow
Chisholm, S.M. f. St. Aubyn's, Woodford Green
Clarkson, N.F.W. Private tuition
Course, R.R. f. Private tuition
Gabbett, C. Dudley H., Lee
Gadsden, H. TOLLINGTON S., MUSWELL HILL
Haddock, J. The Palace S., Bewdley
Hugill, V.F.H. Private tuition
Lewis, H.L. Highbury Park S., N.
McLennan, K.D. Croydon High S. for Boys
Safery, E.V. Gunnersbury S., Chiswick
Carter, H.W. Norwich High S. for Boys
Gasking, E.B. OAKES INST., WALTON, LIVERPOOL
Harris, C. J. Newquay College
Hook, R.J. Wallingbrook S., Chumleigh
Livermore, J.E. al. St. Mary's Coll., Harlow
Nightingale, W.G. Leighton Hall S., Carnforth
Hall, F.J. Wilson Coll., Stamford Hill
Hunt, F.J. f. Private tuition
McCahy, C. Private tuition
Penman, D.C. Shoreham Gram. S.
Ridgeway, J.A. Penketh School
Taylor, A.B. Private tuition
Whitelaw, P.S. TOLLINGTON S., MUSWELL HILL
Gregersen, C.S. ARGYLE H., SUNDERLAND
Hyslop, R.B. al. OAKES INST., WALTON, LIVERPOOL
McKnight, J.E. Wilson Coll., Stamford Hill
Rasch, F.H.S. St. Helen's Coll., Southsea
Spenceley, W.S. Tankerton Coll., Whitstable
Whiteley, S.E. Gram. S., Chorlton-cum-Hardy
Ashling, H. al. f. St. James' Sec. S., Grimsby
Eggleston, E. f. ARGYLE H., SUNDERLAND
Kelly, J.S. Leyland House, Southport
Le Maurier, G. f. Les Landes H., Faldouet, Jersey
Lewis, J.S. St. Paul's S., W. Kensington
Mosely, C. Worcester Coll., Westcliff-on-Sea
Reid, B.E. Wilson Coll., Stamford Hill
Bell, R.G. Private tuition
Blake, A.L. Barton S., Wisbech
Prebble, J. Merchant Taylors S., E.C.
Wells, N.B. Modern S., Salisbury
Cass, G.W.G. mu. Scarborough College
Marshall, G.R. Boys' High S., Wareham
Lock, W.P. St. John's Coll., Finsbury Park
Lacey, A.V. Newcastle Modern S.
Wood, R.G. U. TOLLINGTON S., MUSWELL HILL
Baldwin, J.A. Private tuition
Beattie, J. al. gm. Private tuition
Brenton, T.R. TOLLINGTON S., MUSWELL HILL
Grave, G. Keawick School
Revell, W.E. Gunnersbury S., Chiswick
Richardson, R. Scarborough College
Seekings, F. Hutton Gram. S.
Haslegrave, C.P. Private tuition
Holt, N.C. Springside H., Gorey, Jersey
MacDonnell, J.J.M. Private tuition
Nicholls, S. Hoe Gram. S., Plymouth
Perfect, P.C. Southdown Coll., Willington, Eastbourne
Plunkett, J.J.A. Private tuition
Bazillais, R. f. Sutton Park S., Sutton
Chandler, P.A. f. Private tuition
Cole, F.L. Cranbrook Coll., Ilford
Eady, K.W. f. St. Mary's Coll., Harlow
Griffiths, D. Tutorial S., New Quay, Cardigans
Maher, A. Private tuition
Bailey, A.L. Private tuition
Carrodus, V.R. Private tuition
Foxton, A. St. Martin's Gram. S., Scarborough
Hudson, W.H. Thornton Heath School
Roberson, A.R.G. f. Brighton College
Walker, J.L.G. Shoreham Gram. S.
Warburton, J.B. Gram. S., Chorlton-cum-Hardy

**BOYS, 2ND CLASS, PASS—Continued.**  
 Farrington, R.L. Wimslow College  
 1Lebeboer, D.H. Commercial Coll., Acton  
 Linton, D.S.T. Shoreham Gram. S.  
 Phillips, J.C.L. Private tuition  
 Thompson, F.N.E. Scarborough College  
 Brooke-Thorne, H.V. al. Private tuition  
 Cleeve, N.E.E. Shoreham Gram. S.  
 Foster, L. Penketh School  
 Garrett, H.F. d. Croydon High S. for Boys  
 Noel, G.G. Springside H., Gorey, Jersey  
 Clark, C. Froebel H., Devonport  
 Cox, B.N. d. Private tuition  
 Ellicott, J.T. Commercial Coll., Acton  
 Hughes, H. Coll. S., Colwyn Bay  
 Hurst, J. Grosvenor Coll., Carlisle  
 Steer, C.W. The Gram. S. Holsworthy  
 De La Rue, C.F. al.  
 Oxford H., St. Lawrence, Jersey  
 Donohue, J.S. s. Southport College  
 1Head, J.F. Craven Park Coll., Harlesden  
 Newsholme, T.A.W. Private tuition  
 Schooling, C.W. Priory Coll., Hornsey  
 1Dann, P.W. Hutton Gram. S.  
 1Lee, F.A. Croydon High S. for Boys  
 Le Moine, H.G. The Jersey Modern S.  
 1Taplin, W. Private tuition  
 Tubby, R.P. Alderman Norman's  
 Endowed S., Norwich  
 De La Haye, N. The Jersey Modern S.  
 Shepherd, W.E. Hoe Gram. S., Plymouth  
 Stanton, L.H. Tollington S., Muswell Hill  
 Goodall, C.E.L. Hoe Gram. S., Plymouth  
 1Griffiths, W.N. Southport Modern S.  
 1Grundy, R.E. Hutton Gram. S.  
 Hallam, H.W. Newquay College  
 1Jones, S.  
 Advanced Elem. Boys' S., Merthyr Tydfil  
 Kent, S.V. Higher Grade S., Mountain Ash  
 Porter, G. Grosvenor Coll., Carlisle  
 Ward, F.H. al. Private tuition  
 Fisher, J. Norwich High S. for Boys  
 Gardner, J. Hutton Gram. S.  
 Grierson, W.G. Hoe Gram. S., Plymouth  
 Linnett, F.B. Tollington S., Muswell Hill  
 Piercy, G.B. Undercliff Coll., Ventnor  
 Rogers, R.S. Oakes Inst., Walton, Liverpool  
 Private tuition  
 Frost, H.F. Private tuition  
 1Searle, H. St. Leonards Coll. S.  
 Sinden, A.E. Selwyn H., Hove  
 Trussell, E.L. Private tuition  
 Vincent, D.F. f. Private tuition  
 Young, H.G. Croydon High S. for Boys  
 Bendall, A.F. al. Private tuition  
 Bradley, E.A. J. Simon Langton Boys' S., Canterbury  
 Bruce, R. Private tuition  
 Dean, G.H. f. Private tuition  
 1Fowkes, J.E. Private tuition  
 King, C.L. Ryde H., Ripley  
 Matthews, R.L. St. Leonard's Coll., S.  
 Newman, A.C. Hutton Gram. S.  
 Pontin, S.C.M. Highbury Park S., N.  
 Rundle, G.P. Private tuition  
 1Banwell, F.E. Tankerton Coll., Whitstable  
 Brown, L.A. 17Compton Avenue, Brighton  
 Clayton, E.H. Archbishop Holgate's Gram. S., York  
 Hopson, M.G.S. University College S., Hampstead  
 Private tuition  
 Lowe, T. Private tuition  
 Mennie, J.W. Private tuition  
 Parsonage, R.P. Whitechurch Gram. S.  
 Ratcliffe, S. al. Private tuition  
 Simpson, J.C. Gram. S., Windermere  
 Verity, A.K. Private tuition  
 1Whitefield, F.A. Campbell H., Bristol  
 Baxter, E.B. Clifton Coll., Blackpool  
 Colbourne, A. Shoreham Gram. S.  
 1Coles, R.J. Erwell S., Warminster  
 Hawken, W.R.M. Hoe Gram. S., Plymouth  
 Jones, G. Private tuition  
 Montgomery, D.H. Croydon High S. for Boys  
 Swann, L.G. Shoreham Gram. S.  
 Washington, W.F. Croydon High S. for Boys  
 McMechan, S.F.D. f. Saitaire Gram. S., Shipley  
 Narvaez, M. s. Hoe Gram. S., Plymouth  
 1Baker, J.H. Tollington S., Muswell Hill  
 Cooper, J.W. Private tuition  
 Fryman, H. Humberstone Foundation S., Grimsby  
 1Hamel-Smith, L.F. Croydon High S. for Boys  
 1Mitchiner, H.G. Croydon High S. for Boys  
 Whiting, G.C.H. gm. Dame Margaret  
 Thorold's Gram. S., Sedgebrook  
 Wright, H.B. Private tuition  
 Pulford, W.W. Highfield S., Muswell Hill  
 Roe, R.H. Private tuition  
 Ross, N.D. Croydon High S. for Boys  
 Sanderson, H.H. Ashford County S.  
 Turner, A.R. Tollington Park Coll., N.  
 Willard, S.J. St. Leonards Coll. S.

Heywood, W.J. Gram. S., Chorlton-cum-Hardy  
 Kalber, F.W. The Jersey Modern S.  
 Parris, W.H. Oxenford H., St. Lawrence, Jersey  
 Paterson, G. Finsbury Park Coll., N.  
 Smith, G.F. Private tuition  
 Stieber, L.S. f. Private tuition  
 Way, H.S. Manor H., Clifton, Bristol  
 Private tuition  
 Banks, H.K. Freestone, C.A. d. Tollington S., Muswell Hill  
 1Lynn, F.R.H. Gram. S., Cowfold, Horsham  
 Shirt, H. Bournemouth Coll. S.  
 Silverstone, H. Private tuition  
 Steer, A.E. Hoe Gram. S., Plymouth  
 1Brown, F.C. Private tuition  
 1Corke, D.E. Dorset H., Sevenoaks  
 Ingham H. Hutton Gram. S.  
 Jones, N.P. d. Bourne Coll., Quinton  
 Smith, G.E. Southport Modern S.  
 Hook, P.W. Dorset H., Sevenoaks  
 Bone, N.D. The Philological S., Southsea  
 Carpenter, E.R. d. St. John's Coll., Finsbury Park  
 Doughty, L.A. Private tuition  
 1Durham, A. St. Leonards Coll. S.  
 Harvey, G.McN. Private tuition  
 Barnes, R. Grosvenor Coll., Carlisle  
 Clark, W.L. Lulworth H., Caeleion  
 Darroch, J.M. Wilson Coll., Stamford Hill  
 Hayward, F.W.J. Private tuition  
 Howell, C.W. Wallingbrook S., Chulmleigh  
 Lee, P.M. Private tuition  
 Lethwaite, A.T. Norwich High S. for Boys  
 Pierce, F.C. Oakes Inst., Walton, Liverpool  
 Sanders, H.J. Private tuition  
 Smylie, N. Gram. S., Eccles  
 Stiles, K.C. Shoreham Gram. S.  
 Burt, A.T. Gram. S., Chorlton-cum-Hardy  
 1Humphries, A.R. Private tuition  
 Lambert, S.T. Barton S., Wisbech  
 Roberts, T. Private tuition  
 Ballingall, W. Private tuition  
 1Flint, C.C. Gram. S., Margate  
 Francis, G. Brodick H., Fareham  
 Gibson, J.R.R. Leighton Halls, Carnforth  
 1Goddard, R.O. Barton S., Wisbech  
 Lawson, C.V. Brighton H., Clifton, Bristol  
 Littlewood, A.V. Private tuition  
 Simpson, J.E. Greystones S. for Boys, Scarborough  
 Watt, J.A. Shoreham Gram. S.  
 Chipp, F.C. Tollington Park Coll., N.  
 Dyer, R.G. Gram. S., Portsmouth  
 Jones, R.D. Private tuition  
 Kenderline, G.A. Private tuition  
 Knowles, C.R. Private tuition  
 Lander, L.C. Tollington Park Coll., N.  
 Manning, G.E. Croydon High S. for Boys  
 Mout, C.S. Private tuition  
 Rainer, G.H. Thornton Heath S.  
 Robinson, O.F.W. Private tuition  
 Shorto, T. al. Thornton Heath S.  
 Durnell, C.S. Dorset H., Sevenoaks  
 Haggis, S.C. The Philological S., Southsea  
 Hancock, H.M. Private tuition  
 Hibbs, G.W. Boys' High S., Wareham  
 1Hosken, C.N. Newquay College  
 1Lancaster, R.C. Private tuition  
 Pople, D. The Tutorial Chambers, Burnham  
 Berry, E.C. The Gram. S. Ongar  
 Cairns, A. Private tuition  
 Exelby, G. Sutton Park S., Sutton  
 Graidon, D.A. Highfield S., Muswell Hill  
 Harris, R.T. Private tuition  
 Lister, E.A. Bridlington Gram. S.  
 Matthews, L.G. Private tuition  
 Relfe, W.E. St. Leonards Coll. S.  
 Richardson, R. Private tuition  
 Sunbul, Y.A. Private tuition  
 Dodsworth, R.D. Tollington S., Muswell Hill  
 Edney, C.H. Kensington Coaching Coll.,  
 Nevern Sq., S.W.  
 Scott, F.C. Mercers' School, E.C.  
 Griffith, J. Private tuition  
 Gulston, H.V. Gram. S., Margate  
 1Hosken, C.J. Newquay College  
 Southgate, C.J. Southampton Boys' Coll. & High S.  
 Adams, C. Chichester Gram. S.  
 Mackay, A.J. Oxenford H., St. Lawrence, Jersey  
 Bradshaw, H.E. Littleton H., Knowle, Bristol  
 Lywood, H.D.M. Private tuition  
 Norton, R.W. Tollington S., Muswell Hill  
 Nutton, G.C. Halifax Council Sec. Boys' S.  
 Sallis, T. Private tuition

Beattie, N.R. Blyth Secondary S.  
 Bright, W. Private tuition  
 Dando, A.J. Private tuition  
 Hartley, W.G. Clark's Coll., Forest Gate  
 Heald, N. Hutton Gram. S.  
 Michell, W.H. Private tuition  
 O'Neill, F. Private tuition  
 Penberthy, W.F. Queen's Coll., Taunton  
 Phillips, F. Clark's Prep. S., West Ealing  
 Sawyer, A.C. Private tuition  
 Torrance, R.G. Gram. S., Margate  
 Miller, L.A. Barton S., Wisbech  
 Price, W.H. Private tuition  
 Swatland, C.H. Private tuition  
 Walmsley, J. Private tuition  
 Warran, W.S.E. Towcester School  
 Watkins, A.S.H. Shoreham Gram. S.  
 Aucott, G.W. St. Dunstan's Coll., Margate  
 Edwards, A.W. Dorset H., Sevenoaks  
 Morris, O.G. Private tuition  
 Nicholas, W.C. Old College S., Carnarthen  
 Ryder, H.G. Private tuition  
 Hutchings, V.R.L. Hoe Gram. S., Plymouth  
 1Perkins, H.A. Croydon High S. for Boys  
 White, W.T. Private tuition  
 Makin, W. Private tuition  
 Day, C.B. Private tuition  
 Hare, P.V. The School, Wellington Rd., Taunton  
 Osborn, W.G.S. Private tuition  
 Smith, H.F. Croydon High S. for Boys  
 Paine, H.A. Croydon High S. for Boys  
 Bell, A.V.H. Hutton Gram. S.  
 Davies, C. Private tuition  
 Goodall, W. Mexboro' Sec. S. Wombwell  
 Newmarch, G.L.B. St. Helen's Coll., Southsea  
 Phillips, F.W. Thornton Heath School  
 Pryor, G.F. Private tuition  
 Rutherford, R.C. Private tuition  
 Green, E.V. Southdown Coll.,  
 Willington, Eastbourne  
 Gill, E. Gram. S., Chorlton-cum-Hardy  
 Anderson, G. Private tuition  
 Bottig, J.E. Ryde H., Ripley  
 Mitchell, F. Private tuition  
 Stanyon, C.R. Private tuition  
 Sweetman, B.E. Private tuition  
 Brown, H.L. Private tuition  
 Schoof, P.L.S. Dudley H., Lee  
 Hodgson, J.A. Private tuition

Brown, J.R. s.g. Upton Coll., Bexley Heath  
 Fuller, F.E. e.g. al. Steyne S., Worthing  
 Scott, F. a.al. f. Shoreham Gram. S.  
 Batterham, A.E.N. e.a. f. Tollington Park Coll., N.  
 Suddaby, W. e.a. al. Greystones S. for Boys, Scarborough  
 Wright, R.H. e.a. l.g. m. Cranbrook Coll., Ilford  
 Cochrane, G.A.D. s.g. d. Hutton Gram. S.  
 Kennaby, G.L. e.a. al. Priory Coll., Hornsey  
 Paros, N. a.al. St. John's Coll., Finsbury Park  
 Arnold, H.G. e.a. l.f. Norwich High S. for Boys  
 Miller, W.D. s.g. Grosvenor Coll., Carlisle  
 Perrott, H.F. e.a. al. f. Bradley High  
 S. for Boys, Newton Abbot  
 Thomson, K.G. g. al. Upton Coll., Bexley Heath  
 Green, C. s.e. al. l. Manor H., Clapham  
 Walters, E.J. e.a. l. f. Bradley High  
 S. for Boys, Newton Abbot  
 Calvert, J.D. s. Upton Coll., Bexley Heath  
 Coleman, S.F. e.g. Norwich High S. for Boys  
 Hawkins, W.S. e.h. g. Steyne S., Worthing  
 Le Ruez, W.G. s.e. Harleston H.,  
 St. Lawrence, Jersey  
 Ridgeway, F. s.g. s.c. Penketh School  
 Daniels, E.J. e.h. a. Norwich High S. for Boys  
 Hawley, E. e.f. New Coll., Harrogate  
 Rayner, N.E. e.a. al. f. Beccles College  
 Sercombe, K.W. a.al. f. St. Mary's Coll., Harlow  
 Taylor, F.W. s.e. al. f. Wilson Coll., Stamford Hill  
 Taylor, L.N. a.al. f. Oakes Inst., Walton, Liverpool  
 Wix, J.F. g. al. Tollington Park Coll., N.  
 Esam, C.W. W. g. a. The Gram. S., Ongar  
 McLachlan, K.A. g. al. Wimslow College  
 Paul, J.S.G.F. e.g. e. The Gram. S., Ongar  
 Walker, E. h. Beccles College  
 Chudley, A.W. e.a. al. Mount Radford S., Exeter  
 Gould, J.R. d. Wallingbrook S., Chulmleigh  
 Palmer, C.C. e. Froebel H., Devonport  
 Sydal, W.E. g. a. al. Dorset H., Sevenoaks  
 Thompson, E.R. a.s.c. Penketh School  
 Crowhurst, H.F. a. b. k. The Modern S., Gravesend  
 Edmunds, H.E. e. a. Shoreham Gram. S.  
 Elson, A. al. Southdown Coll., Willington,  
 Eastbourne  
 Finn, R.A. e.g. m. f. Arundel H., Surliton  
 Roberts, E.E. e. al. f. Oakes Inst., Walton, Liverpool  
 Twyman, F. a.s.c. Penketh School  
 Ahier, W. e.a. f. The Jersey Modern S.  
 De Gruchy, E.J. e.a. l. f. Oxenford H., St. Lawrence, Jersey  
 Holt, W. e.a. Southport Modern S.  
 Johnston, G.B. a. Grosvenor Coll., Carlisle  
 Marshall, H.L. e. a. Grosvenor Coll., Carlisle  
 Crowder, R.F. e.g. m. Croydon High S. for Boys  
 Farmer, J.W. g. al. Commercial Coll., Acton  
 Lacey, W.C. g. a. Steyne S., Worthing  
 Watta, J.F. h. Steyne S., Worthing  
 Base, K.W. e. Norwich High S. for Boys  
 Burdass, C.W. a. al. f. Scarborough College  
 Dearman, R.L. e. d. Heaton Moor College  
 Haynes, S.J. al. Wilson Coll., Stamford Hill  
 Macey, L.E. s.a. al. St. Leonards Coll. S.  
 Partridge, W.H. Tollington Park Coll., N.  
 Paul, W.R. The Gram. S., Ongar  
 Robinson, S. Oakes Inst., Walton, Liverpool  
 Terry, D.E. e. The Modern S., Gravesend  
 Campbell, S. e.a. Oakes Inst., Walton, Liverpool  
 English, G.R.G. e. f. St. John's Coll., Finsbury Park  
 Joyce, S.K.D. e. a. Croydon High S. for Boys  
 Morel, F. f. St. Mary's High S., St. Helier, Jersey  
 Sugden, H.D. e. Heaton Moor College  
 Boutellier, W.L. al. The Jersey Modern S.  
 Greenwood, L.A. al. m. St. John's Coll., Finsbury Park  
 Hargreave, E.B. h.g. al. Wimslow College  
 Mote, J.H. e. St. John's Coll., Finsbury Park  
 Palmer, L.C.G. e. al. Southdown Coll., Willington, Eastbourne

**THIRD CLASS.**  
**Honours Division.**

Pool, F.E. s.a. al. f. Newquay College  
 Boudoin, M.A. e. al. f. Springside H., Gorey, Jersey  
 Wells, G.P. gm. Private tuition  
 Laurens, S. s.e. Harleston H., St. Lawrence, Jersey  
 Hainsworth, J.R.s.h.a. al. Newquay College  
 Wilson, E.F. h.g. a. al. gm. Commercial Coll., Acton  
 Sheppard, A.N. s.e. g. a. Upton Coll., Bexley Heath  
 Renouf, W.W. e. Springside H., Gorey, Jersey  
 Turney, T.L. e.h. a. al. f. Oakes Inst., Walton, Liverpool  
 Greenwood, A.D. g. al. gm. Cranbrook Coll., Ilford  
 Maynard, A.W. s.e. a. al. f. Cranbrook Coll., Ilford  
 Moissant, L.H.J. al. f. Chichester Gram. S.  
 Bisgood, G.C.H. e. a. al. St. Mary's Coll., Harlow  
 Glenn, K.E. e.h. a. al. f. Cranbrook Coll., Ilford  
 Usher, J.S. e.a. al. f. St. Bede's S., Hornsea  
 Keith, W.A. e.g. gm. Cranbrook Coll., Ilford  
 Dobson, J.R.S. a. al. f. g. e. Bickerton H., Birkdale, Southport  
 Follett, A.J. e.g. a. al. f. Priory Coll., Hornsey  
 de Morsier, S.M. a. al. f. Heath Croft, Hampstead  
 Barney, F. g. a. al. f. Beccles College  
 Bradford, H.J. e.a. al. f. Southdown Coll., Willington, Eastbourne  
 Emelius, K.G. e.a. al. f. St. Leonards Coll. S.  
 MacMahon, D. e.a. al. f. Argyle H., Sunderland  
 Nowell, R.P. e.a. gm. f. Wimslow College



**THIRD CLASS.**

**Pass Division.**

(2)Jenkins, E.D. *al.* The Gram. S., Ongar  
 (3)Royal, F.B. Norwich High S. for Boys  
 (2)Warne, C.W. Wilson Coll., Stamford Hill  
 (2)Barker, C.H. *al.* St. Mary's Coll., Harlow  
 (3)Hirst, H.A. Mercers' S., E.C.  
 (3)Harvey, W.R. Hoe Gram. S., Plymouth  
 (2)Marsh, C.H. Godwin Coll., Margate  
 (2)Spink, L.R. Tollington S., Muswell Hill  
 (2)Cully, L.F.W. Tollington S., Muswell Hill  
 (2)Ashwell, H.F. Brunswick H., Maidstone  
 (2)Loveridge, A. Christ Church Higher Elem. S. Hutton Gram. S.  
 (2)Ainsworth, D.R. Hutton Gram. S.  
 (2)Ashdown, O.W. Wallingbrook S., Chulmleigh  
 (2)Rhode, A.H. St. Mary's Coll., Harlow  
 (2)Hayes, C.F. Christ Church Higher Elem. S.  
 (2)Richards, H.W.E. Tollington S., Muswell Hill  
 (2)Austen, T. Margate Comm. S.  
 (2)Husband, J. The Jersey Modern S.  
 (3)Martyn, T.O. Tollington S., Muswell Hill  
 (2)Cooper, R.H. Barton S., Wisbech  
 (2)Le Gresley, S.E. Springside H., Gorey, Jersey  
 (3)Deschamps, P. Gram. S., Chorlton-cum-Hardy  
 (2)Lane, E. Hutton Gram. S.  
 (2)Oakes, F.W. St. Peter's Choir S., S.W.  
 (2)Hodgson, T.W. Tollington S., Muswell Hill  
 (2)Langler, G.E. Bradley High S. for Boys, Newton Abbot  
 (2)Burkinshaw, C.D. Oakes Inst., Walton, Liverpool  
 (2)Raven, W.H. The Gram. S., Ongar  
 (2)Banister, W.H. *al.* St. John's Coll., Finsbury Park  
 Harrison, H.S. *g.* Argyle H., Sunderland  
 Nightingale, A. *g.* Mount Radford S., Exeter  
 Storry, E.R. *al.* St. Martin's Gram. S., Scarborough  
 Twist, J.R. Gram. S., Welshpool  
 (2)Winniger, W.C. Wallingbrook S., Chulmleigh  
 Young, J. *a.* Heaton Moor College  
 (2)Allitt, P.A. *al.* Barton S., Wisbech  
 Anutey, C.G. *d.* Summerleaze Coll. S., East Harptree  
 Croft, R.H. *e.* Chichester Gram. S.  
 Ditcher, B.F. Ruthin Coll., Eckington  
 (2)Daniell, M.G. The Gram. S., Holsworthy  
 Hind, T.R. *e.* St. Martin's Gram. S., Scarborough  
 Hudson, H. *al.* Oakes Inst., Walton, Liverpool  
 Ingram, A. *a.* Oakes Inst., Walton, Liverpool  
 Kelk, N.T. *g.* *al.* Hutton Gram. S.  
 Landray, W.J. *al.* Wilson Coll., Stamford Hill  
 Lee, J.W. *d.* Towcester School  
 Sturrock, D. St. Winifred's, Torquay  
 Wood, E.A. Arlington Park Coll., Chiswick  
 (2)Clayton, B.F. Paddington High S. for Boys  
 Cushion, H.G. *e.* Norwich High S. for Boys  
 (2)Dixon, S.F. Commercial S., Maidstone  
 Griffiths, H.S. *al.* The Gram. S., Ongar  
 Harper, S.W. *a.* Convent S., Cannock  
 Hewitson, D.A. *J. al.* Norwich High S. for Boys  
 (2)Batty, D.H. St. Leonards Coll., S.  
 Edmondson, N.P. *e.* Leighton Hall S., Carnforth  
 Forsyth, D.C. *e.* St. Aubyn's, Woodford Green  
 Haley, W.J. *e.* Oxenford H., St. Lawrence, Jersey  
 (2)Horsey, H.J. St. Mary's Coll., Harlow  
 Perkins, A. *al.* Froebel H., Devonport  
 Rouse, A. *al.* Oakes Inst., Walton, Liverpool  
 (2)Salt, E.O. Leighton Hall S., Carnforth  
 (2)Blockley, N.T. *al.* St. Dunstan's Coll., Margate  
 Buckley, L. *a.* Steyne S., Worthing  
 Mitchell, H.J. *al.* Gram. S., Welshpool  
 White, W.J. *a.* Highbury Park S., N.  
 Wilkins, S.R. Norwich High S. for Boys  
 (2)Bell, D.D. *al.* Oakes Inst., Walton, Liverpool  
 Bramley, W.H. *g.* *al.* Ousegate S., Selby  
 Brown, W.J. Scarborough College

Deighton, G. *al.* St. Martin's Gram. S., Scarborough  
 Hastings, S.R. *d.* Norwich High S. for Boys  
 Large, G. *al.* Oakes Inst., Walton, Liverpool  
 Tnerk, A.H. Tollington Park Coll., N.  
 White, E.A. Steyne S., Worthing  
 (2)Cosway, R. *g.* Penketh School  
 (2)Hicks, H. Shoreham Gram. S.  
 Johnson, A.J. R.F. Norwich High S. for Boys  
 Johnson, D.N. *a.* Shoreham Gram. S.  
 Kendal, J. The Jersey Modern S.  
 (2)Nunn, F.M. Norwich High S. for Boys  
 Powell, B.B. *e.* Oxenford H., St. Lawrence, Jersey  
 (2)Wilson, D.N. St. Leonards Coll. S.  
 Yates, T. *a.* Hutton Gram. S.  
 (2)Cairns, T. *a.* New Coll., Harrogate  
 Campion, W.T. *a.* Barton S., Wisbech  
 (2)Redfern, B. Heaton Moor College  
 Smith, A.H. *bk.* The Modern S., Gravesend  
 (2)Taylor, J.W. Oakes Inst., Walton, Liverpool  
 (2)Thomson, B. Moseley Modern School  
 Waterman, J.H. *bk.* Wallingbrook S., Chulmleigh  
 Withey, E.G. *e.* Summerleaze Coll. S., East Harptree  
 (2)Baker, C. *al.* Shoreham Gram. S.  
 (2)Brown, H. Gram. S., Fuiwood, Preston  
 Case, H. *g.* Clark's Prep S., West Ealing  
 Hodder, A.R. *f.* St. Winifred's, Torquay  
 Hodson, F. *al.* Oakes Inst., Walton, Liverpool  
 Long, C. *e.* Oxenford H., St. Lawrence, Jersey  
 Vallance, A.W. *e.* Eccles Prep. S., Eccles  
 Wilson, G.W. *al.* Oakes Inst., Walton, Liverpool  
 Young, E. *e.* Croydon High S. for Boys  
 (2)Bailey, H.C. *a.* Barton S., Wisbech  
 Brown, F. Beccles College  
 Down, R. *a.* Littleton H., Knowle, Bristol  
 Eldred, H.E. Tollington Park Coll., N.  
 Johnson, F. *a.* Greystones S. for Boys, Scarborough  
 Jones, E.L.B. Dorset H., Sevenoaks  
 (2)Laws, R.F. Paddington High S. for Boys  
 (2)March, R.Q. Shoreham Gram. S.  
 (2)Smith, D. Private tuition  
 Walker, P.S. *al.* Shoreham Gram. S.  
 (2)Blackwell, G. Margate Comm. S.  
 Cairns, S. *a.* Grosvenor Coll., Carlisle  
 (2)Causebrook, J.F. Towcester School  
 Denton, W.W. *a.* Private tuition  
 Edwards, F.H. *d.* The Modern S., Gravesend  
 Garrett, E.B. Croydon High S. for Boys  
 Horton, E.C. *a.* Tollington Park Coll., N.  
 Kolkenbeck, H.P. *s.g.* Upton Coll., Bexley Heath  
 (2)Lock, F.W. Norwich High S. for Boys  
 (2)Miller, A. The Ferus, Thatcham  
 Way, W. *a.* The College, Weston-super-Mare  
 Wood, E.C. *a.* The Haughton S., York  
 (2)Appleby, E.A. St. Peter's Choir S., S.W.  
 Ayriton, H. Heaton Moor College  
 (2)Bonsfield, H.H. Grosvenor Coll., Carlisle  
 Cooke, J.E. *e.* *al.* Priory Coll., Homsey  
 Crowther, R. Greystones S. for Boys, Scarborough  
 Ffoulkes, H. *a.* Tollington Park Coll., N.  
 (2)Freagar, J.G.L. Tollington S., Muswell Hill  
 (2)Higgins, F.D. Private tuition  
 Jackson, H. Academy, Crewe  
 King, J.A.H. Lancaster Coll., W. Norwood  
 Pickering, W.V. The Palace S., Bewdley  
 Turner, A.E. Oakes Inst., Walton, Liverpool  
 Wardell, J.W. Greystones S. for Boys, Scarborough  
 Weekes, A.W. *e.* St. John's Coll., Brixton  
 (2)Dracock, D.H. Wilson Coll., Stamford Hill  
 Ellis, J. Penketh School  
 Gibson, F. Shoreham Gram. S.  
 Havers, K.F. St. Placids, Ramsgate  
 Jones, A.V. Gram. S., Welshpool  
 Pearl, H. *s.g.* Margate Comm. S.  
 (2)Walkington, T.R. Leighton Hall S., Carnforth  
 Watts, G. Winchester H., Bristol  
 Whitfield, C. *al.* St. Martin's Gram. S., Scarborough  
 (2)Baker, B.S. Bourne Coll., Quinton  
 Bates, F.E. Croydon High S. for Boys  
 Dean, C.C. *g.* New Coll., Harrogate  
 Gould, S.H. *al.* St. Leonards Coll. S.  
 Hare, K.P. Scarborough College  
 Holbrook, G.L. Shoreham Gram. S.  
 Joyce, J. *al.* Argyle H., Sunderland  
 Morris, C.B. The Gram. S., Ongar

Moyle, M. *gm.* The High School, Brentwood  
 (2)Pimm, C.G.N. Littleton H., Knowle, Bristol  
 Robinson, N.Q. Southend Gram. S.  
 Tyler, D.F. The Modern S., Gravesend  
 Willan, F.G. Heaton Moor College  
 Wright, H.B. *e.* St. Martin's Gram. S., Scarborough  
 (2)Binet, P. *f.* Maida Vale S., W.  
 Cooper, A.F. Ruthin Coll., Eckington  
 Cox, V.C.V. *a.* Beccles College  
 Dunford, F.H. Summerleaze Coll. S., East Harptree  
 Du Val, G. *al.* The Jersey Modern S.  
 Faulkner, C.E. The Modern S., Gravesend  
 Gardner, H.B. *a.* Leighton Hall S., Carnforth  
 Goodban, C. *s.* Margate Comm. S.  
 (2)Payne, J. Christ Church Higher Elem. S.  
 Redwood, D.I. Summerleaze Coll. S., East Harptree  
 Shannon, A.D. Froebel H., Devonport  
 Sherwood, A.E. *al.* St. Bodes S., Hornsea  
 Clarke, J.P. *e.* Towcester School  
 Snell, G. Commercial Coll., Acton  
 (2)Banister, H. St. John's Coll., Finsbury Park  
 Baxter, H. *a.* Leighton Hall S., Carnforth  
 Baynes, P.D. Steyne S., Worthing  
 Coates, W.H.F. *ge.* The Modern S., Streatham Common  
 Crewe, W.K. The College, Bridlington  
 (2)Harbord, A.E. Wallingbrook S., Chulmleigh  
 Hillyer, L.A. *W. a.* Boys' High S., Wareham  
 Knowles, J.H. *a.* Penketh School  
 Le Marquand, B.P. *e.* Harleston H., St. Lawrence, Jersey  
 Mattingley, S.V. *a.* Highbury Park S., N.  
 (2)Perkin, I.F. Streatham Modern Coll., S.W.  
 Redfern, H.G. Heaton Moor College  
 Smith, R.S. Beccles College  
 Stubbs, H.L. *e.* Steyne S., Worthing  
 Wheeler, L.C. *e.* *al.* Shoreham Gram. S.  
 (2)Dunn, W.H. *a.* Fitzroy S., Crouch End  
 Eccles, F.L. *a.* Hutton Gram. S.  
 Kilett, J. *al.* The Jersey Modern S.  
 George, C.H. *e.* East Leigh Prep. S., Sheffield  
 Green, G.A. Southport Modern S.  
 (2)Jones, L. St. Leonards Coll. S.  
 (2)Lowe, A. Southampton Boys' Coll. and High S.  
 Nuttall, W.V. *s.* Penketh School  
 Roston, S.R. Bickerton H., Birkdale, Southport  
 Scammell, F.H. *al.* St. Mary's Coll., Harlow  
 (2)Taylor, E.G. Fiddington High S. for Boys  
 Tolley, L.J. *a.* The Gram. S., Holsworthy  
 (2)Booth, T.A. *e.* St. John's Coll., Finsbury Park  
 Coates, R.G. *ge.* The Modern S., Streatham Common  
 Earl, T.E. *g.* Chichester Gram. S.  
 Fairburn, A.M. *d.* New Coll., Harrogate  
 (2)Foster, A.S. Ousegate S., Selby  
 Francis, E.M. *a.* St. John's Coll., Finsbury Park  
 Groves, E.E. Highbury Park S., N.  
 Harvey, L.G. Bradley High S. for Boys, Newton Abbot  
 (2)Lake, F.E. Oakes Inst., Walton, Liverpool  
 Mead, J.D. St. Aubyn's, Woodford Green  
 Oxley, G.L. The Modern S., Gravesend  
 Parry, W.H. Coll. S., Colwyn Bay  
 (2)Symonds, F.R. St. Winifred's, Torquay  
 Vellacott, J.W. Towcester School  
 Wade, B.M. *e.* Leighton Hall S., Carnforth  
 (2)Ashby, S. Old College S., Carmarthen  
 Botting, H.H. *al.* Ryde H., Ripley  
 (2)Cowie, G. *f.* Bootham S., York  
 Cox, C.S. *e.* Wilson Coll., Stamford Hill  
 (2)Downing, A.W. St. Peter's Choir S., S.W.  
 Durrant, W.A. *al.* Alderman Norman's Endowed S., Norwich  
 Holdaway, E.D.W. Monkton H., Streatham  
 Holmes, G.B. Southdown Coll., Willington, Eastbourne  
 Hopkins, W.E. *a.* Hutton Gram. S.  
 (2)Jolliffe, E.W. Commercial S., Maidstone  
 Jones, G.B. *e.* Oakes Inst., Walton, Liverpool  
 Kinmiff, G.R. *e.* Castle Hills, West Ealing  
 Marriott, L.H. The Gram. S., Ongar  
 Pickering, F.H. *d.* Towcester School  
 (2)Pinks, A. St. Peter's Choir S., S.W.  
 Wood Graves, M. *g.* Beccles College  
 (2)Bottrell, A.H. *g.* Newquay College  
 Develin, S.W. *d.* The Modern S., Gravesend  
 Garratt, C.J. *a.* Gram. S., Fulwood, Preston  
 Hirst, E.W. Gram. S., Welshpool  
 Johnson, G.B. Norwich High S. for Boys  
 Margaron, T.J. *e.* Norwich High S. for Boys

(2)Marshall, W.H.W. Brunswick H., Maidstone  
 Oliver, C.P. Hoe Gram. S., Plymouth  
 Stockwell, D.B. The College, Bridlington  
 (2)Warner, S.H. *a.* Commercial Coll., Acton  
 Calderbank, W. *al.* Hutton Gram. S.  
 Cunningham, R. Hutton Gram. S.  
 D'Anthreau, E. *a.* The Jersey Modern S.  
 Fear, E.F. Commercial Coll., Acton  
 Hendy, A.E. *e.* *al.* *d.* Bradley  
 High S. for Boys, Newton Abbot  
 Howell-Jones, A.C. *al.* Littleton H., Knowle, Bristol  
 Lancaster, W. St. Martin's Gram. S., Scarborough  
 Le Seclleur, W. *f.* Springside H., Gorey, Jersey  
 (2)Leverett, H.M. St. Helen's Coll., Southsea  
 Pollard, A.J. Broadgate S., Nottingham  
 (2)Ramsay, W.A. Norwich High S. for Boys  
 Sanderson, G.W. Barton S., Wisbech  
 Wager, A. Norwich High S. for Boys  
 Widlake, W.H. The College, Western-super-Mare  
 (2)Chitty, F.B. Cawley S., Chichester  
 Cogger, R.W. *d.* Commercial S., Maidstone  
 Colls, A.B. Barton S., Wisbech  
 Dennett, P.M. St. Leonards Coll. S.  
 Duncombe, R.H. *e.* Croydon High S. for Boys  
 Espenchied, M.B. Cranbrook Coll., Iford  
 Haynes, G. *f.* The Jersey Modern S.  
 (2)Langford, C.J. Ashland Avenue S., Wigan  
 (2)Lewis, E.R. Old College S., Carmarthen  
 Lupton, C.W. Croydon High S. for Boys  
 Mellor, H.E. Mount Radford S., Exeter  
 Mercer, B. *e.* Gram. S., Welshpool  
 Mudd, S.G. The Modern S., Gravesend  
 Pallet, E. The Jersey Modern S.  
 Palmer, W.C. *al.* Penketh School  
 Schweinitz, H. Oxenford H., St. Lawrence, Jersey  
 (2)Siddall, S.M. Tollington Park Coll., N.  
 (2)Spearing, E.J. Hoe Gram. S., Plymouth  
 Wood, F. New Coll., Harrogate  
 (2)Bonyun, F.V. Croydon High S. for Boys  
 Brown, C.W. Bickerton H., Birkdale, Southport  
 (2)Carbines, H. Oakes Inst., Walton, Liverpool  
 (2)Fordyce, H.M. Highbury Park S., N.  
 Greenwood, L.P. *d.* The Gram. S., Ongar  
 Hagger, L.W.C. *a.* Richmond Park Coll. S., Bournemouth  
 Hersee, W. *al.* Southend Gram. S.  
 (2)Hobbs, B.E. *al.* Bourne Coll., Quinton  
 Hosegood, E.J. *gm.* The High School, Brentwood  
 Ivens, R. Steyne S., Worthing  
 Lake, W.C. Cranbrook Coll., Iford  
 Lloyd, C.J. *al.* St. Leonards Coll. S.  
 O'Neil, B. *al.* The Jersey Modern S.  
 Orrett, C.C. Commercial Coll., Acton  
 Simon, E.L. *a.* The Gram. S., Ongar  
 Southin, J.R. Shoreham Gram. S.  
 Stephens, A.S. *al.* Dorset H., Sevenoaks  
 Taylor, H. Towcester School  
 White, W.D. Greystones S. for Boys, Scarborough  
 Wood, J.S. *g.* Scarborough College  
 (2)Bond, G.P. Lancaster Coll., W. Norwood  
 Briggs, A.G.E. Broadgate S., Nottingham  
 (2)Cutler, W.A. Richmond Park Coll. S., Bournemouth  
 Dingle, A.C. *a.* Hoe Gram. S., Plymouth  
 Grainger, G.G. Steyne S., Worthing  
 Hayward, A. The College, Weston-super-Mare  
 McAra, M.J.A. Fitzroy S., Crouch End  
 Parker, E.W. The High S., Brentwood  
 Piccolati, L.C. *f.* Southdown Coll., Willington, Eastbourne  
 (2)Pierce, L. St. Leonards Coll. S.  
 Scott-Boss, M. Beverly S., Barnes  
 Strong, L.J. The Palace S., Bewdley  
 Walters, W.J.G. *a.* Manor H., Clapham  
 Watson, C.D. Wilson Coll., Stamford Hill  
 Bradshaw, J.N.C. *g.* Gram. S., Fulwood, Preston  
 Chandler, J.C. *e.* Oakes Inst., Walton, Liverpool  
 Connell, F.C. *d.* Ousegate S., Selby  
 (2)Farley, L.R. Chichester Gram. S.  
 Hassell, J.R. Herne H., Cliftonville, Margate  
 Hills, R.H. St. Dunstan's Coll., Margate  
 Howarth, N.S. *e.* Gram. S., Fulwood, Preston  
 Jones, M.B. The Modern S., Streatham Common  
 Mallett, C. The Jersey Modern S.  
 (2)Robb, S. *al.* Beccles College  
 (2)Wiles, J.R.R. Chichester Gram. S.  
 Wilson, N. The Palace S., Bewdley  
 Withers, G. Highfield S., Muswell Hill

**BOYS, 3RD CLASS, PASS—Continued.**  
 Richard, A. d. The Jersey Modern S.  
 Brunker, C.H. M. St. Helen's Coll., Southsea  
 Champion, C.H. e.a. al.  
 Lancaster Coll., W. Norwood  
 Darrah, F.A. Bickerton H., Birkdale, Southport  
 Dawson, J.M. a.  
 Edgbaston Acad., Birmingham  
 Denning, W.E.F. a.  
 Hoe Gram. S., Plymouth  
 Ellison, F.S. Oakes Inst., Walton, Liverpool  
 Enoch, S.A. The College, Weston-a-Mare  
 Gale, F. al. The Jersey Modern S.  
 Handley, J.G. Barton S., Wisbech  
 Kent, C.H.S. Lancaster Coll., W. Norwood  
 Morgan, F.C. The Douglas S., Cheltenham  
 Oatley, F. Hutton Gram. S.  
 Page, H.S.D. Norwich High S. for Boys  
 Pring, C.J.  
 The School, Wellington Rd., Taunton  
 Reeder, C. Hutton Gram. S.  
 Richardson, W.D. Scarborough College  
 Sherwell, A.E.  
 Littleton H., Knowle, Bristol  
 Stone, N.S. The Modern S., Gravesend  
 Walker, L.W. Scarborough College  
 Wright, W.M. Scarborough College  
 Bird, A.J. a. Fitzroy S., Crouch End  
 Boorman, K. Ryde H., Ripley  
 Buck, M.W. Paddington High S. for Boys  
 Dunfee, W.V. St. Aubyn's, Woodford Green  
 Grime, H. Gram. S., Fulwood, Preston  
 Harper, J.W. Moseley Modern School  
 Hider, W.E. Beccles College  
 Riley, F.E. Ruthin Coll., Beckington  
 Vautier, B.C. e.  
 Oxenford H., St. Lawrence, Jersey  
 Williamson, R.T. e.  
 The Douglas S., Cheltenham  
 Cutlack, N.L. Private tuition  
 Greenwood, H.W. Heaton Moor College  
 Kingdom, J.W. al. St. Leonard's Coll., S.  
 Newman, C.V. Beccles College  
 Palmer, G.S. Beccles College  
 Selby, P. Sunnybrae S., Balcombe  
 Skelton, H.O. g.d. The High S., Blackpool  
 Springate, C.W.  
 Springside H., Gorey, Jersey  
 Axtmann, C.  
 Notre Dame de France, Lisle St., W.C.  
 Craig, A. ge. The Gram. S., Ongar  
 Edmonds, W.W. al.  
 Littleton H., Knowle, Bristol  
 The Jersey Modern S.  
 Harley, L.S. Fitzroy S., Crouch End  
 Jupe, A.J.D. Shoreham Gram. S.  
 Marshall, A. Wilmslow College  
 Payne, G.C.L. Laugharne S., Southsea  
 Pearless, J. e. Dudley H., Lee  
 Phillips, J.N. Hoe Gram S., Plymouth  
 Reeve, S.B. Bexhill College  
 Watson, V.A. e. Wilson Coll., Stamford Hill  
 Wood, C.  
 Locksley Hall, Torquay  
 Bottrill, H.A. Gram S., Fulwood, Preston  
 Boyland, A.W.S.  
 The Douglas S., Cheltenham  
 Duckworth, W.E. Grosvenor Coll., Carlisle  
 Green, W.J. Croydon High S. for Boys  
 Hooson, D.J.S. e. al. Bourne Coll., Quinton  
 Perkins, T.G. Shoreham Gram. S.  
 Roberts, G. Hutton Gram. S.  
 Shyngle, J.E. Paddington High S. for Boys  
 Sweeney, C.H. St. Mary's Coll., Harlow  
 Tagdell, W.C. Tollington Park Coll., N.  
 Boyce Applegarth, L. Thornton Heath S.  
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The small figures <sup>1</sup> and <sup>2</sup> prefixed to names in the Second and Third Class Lists denote that the Candidates were entered for the First and Second Classes respectively.

In the addresses, Acad. = Academy, C. or Coll. = College, Coll. S. = Collegiate School, Comm. = Commercial, Conv. = Convent, Elem. = Elementary, End. = Endowed, Found. = Foundation, H. = House, Hr. = Higher, Inst. = Institute, Int. = International, Inter. = Intermediate, Poly. = Polytechnic, Prep. = Preparatory, P.T. = Pupil-Teachers, S. = School, Sec. = Secondary, Tech. = Technical, Univ. = University.

FIRST CLASS [or SENIOR].

Honours Division.

Biggs, O.M. *s.e.a.al.ms.d.*  
Crouch End High S. & Coll., Hornsey

Howard, J.W. *s.e.gm.lt.*  
Crouch End High S. & Coll., Hornsey

FIRST CLASS [or SENIOR].

Pass Division.

Scott, S.T. *e.do.*  
Crouch End High S. & Coll., Hornsey

Williams, G.E. *s.do.* Private tuition

Slarke, V.E. *s.* Towcester School

Smith, A. *e.* Gram. S., Leigh

Batten, M.A. Cardiff & S. Wales S., Cardiff

Dawes, F.V. Private tuition

Happold, F.A. *s.* Hill Croft S., Bentham

Mahoney, M. *s.e.h.* Private tuition

Dunsford, M.J. Private tuition

Harly, M.A. *e.* Private tuition

Winship, O.F. The Haughton S., York

Condon, O.A. High S., Twickenham Green

Ball, M. Private tuition

Heun, M.T. Highfield S., Croydon

Wood, A.W. *a.* Private tuition

Davies, J. *e.* Private tuition

Edmunds, B. *do.* Cardiff & S. Wales S., Cardiff

Greenfield, J.A. Private tuition

Lloyd, I.M. *d.* High S., Redcar

Bichard, A.M. St. James' Ladies' S., Jersey

Oxford, E.R. Granville Coll. West Croydon

Baker, G.L.  
The Tutorial Chambers, Burnham

Swinson, B.M.A. High S., Leek

Davies, May Cardiff & S. Wales S., Cardiff

Evans, S.E. Pencader Gram. S.

Hayward, F.L. Private tuition

Jones, K. Private tuition

Barr, F.M. *f.*  
Leeds Girls' High S. Headingley, Leeds

Walton, D. Private tuition

Griffin, E.M. Private tuition

Blatchford, C.M.  
Cardiff & S. Wales S., Cardiff

Bradley, R. Private tuition

Croxall, B. Gram. S., Cannock

Hall, E. Gram. S., Cannock

Hunter, M. Hill Croft S., Bentham

Jones, R.M. Pencader Gram. S.

Robson, M. *do.* Private tuition

Jones, M.J. Cardiff & S. Wales S., Cardiff

Jones, M.J. Private tuition

Evans, E.O.  
Tutorial S., New Quay, Cardiganshire

Rees, H.M. Private tuition

Llewellyn, M.M. Private tuition

Parsons, M.  
The Tutorial Chambers, Burnham

Thomas, R. Pencader Gram. S.

Thomas, G. Private tuition

Botting, W.M. Gram. S., Cowfold, Horsham

Pike, E.H. Private tuition

Foreman, P.F. Private tuition

Johns, G.V. Clark's Coll., Cardiff

Davies, K. Private tuition

Stafford, R.N.  
Cardiff and S. Wales S., Cardiff

Whitting, D.C. Ryde H., Ripley

Davies, E. The County S., Tregaron

SECOND CLASS [or JUNIOR].

Honours Division.

Allbon, G.A. *s.al.*  
Crouch End High S. & Coll., Hornsey

Crookes, M.E. *s.d.*  
Hillside Modern S., Harrow

Dell, D.H. *s.al.bk.*  
Crouch End High S. & Coll., Hornsey

Goodall, G. *al.d.* Private tuition

Parr, D.I. *s.f.*  
Royal Masonic Inst., Clapham Junction

Domakin, M. *f.d.* Beechfield, Wilmslow

Roe, D.E. *s.f.do.*  
Ravensworth S., Scarborough

Macdonald, E.T.L. *s.f.* Priory Coll., Hornsey

Bradley, L.P. *mu.*  
Ravensworth S., Scarborough

King, K.M.  
Dunmore S., St. Leonards-on-Sea

Barrett, M.L. *d.*  
Wellington College, Hastings

SECOND CLASS [or JUNIOR]

Pass Division.

Clarke, W.K. *f.* Wilmslow College

Bedwell, E.E. *s.*  
Pemberton Coll., Upper Holloway

Wells, V.H. Wellington Coll., Hastings

Grimmer, M.I.A. Private tuition

Weatherseed, L.M.  
Dunmore S., St. Leonards-on-Sea

Ashby, B. *d.*  
Steyne Girls' High S., Worthing

Gordon, F.E. *s.mu.*  
Clatford H., Southampton

Leaver, E.S. Penketh School

Cottrell, N. Hill Croft S., Bentham

Duffy, I. Private tuition

Bracegirdle, R.  
Inglewood S., Moberley, Knutsford

Hale, D.F. Cloughton Coll., Romford

Garner, A.A. *F. s.*  
Rock Hill S., Chulmleigh

Petty, G.F. *s.*  
Woodford High S., S. Woodford

Read, E.S. *E.M.* Middle Class S., Gosport

Roe, D.V. *s.* Baliol S., Sedbergh

Botting, G.M. *s.* Trinity H., Bexhill-on-Sea

King, E.M.  
Dunmore S., St. Leonards-on-Sea

Morgan, T.L. *s.* Clark's Coll., Cardiff

Henshaw, M.  
Miss Watkins' S.,  
Crick Common, Matlock-Bath

Joyner, D.E. Sirsa H., Cheltenham

Lefevre, I.I. French Protestant S.,  
Shaftesbury Av., W.C.

Bonser, G.M. *e.f.* Private tuition

Booth, D.C. *f.* Baliol S., Sedbergh

Cox, N.J. Private tuition

Scott, H.D. *f.* Private tuition

Spratley, L.E. *s.*  
Pemberton Coll., Upper Holloway

Coleman, A.M. *a.*  
Lynchthurst Coll., Portsmouth

Hillen, N.P. Crouch End High S., Hornsey

Redhouse, D.E.  
St. Martin's, Cliftonville, Margate

Turk, L.M. Woodford High S., S. Woodford

Bowden-Pickstock, L.O.  
Rock Hill S., Chulmleigh

Evans, G.M. *s.* St. Maur Coll., Chestport

Inman, A. *s.f.* Cambridge H., York

Casebourne, H.  
Ingleby High S. Winchmore Hill

Wilkinson, S. Private tuition

Randall, E. Penketh School

Skrymes, E.G. Private tuition

Adams, V.M. *s.* St. Maur Coll., Chestport

Davies, E.M. *s.* St. Maur Coll., Chestport

Elliott, D.L. Exmouth H., Hastings

Reyppert, D.L. Middle Class S., Gosport

Prout, C.L. Cardiff & S. Wales S., Cardiff

Williams, A. Private tuition

Brostrom, A. Glenarm Coll., Ilford

Bryant, M. Oxford H., Swindon

Gedrych, N.F. *A.* St. Margaret's, Cardiff

Hodgson, D.  
Norma S., Waterloo, near Liverpool

Williams, M.E. Private tuition

Butler, E.M. *d.*  
The Close, Dyke Road, Brighton

James, H. Mountain Ash County S.

Quigley, E.G. *s.* Hillside Modern S., Harrow

Turner, J.M. Private tuition

Batchelor, M. *f.* Anney Conv., Seaford

Beveridge, M.  
Crouch End High S. & Coll., Hornsey

Martin, O.W. *f.*  
Les Landes H., Faldouet, Jersey

Berry, D.M.  
Glendale S., Westcliff-on-Sea

Bowman, A.M.  
Ainstable Council S., Armathwaite

Gay, L.A. Rock Hill S., Chulmleigh

Harding, T. Private tuition

Smith, W.M. Cornwallis High S., Hastings

Adams, E.M. *C.* Private tuition

Allen, M.W. Baliol S., Sedbergh

Collins, V.V.  
St. Mary's Conv., Bishop's Stortford

Grey, E.L. Exmouth H., Hastings

Thomas, H.M. Private tuition

Turvey, D.C. *s.*  
Felthorpe, Hampton-on-Thames

Kendrick, A.L. Private tuition

Smith, A.G.A. Private tuition

Stedman, D.M.F.  
Lulworth House, Carleion, Mon.

Gee, G.E. Central Hr. Standard S.,  
Chadsmoor, Cannock

Hobson, M.F. Pengwern Coll., Cheltenham

Redcliffe, E. Ladies' Coll. S., Tavistock

Davies, M.E. Private tuition

Jones, S.A. Private tuition

Peters, D. Baliol S., Sedbergh

Arnold, C. Private tuition

Flatt, L.B. Glenarm Coll., Ilford

Harris, W.F. Beechfield, Wilmslow

Low, E.M. Friern Manor Coll., E. Dulwich

Marshall, D.N.  
Pengwern Coll., Cheltenham

Thompson, E.M. *E.*  
St. Peter's, Bournemouth

Wilson, E.G. Private tuition

Davies, F. Private tuition

Davies, Mary Cardiff & S. Wales S., Cardiff

Cawkwell, D.  
Roanoke Coll. S., Palmer's Green

Edwards, E. Mountain Ash County S.

Hutchings, E.L.  
Wellington College, Hastings

Tenkins, M. Private tuition

Pridmore, F.  
Church Street S., Market Deeping

**GIRLS, 2ND CLASS, PASS—Continued.**

<sup>1</sup>Davies, S.H. Private tuition  
Malone, B. Private tuition

Cork, V.E. s. Hillside Modern S., Harrow  
<sup>1</sup>Mills, L.M. Cardiff & S. Wales S., Cardiff  
Parker, D.M.J. Upper Mount, Southsea

<sup>1</sup>Gregory, K. Private tuition  
<sup>1</sup>Kitson, E.M. Adelaide Ladies' Coll., Ilfracombe

Keep, K.M. f. Private tuition  
<sup>1</sup>Pengelly Hubber, B. Private tuition  
<sup>1</sup>Wanderli, H.E. High S., Redcar

<sup>1</sup>Bassett, O.A. Private tuition  
Salmon, C.I. St. Margaret's, Cardiff  
Scott, T.A. Municipal High S., W. Hartlepool

Hogg, E.V. Ryde H., Ripley  
<sup>1</sup>Jones, M.E. The County S., Tregaron

Davies, M.J. St. Margaret's, Cardiff  
<sup>1</sup>Jones, L.M. Baliol S., Sedbergh  
<sup>1</sup>Moseley, H.M. Private tuition  
Reeve, A.M. Private tuition

Coleman, M.E. s. Towcester School

Oakland, M. Private tuition  
Reffell, C.M. Ryde H., Ripley

Cooper, J. St. John's H., Felixstowe  
<sup>1</sup>Morgan, E.J. Private tuition  
Norbury, F.E. Private tuition

Evans, A.E. f. St. Maur Coll., Chepstow  
Stephen, B. Hill Croft High S., Stamford Hill

<sup>1</sup>Lewis, E.A. The County S., Tregaron  
<sup>1</sup>Suthers, E.M. Private tuition  
Cabot, M.B. f. St. Lawrence Parochial S., Jersey

<sup>1</sup>Pardoe, E.M. Private tuition

<sup>1</sup>Holloway, M. Private tuition  
<sup>1</sup>Williams, A. Private tuition

<sup>1</sup>Jones, G.I. Private tuition  
<sup>1</sup>Rowe, B.M. Private tuition  
<sup>1</sup>Webb, F.M. Private tuition

Gea, C.M. Private tuition  
Lander, M.B. Evelyn High S., Upper Holloway  
Williams, D.M. The County S., Tstalyfera

Curtis, A.M. High S., Twickenham Green  
Whitehead, E.L. Belmont, Stratford-on-Avon

<sup>1</sup>Parker, W.B. Private tuition  
Thomas, J.G. St. Margaret's, Cardiff  
Evans, D.M. St. Maur Coll., Chepstow  
Baker, E.A. Private tuition  
Day, I.J. Ryde H., Ripley  
Conisbee, D.M.E. Ryde H., Ripley

**THIRD CLASS.**

**Honours Division.**

Henderson, J.T. s.h.g.o. Crouch End High S. & Coll., Hornsey  
Gadsdon, N.F. e.g.f.g.e.d. The Hollies, Brentwood

Cavey, I.B. e.g.a.nl. West End S., Jersey  
King, H. e.g.a.al. Conv. of the Ladies of Mercy, Scarborough

Chatterton, D.V. e. St. Dunstan's Coll., Margate

Drabble, P. al. Conv. of the Ladies of Mercy, Scarborough  
Bolton, D.O. h.a. Queen's S., Cliftonville, Margate

Dearberg, H.M. e.f. The Hollies, Brentwood  
Ruscoe, C.M. e.al. Crouch End High S. & Coll., Hornsey

Port, I.E. s.e.a. Hainault High S., Ilford

Fozard, P. s.e.a. Girls' High S., Rothwell  
Newbery, O. f. Wellington Coll., Hastings  
Swindon, I.E. s.a.f. Raleigh Middle Class S., Stoke Newington  
Wood, K.E. a.al.d. Crouch End High S. & Coll., Hornsey

Anstiss, G.I. a.d. Temple S., Aylesbury  
Hunt, L.M. s.e.g.d. 11 Church Street, Oldbury

Crumplén, A.D. St. Monica's, Herne Bay  
Marx, L.F.L. e.f. Queen's S., Cliftonville, Margate

Deeley, A.P. e. Towcester School  
Smith, P.M. f.g.e. Private tuition

Foster, E. a.al. Onsegate S., Selby  
Simons, C.O. e. St. James' Ladies' S., Jersey

Briggs, D.M. a. Pengwern Coll., Cheltenham

Mason, L.A. s. Raleigh Middle Class S., Stoke Newington

Constantine, A. e.a. Aintree High S., Liverpool

**THIRD CLASS.**

**Pass Division.**

<sup>2</sup>Olareshaw, G.M. Gram. S., Cannock

<sup>2</sup>Gildersleeve, B.S. Cornwallis High S., Hastings

<sup>1</sup>White, M.C. Crouch End High S. & Coll., Hornsey

<sup>1</sup>John, F.G. Clark's Coll., Cardiff  
<sup>2</sup>Williams, E.H. s. Claremont Girls' S., Bath

<sup>2</sup>Nerney, J.E. Lancefield Coll., Southend-on-Sea  
<sup>2</sup>Muir-Smith, K.G. Hill Croft S., Bentham

Botting, M. e. The Close, Dyke Rd., Brighton  
Stevens, C.C. e.f. St. Martin's, Cliftonville, Margate

Dudley, G.V. Steyne Girls' High S., Worthing  
Gay, R. e.f. Rock Hill S., Chulmleigh

Denness, V.W. Alexandra Coll., Shirley  
Robb, D. c.d. Handfield Coll., Waterloo, Liverpool  
Russell, J.R. Temple S., Aylesbury  
Storey, L.J. e.d. Benalbyn, New Barnet

Barnes, D.B. e. Alexandra Coll., Shirley  
Hayward, M.M. d. Hockley High S.  
Strutt, W.M. E. g.d. Hillside High S., Leigh-on-Sea

<sup>2</sup>Johnson, E.W.K. Hillside High S., Leigh-on-Sea  
Plummer, D.L. a. Cavendish Coll., Clapham Pk.

<sup>1</sup>Punch, I.B. Baliol S., Sedbergh  
Reading, C.R. e.g. Hemdean H., Caversham

Myall, G.E. Glenam Coll., Ilford  
Pickhard, E. s.a. Penketh School  
Tonkin, G.E. s.e.g.d. Aintree High S., Liverpool

Carter, F.M. e. St. Maur Coll., Chepstow  
Dickson, J. The Gram. S., Holsworthy  
Rymer, D.E. St. Maur Coll., Chepstow

Beaver, D.K. Sirsa H., Cheltenham  
Coulthard, A.J. e.g. Beaconsfield, Weston-s.-Mare

Elliott, K.M. g.a. Ravensworth S., Scarborough  
Heaps, M. e. St. Paul's, Standishgate, Wigan  
Morton, C. e.a. Hill Croft S., Bentham  
Phillips, G.E. L. e.g. Grosvenor S., Grosvenor Rd., S.W.

White, P.E. g. Stapleton Hall S., Stroud Green

Armstrong, L.G.L. e. Pengwern Coll., Cheltenham

A' Bear, W.M. Sunnyland, Henley-on-Thames

<sup>1</sup>Crowther, H. Ravensworth S., Scarborough  
<sup>2</sup>Jones, D.V. Woodford High S., S. Woodford  
Madden, E.W. Steyne Girls' High S., Worthing  
Marshall, D. Leighton Hall S., Carnforth  
Palmer, M.G. Stapleton Hall S., Stroud Green  
Wigginton, G.E. E. Queen's S., Cliftonville, Margate

Courts, F. a. Pemberton Coll., Upper Holloway  
Grossmith, V.C. Alexandra Coll., Shirley  
<sup>1</sup>Lees, D.L. St. Martin's, Cliftonville, Margate  
Lloyd, C.E. St. Maur Coll., Chepstow

Fountain, D.M. a. Southend Gram. S.  
Sherman, D.M. e. Wellington College, Hastings

<sup>2</sup>Collins, A.H. Private tuition  
Hayward, E.M. d. Hockley High S.  
<sup>2</sup>Paine, V.A.M. Wellington College, Hastings

<sup>1</sup>Turner, D. Alieyn Coll., Margate  
Watson, F.I. Crouch End High S. & Coll., Hornsey

<sup>2</sup>Bradley, D.E. Hill Croft S., Bentham  
Lawrence, F.J. e. Benalbyn, New Barnet  
Lichtenberg, A. e.a.nl. Stapleton Hall S., Stroud Green

<sup>2</sup>Ongley, G. Norma S., Waterloo, near Liverpool  
<sup>1</sup>Wade, E.K. Steyne Girls' High S., Worthing

Ashby, M. Steyne Girls' High S., Worthing  
Thorp, I.V. e. Peterborough Coll., Harrow-on-the-Hill

Cullimore, M.E. e.o. St. Maur Coll., Chepstow  
Hinwood, D. J. St. Maur Coll., Chepstow  
Matchett, M. K. e. Hemdean H., Caversham

Meadows, D.M. Towcester School  
Tierney, F.M. Lynton Coll., Herne Bay

Bentley, E. Ravensworth S., Scarborough  
Cathrey, D.F. Lynton Coll., Herne Bay  
Drake, W. Burwood Coll., East Sheen  
Francis-Watkins, D.M. e. St. Maur Coll., Chepstow

Monk, M.J. Hainault High S., Ilford  
Parry, M.H. s. Ladies' College, Hereford

Darling, K.J. e. Iona High S., Ilford  
Parrott, M.I. e. Hemdean H., Caversham

Pearce, D.W. Alexandra Coll., Shirley  
<sup>1</sup>Walters, T.H. Clark's Coll., Cardiff

Fordham, E.W. Caunden H., Biggleswade  
Kelly, P.M. High S., Liskeard  
Palmer, F.E. Queen's S., Cliftonville, Margate  
Palmer, F.E.M. al. Stapleton Hall S., Stroud Green  
Wells, V.M. St. Martin's, Cliftonville, Margate

Trimble, E.C. Birkdale Ladies' Coll., Southport

Beeson, N.C. s. Harley S., Hereford  
Blencowe, E. Sunnyland, Henley-on-Thames

Davies, A.F. a. Harley S., Hereford  
Jeffery, E.C. Home Park S., Stoke  
Knightsbridge, H.M. St. Helens, Streatham  
Price, A.P. St. Maur Coll., Chepstow  
Smith, E.M. Southoe H. Richmond  
Smolton, N.G. e. South Views, Holcombe Rogus, Wellington

Bradley, N. e. Lark Hill S., Timperley  
Bushill, E. f. Anney Conv., Seaford  
Collins, G. s. Iona High S., Ilford  
Ellicott, B.L. e. Lancefield Coll., Southend-on-Sea

Flesch, E. e.f.g.e. Hill Croft High S., Stamford Hill  
Iveson, Q. e. Conv. of the Ladies of Mercy, Scarborough

Brazier, F.K. Steyne Girls' High S., Worthing  
<sup>2</sup>Brookes, M.L. Pengwern Coll., Cheltenham

Hancock, W.E. e. Camborne H., Torquay  
Palmer, D.W. Cavendish Coll., Clapham Pk.  
Sachtler, K.N. G. d. Cavendish Coll., Clapham Pk.

Smith, D. d. Norma S., Waterloo, near Liverpool

Cowen, B.E. The Convent, Leicester Sq., W.C.

Graves, M. f. Beechfield, Wilmslow  
Harris, N.M. Beechfield, Wilmslow  
<sup>1</sup>Ingram, M. Alieyn Coll., Margate  
Lefever, A.M. French Protestant S., Shaftesbury Av., W.C.

Lloyd, D.E. St. Maur Coll., Chepstow  
Morgan, D.E.C. Roanoke Coll. S., Palmer's Green

Noel, M. f. Les Landes H., Falduet, Jersey

Cranstone, C.R. h. Private tuition  
Lasham, L.S.M. Westheath S., Southbourne-on-Sea  
Spink, E.M. f. St. Leonards, Ealing

Bailey, F.L. a. Harley S., Hereford  
Bromwich, C.S. Castle Hill S., Bridgnorth  
<sup>2</sup>Lewis, L.W. Newry Lodge S., Twickenham  
Mott, C.A. Hemdean H., Caversham  
Stone, W.M. Towcester School  
White, E.M. Hobbygirt, Nottingham

Avery, I.D. Belair Girls' S., Herne Hill  
Hiles, E.M. s. Gram. S., Welshpool  
Knowles, I.M. 11, Church Street, Oldbury  
Macmillan, N.E. Wellington College, Hastings

Marques, G. Penketh School  
Mayes, D.M. a. E. Anglian Deaf & Blind S., Gorleston-on-Sea  
Michael, M.C. Harley S., Hereford

Fryer, M.A. St. Monica's, Herne Bay  
<sup>1</sup>Nicholls, G.C. Steyne Girls' High S., Worthing  
Russell, A.E. Temple S., Aylesbury  
Russell, D.J. Crouch End High S. & Coll., Hornsey

Bolingbroke, V.V. Cornwallis High S., Hastings  
Field, H.A. s.f.g. Clarendon Coll., Tufnell Park  
Gruchy, B.B. f. St. James' Ladies' S., Jersey

Husband, Q. e. Exmouth H., Hastings  
Lee, M.M. Private tuition  
Martin, S.G. Fimmart S., Newquay

Carter, D.M. West Heath S., Southbourne-on-Sea  
Ham, W.E. Roanoke Coll. S., Palmer's Green  
Tranter, K.V. Sunnyland, Henley-on-Thames  
Wales, H.M. Clark's High S., Tufnell Park

Cannan, I. Private tuition  
Cope, H.V. Stapleton Hall S., Stroud Green

Evans, C. Old College S., Carmarthen  
Owen, M.W. St. Mary's Coll., Barnes  
Pier, G.O. Exmouth H., Hastings  
Sleeman, A.M. The Gram. S., Holsworthy  
Smith, L.C. Highfield S., Croydon  
Thomas, M.G. s. Pengwern Coll., Cheltenham

Utton, E.F.R. St. Martin's, Cliftonville, Margate

Bonnington, M.E. Temple S., Aylesbury  
Borrow, E.G. North End High S., Portsmouth  
Goodwin, V. al. "Fauntleroy," St. Leonards-on-Sea  
Howard, D. Penketh School  
Powell, K.G. The Close, Dyke Rd., Brighton  
Wilson, D. Norma S., Waterloo, near Liverpool

Farrington, B.A. e. Hill Croft High S., Stamford Hill  
<sup>2</sup>Fitzmaurice, N. Cornwallis High S., Hastings  
Hancock, H.R. Lyndhurst Coll., Portsmouth  
Kelsall, G.M. Penketh School

Heaney, E.G. I. Wellington Coll., Hastings  
Marshall, D.M. a. Beechfield, Wilmslow  
Pollard, N. St. Mary's Coll., Barnes  
Shrimpton, E. St. Martin's, Cliftonville, Margate

<sup>2</sup>James-Smith, D.S. Private tuition  
Moore, I. Carlyle Coll., Clapham Common  
Waldron, G.M. Iona High S., Ilford

Ellis, M.E. The Grammar S., Holsworthy  
Feltham, E.M. e. Private tuition

Matthews, I.D. Alexandra Coll., Shirley

Brown, E.M. Wakeford H., Brighton  
Clarke, G.M. Clark's High S., Tufnell Park  
Cotton, J.L. Private tuition  
Hunter, E.M. Wellington College, Hastings

Barron, J. Steyne Girls' High S., Worthing  
Barton, E. St. Paul's, Standishgate, Wigan  
Passmore, O.C. Norma S., Waterloo, near Liverpool  
Rowe, A. High S., Liskeard  
Spice, E.E. Dunmore S., St. Leonards-on-Sea  
Stockman, K.E. e. Priory Coll., Hornsey



GIRLS, 3RD CLASS, PASS—Continued.

Bishop, W.E. St. Maur Coll., Cheltenham  
 Otley, W.M. Brookville, Filey  
 Roach, E. Pengwern Coll., Cheltenham  
 Walker, H. Norman S., Waterloo, near Liverpool  
 Walker, W.M. Camden H., Biggleswade

\*Benion, M.M. National S., Chadmoor, Cannock  
 Gill, D. Glenarm Coll., Ilford  
 \*Holme, A.M.R. Hill Croft S., Bentham  
 Jones, G. Hainault High S., Ilford  
 Nicholls, M.St. Paul's, Standishgate, Wigan  
 Scott, K. Lime Tree H., York

Badham, D. Harley S., Hereford  
 Evans, D.M. Gram. S., Welshpool  
 Evans, Q. Lulworth House, Casricton, Mon.

Johnson, H. Ousegate S., Selby  
 \*Penn, B.M. Cambridge H., Csmiden Rd., N.  
 Seamons, M.M. Roanoke Coll. S., Palmer's Green

\*Keates, D.A. Ryde H., Ripley  
 Sadler, A. 11, Church Street, Oldbury

Foreshew, M. Highfield S., Croydon  
 Hill, N.G. Allyn Coll., Margate  
 King, E.F. A. St. Helens, Streatham  
 Shaw, J.C. Clark's High S., Tufnell Park

Carbin, I. A. Carlyle Coll., Clapham Common  
 \*Megicks, M.A. The County S., Tregaron  
 Winter, K.A. Allyn Coll., Margate

Breingan, E. C. Aintree High S., Liverpool  
 Larcombe, L.R. Cornwallis High S., Hastings

Paine, M.M. High Croft High S., Stamford Hill  
 \*Whiting, E.E. Ryde H., Ripley

Lanham, C.A. Alexandra Coll., Shirley

Ellis, E. Southend Gram. S.  
 Prince, M. Sissa H., Cheltenham

\*Mercer, M.F. Beechfield, Wilmslow  
 Rudd, V. Camden H., Biggleswade

Cory, M. St. James' Ladies' S., Jersey  
 \*Gosney, A.F. Evelyn H. S., Upper Holloway  
 Hall, M.F. Ryde H., Ripley  
 Haslam, C. Fenketh School  
 Mourant, M.F. St. James' Ladies' S., Jersey

Christmas, G.M. Private tuition  
 Griffin, L.K. Lancesfield Coll., Southend-on-Sea  
 Mayfield, M.R. St. Mary's Coll., Barnes

Gerhard, T.F. Allyn Coll., Margate  
 Hill, G.F. Allyn Coll., Margate

Farrow, V.M. Hillside Modern S., Harrow  
 Heward, K.M. Brynmors, Littlehampton

Edminster, E.F. Lynton Coll., Herne Bay  
 Talbot, E.A. St. Paul's, Standishgate, Wigan

Hocken, M.M. Finnart S., Newquay  
 Foreman, D.B. Lynton Coll., Herne Bay  
 Wilson, I.V. Apsley H., Wood Green

LOWER FORMS EXAMINATION.—PASS LIST, CHRISTMAS, 1912.

BOYS.

Aikman, R.L. Hutton Gram. S.  
 Allchin, S.M. The Modern S., Gravesend  
 Allott, J.R. Barton S., Wisbech  
 Anderson, S.T. Barton S., Wisbech  
 Anderson, W.M.C.K. Wilmslow College  
 Appleton, E.S. Priory Coll., Hornsey  
 Apted, H.H. Winchester H., Bristol  
 Ashdown, D.P. The Modern S., Gravesend  
 Ashton, A.L. Richmond Hill S.  
 Atkinson, W.N. Grosvenor Coll., Carlisle  
 Bailey, G.A. Kilgrimol S., St. Anne's-on-Sea  
 Baines, T. Kilgrimol S., St. Anne's-on-Sea  
 Baker, F.J. Shoreham Gram. S.  
 Baker, V.E. Ryde H., Ripley  
 Ball, E. Richmond Lodge, Torquay  
 Ball, J.E. Eton H., Southend-on-Sea  
 Ballard, H.G. St. Leonards Coll. S.  
 Balster, H.J.  
 Bradley High S. for Boys, Newton Abbot  
 Bamber, W. Barton S., Wisbech  
 Barretto, J.V. The College, Bridlington  
 Bate, F.B. The Douglas S., Cheltenham  
 Baudains, G.P. The Jersey Modern S.  
 Bauly, C.J. Fitzroy S., Crouch End  
 Baynes, R.F. Steyne Prep. S., Worthing  
 Beall, L.H. Barton S., Wisbech  
 Beckwith, G.F. Eton H., Southend-on-Sea  
 Beech, C.H. Tollington Park Coll., N.  
 Benjamin, H.B. St. Leonards Coll. S.  
 Bennett, W.G.D. Steyne Prep. S., Worthing  
 Bennoson, M. Manor H., Clapham  
 Benson, A. Lankaster S., E. Finchley  
 Berridge, T.D. Froebel H., Devonport  
 Berry, T.H. Hutton Gram. S.  
 Bickerstaff, T. Cliftonville Coll., Aintree  
 Bindon, H.J. Cliftonville Coll., Margate  
 Bird, E.L. Fitzroy S., Crouch End  
 Birmingham, A. St. Placid's, Ramsgate  
 Blackman, R.J. The Modern S., Gravesend  
 Blackwell, T.G. Private tuition  
 Blake, H.W. The Modern S., Gravesend  
 Bland, S.E. Tollington Park Coll., N.  
 Blinkhorn, E.L. Greystones S. for Boys, Scarborough  
 Southdown Coll., Willingdon, Eastbourne  
 Bloomer, T.P. Kilgrimol S., St. Anne's-on-Sea  
 Bond, H.E. The Modern S., Gravesend  
 Borton, M.H.R. Kings' Coll., Wandsworth Common  
 Bott, D.A. Lancaster Coll., West Norwood  
 Botting, N.P. Ryde H., Ripley  
 Bottomley, J.C. New Coll., Harrogate  
 Boutillon, C. Shoreham Gram. S.  
 Bower, S. Harlestone, St. Lawrence, Jersey  
 Bowker, J.K. Gram. S., Hyde  
 Bowler, R. The College, Weston-super-Mare  
 Bowles, R. High S., Twickenham Green  
 Bowman, D. Penketh School  
 Bradley, J.F.C. Shoreham Gram. S.  
 Brantom, F. Lancaster Coll., West Norwood

Bray, C.V. St. Barnabas' Boys' S., Bexhill-on-Sea  
 Breckon, J.W. York Minster Choir S., York  
 Brewer, G. The High S., Blackpool  
 Briggs, L.B. New Coll., Harrogate  
 Broers, A.W. Linton, Wilson Rd., Southend-on-Sea  
 Brooks, E. Eton H., Southend-on-Sea  
 Brown, H. St. Leonards Coll. S.  
 Brown, H.O. Cliftonville Coll., Margate  
 Brown, L.S.T. Herne Bay College  
 Brown, R.P. St. Aubyn's, Woodford Green  
 Bruce, J.F. Heaton Moor College  
 Brunet, P. Saint-John's Coll., Frome  
 Buck, E.R. Oxenford H., St. Lawrence, Jersey  
 Bullivant, H.T. Shoreham Gram. S.  
 Bunning, H.W. Barton S., Wisbech  
 Burnes, H.T. Lancaster Coll., West Norwood  
 Burnett, A.L. Brighton H., Clifton, Bristol  
 Burns, G.W.H. St. Placid's, Ramsgate  
 Burton, J.B. The High S., Blackpool  
 Butcher, H.W. St. Leonards Coll. S.  
 Butler, N.F. Boys' High S., Erdington  
 Cairns, G. New Coll., Harrogate  
 Caldwell, J.T. Greystones S. for Boys, Scarborough  
 Campion, S.J. Tollington Park Coll., N.  
 Canning, D. Temple S., Aylesbury  
 Carr, T. The High S., Blackpool  
 Chadwick, T.C. Heaton Moor College  
 Charlton, A. Heaton Moor College  
 Cheers, D.H.A. Godwin Coll., Margate  
 Cheetham, F.T. Kilgrimol S., St. Anne's-on-Sea  
 Chick, T.J. Ryde H., Ripley  
 Chitty, D.G. Cawley S., Chichester  
 Christ, D.H. Herne Bay College  
 Clark, G.C. Froebel H., Devonport  
 Clark, H.C. St. Leonards Coll. S.  
 Clarke, C.H. The High S., Blackpool  
 Clarke, F. The High S., Blackpool  
 Clarke, F.L. Cliftonville Coll., Margate  
 Clayton, C.J. Greystones S. for Boys, Scarborough  
 Clemence, F. Nutley Gram. S., Plymouth  
 Clemenson, J.G. Commercial S., Maidstone  
 Coates, P.H. Wallingbrook S., Chulmleigh  
 Cockett, I.F. St. Barnabas' Boys' S., Bexhill-on-Sea  
 Cols, P.W. Barton S., Wisbech  
 Commander, E. New Coll., Harrogate  
 Cooper, H. Hutton Gram. S.  
 Cornish, W.J. The Jersey Modern S.  
 Cottrell, J.C. The Modern S., Streatham Common  
 Cousens, T.C. Shoreham Gram. S.  
 Cox, J.S. Brighton H., Clifton, Bristol  
 Crawshaw, K. Lightton Hall S., Carnforth  
 Crewe, P.C. The College, Bridlington  
 Crisp, H.S. The Gram. S., Holsworthy

Crockwell, C.H. Heaton Moor College  
 Crounpton, J. The High S., Blackpool  
 Crook, G.A. Steyne Prep. S., Worthing  
 Cross, S. Heaton Moor College  
 Crothers, A.H. Wilmslow College  
 Crowhurst, A.L. The Modern S., Gravesend  
 Crowthers, O.S. Leighton Hall S., Carnforth  
 Cruickshank, J.L. Heaton Moor College  
 Crutchley, W.S. Girtonville Coll., Aintree  
 Cunningham, W.C. St. Leonards Coll. S.  
 Cuthbert, E. Highbury Park S., N.  
 Dain, G.H. Grosvenor Coll., Carlisle  
 Dale, W.D. Tollington Park Coll., N.  
 Dann, S.C.W. Herne Bay College  
 Davey, E.S. Barton S., Wisbech  
 Davidson, T.H. Heaton Moor College  
 Davies, J.C. New Coll., Harrogate  
 Davies, K.I. Wilmslow College  
 Davies, R.M.S. St. Aubyn's, Woodford Green  
 Dean, H. Private tuition  
 de Lance Holmes, W.L. Eccles Prep. S., Eccles  
 Deller, V.G. Littleton H., Knowle, Bristol  
 Dench, R.J. Southampton Boys' Coll. & High S.  
 Denham, G.W. Shoreham Gram. S.  
 Dent, G.J. Leighton Hall S., Carnforth  
 Devon, W.W. Godwin Coll., Margate  
 Dicks, E.G. The Douglas S., Cheltenham  
 Dobbyn, M.W. Brighton H., Clifton, Bristol  
 Doughty, J.L. Ryde H., Ripley  
 Down, E.P. Clark's Modern Boys' S., Brixton  
 Down, T.A. Clark's Modern Boys' S., Brixton  
 Drewry, H.G. Broadgate S., Nottingham  
 Drysdale, J.D. The Modern S., Gravesend  
 Du Feu, F.E. Oxenford H., St. Lawrence, Jersey  
 Duffield, J.R. Norwich High S. for Boys  
 Duncan, W. Godwin Coll., Margate  
 Dunlop, R.R. Anerley College  
 Duthoit, J.A. Godwin Coll., Margate  
 Earnshaw, C. Cliftonville Coll., Margate  
 Earnshaw, R. Cliftonville Coll., Margate  
 Eastland, W.M. St. Leonards Coll. S.  
 Easton, A.C. St. Leonards Coll. S.  
 Easton, R.F. Newquay College  
 Edwards, A.S. The Douglas S., Cheltenham  
 Edwards, R.H. Broomfield Park Coll., New Southgate  
 Edwards, S.G. Norwich High S. for Boys  
 Eldred, M.E. Worcester Coll., Westcliff-on-Sea  
 Elliott, T.G. The Modern S., Gravesend  
 Empson, L.J. The Modern S., Streatham Common  
 Ettridge, E.W. Tollington Park Coll., N.  
 Farris, C.D. Dudley H., Lee  
 Fenn, F. The High S., Brentwood  
 Filmer, H.E. Shoreham Gram. S.

Fitzmaurice, E.R. Clare H., Tankerton  
 Fletcher, W.L. Southport Modern S.  
 Flint, J.F. Tankerton Coll., Whitstable  
 Flint, R.F.G. Tollington Park Coll., N.  
 Forge, E.L. St. Aubyn's, Woodford Green  
 Fountain, T.D. Steyne Prep. S., Worthing  
 Fowler, D.G. Gram. S., Cowfold, Horsham  
 Franklin, R. St. Aubyn's, Woodford Green  
 Friedenthal, G. Hutton Gram. S.  
 Fuente, R. Steyne Prep. S., Worthing  
 Fuller, F.M. Shoreham Gram. S.  
 Fuller, S.S. Eton H., Southend-on-Sea  
 Fullwood, S.C. Anerley College  
 Galpin, E.C. Herne Bay College  
 Galstaun, M. Herne Bay College  
 Gardner, F. Hutton Gram. S.  
 Gardner, F.S. Godwin Coll., Margate  
 Gay, H.G. Priory Coll., Hornsey  
 Gedy, F.H. Ryde H., Ripley  
 Giesenberg, L. Heaton Moor College  
 Gillett, S. Shoreham Gram. S.  
 Gladding, R. Southdown Coll., Willingdon, Eastbourne  
 Goddridge, R. St. Leonards Coll. S.  
 Graves, A. Wilmslow College  
 Gravett, S.R. The Modern S., Gravesend  
 Green, A.F. Broomfield Park Coll., New Southgate  
 Greenwood, H.A. Heaton Moor College  
 Grehan, J. Norwich High S. for Boys  
 Grieve, T.K. Herne Bay College  
 Hall, R.B. Argyle H., Sunderland  
 Hallowell, H.B. Hutton Gram. S.  
 Hame, A. New Coll., Harrogate  
 Hamilton, C.W. York Minster Choir S., York  
 Hamon, A.P. Oxenford H., St. Lawrence, Jersey  
 Hamon, F. Oxenford H., St. Lawrence, Jersey  
 Hauncroft, S.F.C. Broomfield Park Coll., New Southgate  
 Hargreave, G. Wilmslow College  
 Harman, C. The School, Wellington Rd., Taunton  
 Harradon, R.C. Froebel H., Devonport  
 Harrison, E.R. Ion H., East Molesey  
 Harrison, G.B. Shoreham Gram. S.  
 Hawkes, K.A. Ryde H., Ripley  
 Hearne, G. Clark's Modern Boys' S., Brixton  
 Helmore, F.T. Eton H., Southend-on-Sea  
 Henshall, H. Penketh School  
 Henwood, H.A. St. Aubyn's, Woodford Green  
 Hewson, A.S. Anerley College  
 Heys, R.A. Heaton Moor College  
 Hibbs, C.W.J. Ryde H., Ripley  
 Higgins, H.H. Froebel H., Devonport  
 Higgins, H.R.W. Caversham H., Caversham  
 Higham, D.C. The High S., Blackpool  
 Hill, R.H. Dorset H., Sevenoaks  
 Hockley, A.J. Shoreham Gram. S.  
 Hodgson, F.O. York Minster Choir S., York

BOYS, LOWER FORMS—Continued.

Hollis, G.S. Steyne Prep. S., Worthing
Holmes, F.S. Godwin Coll., Margate
Holt, R.N. Newquay College
Hope, C.G. The Modern S., Gravesend
Hopkins, C.A. Lancaster Coll., West Norwood
Hopper, J.S. The Gram. S., Holsworth
Horsefield, R.B. Littleton H., Knowle, Bristol
Howell, C.B. Herne Bay College
Hudson, H.E. St. Aubyn's, Woodford Green
Hudson, R.A. Cliftonville Coll., Margate
Humphreys, B. Manor H., Clapham
Hunt, W.C.M. Herne Bay College
Hutchinson, R.D. Argyle H., Sunderland
Jardim, R. St. Aloysius' S., Carshalton
Jardine, G.O. Steyne Prep. S., Worthing
Jay, R. Shoreham Gram. S.
Jeffries, G.B. Clark's Prep. S., West Ealing
Jewson, S.W. Broadgate S., Nottingham
Johnson, H.A. The Modern S., Gravesend
Johnson, H.D. Shoreham Gram. S.
Jolly, R.C. Cliftonville Coll., Margate
Joseph, V. Steyne Prep. S., Worthing
Joy, F.M. Private tuition
Joyner, R.H. The Douglas S., Cheltenham
Kellett, G.S. Victoria S., Heaton
Kelsall, T.M. Penketh School
Kemp, F.E.H. Ryde H., Ripley
Kendal, P.B. Gram. S., Cowfold, Horsham
Kennington, T. St. Bede's S., Hornsea
Kerish, C. Lancaster Coll., West Norwood
Ketten, C. Saint-John's Coll., Frome
Kindon, G.J. Victoria Park S., Manchester
King, C.P. St. Leonards Coll. S.
Kingston, R.G. Shoreham Gram. S.
Knight, C.E. Ryde H., Ripley
Koethlitz, R.M. Herne Bay College
Kollis, H.A.B. Heaton Moor College
La Cloche, B. The Jersey Modern S.
Lambert, M.P. Manor H., Clapham
Lander, E. Boys' High S., Wareham
Lane, J.H. Southampton Boys' Coll. & High S.
Laney, R.F. Oxenford H., St. Lawrence, Jersey
Larham, D.P. Southampton Boys' Coll. & High S.
Layne, P.S. Boys' Prep. S., Newcastle-on-Tyne
Leak, G.A. Barton S., Wisbech
Le Boutillier, H. The Jersey Modern S.
Le Cras, C.P. The Jersey Modern S.
Leighton, H.O. Cliftonville Coll., Margate
Lefruer, S.P. Harleston, St. Lawrence, Jersey
Lesclieur, J.T. Springside H., Gorey, Jersey
Levett, G.T. Anerley College
Lewis, C.B. Hutton Gram. S.
Lewis, N. Godwin Coll., Margate
Lincoln, J.H. The Modern S., Gravesend
Lindsay, R.E. Cliftonville Coll., Margate
Lock, R.R. Boys' High S., Wareham
Locke, R.C. Victoria Park S., Manchester
Low, E.H.S. Broomfield Park Coll., New Southgate
Lunnis, E. Worcester Coll., Westcliff-on-Sea
Macadam, G.H. St. Aubyn's, Woodford Green
Macara, K.G. Cliftonville Coll., Margate
Macfadyen, D. Boys' Prep. S., Newcastle-on-Tyne
Mackey, J.W. Gram. S., Cowfold, Horsham
Main, J.F. King's Coll., Wandsworth Common
Mallet, H.P. Oxenford H., St. Lawrence, Jersey

Mallinson, K.A. Shoreham Gram. S.
Marchall, H.C. Fitzroy S., Crouch End
Marsden, A.H. Barton S., Wisbech
Martin, J.D. St. Leonards Coll. S.
Mason, A.S. Tollington Park Coll., N.
Matthews, C.F. The Modern S., Gravesend
Matthews, G.E. King's Coll., Wandsworth Common
Matusch, F.H. Broomfield Park Coll., New Southgate
Maynard, R.H. The School, Wellington Rd., Taunton
McDonald, R.E.W. King's Coll., Wandsworth Common
McDowell, E.J.P. Manor H., Clapham
McIntyre, J.L. Shoreham Gram. S.
Mercer, J.H. Wilmslow College
Mill, J. Margate Comm. S.
Mills, G. Penketh School
Millward, K.A. The College, Weston-s.-Mare
Moir, I.G.A. Anerley College
Moncur, R.A. Argyle H., Sunderland
Moore, P.W. Broomfield Park Coll., New Southgate
More, G.R.H. Herne Bay College
Morgan, H.C. Shoreham Gram. S.
Morris, C.J. Broadgate S., Nottingham
Morris, P. St. Aloysius' S., Carshalton
Morton, J.B. The High S., Blackpool
Moss, R.B.N. Herne Bay College
Muller, W.R. Lankester S., E. Finchley
Murray, C. Shoreham Gram. S.
Myers, A.R. Richmond Hill School
Newman, J.F. Richmond Hill School
Newsholme, C.W. The High S., Blackpool
Nichols, E. Oxenford H., St. Lawrence, Jersey
Nowler, A.C. Wilmslow College
Olive, R.M. St. Winifred's, Torquay
Oppen, J. St. Dunstan's Coll., Margate
Osborne, S.A. Worcester Coll., Westcliff-on-Sea
Overbury, F.H. Godwin Coll., Margate
Owen, H.J.S. Herne Bay College
Oxley, T. Heaton Moor College
Page, R.E. Heaton Moor College
Parker, A.C. Richmond Hill S.
Parker, E.B. New Coll., Harrogate
Parkinson, S.V. The Modern S., Gravesend
Parsons, F.J. St. Leonards Coll. S.
Patterson, W. New Coll., Harrogate
Pearl, I.M. Margate Comm. S.
Pearson, H.F. Heaton Moor College
Peet, H.A. Brighton H., Clifton, Bristol
Penhale, E.L. The Gram. S., Holsworth
Perren, C.H. Bradley High S. for Boys, Newton Abbot
Phillips, J. Shoreham Gram. S.
Phillips, R.A. Shoreham Gram. S.
Pink, W. York Minster Choir S., York
Pink, W.H. York Minster Choir S., York
Pipon, A.S. Harleston, St. Lawrence, Jersey
Plummer, H.C. Ryde H., Ripley
Pollock, L. Argyle H., Sunderland
Ponton, L.W. Eton H., Southend-on-Sea
Pople, E.L. Oakover, Burnham
Powell, J.C. Anerley College
Preston, H.M. St. Bede's S., Hornsea
Priestley, G. Norwich High S. for Boys
Purse, R.B.W. Shoreham Gram. S.
Pyke, T.B. Godwin Coll., Margate
Radford, E.B. Selwyn H., Hove
Randall-Jones, H.W.W. Herne Bay College
Randall-Jones, J.C. Herne Bay College
Ransdale, W.R. Shoreham Gram. S.

Raphael, G. New Coll., Harrogate
Ratcliffe, J.H.W. St. Bede's S., Hornsea
Rawkins, E.G. Cliftonville Coll., Margate
Read, L. Hutton Gram. S.
Redstone, P.W. Southampton Boys' Coll. & High S.
Rhodes, E.R. Tollington Park Coll., N.
Rhodes, J.S. Heaton Moor College
Richardson, G. Ascham H., Harrogate
Richardson, H.S. Ascham H., Harrogate
Ridgway, M.W.C. King's Coll., Wandsworth Common
Riley, F. The Douglas S., Cheltenham
Rix, G. Norwich High S. for Boys
Robertson, T.W. York Minster Choir S., York
Robins, J.H. Steyne Prep. S., Worthing
Robinson, A. High S., Broadstairs
Rogers, A.G. Littleton H., Knowle, Bristol
Rogulski, E.M. Tollington Park Coll., N.
Ross, E. Worcester Coll., Westcliff-on-Sea
Rowe, D.H. Newquay College
Russell, C.A. Clare H., Tankerton
Sanders, G.S. Shoreham Gram. S.
Sandford, O.V. Bradley High S. for Boys, Newton Abbot
Sankey, C. Penketh School
Sarpy, A.U. King's Coll., Wandsworth Common
Savage, C.H.C. Littleton H., Knowle, Bristol
Sayet, D.H. St. Leonards Coll. S.
Scott, B. Preston Gram. S., Brighton
Searle, J.I. Gram. S., Hyde
Selleck, R. Plympton Higher Prep. S., Mutley
Shorten, W.A. Norwich High S. for Boys
Simon, E.J. Harleston, St. Lawrence, Jersey
Sivewright, W.J. New Coll., Harrogate
Smith, J.B. The College, Bridlington
Smith, T.H. The Douglas S., Cheltenham
Spencer, A.C. Boys' Prep. S., Newcastle-on-Tyne
Staddon, H. Bradley High S. for Boys, Newton Abbot
Stanton, D.F. Godwin Coll., Margate
Statham, D.D. Richmond Lodge, Torquay
Steele, T.G. Kilgrimol S., St. Anne's-on-Sea
Stevens, E.G. Heaton Moor College
Stevens, J.H. Froebel H., Devonport
Stevens, R. Plympton Higher Prep. S., Mutley
Stobart, R.P. St. Placid's Ramsgate
Stockdale, L.J. Barton S., Wisbech
Stoker, H.G. Argyle H., Sunderland
Stoker, J. Argyle H., Sunderland
Stonham, H.E. The Modern S., Gravesend
Strudwick, H.E. The Modern S., Streatham Common
Stubbs, J. Grosvenor Coll., Carlisle
Sturton, R. St. Dunstan's Coll., Margate
Syvret, A.C. Oxenford H., St. Lawrence, Jersey
Talbot, E.V. Heaton Moor College
Thirle, A.C. Norwich High S. for Boys
Thomas, C.W. The Modern S., Gravesend
Thomson, A.W. Ryde H., Ripley
Thorne, L.V. Froebel H., Devonport
Thorp, W.E.L. Ryde H., Ripley
Thorpe, A.H. Barton S., Wisbech
Threkelde, A. Grosvenor Coll., Carlisle
Tiekler, F.C. Shoreham Gram. S.
Tillett, C. Anerley College
Tindall, B.M. Shoreham Gram. S.
Tomlinson, C.O. Southport Modern S.
Tonge, S.V. The Modern S., Gravesend
Topham, V.J. Richmond Hill S.

Tremeer, A.J. Bradley High S. for Boys, Newton Abbot
Tubby, L.O. St. Aubyn's, Woodford Green
Tuck, B. Barton S., Wisbech
Tuerk, C.W. Tollington Park Coll., N.
Turner, J.G. Clark's Prep. S., West Ealing
Tytherleigh, A.T. St. Winifred's, Torquay
Uppfield, S.G. Mutley Gram. S., Plymouth
Varley, R.T. New Coll., Harrogate
Vass, T. Godwin Coll., Margate
Vernon, C.H. Highbury Park S., N.
Vince, C.F. Norwich High S. for Boys
Vincent, R. St. Aubyn's, Woodford Green
Voigt, J.T. Richmond Hill S.
Walker, A.J. Shoreham Gram. S.
Wade, S.D. Raleigh Coll., Brixton
Walker, A.O. Brighton H., Clifton, Bristol
Walker, J.V. Wilmslow College
Ward, A. Southport Modern S.
Warren, H.F. Priory Coll., Hornsey
Waterfield, W.H. King's Coll., Wandsworth Common
Froebel H., Devonport
Watts, C.D. Shoreham Gram. S.
Watts, H.G. Ryde H., Ripley
Webb, H.F. Ryde H., Ripley
Webber, F.C. The Modern S., Gravesend
Wells, A.A.J. Anerley College
Wells, F.R. Private tuition
Wendon, W.J.E. Dudley H., Lee
West, C.A. The Modern S., Streatham Common
West, E.L. Broomfield Park Coll., New Southgate
Westcott, L.A. St. Aubyn's, Woodford Green
Weston, G.H. Gram. S., Cowfold, Horsham
Weyer, A.R. Mutley Gram. S., Plymouth
Wheeler, E.J. Shoreham Gram. S.
Wheeler, G.R. Shoreham Gram. S.
White, D.D.G. Shoreham Gram. S.
Whitlam, J.S. Barton S., Wisbech
Wicks, J.S. Barton S., Wisbech
Wild, H.E. Shoreham Gram. S.
Willan, C.E. Heaton Moor College
Williams, H.L. Ryde H., Ripley
Williams, W.H. St. Margaret's, Cardiff
Wilson, J. Gram. S., Sale
Wilson, F.G. St. Barnabas' Boys' S., Bexhill-on-Sea
Wilson, G.F. King's Coll., Wandsworth Common
Wilson, G.R. New Coll., Harrogate
Wilson, J.E. Downton S., Streatham Hill
Winkworth, F.E. Les Landes H., Falduet, Jersey
Wint, G.J. St. Leonards Coll. S.
Withers, H.F. St. Leonards Coll. S.
Wood, B.B. Dorset H., Sevoeaks
Wood, N.W. Froebel H., Devonport
Wood, S.B. Dorset H., Sevoeaks
Wooderson, T.L. Manor H., Clapham
Woodhead, J.A. The College, Bridlington
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Yours faithfully,

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Thanking you for your attention and assistance,

I am, Sir, yours truly,

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2 Belmont Road, Astley Bridge, Bolton.

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MARCH 1, 1913.

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## The Educational Times.

### THE COMING EDUCATION BILL.

THE educational proposals of the Government are crystallizing, and we may now speak of the coming Education Bill as a matter of general expectation. The word "Bill" describes but faintly the changes that are foreshadowed. We have had many Education Bills, some important and some otherwise; and a few of them have become Acts of Parliament. We are now looking forward to something larger, and wider, and deeper, that may well be called an Education Charter. Unreasoning optimism must be avoided; but it is enthusiasm that gives driving power to proposed changes, and without a genuine, enthusiastic belief that changes vital to the welfare of the nation are necessary and can be carried out we shall not progress far.

We have now one of the most essential factors in the solution of the problem. Lord Haldane is a statesman, not a politician; he is a man of scientific training; he possesses undoubted powers of getting to the root of a matter, and he has the rare gift of imagination. He can see a thing as a whole. For some years he has been making an especial study of the educational problems of the country. We have wanted a leader, and now that he is found, there is a practical certainty that the "driving power" to support him will enable the country to get a satisfactory system of education. For many years the cry has been for a really powerful and convinced Minister of Education. Lord Haldane is not likely to be that Minister; but, when the reforms that he adumbrates are carried out, it will not be so difficult to find the man required.

Some of us, perhaps, dislike change, and, even if we are not altogether satisfied with things as they are, may feel inclined to quote the case of the fish who leaped from the frying-pan into the fire. But it is easy to make out an overwhelming case for reform. No one is altogether satisfied; nothing is so much a matter of daily criticism

and fault-finding as education. We may find much to say in praise of particular schools, of particular teachers, and we are told that every tutorial class in the country is proud in the conviction of possessing the best of teachers, but in many quarters there is discontent. Parents complain that in secondary schools they do not get what they want, that they do not get their money's worth, and the complaint is all the louder on the part of parents who pay £6 a year for an education that costs £18. Employers of labour are dissatisfied, and are never weary of saying that the education of a secondary school does not fit a boy for practical life. The whole body of teachers is profoundly uneasy at the conditions of work and the prospects of life. A deep and widespread feeling prevails that the better posts in the Civil Service are given not to the best candidates, but to those whose parents have been able to afford the charges of a University education. In the elementary field the confusion still holds between provided and non-provided schools. Unrest is apparent amongst the teachers, and it is openly said that the training of a boy scout is more valuable than years of teaching in schools.

We have indicated very broadly some of the prevailing lines of discontent. Lord Haldane proposes to meet them by certain administrative changes. These will help. But he says also that "education must be an affair of the spirit." The country needs to be convinced that education is not only a matter of fine buildings and shady playing-fields, and Lord Haldane is the man to lead this crusade, and to bring it to a happy conclusion. The prevailing uneasiness about education indicates that the times are ripe for a change of view on the part of the nation. The proposals put forward in the Manchester speech were necessarily tentative and vague; but that speech was in the form of a *ballon d'essai*, and Lord Haldane has no reason to be dissatisfied with the way the country, as voiced by the press, has taken his proposals. By the way, we printed in our February number a verbatim report of the passages in the address dealing with education, and our readers will do well to refer to this again.

The administrative changes foreshadowed are these. The Minister of Education is to take rank with other Cabinet Ministers. In itself, it is not important to education whether a man gets £2,000 a year or £5,000; but it is of the utmost importance, so long as our system of values remains as it is, that the Minister of the most important Government Department should not be deemed to hold a minor position. The Treasury will also be called upon for a very large increase in grants. Money implies time, and care, and skill, and efficiency. If there is not enough money there are not enough teachers. But the rate-payer can stand no further burden. The increased payments for education are to come out of the Exchequer. The legal age of attendance at public elementary schools is to be raised, and no half-time allowed under fourteen years of age. There will be an easier means of approach from the elementary to the secondary schools, and from the latter to the Universities. There will be more Universities, and Exchequer grants will make it possible for every student who passes the necessary tests to receive a University education. There will be more teachers, who will be better paid, and have more assured prospects. It is also said that the curriculum will be considered, and that the scheme of studies generally will be widened to include more manual and technical instruction. A Committee of the Cabinet is now sitting, and is working hard at the problem. The Committee is, we are assured, considering a Bill on the lines we have indicated. Many details will, of course, come in for much criticism; but we are convinced that Lord Haldane will carry the country with him in a comprehensive scheme of reform. In his Manchester speech he referred to the possibility of grouping counties together into provincial areas with a University as the centre. We hope that further consideration will induce the Cabinet to hold fast to the county areas. In so small a country as England provincial areas are not needed, and the Universities are not well placed to be centres of areas.

## NOTES.

It is with very deep regret that we have to announce the death of Mr. C. R. Hodgson, the Secretary of the College of Preceptors, which took place on February 3. An appreciation of his work, written by a member of the Council, will be found on another page. The funeral was held at the Highgate Cemetery on February 6, and was attended by a number of members of the College who wished in this way to show their appreciation of his services and their sympathy with his family. Mr. Hodgson had intended to resign his office at the end of this month, and it was hoped that he would enjoy many years of leisure. But his life was so bound up with the College that it is, perhaps, permissible to say that he would have preferred to die, as he did, in harness.

THERE is a growing feeling that in the near future all schools and educational institutes of every kind will come under some sort of Government inspection. The fact is that education is of such vital importance to the community that no part of it can be left entirely without some measure of national control. But inspection in the future need not be, and will not be, exactly what is understood by inspection to-day. Traditions die hard. The present inspectorate is hampered by the traditions established by Her Majesty's Inspectors of the seventies and eighties. Then the Inspector was in reality an entirely detached person whose sole functions were to see that certain regulations were obeyed in order that certain grants might be paid. Inspection is better understood now. The Inspector should be like the consultant physician—he should advise, encourage, and disseminate sound knowledge. The weaker the patient and the smaller his financial resources, the greater his need for careful advice and encouragement. Were a physician to advise a poor patient to drink champagne, take motor-car exercise, and live in the South of France, he would be acting foolishly, and his advice would be unavailing.

It is precisely because we fear to have offered to us this kind of impossible advice that many of us fear to call in the Inspector. This fear, as we have said, is based upon an exploded tradition. There are many things that go to the making of an efficient school. Buildings, salaries, playing-fields, and teachers. The adequacy of the buildings, judged according to definite measurements and regulations, the qualifications of the staff, on paper, are the easiest matters to assess. The real spirit of the school is more difficult to judge. It is not surprising that in the past Inspectors, bound by regulations, have taken the smoother line. But there are signs of a change. There was a time when the acting of a drama could not be estimated by the critics apart from the stage accessories. It is poor acting that needs good scenery. Where all our professors differ, we will not attempt a definition of education; but we may say with confidence that the really important things of education are entirely outside the accessories of equipment. The latter have, of course, their use, especially to the less efficient teachers; but they are not education.

THE Board of Education have, quite naturally, reflected the general feeling of the country that equipment is of primary importance, and they have been inclined to be severe upon schools which, supported both by local rates and Government grants, have failed to come up to the standard laid down. In reporting upon schools under public control they have taken the view that a school which may not quite come up to the required standard is potentially efficient in view of the public funds at its disposal; but, in



reporting upon private schools that have no such sources of income, they have been inclined to refuse recognition where the conditions do not coincide with the Board's regulations. This point of view—that efficiency depends primarily and mainly upon efficient buildings—has been modified. Private schools do not need to ask for two standards of efficiency: one for schools supported by public moneys, the other for schools in private hands. They must ask that the certificate of efficiency shall be based on things that really matter. When this is understood, no private school that is doing honest work need hesitate to welcome the visit of the Inspectors.

INSPECTION will be much more searching and genuine in the future. It will include the University and the private school. But inspection will change its character. We do not imagine that Inspectors will listen to University lectures or inquire if the cloak-room accommodation is sufficient; but they must satisfy the nation that the University is doing the work it sets out to do. "Education," says Lord Haldane, "must be an affair of the spirit." We do not want Inspectors to waste their time in niggling matters: to measure the cubic feet in a classroom, to count the hat-pegs, or to interfere with the subjects taught. We want the Inspectors to recognize earnest and devoted work; to remember that every one works better for encouragement; to estimate a school by the work it does with the equipment that is available; and to be, not the fault-finder who represents a hostile authority in the background, but a friend, a fellow-worker, and a helper. This change is coming about, and private schools will do well to ask for inspection.

THE Montessori controversy continues to rage; books are published, lectures given, and societies formed. We are quite expecting to hear of the formation of an Anti-Montessori League. The really important thing to do is to study the method and to try it. This has been done by Prof. Findlay at the Fielden School in Manchester, and he will give an account of the experiment at the College of Preceptors on Wednesday evening, March 12, at 7.30. Few can afford to neglect this opportunity of learning how the method has answered in the Fielden School. The extravagance of the claims made in some quarters is only equalled by the extravagance of the opposition. Education will not be revolutionized by calling it Montessori; neither will the claims be laughed out of court by the absurd travesty that "children are allowed to do what they like."

A GREAT pother has been made over the award of honorary degrees by the University of Bristol; but the point raised has been very widely misunderstood. It should not have been necessary for the Bishop of Bristol to write

*A Changed Point of View.*

*Prof. Findlay on Montessori Methods.*

*Bristol Degrees.*

a weighty letter to justify the list of names selected for the honour. It is quite beside the mark to argue, as has been done in some quarters, that the value of the degree of the University of Bristol has been discredited by the action of the Council in conferring so many degrees on one occasion. The occasion was a very special one, and it was quite right that a number of citizens should receive the one compliment that it was in the power of the University to grant. The standard of the ordinary degrees is quite safe in the hands of the external examiners. The real point at issue is whether the Council exceeded its powers by conferring these degrees without consulting the Senate. The clause in the charter bearing on this does not seem to be clear, and probably the Privy Council will have to decide the matter. In our opinion, the conferring of degrees should be a function of the Senate.

M. CAMBON, the French Ambassador, knows England well, and we feel sure that he does not express an opinion without due thought; but it is with some surprise that we find him, at a dinner given by the Société Nationale des Professeurs de Français en Angleterre, saying that the Direct Method of teaching modern languages does not give the results expected of it. M. Cambon finds that people "of a certain age" speak French better than the present generation, whose knowledge of the written language appears to be of a more elementary character. Such an expression of opinion from such a quarter may well give somewhat of a shock to the teacher of modern languages. If it is true, the reason is, we believe, not that the Direct Method is at fault, but that some of the exponents of the Direct Method do all the work themselves, while the pupils remain more or less passive during the lesson. The old method, though it failed to touch a number of the pupils, did, at any rate, make those who wished to succeed work hard. Is it possible that there is sometimes too little scope for individual effort in the newer methods?

It often happens that, as the philosophers teach, the appearance of things is taken for the things themselves. This has been so in the case of the wonderful development of photography that has given us the "moving pictures." It is a mere accident, and in no way inherent in the thing, that the winding film should be associated with the amusement of people whose taste is not of a high standard. The discovery has been applied to medical research and can be applied to help education in the schools. The International Kinematograph Exhibition and Conference to be held at Olympia from the 22nd to the 29th of this month will do much to remove the false impression that has been given. Sir Albert Rollit is President of the Educational Section, and the Head Masters of Eton and Westminster are Vice-Presidents. Many other names that carry weight with teachers will be found among the Advisory Committee. Accessories

*M. Cambon and the Direct Method.*

*The Kinematograph Exhibition.*

have their use, though they are not education, and this particular form of educational accessory is pretty sure to be widely adopted.

IN the last number of the *Times Educational Supplement* there is a strong letter of protest from the Rev. F. W. Aveling in reference to the injustice that would be worked on private schools were the proposals of the Consultative Committee on Examinations carried out. We have already pointed out that the effect of these proposals would be to limit appointments in the higher ranks of industry, commerce, and the Civil Service to candidates who had passed through the secondary schools inspected by the State, and that, as things are, such proposals carry their condemnation on their face. But we look forward to a time not far distant when every school, grant-earning or not, will be inspected by the State. When this comes about, any candidate who reaches the necessary standard may receive the certificate, whatever his antecedents may be. For the education of every candidate of the age of sixteen may be called secondary, whether it is received in a State secondary school or in a technical institute, or in a private school. Every school must give an efficient education, and must be officially known to do so. But of course the present lines of inspection must be largely modified.

SIR ARTHUR QUILLER-COUCH, in giving his inaugural lecture as King Edward VII Professor of English Literature in the University of Cambridge, admitted that there lurked in the public mind a doubt whether English literature could be taught in the way that other school subjects are taught. But he went on to give it as his opinion that the study of English literature could be promoted in young minds by an elder one, and that their zeal could be promoted, their taste directed, and their vision quickened. If we may summarize very briefly the rest of the lecture we may say that Sir Arthur urged the necessity of studying the masterpieces with minds intent on finding out just what the author meant, and that commentators should not be allowed to obscure the direct vision of the author. He made some severe allusions to the "endless stream of little school books, all upside down and wrong from beginning to end." The difficulty is, of course, well known and always present. The teacher does not feel that he is doing his work unless he is explaining all the time, and the pupils have no chance of studying the author.

MR. F. D. ACLAND, who may perhaps some day take up the mantle of his father and become Minister of Education, spoke some wise words the other day at Chorley on the subject of religious teaching in schools. Religion, he said, was part of the people's life. This is quite true, and as a part of national life it will never cease to be taught in

schools. Specific formularies and Creeds may be and are excluded, but religion is wider than these. Mr. Acland went on to say that it was the extremists like Lord Hugh Cecil who "were driving them as hard as they could in the direction of clearing religion from the schools." On the same night, in another part of the constituency, Lord Hugh Cecil was speaking on the same subject. He maintained that the only fair system was to teach the child the religion preferred by the parent, and he hoped some day to see this system established. It seems to us practically impossible that in every school there should be teachers prepared to teach with conviction the distinctive doctrine of each body of Christians, and we consider the proposal as hopeless. We want the atmosphere of convinced Christian life: the special doctrine must be left for the home or the Sunday school.

DR. CLIFFORD, speaking at Hull, said that Lord Haldane's proposals were the most democratic on the subject of education that had been made during the last thirty or forty years, and that they meant business. The proposals, he went on to say, gave them a vision of an open road from the elementary school to the University, a road along which there would be no ecclesiastical toll-bars. Similar remarks have been made by other speakers, and, although we cordially agree that educational opportunities should be freely offered to all who can profit by them, yet we are bound to point out that many speakers and many newspapers appear to assume that the educational system of a country exists in order to take the promising boy from the elementary school to the University. However Lord Haldane may multiply Universities, in our generation we shall not see any attempt to give a University education to every citizen. We must not forget the education given to those who get no farther than the elementary school. They are just as important to the nation, and their interests must not be sacrificed for the scholarship boy. Education in all its grades must be sound, and must be the best possible in reference to the leaving age of the children.

## SUMMARY OF THE MONTH.

At the Annual Meeting of the Association of Technical Institutes, held at Birmingham, Sir Philip Magnus gave an address on the educational proposals of the Government. We have been promised, he said, a comprehensive scheme of educational reform, and we were told that it was to be ushered in by a series of legislative measures. He must own that he distrusted legislative measures which were introduced into the House of Commons before the matter had been fully and carefully considered by those experts who were capable of forming sound judgment and giving good advice. He might be wrong, but he could not help thinking that legislation ought to follow and not precede investigation. But he was not certain that that was the opinion generally held at the present time. It would be the duty of this Association to take care that any measure that might be introduced for reforming our existing system of education should be founded on the best experience and framed on the lines of real progress. But change was not necessarily progress, and the

Association must keep a sharp look out that the new proposals made for educational improvement. In conclusion, Sir Philip Magnus referred to the common platform cry against all examinations, and expressed the hope that the Association would carefully and scientifically inquire into the value of examinations. It should not be overlooked that examinations tended to encourage concentrated thought.

MR. C. E. PALMER, President of the Cheshire County Association of the N.U.T., in meeting the charges that the quality of the product of the schools is deteriorating, said: "There is just about enough truth in the criticism to make it a great untruth. For instance, it may be that writing is not so uniform to-day as it was a decade ago, but it is as legible. Spelling of out-of-the way words may not be as correct, but the children on leaving school now have a bigger vocabulary, which they can use sensibly and spell correctly. They may not be able to tot up long columns of figures so quickly, but they can grapple more effectively with the every-day arithmetical problems of their own district. Surely a merchant should no more expect an expert clerk straight from the school than a builder should expect a new apprentice at once to blossom into an expert bricksetter. It is not the function of the school to cater specifically for the needs of the office, nor for any other trade or occupation. Its aim should rather be to develop the power of initiative, investigation, and self-reliance, the qualities which will render a lad capable of adapting himself to the position he will have to fill."

SUMMING up the distinctive characteristics of the Montessori Method, Miss Caroline Herford concluded her address to the Child-Study Society of Manchester by saying that: (1) Dr. Montessori claimed to have originated a system; (2) the formulation of the system began with the statement that auto-education was the most important part of education; (3) starting with Seguin's apparatus, she had modified and added to it to such a great extent that there was now an elaborate, graduated series of didactic materials for sensory culture which she believed were a necessary part of her system, and which there was some fear she might be misguided enough to patent: (4) this didactic material was to be the means of a carefully graded sensory culture, in which the child should proceed from few stimuli, strongly contrasting, to many stimuli in gradual differentiation, always more fine and formerly imperceptible; (5) the directress rather than teacher must have both a scientific and spiritual training.

DR. S. B. SINCLAIR, Head of the School for Teachers at Macdonald College, Quebec, writes: "We have read *The Educational Times* with interest at Macdonald College for a number of years," and encloses an address on "The Rural School as a Factor in the Agricultural Life of a Nation," from which we make the following extract:

The new scientific view of education is not content with a knowledge of unrelated facts that lead nowhere. An educated man must be able to control himself and the forces about him, and to make the best of the particular situation in which he happens to be placed. This does not mean that the highest purpose of education is to train people to make money, but it does mean that the most valuable facts should be taught first and that the child should learn both to know and to do and to prepare himself for the position in which he is likely to be placed in life.

FROM the Fourth Annual Report of the Boy Scouts Association we take the following definition of its objects, written presumably by the Chief Scout, Sir Robert Baden-Powell.

Our Scouting has nothing to do with Soldiering: it is merely the practice of backwoodsmanhood. His manliness and sense of patriotism would no doubt cause every Scout to prepare himself to take his share in the defence of his country should this ever be necessary, and incidentally the practice which he gets in camp life, scoutcraft, signalling, dispatch-riding, &c., affords the soundest foundation on which to model a soldier of the best quality. But we do not preach war and bloodshed to the lads, nor do we favour military drill for them. We want to help boys on leaving school to escape the evils of "blind alley" occupations, e.g., van and newspaper, caddie, or messenger work, such as give the boy a wage for the moment, but

which leave him stranded without any trade or handicraft to pursue when he is a man, and so send him as a recruit to the great army of unemployed—and what is worse—unemployable.

"THE MASQUE OF LEARNING," by Prof. Patrick Geddes, which was performed before enormous audiences in Edinburgh last autumn, is to be produced on March 11 to 15 in the Great Hall of the University of London at South Kensington. Tickets and all information can be obtained from the Masque Secretary, Crosby Hall, Chelsea, S.W. There will be about five hundred performers, under the general direction of Mrs. Percy Dearmer, in the Masque, which begins with the Barbarian Invasion, and stretches on through the Middle Ages to modern times, illustrating the spread of learning through ancient monasteries and Universities, the great centre of the Renaissance period—Lorenzo the Magnificent, Columbus, Erasmus, the Mermaid Club, Milton and Galileo, the Encyclopaedists, and the present-day Educational Movements.

It is proposed to hold a Summer School in pedagogy during the early part of August at some place on the coast of Norfolk. It will be of interest not only to teachers of young children, but also to teachers of older children and to mistresses of method in training colleges. Expeditions to places of interest in the neighbourhood and other social fixtures will be arranged. The school will be organized under the auspices of the Froebel Society. Those who wish to receive full particulars should send a stamped and addressed envelope to Miss Temple Orme, LL.D., Froebel Society, 4 Bloomsbury Square, W.C., and they will receive a copy of the prospectus and all particulars as soon as they are issued.

THE Annual Report of the National Home-Reading Union, which has just been issued, speaks of the steady progress of the movement as a whole, and especially of the development which is taking place in its work among young people, particularly in elementary day and evening schools. There are now a considerable number of Education Authorities who have expressed their willingness to encourage the formation of Circles by undertaking to pay the small fee by which a class can be recognized as a Circle, and to supply the books required for home reading. It is estimated that, through the Union's Reading Circles all over the country, more than a hundred thousand children are being influenced to care for good and healthy books. The vital importance of training children not only how to read, but what to read, is not always borne in mind, and the need for and value of this branch of the Union's work can hardly be over-estimated.

THE Hartley University College of Southampton has emerged from its embarrassments. As a condition for the renewal of its licence as a day training college the Board of Education set the Governors the task of raising £32,000 before December 31 last. This sum was required for the erection of buildings for the Arts faculty of a college which, when completed, will cost about four times that amount. A site has been obtained on the highest ground behind the town, and it is hoped that in a little more than a year the first instalment of the new buildings will be ready for occupation. Meantime the staff of the college will continue to conduct their classes in the existing building. Dr. Alex Hill, the new Principal, was for many years the Master of Downing College, Cambridge. During his Mastership the number of undergraduates at Downing was more than trebled, and it may be anticipated that a similar increase will result from his leadership of the Hartley University College.

IF the writer of the following Note in the *Manchester Guardian* is correct, we shall soon find our infants declining plasticine as an old-fashioned occupation suitable only for mothers.

Anyone adventuring without prejudice into the Victoria Hall of the Hotel Cecil to-night would have borne in upon him effectively the sadness of our pleasures. A small orchestra played industriously

but quite unheeded by the hundred or two of matrons, maids, and men who bent in silent quartets over little tables littered with scraps of coloured paper and plasticine. This was the Patchwork Club in session, and the Patchwork Club exists apparently in order that Kindergarten competition may be substituted for the whist drives which the law has banned. "Patchwork" is a cross between a jigsaw puzzle and clay modelling. Each couple of players is supplied with a paper jigsaw puzzle to be cut out and pieced together within half an hour or so. That is the first stage. In the second stage the players are supplied with coloured plasticine, and are required to finish the pictures in relief. Prizes are given to the best craftsmen—a novel idea which deserves encouragement. On the whole, the results to-night were better than one had any right to expect. A plastic caricature of the Chancellor of the Exchequer, of course, got a special prize—an odd choice for a company that probably had objected vigorously to licking stamps.

## CURRENT EVENTS.

PROF. FINDLAY will lecture at the College of Preceptors on Wednesday, March 12, at 7.30. p.m., on "The Montessori Method: a Report of a Preliminary Investigation conducted at the Fielden School."

THE Bible Study Week will be held at Claydon, March 22-29. Information from Miss B. Leahy, Claydon House, Steeple Claydon, S.O. Bucks.

MR. F. A. CAVENAGH, King Edward VII School, Lytham, has gained a prize of five guineas in the "Esai Competishon" promoted by the "Simplified Speling Societi."

MR. GEORGE ALFRED WILLS and Mr. Henry H. Wills have offered the sum of £150,000 for the extension of the buildings of Bristol University.

MR. FRANK FLETCHER, Head Master of Charterhouse School, has been elected Chairman of the Head Masters' Conference for 1913.

THE Royal Geographical Society has elected twenty-six Fellows, sixteen of whom are women.

IN answer to a question from Sir Philip Magnus, Mr. McKenna stated that the Report of the Royal Commission on the University of London was nearly completed, and would be published shortly.

MR. EDMUND WILSON has left the major part of his fortune to the City of York, to be used for the instruction and promotion of all kinds of swimming and diving.

LORD CURZON OF KEDLESTON has been appointed Rede Lecturer at Oxford, and will deliver a lecture on "Modern Parliamentary Eloquence" during the present term.

THE death is announced of Mr. G. A. Hutchinson, the first editor of the *Boy's Own Paper*.

LORD HALDANE is acting as the Chairman of the Committee of the Cabinet which is now considering the Education Bill to be introduced as a Government measure next session.

SOMERVILLE COLLEGE, Oxford, is offering a Research Fellowship. The annual value is £120 and the tenure five years. This is the first Research Fellowship open to women.

THE LORD MAYOR OF LONDON has received an invitation from the President of the Organizing Committee for the celebration of popular fêtes in honour of childhood, to be held in Paris at Whitsuntide under the direction of the Municipal Council, for twenty-five to fifty boys and girls from the London schools to attend the fêtes.

THE controversy at Oxford over the proposed allotment of a site in the University Parks for an engineering laboratory has been settled by the gift of a site outside the Parks.

MISS AMY MARKS, Head Mistress of the Jews' Free School, has been appointed one of His Majesty's Inspectors of Schools.

AN anonymous benefactor has offered to bear the cost of the new buildings at University College, London, for architecture, sculpture, and applied statistics, including the eugenics laboratory.

MR. FRANCIS B. BOURDILLON has been appointed Lecturer in Modern Languages at Balliol College, Oxford.

THE British Association will meet at Birmingham in September. Sir William White will deliver his Presidential Address on Wednesday, the 10th, and the meeting will be continued until the 17th.

DR. J. S. BRIDGES has been appointed Chief Educational Officer to the Willesden Education Committee.

THE Ramsgate Course for English and Foreign Teachers of Modern Languages, under the control of the University of London, will be again carried on under the direction of Prof. Rippmann, from August 11 to 29.

WE have received a copy of the *Imprint* for January (1s. net), which is a delightful revelation of the possibilities of good printing. The February number will be devoted largely to the production of children's books, and will be illustrated in colour.

THE Kinematograph Exhibition and Conference will be held at Olympia from the 22nd to the 29th of this month.

MISS AGNES DE SELINCOURT has been appointed Mistress of Westfield College, in succession to Miss Maynard, who retires at the end of this session.

THE National Union of Teachers is building a block of new offices at a cost of £33,000.

## CORRESPONDENCE.

### FORMAL TRAINING.

To the Editor of "The Educational Times."

DEAR SIR,—In his courteous rejoinder to my few and much condensed remarks on his recent article Mr. Frank Smith refers to a certain "improved theory" advanced by myself against his views. I am afraid that his reproach is due to my own lack of clearness. I had intended to say that I regarded taste as a part of the innate ideal: or rather that I so regarded its embryo.

I regret that the limits of a letter do not permit me to raise further objections to the article in question: but I trust to be allowed to do so in the near future. Yours truly,

SYDNEY H. KENWOOD.

Llly Place, Gresford, N. Wales.  
February 5, 1913.

### ANGLO-FRENCH COURSE AT RAMSGATE.

To the Editor of "The Educational Times."

DEAR SIR,—With your permission I should like to bring before my fellow readers the Anglo-French Course held last August at Ramsgate under the auspices of London University, and attended by about 120 students of several nationalities. The course included daily lectures on Phonetics by Prof. D. Jones, of University College, London; frequent lectures on French and English Literature and on Methods of Modern Language Teaching, and also conversational circles conducted by the students themselves. Many of the students often formed private circles for conversation when opportunities presented themselves. At the end of the course a voluntary examination was conducted by the University. Excursions were organized from time to time and the three weeks passed pleasantly.

The next course is from August 11 to 29, and will be again under the direction of Prof. Rippmann, and Mr. Norman, Head Master of the County School, from the latter of whom prospectuses may be obtained. I am, Sir, yours truly,

A STUDENT.

It has been decided to establish a social club for graduates of the University of London, men and women, in the neighbourhood of Bedford Square. It is hoped that the club may be open by the middle of the year. If the support is as expected, the annual subscription will probably be two guineas for town and one for country members.

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 Hargreaves, W. B.  
 Hedger, W. S.  
 Higgins, F. J. T.  
 Hill, H. A.  
 Hill, R.  
 Hills, Miss L. M.  
 Holt, R. J.  
 Hudson, C. H.  
 Hughes, A. W. (hon.)  
 Jackson, J. W.  
 Jones, C.  
 Jones, T. J.  
 Jones, W. H.  
 Jubb, A. B.  
 Kellaway, W. H.  
 Knight, J.  
 Knights, G. W.  
 Law, E. F.  
 Lawrence, F. W.  
 Little, E. R.  
 Martin, F.  
 Michell, F. C.  
 Middleton, L. H.  
 Millner, G. H.  
 Oudin, Miss J. M. L.  
 Patrick, F. W.  
 Pearson, L.  
 Pinch, W.  
 Platten, E. W. (hon.)  
 Powell, L. E. B.  
 Probert, H.  
 Proctor, J. W. (hon.)  
 Pugh, C. F.

Reeve, W. A.  
 Roberts, T. R.  
 Robertson, Miss I. M.  
 Rodda, W. J.  
 Shaw, H. L.  
 Skinner, W. J.  
 Smith, R. H.  
 Steedman, J.  
 Stone, E. G.  
 Sturme, Miss N.  
 Swaine, G. R. (hon.)  
 Tungate, M. D.  
 Walshe, P. T.  
 Warren, M. W.  
 West, W. N.  
 Whitter, J.  
 Wicks, J. D.  
 Wilkins, W. H.  
 Wood, A. J.  
 Wright, Miss F. K.

**Arithmetic.**

Adamson, T. C.  
 Arthur, H.  
 Ashton, Miss M.  
 Ball, H. F.  
 Barnes, H. C.  
 Barnes, R. J. T.  
 Bearder, J. E.  
 Berks, R.  
 Biggs, W. R.  
 Bown, E. E.  
 Brown, D.  
 Buckler, J.  
 Burge, A. B.  
 Burton, Miss E. A. (hon.)  
 Carter, G.  
 Chambers, Miss C. L.  
 Chapman, H.  
 Claxton, S. H.  
 Cocker, H. B.  
 Conton, C. B.  
 Coulthard, W.  
 Cox, G. E.  
 Cunningham, J.  
 D'Alton, Miss M. F.  
 Davies, Miss O. R.  
 Dean, F.  
 Dillon, M. J.  
 Dodson, W. A.  
 Drew, Miss E. B.  
 Edwards, W. S.  
 Foot, G. J.  
 Gleeson, D.  
 Glen, W.  
 Godivier, Miss A. E. L.  
 Green, Miss E. M.  
 Gregory, J. H.  
 Hall, J. M.  
 Hann, L. C.  
 Hargreaves, W. B.  
 Hedger, W. S.  
 Hill, H. A.  
 Hill, R.  
 Hills, Miss L. M.  
 Holt, R. J.  
 Hudson, C. H.  
 Hughes, A. W.  
 Hughes, W. H.  
 Irvine, H. J.  
 Jones, C.  
 Jones, Miss J. L.

Jubb, A. B.  
 Kellaway, W. H. (hon.)  
 Knight, J.  
 Knights, G. W.  
 Latham, S.  
 Lawrence, F. W.  
 Little, E. R.  
 Martin, F.  
 Michell, F. C.  
 Millner, G. H.  
 Mitchell, W.  
 Morris, H. H.  
 Newby, T. E.  
 O'Keefe, Miss M.  
 Patrick, F. W.  
 Paqualin, Miss A. E.  
 Pearson, L.  
 Peet, H. F.  
 Pinch, W.  
 Platten, E. W.  
 Potts, E.  
 Powell, L. E. B. (hon.)  
 Reynolds, Miss D. B.  
 Roberts, T. R.  
 Rodda, W. J.  
 Sheahan, J. D. G.  
 Skinner, W. J.  
 Southworth, J. P.  
 Stone, E. G.  
 Sturme, Miss J. E.  
 Sturme, Miss N.  
 Swatman, W. W.  
 Tendulkar, A. G.  
 Varley, C. L.  
 Walshe, P. T.  
 Warren, F. E.  
 Warren, M. W.  
 White, L. R.  
 Whitter, J.  
 Wicks, J. D.  
 Wood, A. J.  
 Wright, Miss E. K.

**Mathematics.**

**FELLOWSHIP.**  
 Dumaresq, O. W.  
 (hon. geometry, trigonometry, conics, and calculus)  
 Ellis, A. C.  
**LICENTIATESHIP.**  
 Adamson, T. C.  
 Culshaw, W. H.  
 (hon. geometry)  
 Eades, G. E.  
 Emberson, S. W.  
 Ferraro, R.  
 Gard, H. A. E. (hon. conics)  
 Hatton, A. E.  
 Hill, H. A.  
 Humphreys, P. E.  
 (hon. conics)  
 Hunt, J.  
 Kershaw, W.  
 Lowther, C.  
 Milner, J. G. (hon. conics)  
 Pearson, L.  
 (hon. trigonometry)  
 Sheckell, N. G.  
 Sykes, V. H.  
 Tanner, F. E. (hon. conics)  
 Taylor, B. A.

Tedstone, J. L.  
 Vaughan, W. B. G.

**ASSOCIATESHIP.**

Arthur, H.  
 Atherton, P.  
 Baker, C. E.  
 Carter, G.  
 Chapman, H.  
 Cox, G. E.  
 Daniel, D.  
 Davies, Miss O. R.  
 Dean, F.  
 Dexter, G. F.  
 Dillon, M. J.  
 Ducklin, Miss E. M.  
 FitzGibbon, A. H.  
 Foot, G. J.  
 Gleeson, D.  
 Glen, W.  
 Greenhalgh, S. W.  
 Gwilt, J.  
 Hargreaves, W. B.  
 Hill, R.  
 Jubb, A. B.  
 Kellaway, W. H.  
 (hon. algebra)  
 Knights, G. W.  
 Law, E. F.  
 Lodge, J. L.  
 Mead, J. R.  
 Michell, F. C.  
 Millner, G. H.  
 Mitchell, W.  
 Owen, C. E.  
 Patrick, F. W. (hon. algebra)  
 Pedely, J. E.  
 Peet, H. F.  
 Pinch, W.  
 Platten, E. W. (hon. algebra)  
 Powell, L. E. B.  
 Wood, A. J.  
 Sheahan, J. D. G.  
 Spratt, Miss E. E.  
 Walshe, P. T.  
 Warren, M. W.  
 Whitter, J.

**Languages.**

e. = Higher English.  
 f. = French, g. = German,  
 l. = Latin, s. = Spanish.  
**FELLOWSHIP.**  
 Ellis, A. C. e.f.  
 Wightman, J. C. e.f.  
**LICENTIATESHIP.**  
 Andrew, C. e.f.  
 Gachet, W. R. e.f.  
 Hill, H. A. e.f.  
 Le Gros, C. L. e.f.  
 Lewis, S. C. e. (hon.) f.  
 Pearson, L. f.l.  
 Spink, J. S. e.g.  
 Stephens, H. H. f.g.  
 Thomas, R. e.f.g.l.  
 Willmore, E. f.g. (hon.)  
**ASSOCIATESHIP.**  
 Bown, E. E. f.  
 Cahalan, Miss K.

Condry, Miss N. M. f.  
 Doidge, Miss H. f.  
 Drew, W. P. f.  
 Fitton, R. A. s. (hon.)  
 Hudson, C. W. f.  
 Hughes, A. G. L. l.  
 Hughes, A. W. l.  
 Jones, W. H. g.  
 Leech, Miss A. F. O. f.  
 Staples, Miss G. f.  
 Tomlin, Miss C. I. M. f.  
 Wall, Miss C. f.  
 Warren, F. E. f.  
 Willcocks, Miss E. J. f.

**Science.**

a. = Astronomy.  
 b. = Botany.  
 ch. = Chemistry.  
 g. = Geology.  
 m. = Mechanics.  
 n. = Natural Philosophy  
 and Astronomy.  
 p. = Experimental  
 Physics.  
 ph. = Animal Physiology  
 z. = Zoology.

**FELLOWSHIP.**

Dumaresq, O. W. p. (hon.) n  
 Stead, H. G. n.ph.  
 Wightman, J. C. ph.b.

**LICENTIATESHIP.**

Bird, W. E. A. ph.b.  
 Burrill, F. ph.b.  
 Ferraro, R. p.ch.  
 Francis, H. J. ph.b. (hon.)  
 Gard, H. A. E. ch.b. (hon.)  
 Hall, E. C. ch.ph.  
 Howard, N. P. a.ph.  
 Jones, J. E. m.ph.  
 Kirkby, Miss L. ph.b.  
 Ogden, J. ch.ph.  
 Pearce, H. ch.ph.  
 Spink, J. S. ph.z.  
 Stephens, H. H. a.ph.  
 Tanner, F. E. p.ch.  
 Vaughan, W. B. G. p.m.  
 Walker, F. M. ch.ph.  
 Wilson, A. E. a.g.

**ASSOCIATESHIP.**

Ashton, Miss M. ph.b.  
 Bloxham, H. W. ph.b.  
 Crabbe, Miss L. ph.b.  
 Edwards, W. S. m.ch.  
 Gregory, J. H. ph.b.  
 Hall, J. M. ph.b.  
 Hewett, W. J. ph.b.  
 Holcombe, H. J. ch.ph.  
 Hudson, C. H. m.ph.  
 Jones, C. m.ph. (hon.)  
 Jones, H. C. ph.g.  
 Matthews, Miss W. ph.b.  
 Moore, T. ch.ph.  
 Oxford, Miss G. H. ph.b.  
 Papworth, L. J. ph.b.  
 Silk, Miss E. ph.b.  
 Sturme, Miss N. ph.b.  
 Wilkins, W. H. ch.ph.  
 Wilman, Miss L. B.  
 Wright, L. G. ph.b.

**DIPLOMAS** were awarded to the following, who had satisfied all the prescribed conditions:—

**Fellowship.**

Fox, F. D.  
 Pilkington Rogers, C. W.  
 Wightman, J. C.

**Licentiatehip.**

Berggren, G. H. J. A.  
 Culshaw, W. H.  
 Eades, G. E.  
 Ellis, H. E.  
 Emberson, S. W.  
 Essam, W.  
 Evans, E. J.  
 Gard, H. A. E.  
 Gibbs, H.  
 Greaves, J. W.  
 Green, W.  
 Hargreaves, H. D.  
 Hawtin, H. E.  
 Humphreys, P. E.  
 Hunt, J.  
 Lewis, S. C.  
 Lowther, C.  
 Mayo, H. G.  
 Miles, G. H.  
 Milner, J. G.  
 Nunn, C. S.  
 Ogden, J.  
 Pearson, L.  
 Pick, W. H.  
 Rayner, G. J.

Record, S. P.  
 Salmon, A. F.  
 Sheckell, N. G.  
 Shires, A. L.  
 Spink, J. S.  
 Sykes, V. H.  
 Tanner, F. E.  
 Tedstone, J. L.  
 Varley, B.

**Associateship.**

Arkwright, J. S.  
 Baker, C. E.  
 Beckley, R. F.  
 Bird, W. J.  
 Bloxham, H. W.  
 Brown, F. J.  
 Brown, Miss S. A.  
 Buckler, J.  
 Cahalan, Miss K.  
 Catchpole, D.  
 Cockrill, R.  
 Cumber, S. W.  
 Cook, A.  
 Cookson, F. L.  
 Cooper, H.  
 Cox, Miss C. M.  
 Crawford, W.  
 Davies, Miss O. R.  
 Dexter, G. F.  
 Douglas, R. R.

Ducklin, Miss E. M.  
 Edwards, W. S.  
 England, H. A.  
 English, S.  
 Entwistle, R. G.  
 Fisher, C. H.  
 Fleet, W. F.  
 Fox, L. J. F.  
 Freeman, F. B.  
 George, Miss E. A.  
 Goddard, Miss E. G.  
 Grant, B. C.  
 Greatbatch, A. R.  
 Greenhalgh, S. W.  
 Gribbin, E. P.  
 Griffiths, L.  
 Griffiths, R. P.  
 Hall, J. M.  
 Hann, L. C.  
 Heathcote, W. T.  
 Hemstead, M. I.  
 Henry, Miss G. M.  
 Hewett, W. J.  
 Hill, R.  
 Holt, R. J.  
 Hudson, C. H.  
 Hudson, C. W.  
 Hughes, A. W.  
 Hughes, W. H.  
 Jackson, J. W.  
 Jenner, Miss M. E.

Jones, C.  
 Jones, Miss R. W.  
 Jones, T. J.  
 Joynton, Miss E. M. C.  
 Kellaway, W. H.  
 Knief, C. A. M.  
 Law, Miss M. G.  
 Llewellyn, Miss M. J.  
 Lloyd, R. G.  
 Lodge, J. L.  
 Machin, G.  
 Mainhood, A. E.  
 Mathews, F. W.  
 Matthews, Miss W.  
 Middleton, L. H.  
 Millner, G. H.  
 Moore, T.  
 Munday, Mrs. L. M.  
 North, R. J.  
 Oates, T.  
 Owen, C. E.  
 Owen, O. T.  
 Owen, T. J.  
 Oxford, Miss G. H.  
 Papworth, L. J.  
 Paqualin, Miss A. E.  
 Peacock, T. S.  
 Platten, E. W.  
 Player, J. L.  
 Pollard, C. T.  
 Powell, C. G.

Reid, Mrs. S. G.  
 Richards, Miss P. A.  
 Roberts, T. R.  
 Robertson, Miss I. M.  
 Russell, Miss C. J.  
 Savage, P. M.  
 Scott, E. L.  
 Sergeant, S.  
 Soley, W. H.  
 Silk, Miss E.  
 Slack, E. H.  
 Skinner, W. J.  
 Smith, J.  
 Spratt, Miss E. E.  
 Sturme, Miss N.  
 Swaine, G. R.  
 Swatman, W. W.  
 Swell, E. O.  
 Taylor, J.  
 Vickery, L. E.  
 Walton, Miss E. A. M.  
 Warren, F. E.  
 Warren, M. W.  
 Whalley, R. T.  
 Whitter, J.  
 Wilkins, W. H.  
 Wilman, Miss L. B.  
 Wood, A. J.  
 Yelland, F.  
 Yeoman, G. D.

The Prize for **Theory and Practice of Education** was awarded to William Henry Pick, the Prize for **Mathematics** to Lawson Pearson, and the Prize for **Natural Sciences** to Harold Archibald Edward Gard.

**THE NORMAL CORRESPONDENCE COLLEGE**  
**AT THE**  
**DIPLOMA EXAMINATION.**

**In all parts of the kingdom pupils of the Normal have passed A.C.P. and L.C.P. with Honours.**

(Testimonials received from many other pupils of the Normal who have passed the last examination will be sent on application.)

Lynwood, Willoughby Road, Langley, Bucks.  
 Dear Sir, January 29th, 1913.  
 I received my result this morning. I know you will be pleased to hear that I have completed the Diploma, obtaining **Honours** in Geometry at A.C.P.  
 Allow me to offer you my sincerest thanks for your excellent tuition and the pains you took with me. I cannot speak too highly of your classes. I have always been backward in Mathematics and Honours was the last thing I anticipated.  
 I gladly recognize that you have pulled me up wonderfully in a subject that was always a bane to me. Again thanking you.  
 Believe me, yours gratefully,  
 EDGAR O. SWELL.

70 Breakspere Road, Brockley, S.E.,  
 Dear Sir, January 29th, 1913.  
 I heard this morning from the College of Preceptors to say I have passed the examination, and shall receive the A.C.P. Diploma in due course. Please accept my hearty thanks for all the help that you gave me while I was preparing for the examination, and to which I feel I owe my success. I am quite sure that I could not have passed the examination after three months' study without the guidance and the aid of the "Normal College." I shall take the opportunity of recommending the "Normal College" to anyone that I know is studying for anything which that College undertakes to coach for. Again thanking you for all the help and kindness which I have received from you.  
 I remain, yours sincerely  
 SARAH AMERSON BROWN.

24 Union Street,  
 Middlesbrough,  
 Dear Sirs, February 21st, 1912.  
 I am pleased to inform you that I have passed the Licentiate examination of the College of Preceptors, and have also been awarded the **£10 Prize in Education**. This success redounds greatly to the credit of the "Normal." The fact that this is the second examination for which you have con-fided me successfully speaks for the excellence of your tuition. Thanking you,  
 I am, yours truly,  
 G. R. BOWEN.

**A.C.P. Honours in Three subjects.**  
**L.C.P. Honours in Three subjects.**

57 Fawe Park Road, Putney,  
 Dear Sir,  
 At the recent L.C.P. exam. I obtained the only **Honours** in Mathematics granted in the whole list, together with one of the two Honours granted in Mechanics. Also I was the only person to gain more than one Honours. As I have never had any other tuition than yours, I feel I must write and thank you for piloting me safely through Certificate (with Distinction), **Triple Honours** at A.C.P., L.C.P. (**Triple Honours**). I have always found your tuition admirable in every respect, and will always recommend your college.  
 CYRIL E. WALL.

Kirkurd Schoolhouse, Delphinton, Peeblesshire,  
 Dear Sirs, October 3rd, 1912.  
 You will be delighted to hear that I have now completed my qualifications for the Diploma of Licentiate of the College of Preceptors. The result is extremely gratifying, seeing that I am kept busy here with my school duties and with my Parish work. I am Registrar, Poor Inspector, &c., of Kirkurd. I must therefore compliment your admirable tuition, which reduces superfluous work to a minimum. *Multum in parvo* is really one of the distinctive features of the "Normal." The notes sent to me were excellent, and the correction of the work papers sent to you was most carefully done. Too much praise cannot be bestowed upon the "Normal," and I shall certainly, should any of my friends desire tuition, recommend the "Normal."  
 Yours faithfully,  
 FRED. J. BELFORD, M.A.

146 Burnley Road, Bacup,  
 Dear Sir, October 2nd, 1912.  
 I have just received the result of A.C.P., and am pleased to be able to inform you that I have gained **Honours** in Geography and Arithmetic. Thanking you again for your valuable tuition,  
 I am, yours &c.,  
 JOHN CROPPER.

201 Ormskirk Road, Newtown, Wigan,  
 Dear Sir, January 29th, 1913.  
 I have pleasure in informing you that I have gained the Diploma of Licentiate of the College of Preceptors, and that I have gained **Honours** in Euclid and Geography. I must say that I am quite pleased with your tuition. Mr. Gardner (your tutor for Mechanics) is all that could be desired, and Mr. Bell (your tutor for Mathematics) is one of the finest coaches it has been my pleasure to be under. They were both untiring in their efforts and their solutions well thought out and easily to follow, and I think it is my duty to give them the credit they deserve.  
 I am, sincerely yours,  
 W. H. CULSHAW.

Gloucester Road, Chesterfield,  
 Dear Sir, January 30th, 1913.  
 You will be pleased to know that I have been successful in gaining my complete A.C.P. Diploma at the first trial.  
 I thank you very heartily for the expert assistance given for so small a fee, and I feel sure that without such assistance success would not have been mine.  
 Especially would I like to thank you for the Model Psychology answers. I did not commence to read Psychology until September, and I cannot imagine how I should have progressed without your notes.  
 Yours sincerely,  
 ERNEST H. SLACK.

53 Castle Road,  
 Newport, I.W.,  
 Dear Sir, February 1st, 1912.  
 I have much pleasure in stating that at the recent examination for the A.C.P. Diploma I was successful, and passed in all subjects, thereby qualifying for the full Diploma. I am also glad to be able to add that I passed with **Honours** in Geography. Such result does, I think, great credit to your course of instruction.  
 Thanking you for your attention and assistance,  
 I am, Sir, yours truly,  
 MARK MITCHELL.

33 Eagle Mansions, Salcombe Road,  
 Stoke Newington,  
 Dear Sirs, February 2nd, 1912.  
 I have a pass at the A.C.P. examination in Botany, and **Honours** in Physiology. I am shortly joining your correspondence class again. Once again thanking you,  
 I am, Sirs, yours obediently,  
 HANNAH LAWRENCE.

2 Belmont Road,  
 Astley Bridge, Bolton,  
 Dear Sir, October 2nd, 1912.  
 A.C.P. results to hand and, entirely as a result of your tuition, I find myself credited with **Honours** in Geography and Arithmetic. The success in Geography is particularly pleasing to me, because, considering the modern ideas of Geography, I was at first very uncertain in my own mind as to whether I could achieve a pass. But the "Normal" as usual was up-to-date, and soon put me on the right track, with the most gratifying results.  
 Gratefully yours,  
 JOHN H. ASTLEY.

**THE NORMAL CORRESPONDENCE COLLEGE**  
 47 Melford Road, East Dulwich, London, S.E.

# CLASS LISTS

OF CANDIDATES WHO HAVE PASSED THE CERTIFICATE EXAMINATION OF THE COLLEGE OF PRECEPTORS.—CHRISTMAS, 1912.

## LIST OF SUCCESSFUL CANDIDATES AT COLONIAL AND FOREIGN CENTRES.

N.B.—The small italic letters denote that the Candidate to whose name they are attached was distinguished in the following subjects respectively :—

<i>a.</i> = Arithmetic.	<i>du.</i> = Dutch.	<i>gr.</i> = Greek.	<i>mag.</i> = Magnetism & Electricity.	<i>sc.</i> = Elementary Science.
<i>al.</i> = Algebra.	<i>e.</i> = English.	<i>h.</i> = History.	<i>ms.</i> = Mensuration.	<i>sh.</i> = Shorthand.
<i>b.</i> = Botany.	<i>f.</i> = French.	<i>he.</i> = Hebrew.	<i>mv.</i> = Music.	<i>sp.</i> = Spanish.
<i>bk.</i> = Book-keeping.	<i>g.</i> = Geography.	<i>i.</i> = Italian.	<i>nh.</i> = Natural History.	<i>t.</i> = Tamil.
<i>ch.</i> = Chemistry.	<i>ge.</i> = German.	<i>ir.</i> = Irish.	<i>p.</i> = Political Economy.	<i>tr.</i> = Trigonometry.
<i>d.</i> = Drawing.	<i>geo.</i> = Geology.	<i>l.</i> = Latin.	<i>ph.</i> = Physiology.	<i>w.</i> = Welsh.
<i>do.</i> = Domestic Economy.	<i>gm.</i> = Geometry.	<i>lt.</i> = Light and Heat.	<i>phys.</i> = Elementary Physics.	<i>z.</i> = Zoology.
		<i>m.</i> = Mechanics.	<i>s.</i> = Scripture.	

In the addresses, Acad. = Academy, C. or Coll. = College, Coll.S. = Collegiate School, Comm. = Commercial, Conv. = Convent, Elem. = Elementary, End. = Endowed, Found. = Foundation, H. = House, Hr. = Higher, Inst. = Institute, Int. = International, Inter. = Intermediate, Poly. = Polytechnic, Prep. = Preparatory, P.T. = Pupil-Teachers, S. = School, Sec. = Secondary, Tech. = Technical, Univ. = University.

The small figures <sup>1</sup> and <sup>2</sup> prefixed to names in the Second and Third Class Lists denote that the Candidates were entered for the First and Second Classes respectively.

[Bracketing of names denotes equality.]

### BOYS.

#### FIRST CLASS [or Senior].

##### Pass Division.

- Anderson, C.G. *s.g.* Government S., Nairobi
- Schultz, H.J.E. *du. ch.* Marist Bros.' Coll., Uitenhage
- Basson, H.O. *ch.* Marist Bros.' Coll., Uitenhage
- Ruthnam, A. Norris Coll., Rangoon
- Wilson, J.P. Marist Bros.' Coll., Cala
- Kariapper, M.S. Wesleyan Central S., Batticaloa
- Smith, J.P. Marist Bros.' Coll., Uitenhage
- Paterson, A.R.G. *du.* Marist Bros.' Coll., Uitenhage
- Cadwalader, F.W.L. Marist Bros.' Coll., Uitenhage
- Vytilingam, S. *s.* Jaffna National Acad., Manipay
- Long, H. Marist Bros.' Coll., Uitenhage
- Casipillai, P. Eton Coll., Colombo
- Mercier, H.J. Marist Bros.' Coll., Uitenhage
- Power, J.P. Marist Bros.' Coll., Uitenhage

#### SECOND CLASS [or Junior].

##### Honours Division.

- Neustadt, E.C.R. *e.al.gm.ge.ch.* Marist Bros.' Coll., Uitenhage
- de Zilva, I.G. *e.h.f.ma.* Private tuition
- Hoddinott, R.W. *s.* Government S., Nairobi
- Mahon, G.S. *s.h.* Samaritan Presbyterian S., Grenada
- Knower, H.W. *al.* Eton Coll., Colombo
- Featherstone, D.R.H. *du.* Marist Bros.' Coll., Uitenhage
- Sabnathy, J.P. *e.t.* Central Coll., Colombo
- Williams, V.H. *s.* Private tuition
- Einkamerer, A. *gm.* Marist Bros.' Coll., Uitenhage
- McGuire, J.J. Marist Bros.' Coll., Uitenhage

#### SECOND CLASS [or Junior].

##### Pass Division.

- Kinna, T. St. Aidan's Coll., Grahamstown
- Cornelius, J. *e.t.* Eton Coll., Colombo
- Girndt, E.R.C. *al. du.* Marist Bros.' Coll., Uitenhage
- Stow, F.C.P. *al.* Marist Bros.' Coll., Uitenhage
- Haniffa, N.M.M. *al.* Central Coll., Colombo
- Hassen, M.S. Eton Coll., Colombo
- Maung, T.M. Eton Coll., Colombo
- Pitt, R.J.L. St. David's R.C. School, Grenada
- Stewart, E. St. Aidan's Coll., Grahamstown
- Fernando, W.E.T. Eton Coll., Colombo
- Pieris, P.L. Eton Coll., Colombo
- Sylvester, N.G. Mt. Pleasant Government S., Grenada
- Pitt, C.S.L. Grand Roy Government S., Grenada
- Fernando, H.A. Eton Coll., Colombo
- Pereira, D.C. *f.d.* U.M.C.A. High School, Zanzibar
- Jensen, O. *ch.* Marist Bros.' Coll., Johannesburg
- Muthukumarasawmy, P. Norris Coll., Rangoon
- Isaacs, C.V.B. St. Vincent Gram. S., Kingstown
- Nagalingam, A. *t.* Eton Coll., Colombo
- Moss, M.P. Eton Coll., Colombo
- Van der Heever, H. Marist Bros.' Coll., Johannesburg
- Andrews, E.A.E. St. David's Anglican S., Grenada

- (Noel, E.A. St. Andrew's Anglican S., Grenada
- (Proudfoot, L.C. St. Vincent Gram. S., Kingstown
- Thm, W. Norris Coll., Rangoon
- Powell, C. *gm.ch.* Marist Bros.' Coll., Johannesburg
- (Albertijn, B. Marist Bros.' Coll., Uitenhage
- (Aronowitz, I. Private tuition
- (De Mel, A. Eton Coll., Colombo
- (Kuola, N.A. *s.* Private tuition
- (Kartigeon, S. Wesleyan Central S., Batticaloa
- (Morgan, S. *ch.* Marist Bros.' Coll., Johannesburg
- (Ratnasabapathy, L. Private tuition
- (Casinarud, J.W.H. Wesleyan Central S., Batticaloa
- (Nel, P.J. Marist Bros.' Coll., Uitenhage
- (Subrahmaniam, G. Norris Coll., Rangoon
- (Chelladorai, M. Eton Coll., Colombo
- (Dnbasson, C.E. Marist Bros.' Coll., Uitenhage
- (Elliott, R.C. Marist Bros.' Coll., Uitenhage
- (Goulding, M. St. Aidan's Coll., Grahamstown
- (Hacking, C. St. Aidan's Coll., Grahamstown
- (Visuvasam, S. *t.* Eton Coll., Colombo
- Tin, T. Norris Coll., Rangoon
- (Duires, M.L. *s.* Government S., Nairobi
- (Jewell, E.H. Marist Bros.' Coll., Uitenhage
- (McLachlan, J.N. Marist Bros.' Coll., Uitenhage
- (Pe, M.O. Eton Coll., Colombo
- (Hunter, H.R. *al.* Marist Bros.' Coll., Uitenhage
- (Arambamuthali, V. *al.* Wesleyan Central S., Batticaloa
- (Ankrah, M.C. *s.* Private tuition
- (Mortier, A.C. Eton Coll., Colombo
- (Ramanader, S.H.W. St. Michael's S., Batticaloa
- (Edwards, L.C. Hermitage R.C. School, Grenada
- (Vadivalagiamambi, P.S. *t.* Norris Coll., Rangoon
- (Sassen, T. St. Aidan's Coll., Grahamstown
- (Doherty, T.A. *s.* Abeokuta Gram. S.
- (Godfrey, E. Marist Bros.' Coll., Johannesburg
- (Ferreira, G. Marist Bros.' Coll., Johannesburg
- (Mortimer, R.M. Marist Bros.' Coll., Johannesburg
- (Ragaviah, R. Norris Coll., Rangoon
- (Kuforiji, C.B.A. *s.* Abeokuta Gram. S.
- (Leuaghau, T.P. Marist Bros.' Coll., Uitenhage
- (Beckett, A. St. Aidan's Coll., Grahamstown
- (O'Hea, F.J.F. *ch.* Marist Bros.' Coll., Uitenhage
- (Papenfus, N.C. *ch.* Marist Bros.' Coll., Uitenhage
- (Fernando, B.W. Eton Coll., Colombo
- (H.E. Norris Coll., Rangoon
- (Rubin, H. *he.* Private tuition
- (Wijetunga, D.E.W. Eton Coll., Colombo
- (Vinden, C. Eton Coll., Colombo
- (Crawford, S.H. Marist Bros.' Coll., Uitenhage
- (Anderson, J.D. Marist Bros.' Coll., Johannesburg
- (Tully, M.B. Marist Bros.' Coll., Uitenhage
- (Baukole, D.O. Abeokuta Gram. S.
- (Edmunds, J.P. Marist Bros.' Coll., Uitenhage
- (Miller, D. St. Aidan's Coll., Grahamstown
- (Thamotheram, N. St. Andrew's S., Batticaloa
- (Fernando, M.C. Eton Coll., Colombo
- (Bruton, S.H. Marist Bros.' Coll., Uitenhage
- (Providence, C.H. St. Vincent Gram. S., Kingstown
- (Idoraisamy, C. Eton Coll., Colombo
- (Fernando, M.A. Eton Coll., Colombo
- (Gunawardena, A.S. Eton Coll., Colombo
- (Fernando, L.V. Private tuition

- (Allegacoen, W.G. Wesleyan Central S., Batticaloa
- (Hodes, J. Marist Bros.' Coll., Johannesburg
- (Knight, J.J. Marist Bros.' Coll., Uitenhage
- (Quin, L. St. Aidan's Coll., Grahamstown
- (Sothinather, S. Jaffna National Acad., Manipay
- (McLeod, J.H. St. Vincent Gram. S., Kingstown
- (Mack, W.G. Eton Coll., Colombo
- (de Silva Wijeratna, R.C.W. Central Coll., Colombo
- (Mills, H. Marist Bros.' Coll., Johannesburg
- (Zeitge, C.H.G. Private tuition
- (Delpe Chitra Acharige, L. Private tuition

#### THIRD CLASS. Honours Division.

- Bouffe, V.A. *e.al.f.sc.* Marist Bros.' Coll., Uitenhage
- Kaplan, H. *e.al.gm.* Marist Bros.' Coll., Johannesburg
- Suzman, S. *e.al.gm.* Marist Bros.' Coll., Johannesburg
- (Cushney, J. *ga.* Government S., Nairobi
- (Thunemann, H.J. *e.al. du.* Marist Bros.' Coll., Uitenhage
- (Curry, T.D. *e.a.* Marist Bros.' Coll., Uitenhage
- (Markiles, M. *e.al.gm.* Marist Bros.' Coll., Johannesburg
- (MacDonald, G.Z. *s.e.* Private tuition
- (Adler, L. *e.al.gm.* Marist Bros.' Coll., Johannesburg
- (Kariapper, M.M. *e.* Wesleyan Central S., Batticaloa
- (Segall, M. *al.gm.* Marist Bros.' Coll., Johannesburg
- (Mahon, A.W. *e.* River Saltce Government S., Grenada
- (Lyons, E. *s.* Holy Innocents' Anglican S., Grenada
- (Reason, F.S. *s.a.* Birch Grove Government S., Grenada
- (Dick, W.R. *al.* Private tuition
- (Johansen, A. *ga.* Government S., Nairobi
- (Osman, M.L. *e.a.* Wesleyan Central S., Batticaloa
- (Rodger, R. *al.* Marist Bros.' Coll., Johannesburg
- (Proscod, G.T. *e.a.* Private tuition
- (Cato, J.R. *e.* Private tuition

#### THIRD CLASS. Pass Division.

- <sup>2</sup>Kanagaratnam, N. Jaffna National Acad., Manipay
- <sup>2</sup>Ba, B. Norris Coll., Rangoon
- <sup>2</sup>Holey, J. Marist Bros.' Coll., Cala
- Allnut, A.G. *e.a.* Marist Bros.' Coll., Uitenhage
- (Smith, L.J. *e.a.* Marist Bros.' Coll., Uitenhage
- (Vanderpuye, C.I. *s.e.al.* The Accra Gram. S.
- (James, B.R. *e.al. du.* Private tuition
- (Keogan, G. *al.* Marist Bros.' Coll., Johannesburg
- (<sup>2</sup>Koller, C. Marist Bros.' Coll., Johannesburg
- (Pallas, H. *al.* Marist Bros.' Coll., Johannesburg
- (Adler, J. *e.a.* Marist Bros.' Coll., Johannesburg
- (Akusie, J.K. *s.* The Accra Gram. S.
- (Bryant, A. *e.al. du.* St. Aidan's Coll., Grahamstown
- (Green, C. *e.g. du.* St. Aidan's Coll., Grahamstown
- (<sup>2</sup>Newman, E.J. Marist Bros.' Coll., Cala
- (Browne, E.A.C. *a.* St. Vincent Gram. S., Kingstown
- (Waker, R. *al. du.* St. Aidan's Coll., Grahamstown
- (Grentsil, R.E. *s.* The Accra Gram. S.
- (<sup>2</sup>Fernando, C.S. Eton Coll., Colombo
- (<sup>2</sup>Hla, M. Eton Coll., Colombo
- (Lewis, M. *a.gm.* Marist Bros.' Coll., Johannesburg
- (Schof, H.J. *g.* Government S., Nairobi

THIRD CLASS, PASS DIVISION—continued.

Nathan, A.J. e. Marist Bros. Coll., Uitenhage
Beharee, K.C. a.d. Norris Coll., Rangoon
Joseph, E. e. Birch Grove Government S., Grenada
Joubert, O.G. F. Marist Bros. Coll., Uitenhage
Rogers, H. d. Marist Bros. Coll., Uitenhage
Thompson, E.R. The Accra Gram. S.
McKay, W.D. Marist Bros. Coll., Cala
Dean, A. Marist Bros. Coll., Johannesburg
Kong, A. Norris Coll., Rangoon
Litchman, W.A. e.a. Private tuition
Robinson, E. gm. Marist Bros. Coll., Johannesburg
Casinader, E.D.S. e. Wesleyan Central S., Batticaloa
Effren, R. a. Marist Bros. Coll., Johannesburg
Levitov, A. e.a. gm. Marist Bros. Coll., Johannesburg
Mason, H. a. gm. Marist Bros. Coll., Johannesburg
Lapman, I. a. a. gm. Marist Bros. Coll., Johannesburg
Majiyabze, J.M. Abeokuta Gram. S.
Thomas, A. a. d. Marist Bros. Coll., Johannesburg
Bernstein, S. gm. Marist Bros. Coll., Uitenhage
Maclear, J. a. Marist Bros. Coll., Uitenhage
Beaton, W.G. g. Government S., Nairobi
Clarke, T.L. Mcl. St. Vincent Gram. S., Kingstown
Powell, A. a. Marist Bros. Coll., Johannesburg
Cheln, J. Marist Bros. Coll., Johannesburg
De Silva, B.R. Private tuition
Kkanayake, V. Private tuition
Winter, I. Marist Bros. Coll., Uitenhage
Kuny, J. Marist Bros. Coll., Johannesburg
Ramsay, T.H. al. Marist Bros. Coll., Cala
Ingram, A. Marist Bros. Coll., Johannesburg
Shwe, M.B. e. Eton Coll., Colombo
Mitchell, T. du. St. Aidan's Coll., Grahamstown
Myerson, I. Marist Bros. Coll., Johannesburg
Rowe, D.C. Marist Bros. Coll., Uitenhage
Khan Sahib, A.R. d. Central Coll., Colombo
Rogers, W. e. Marist Bros. Coll., Uitenhage
Trennery, C.O. Marist Bros. Coll., Cala
Jager, H. Marist Bros. Coll., Johannesburg
Kuforiji, J.A. Abeokuta Gram. S.
McKenzie, A. gm. Marist Bros. Coll., Johannesburg
Rao, A. Norris Coll., Rangoon
Anjebwo, C.B. Abeokuta Gram. S.
Peters, J. s. Norris Coll., Rangoon
Wijetunga Wickramatunga, U.D. Eton Coll., Colombo
Ampalavanapillai, C. Wesleyan Central S., Batticaloa
Fernando, J.V. e. Private tuition
Harris, D. Marist Bros. Coll., Uitenhage
Lait, M. a. al. Norris Coll., Rangoon
Vidyasagara, V. Eton Coll., Colombo

(De Silva, A. U. Eton Coll., Colombo
Jenkins, B. Government S., Nairobi
Blanks, E. Marist Bros. Coll., Johannesburg
Cordice, N.H. Private tuition
Alahakoon, K. Central Coll., Colombo
Benken, C. du. St. Aidan's Coll., Grahamstown
Green, B. St. Aidan's Coll., Grahamstown
Lewis, H. Marist Bros. Coll., Johannesburg
Lord, W.W. Marist Bros. Coll., Uitenhage
Marlius, A.B. Abeokuta Gram. S.
Ross, C. g. St. Aidan's Coll., Grahamstown
Schwartzel, L.C. Government S., Nairobi
Waltman, F. Marist Bros. Coll., Johannesburg
Colley, S. Marist Bros. Coll., Uitenhage
Effren, I. Marist Bros. Coll., Johannesburg
Ewels, R.G. Marist Bros. Coll., Cala
Lahanni, N.A. Abeokuta Gram. S.
McChesney, J. a. Marist Bros. Coll., Johannesburg
Nallaretnam, C.M. Wesleyan Central S., Batticaloa
Ware, W. Marist Bros. Coll., Uitenhage
Davidson, R.A. Government S., Nairobi
Hadley, H.A.G. St. Vincent Gram. S., Kingstown
Leslie, P. Marist Bros. Coll., Johannesburg
Sithambarapillai, N. e.a. Jaffna National Acad., Manepay
Aaron, C. Marist Bros. Coll., Johannesburg
Elton, C. e. Marist Bros. Coll., Uitenhage
Kemp, B. al. Marist Bros. Coll., Johannesburg
Sankarapillai, K. Wesleyan Central S., Batticaloa
Watson, V.H. e.a. Marist Bros. Coll., Uitenhage
Casinader, R.J.D. Wesleyan Central S., Batticaloa
Sackeyifo, A.V. The Accra Gram. S.
Allen, R.J. d. Marist Bros. Coll., Cala
Covasjee, B.N. al. Norris Coll., Rangoon
Loe, K. a. al. d. Norris Coll., Rangoon
Tetty, T.B. s. al. d. The Accra Gram. S.
Timothy, F. e. Marist Bros. Coll., Uitenhage
Berman, A. Marist Bros. Coll., Johannesburg
Daniel, T. al. Norris Coll., Rangoon
De Silva, A.W. d. Eton Coll., Colombo
Green, D.O. Abeokuta Gram. S.
Hadley, E.S. St. Vincent Gram. S., Kingstown
Haley, W. St. Aidan's Coll., Grahamstown
Zeigler, B. Marist Bros. Coll., Johannesburg
Fernando, N.I. Central Coll., Colombo
Minaar, G.B. du. Marist Bros. Coll., Uitenhage
Fernando, K.S.V. Central Coll., Colombo
Shaw, A. Marist Bros. Coll., Uitenhage
Sutherland, W. Marist Bros. Coll., Cala
vanGeuns, R. Marist Bros. Coll., Uitenhage

(De Silva, D.E. Eton Coll., Colombo
Fisher, M.O. Abeokuta Gram. S.
Le Sneur, C. Marist Bros. Coll., Johannesburg
Mohamed Maharoo, M.I.L. Private tuition
Sutherland, S. St. Aidan's Coll., Grahamstown
Wattriss, H.D. Private tuition
Whitfield, A. Conv. of the Sacred Heart, Klerksdorp
Ba Shin, M. Private tuition
Frohenan, B.O. Marist Bros. Coll., Uitenhage
Nazareli, V.M. U.M.C.A. High School, Zanzibar
Glencross, S. e. Marist Bros. Coll., Uitenhage
Mendis, J.L. Eton Coll., Colombo
Cohen, L. Marist Bros. Coll., Johannesburg
Kurugulasihamony, S. a. Jaffna National Acad., Manepay
Papenfus, S. Marist Bros. Coll., Uitenhage
Sinnappoo, P. e. Private tuition
Thwe, B. Norris Coll., Rangoon
Heath, J.R. Marist Bros. Coll., Cala
Joshua, A.R. Jaffna National Acad., Manepay
Lee, G.M.P.P.M.C. Government S., Nairobi
Stephenson, T. Government S., Nairobi
Kassim, M. a. Norris Coll., Rangoon
Ogurobi, C.A. Abeokuta Gram. S.
Bandaranaike, C. Private tuition
Jayawardene, D.P. Eton Coll., Colombo
Logan, A. St. Aidan's Coll., Grahamstown
Siva Subramaniam, A. Central Coll., Colombo
Thornton, E.R. Marist Bros. Coll., Cala
Barrett, C. Marist Bros. Coll., Johannesburg
Coker, F.A. Abeokuta Gram. S.
Coltman, N.W. Marist Bros. Coll., Uitenhage
De Kock, A. Conv. of the Sacred Heart, Potchefstroom
Hall, C.R. e. Marist Bros. Coll., Uitenhage
Pararasasingam Mudeliar Sagarasingam
Davison, C.R. Marist Bros. Coll., Uitenhage
Hanna, T. St. Aidan's Coll., Grahamstown
Mungupillai, S. a. St. Andrew's S., Batticaloa
Williams, S. St. Aidan's Coll., Grahamstown
Mitchell, R. St. Aidan's Coll., Grahamstown
Olegasaram, W.S. St. Andrew's S., Batticaloa
Bates, J.R. Marist Bros. Coll., Uitenhage
Lane, B. St. Aidan's Coll., Grahamstown
McLeod, F.L. St. Vincent Gram. S., Kingstown
Perera, E.R. Eton Coll., Colombo
De Alwis, A. Eton Coll., Colombo
Veluppillai, R. Private tuition
Lang, O.P. Marist Bros. Coll., Cala
Schweizer, C.W. Marist Bros. Coll., Cala

FIRST CLASS [or Senior].

Pass Division.

Ramsay, E. gm. Convent S., Cala
Bain, E.F. s. Girl's Secondary S., Grenada
Lurie, S. du. Conv. of the Holy Family, Greenhill, Bloemfontein
Hudson, M.L. s. e. al. Colonial High S., Kingston, Jamaica
Ormsby, N.E. Colonial High S., Kingston, Jamaica
Vieyra, S. du. Conv. of the Holy Family, End St., Johannesburg

SECOND CLASS [or Junior].

Pass Division.

King, F. s. Notre Dame Coll., Kroonstad
Jacobson, B. mu. Notre Dame Coll., Kroonstad
Daniel, G.R. Conv. of the Holy Family, Greenhill, Bloemfontein
Linton, P. Government S., Nairobi
Akers, I. Conv. of the Sacred Heart, Potchefstroom
Cadet, C. s. f. St. Joseph's Conv. S., Castries, St. Lucia
Rhode, M. du. Conv. of the Holy Family, Greenhill, Bloemfontein
Aird, M.B. s. St. George's Anglican S., Grenada
Stephenson, F. Government S., Nairobi
Ogilvie, C.L. s. Grenada High S., St. George's
Henriques, M.C. s. e. Colonial High S., Kingston, Jamaica
Ivon Abo, A. s. du. Notre Dame Coll., Kroonstad
Sandford, A.L. Colonial High S., Kingston, Jamaica
Henriques, P.J.C. s. Colonial High S., Kingston, Jamaica
Mande, M. Eton Coll., Colombo
Ferdinando, D.F.A. Eton Coll., Colombo
Walser, J. Conv. High S., Mafeking
Botha, J. Notre Dame Coll., Kroonstad
Clover, M. Conv. of the Holy Family, Greenhill, Bloemfontein
Human, E. du. Notre Dame Coll., Kroonstad
Ezekiel, M. s. Norris Coll., Rangoon

THIRD CLASS. Honours Division.

Auguste, W. e. a. al. d. St. Joseph's Conv. S., Castries, St. Lucia
Lord, N. s. al. St. Joseph's Conv. S., Castries, St. Lucia
Bonnet, E. s. e. St. Joseph's Conv. S., Castries, St. Lucia
Laporte, C. e. St. Joseph's Conv. S., Castries, St. Lucia
Dawes, J. e. Notre Dame Coll., Kroonstad
Daly, D. Convent High S., Mafeking

GIRLS.

THIRD CLASS. Pass Division.

McGregor, B. mu. Conv. of the Sacred Heart, Klerksdorp
Davis, G.M. s. e. Private tuition
Cook, O.M. s. al. Government S., Nairobi
Politte, H.E. J. e. Private tuition
Broad, D. St. Mary's Coll., Oakford
Donald, A. St. George's R.C. Boys' S., Grenada
Cox, A. e. St. Joseph's Conv. S., Castries, St. Lucia
Hayes, M.D. e. Grenada High S., St. George's
Westall, R. s. g. al. d. St. Joseph's Conv. S., Castries, St. Lucia
George, E. e. a. al. Belair Presbyterian S., Grenada
Ormsby, B.S. s. Colonial High S., Kingston, Jamaica
McPherson, I.L. s. g. Colonial High S., Kingston, Jamaica
Thomas, A. St. Mary's Coll., Oakford
Lubbat, E. s. St. Mary's Home, Jerusalem
Awad, J. St. Mary's Home, Jerusalem
Davidson, M. Convent High S., Mafeking
Ormsby, V.H. e. g. Colonial High S., Kingston, Jamaica
Veitch, M. Convent S., Cala
Walcott, I.E. B. g. Colonial High S., Kingston, Jamaica
Bentley, D. a. gm. Conv. of the Sacred Heart, Potchefstroom
Fregona, C. a. St. Mary's Coll., Oakford
Jones, I. a. St. Mary's Coll., Oakford
McClure, M.S. Government S., Nairobi
Bloom, L. Notre Dame Coll., Kroonstad
Permal, L. Norris Coll., Rangoon
Strom, E. e. Conv. of Mercy, Bloemfontein
Arnoldi, M.M. Government S., Nairobi
Kirsten, S. Conv. of the Sacred Heart, Potchefstroom
Winefred, L. Eton Coll., Colombo
Halsall, D. Conv. of the Holy Family, End St., Johannesburg
Thomas, G. St. Mary's Coll., Oakford
Coen, B. Conv. of the Holy Family, Greenhill, Bloemfontein
Clarke, E. Conv. of the Holy Family, End St., Johannesburg
Boumann, J. al. du. Conv. of the Sacred Heart, Klerksdorp
Tunstall, M. Government S., Nairobi
Woods, G. St. Mary's Coll., Oakford
Cruywagen, D. d. Conv. of the Holy Family, End St., Johannesburg
Levy, M. du. Conv. of the Sacred Heart, Potchefstroom
Wilson, N. d. Conv. S., Cala

(Bentley, D. Notre Dame Coll., Kroonstad
Marchallock, T.E.K.L. Colonial High S., Kingston, Jamaica
Fischer, E. Convent S., Cala
Wilson, A.C. Government S., Nairobi
Neekles, S. Grenada High S., St. George's
Summers, C. Conv. of the Sacred Heart, Klerksdorp
Gilbert, M. a. Convent S., Cala
Keeley, E. Convent High S., Mafeking
Harries, B. St. Mary's Coll., Oakford
Sifri, V. s. St. Mary's Home, Jerusalem
Muragasam, A.L. al. The Begandit English S., Rangoon
Dunn, M.A. Colonial High S., Kingston, Jamaica
Gabriel, R. Conv. of the Sacred Heart, Potchefstroom
Ezekiel, D. Norris Coll., Rangoon
Gilbert, G. a. Convent S., Cala
Daniel, D. d. Conv. of the Holy Family, Greenhill, Bloemfontein
Teitge, F. du. Conv. of the Sacred Heart, Potchefstroom
McClure, J.H. Government S., Nairobi
Taplin, E. Convent S., Cala
Beziudenhout, O. Conv. of the Holy Family, Greenhill, Bloemfontein
Dimberger, C. Holy Family Conv., President St., Johannesburg
Wagh, C. Convent S., Cala
ChinTsony, M. The Begandit English S., Rangoon
Creighton, W. Conv. of the Holy Family, Greenhill, Bloemfontein
Fotheringham, F. St. Mary's Coll., Oakford
Smith, V. Convent S., Cala
Zachariah, F. s. St. Mary's Home, Jerusalem
Schweizer, M. Conv. S., Cala
Sperling, A. St. Mary's Coll., Oakford
Ferguson, E. Conv. of the Holy Family, Greenhill, Bloemfontein
Bruniquel, M. e. St. Mary's Coll., Oakford
James, E. Conv. of the Holy Family, End St., Johannesburg
Wessels, E. Conv. of the Holy Family, Greenhill, Bloemfontein
Jensen, E. Conv. of the Holy Family, End St., Johannesburg
Khimmel, M. St. Mary's Home, Jerusalem
Jacob, M. St. Mary's Home, Jerusalem
Leach, W. Conv. of the Sacred Heart, Potchefstroom
Cavanagh, V. Convent S., Cala
Moonusawmy, D. Norris Coll., Rangoon
Parakh, K. Norris Coll., Rangoon
Donohoe, M. Convent High S., Mafeking
Worringham, M. Conv. of the Holy Family, Greenhill, Bloemfontein

## LOWER FORMS EXAMINATION.—PASS LIST.

## BOYS.

Abeystrota, L.	Central Coll., Colombo	Harries, C.	Government S., Nairobi	Meade, C.J.	Marist Bros.' Coll., Cala
Adebiyi, S.O.	Abeokuta Gram. S.	Harris, R.	Government S., Nairobi	Morris, P.	Government S., Nairobi
Adefarati, J.	Abeokuta Gram. S.	Hart, R.S.	Marist Bros. Coll., Cala	Mosa, E.H.	Marist Bros.' Coll., Cala
Ajala, S.	Abeokuta Gram. S.	Harvey, T.	Government S., Nairobi	Mullan, C.	St. Aidan's Coll., Grahamstown
Bales, F.	Marist Bros. Coll., Johannesburg	Hervey, T.	St. Aidan's Coll., Grahamstown	Nicholas, D.	Marist Bros. Coll., Johannesburg
Baumgohla, O.	Abeokuta Gram. S.	Hoddinott, S.	Government S., Nairobi	Odiris, V.	Eton College, Colombo
Benington, C.	Marist Bros. Coll., Johannesburg	Horawala Vitanage, C.	Central College, Colombo	Odunlami, B.A.	Abeokuta Gram. S.
Berry, J.	Marist Bros. Coll., Johannesburg	Husemeyer, F.	Marist Bros. Coll., Johannesburg	Paige, W.	St. Aidan's Coll., Grahamstown
Berry, L.	Government S., Nairobi	Ieyers, W.J.	Marist Bros. Coll., Cala	Priestley, F.	Marist Bros. Coll., Johannesburg
Bessler, E.	Government S., Nairobi	Jenkins, D.	St. Aidan's Coll., Grahamstown	Quin, R.	St. Aidan's Coll., Grahamstown
Block, J.	Marist Bros. Coll., Johannesburg	Johnson, R.E.	Marist Bros. Coll., Cala	Rehn, W.	Government S., Nairobi
Branman, W.	St. Aidan's Coll., Grahamstown	Jolley, N.	Government S., Nairobi	Russell, S.	Conv. of the Sacred Heart, Klerksdorp
Buning, J.	Marist Bros. Coll., Johannesburg	Jones, G.W.	Marist Bros. Coll., Cala	Schnelle, J.	St. Aidan's Coll., Grahamstown
Butler, H.	St. Aidan's Coll., Grahamstown	Kanagar, P.	Central Coll., Colombo	Schultz, H.	St. Aidan's Coll., Grahamstown
Campbell, M.	Conv. of the Sacred Heart, Klerksdorp	Kantor, L.	Marist Bros. Coll., Johannesburg	Skinner, P.W.	Marist Bros. Coll., Cala
Cockcroft, G.	St. Aidan's Coll., Grahamstown	Karunanayake, M.S.A.	Central Coll., Colombo	Swift, J.	Marist Bros. Coll., Johannesburg
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## ART AND THE EDUCATION OF GIRLS.

If Art is the expression of life, it follows that without it we cannot fully express ourselves, nor appreciate its manifestations in others. Art, then, should hold an important place in education. But in girls' secondary schools, it does no such thing. Rather, despite lessons in class singing, drawing, painting, pianoforte, and violin-playing and so forth, it is contemptuously cold-shouldered in favour of subjects of immediate utility, which shall fit a woman "to compete on terms of equality with man in every sphere of his labour," albeit that art is one of the very few fields of human endeavour, in which equality between the sexes may indeed exist. But Art stands wanly, with drooping wings, in a dark corner of our public schools, receiving much lip-service, but little else. And yet it is her special mission to stimulate those latent spiritual gifts—fineness of temper, quality, taste, a perception and appreciation of the beautiful, a sense of rhythm, proportion and balance; and these do not come into full being, in a system of education, whose stated aim is to fit girls to take up a profession. This aim, so far as it goes, is good; but education should not concern itself solely, nor even chiefly, with the making of successful wage-earners. Especially is this true of girls, most of whom will find their vocation as wives and mothers. Then the professional training they will have received will be no help, but rather a hindrance, for they will be obliged to change their ideal of life and their conception of their place in it.

Consider a moment what a miserly proportion of time is allotted to the study of Art, and little though it is, how games, extra work, entertainments, anything, may encroach upon it as a matter of course. One or, at the most, two lessons a week will be given in drawing or painting, and that disposes of them altogether. A girl has to do several hours' prepara-

tion for lessons in mathematics, science, &c., but none at all, or very rarely, for instruction in drawing.

Few secondary school girls can give more than an hour a day, more often much less, to practising piano or violin, and yet these are instruments of great technical difficulty, which can only be mastered by long and careful study and practice. It is not surprising that the standard of instrumental playing in girls' schools is low, far lower indeed, than it was a generation or so ago. In some schools, there are orchestras, and these might well be more general. Fine arts and crafts are scarcely taught at all. The artistic impulse, latent in almost everyone, should be encouraged to manifest itself, and not allowed either to remain inarticulate, or to dissipate itself unprofitably, in a thousand and one tinkering ways. Concentrated, it can become one of the most compelling forces of life.

Art is not concerned only with the painting of a fine picture, or the writing of a fine book; it may perfect and beautify every aspect of life and work. For instance, the art of cooking, an important one and lost in England, is only an art when the desire to create out of raw materials, a nutritious and dainty dish has inspired the preparer. Again, a woman whose aesthetic sense has been trained early and well, could not endure to live in a home which was not as beautiful as she could make it. The influence, albeit unconscious, upon children of their environment is very great. How important, then, to inspire, by an artistic education, future mothers with the desire and ability to make their homes beautiful!

Once we must have been greatly more artistic as a nation, than we are now. Witness, for example, those fine old churches and buildings, of such infinite beauty and solidarity, which stand, lasting monuments to those unknown men, who put all that was best of them, their very hearts and souls, into the work of their brains and hands. But now, though Art and Culture are much in the air, there is no evidence



that they are that which they once were, vital national forces. Why? Because Art needs early, constant, loving, and leisurely wooing, and for this there is no time or place in a system of education distinguished by cram and hurry, at least so far as girls are concerned. Yet the function of education is surely to enlarge the mind and not merely to fill it with facts and the dry bones of textbooks. The results of that stuffing process called cynically the higher education of girls are plain for all to see who choose.

I will not deny that such subjects as English literature, French and German, Latin and Greek are taught, and that these should promote the growth of that indefinable quality—culture—and the artistic sense. Thrust, however, as they are into an overloaded curriculum, but little time can be devoted to their study, and that, taken in conjunction with "speeding up" process, so prevalent in girls' schools, results in superficial cram, instead of sound literary knowledge. To "get up" Shakespeare for examinations, to gulp down distastefully, the essays of Addison or Lamb for the same nefarious purpose, to be nauseated with the eternal "grind" and "cram," euphemistically known as "English Literature," kills all desire in a young mind for further and more intimate intercourse with great writers of wide humanity, rich experience, and stimulating suggestiveness. Small wonder that girls acquire a distaste for fine literature, and that the taste in books of many so-called well educated women, should be so bad! And yet, who can doubt that what one reads has great influence upon one's character and conduct?

Thoughtlessness and the spirit of vague discontent and unrest, as distinguished from healthy revolt against artificial limitations, of activity and outlook, are characteristic of the age. Educationists, for all they may protest, cannot escape blame in this matter. When girls leave school, after many years of "cram," over-pressure, and mental indigestion, they develop into young women, restless and distraught, seeking peace and finding none, because they know not where to look for it, nor how to fill up time, which lies so heavy on their hands. They are as sheep without a shepherd, and deprived of the capacity for self-direction. Originality, initiative, judgment, the capacity for independent thought, the artistic impulse, the desire for leisure and the contemplation of life—all these things have been crushed out in the educational mill.

"What to do with our daughters" is a problem which harasses parents more and more, and not only those whose daughters must make their own way in the world. This problem would solve itself, if girls' education were actually and not theoretically, on broad, liberal, humane lines, where a bowing and evanescent acquaintance with a multitude of subjects gave place to a real knowledge of a few. These would form a solid foundation upon which a girl could herself help to build a structure of lasting value. As it is, public-school education is a blind alley leading nowhere, unless to a profession which every girl cannot embrace if she would. But, given a brain trained to think and not merely a storehouse of facts quickly forgotten, a perceptive mind, an artistic sense, an appreciation of fine literature, as clear and balanced a conception of life as a young mind can achieve, every girl could, on leaving school, find congenial occupation. Then, let us hope, that restless spirit, born of overpressure, "cram," and "blind-alley" education, so noticeable in the modern young woman, which makes her a burden to herself and an anxiety to her elders, would be laid to rest. In these days of desperate rush and hurry, when the number of human contacts are so many and so fleeting, how is it possible to gain a clear perception of life and one's fellow creatures? Surely by a wide reading of well chosen books, written by artists so concerned with truth as to set down truthfully life as they saw or see it, is one of the most fruitful means to achieve this end. Moreover, a love of reading develops a love of leisure, and, if for no other reason, should be encouraged; so always a discriminating taste has been cultivated. The pace of life nowadays is killing, and women who suffer most from it owing to their frailer physique and lesser nervous stamina, after a "speeding up" education, increase the pace instead of diminishing it.

But the curse of utilitarianism as well as of "cram" lies heavy on education, as witness the growing outcry against the study of the classics, because these have no direct pecuniary value except to such as are entering the learned pro-

fessions. The humanizing broadening influence on mind and character count as nothing in the eyes of those who have no higher ambition for their children than that they should "make money." That same commercial spirit which is trying to drive out the schools every subject not of direct practical value in the earning of a livelihood has taken possession of girls' schools. This is indeed unfortunate. Women, from the nature of things, can seldom lead lives as rich and varied in experience as men, and, since they are the home-keepers and exercise untold influence on the coming generation, they need vicarious experience. This could be found in a liberal education on the most broad and humane lines.

As an example of the grip of utilitarianism in girls' education, take the case of French. The edict has gone forth for some long time that it must be taught mainly for conversational—i.e. utilitarian—purposes. If this were possible there would be much to be said for it. But in practice it is not. Three lessons, or at the outside four, are given every week to classes, ranging in number from ten to twenty pupils or more, at different stages of knowledge. The lessons last for thirty or forty minutes. It must be obvious to any person of average intelligence that no one pupil can herself have sufficient opportunity for talking as to acquire a real conversational facility in that subtle and difficult language. I say nothing about her hearing little else than the stumbling and faulty efforts of her fellow pupils. The oral teaching of French is largely a sham, and results in nothing more than a "Stratford-atte-Bowe" version of that language, which is, more often than not, unintelligible to natives, and in any case so limited in scope as to be unworthy of the name of conversation. For this "ability" to talk a French of dubious utility, the sound knowledge of its grammar, upon which can be quickly built real conversational ability should opportunity come, and a careful literary study of some of its masterpieces, both of which were done in the old unenlightened days, have been sacrificed. Here utilitarianism has been hoist with its own petard. A solid foundation of useful knowledge and culture have been replaced by a showy, toppling edifice, of practically little use.

The fine arts and crafts offer endless artistic scope to women who have a taste for manual work. Needlework in all its branches, embroideries, lace-making, wood-carving, bookbinding, inlaid work, wrought metal, illuminating, rush-plaiting, and so on—any of these, besides satisfying the creative, artistic impulse, can provide women with occupation at once pleasing, stimulating, and useful. Moreover, they can be done at home, a place which would be less sorely despised than it is at present by the modern young woman, if her education had not unfitted her for it, by creating tastes which can only be satisfied outside it.

To find women congenial occupation is one of the problems of the Woman's Question. I believe that this problem would to a large extent be solved if the higher education were on sound artistic and literary lines, with instruction in manual arts and crafts. At present the highly educated girl has no idea of what to do with her life, especially if she has been to college, except to take up a profession. Consequently, if unable to do this, she is quite at a loose end.

But encourage the artistic streak to manifest itself in her; make her to care for fine books, pictures, music; give her thorough wide reading, an interest in humanity; surely then she will cease to be tossed by every wind that blows and will find a haven where she will be both happy and useful.

HELEN HAMILTON.

ASKED by Sir William Anson how soon he expects to lay before the House the scheme of educational reform spoken of by the Lord Chancellor, Mr. Pease replied that it is at present premature to name any date.

"PHONETICS and Poetry," by Lascelles Abercrombie, in the February number of the *English Review*, should be read by teachers. We are sometimes inclined to think that the study of phonetics is restricted to those who intend to teach modern languages.

THE *Cornhill* for February contains a sympathetic study of "John Smith at Harrow," written with much insight. John Smith appeared to owe his influence to the simplicity and directness of his character.

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DURING the last few years we have had to mourn the loss of several of our most esteemed members. The death of Mr. Eve followed in no long time by that of Mr. Pinches, removed from our midst the Dean and Treasurer, who had long played a conspicuous part in the growing prosperity of the College. Last month we recorded the loss of Canon Bell, their old and loyal friend and helper. Now it is our most painful duty to add the name of our esteemed and devoted Secretary, Mr. Hodgson. At the General Meeting in January it was announced that Mr. Hodgson was about to retire next Lady Day after nearly thirty-nine years of strenuous service. The speeches made on that occasion eloquently testified to the respect and affection felt for one who had been so long the faithful servant of the cause and the friend of many of its members. A suggestion that his far-reaching experience, his tact and devotion, might still be made available to the College by electing him a member of the Council was very cordially received. But Mr. Hodgson has not lived to retire and enjoy the pension that had been arranged for him, and such other recognition of his merit as the College would have been glad to render. He died in harness as he had lived—Secretary to the College of Preceptors.

Charles Robert Hodgson was born in Westminster, June 17 1839. He was the son of Mr. C. F. Hodgson, founder of the well known firm now carrying on business at 2 Newton Street, but then having his offices at 1 Gough Square, near the house where Dr. Johnson, a hundred years before, had written part of the famous "Dictionary." The boy was educated first at the school in Islington conducted by Mr. A. K. Isbister, late Dean of the College of Preceptors, and subsequently at the City of London School, under Dr. Mortimer.

Always an ardent student, he devoted himself more particularly to modern languages—French, German, and Italian—at the last of which he worked at the Birkbeck Institute, where he would assist Mr. Toscani, the then Professor, in the conduct of the class. But German was his favourite study, and it was in Germany in his early life that he spent a *Wanderjahr*. It was characteristic of the young man that during that period he supported himself entirely by his earnings as a compositor in Leipzig. He returned to England mainly on foot, up the Danube, through the Tyrol, and down the Rhine. Soon after that he became a partner with his father, and, still devoting his spare time to study, graduated B.A. in the University of London, with Honours in Modern Languages.

In 1874 he was invited by his old Head Master, Mr. Isbister, then Dean of the College, to stand for the Secretaryship. On his election he threw himself into the work of the College with a self-devotion and sustained energy that to the end of his days never wavered or grew less. Prodigal of his time, where the College was concerned, he was always to be found at his post, often long after hours. He never took the whole term of his not very long holidays, and in later years would sometimes say, with a laugh, that the College owed him a year of holidays.

When we reflect how great must have been the burden and responsibility due to the rapidly increasing number of candidates in the various examinations and the consequent increase of clerical duties, we are inclined to wonder how he could find time for anything else. Yet during those years of stress he reported the College Conferences and Congresses and the discussions of the monthly evening meetings of members for use in *The Educational Times*, and on one occasion of emergency he actually edited this paper for three months. In 1891 Mr. Hodgson and Mr. Eve gave evidence

before a Select Committee of the House of Commons on the Teachers' Registration and Organization Bill.

Three years later, together with Mr. Pinches, he represented the College, and gave evidence before the Royal Commission on Secondary Education, of which Commission Dr. Wormell was a member. He minuted all the Council meetings and all the many committee meetings. His monthly reports to Council were long state-papers dealing with all current educational topics. Yet with all this, Mr. Hodgson was apparently never in a hurry, never too busy to have a talk with anyone who called to see him, and we feel sure that no one ever left the genial Secretary without feeling the better for his visit.

In spite of these multifarious duties, Mr. Hodgson found time for the enjoyment of several hobbies. He was a great chess player, and played for Middlesex County for many years. He always kept up his studies, and was looking forward with pleasure to the reading he would be able to do on his retirement. And he was a very active man. During his holidays in Switzerland and elsewhere he would walk day after day from five in the morning to eight at night apparently untired and untirable. In later years he became fond of cycling; only last August the present writer had a letter from him stating the enormous distances he was covering in Cornwall, and how greatly he was enjoying his rides in spite of the incessant rain.

Of his extraordinary diligence and power of work we have already spoken. Under his capable management the income of the College increased by leaps and bounds: a report of the financial history of the College during his term of office, recently laid by the Treasurer before the Finance Committee, illustrates this in a very remarkable manner.

But great as was his talent for business, it is the charm of his personal character that his friends and colleagues chiefly remember. The tact, the perfect courtesy and ready sympathy, the diffident, almost self-distrustful, modesty that made him unwilling to advance his own opinions, but which, though it may sometimes have veiled, yet could never long conceal his strong common sense and keen appreciation of values—above all, his enthusiasm for the cause to which he had devoted his life, rendered him not only an ideal Secretary, but one of whom we shall always think with affection and esteem.

## EDUCATION AS THE TRAINING OF PERSONALITY.\*

By Prof. H. BOMPAS SMITH.

ONE of the most characteristic features of our national life during the last 300 years has been the growth of interest in our material environment. This interest has been both theoretical and practical. On its theoretical side it has produced the great body of systematic knowledge which we call the physical sciences together with the modes of thought characteristic of these sciences. On its practical side this same interest has enabled us to turn to our own use the resources of the material world in ways of which earlier centuries never dreamed. There are signs that we in our time are witnessing the early stages of a similarly effective interest in the world of man and human society. It is not impossible that our children's children will see the evolution of a body of human sciences not less systematic and comprehensive than the knowledge of physical science which we now possess. It is possible also that the growth of these new sciences will be accompanied by a transformation in our social institutions comparable in extent to the transformation which has already taken place in our practical relations with the world of matter.

### THEORY AND PRACTICE IN EDUCATION.

Now of these social sciences education is not the least important, and in education at any rate we may look forward

\* An inaugural lecture delivered at the University of Manchester on January 13, 1913.

with some confidence to rapid progress being made in our own and the next succeeding generations. But if this progress is achieved it will be a progress both in educational theory and educational practice. Theory and practice are intimately connected, are indeed only two aspects of one fundamental interest, so that neither can exist without the other. On the one hand there can be no theory unless we first have practice. For practice must give us the experience which it is the function of theory to explain. But on the other hand all practice implies theory. The teacher who denies this, by his very denial commits himself to a theory, and his own words refute him. No one, in fact, is more theoretical or more dogmatic in his statements than is the one-sided advocate of practical experience. He is so sure of his ground because his theory is so limited, because he tends to ignore all facts outside his personal field of interest. But if we can guide our practice by the light of a comprehensive theory we shall widen our experience by attempting tasks which would not otherwise have occurred to us. "Would that we all considered this fact," says Herbart,\* "that each man has experience only of what he has really tried. A schoolmaster of ninety years has the experience of his ninety years' routine; he is conscious of his length of labour, but can he also rightly criticize his methods and their results?" If theory, therefore, cannot exist apart from practice, neither can practice be divorced from theory. Hence if education is to participate in the progress of the social sciences, educational theory must do justice to the facts of our experience as teachers, and practice must grow more efficient under the guidance of true theory.

There is, I think, evidence that this co-operative advance of educational theory and practice is already taking place. But it is at present only in its initial stage. We still find schoolmasters who distrust all systematic theory and who question the value of any training of teachers by exponents of such theory. And what is even more significant, we find a widespread failure on the part of the general public to realize that there is any science of education in existence. Most men who have gained a position in other walks of life are prepared to speak in public on educational topics, and to prescribe the practice to be followed in our schools—being, as it seems, ignorant of the fact that the nature of education has at any rate been seriously considered by some of the greatest thinkers of mankind, and that, while much is still uncertain, there are some facts and principles which have been definitely ascertained. Among these amateur speakers and writers I do not include men who give us the results of their experience of the practical effects of education upon our boys and girls. Large employers of labours, for instance, have often valuable criticism to offer. I refer only to men who regard vague platitudes or airy speculations as a sufficient substitute for knowledge of the subject.

This distrust or ignorance of educational theory is due partly to the fact that writers on the principles of education do not always keep in touch with the realities of school life and work. Their theories, therefore, do not adequately explain our experience as educators, or, since we shall confine ourselves to school education, we may say, our experience as teachers in our schools. This gives their statements or injunctions an air of unreality which militates seriously against their acceptance by teachers whose interest in education is primarily practical. Many books on teaching, for example, appeal very slightly to the ordinary master because they fail to reproduce the atmosphere of the classroom. The position is, I think, briefly this. We have accumulated in the course of centuries a large stock of practical experience in the teaching and management of boys. And when I speak of boys and masters may I be understood as including also girls and mistresses? This stock of experience is a heritage handed on from one generation of teacher to another, and unless a master enters into this heritage he will never be efficient in his work. I believe that English masters are on the whole so efficient, because we

\* "Werke," Vol. X, page 9.

in England have so rich a fund of experience on which to draw.

But this experience, and the skill which it makes possible, on the whole belong to a stratum of mental life below the level of reflective thought. They are the products mainly of instinct, tact and intuition, and for this very reason form, as it were, part of the flesh and bone of the true teacher. On the other hand, most of the systematic thinking upon education has in our country been the work of men who were not schoolmasters. Hence the theories which they have elaborated have often failed to do justice to the value of this traditional experience and skill. They have not made schoolmasters conscious of the principles upon which their actual practice rests, and they have therefore failed in part to make that practice more intelligent and consistent. In particular, educational theory, as expounded by many writers, has not, I think, led us adequately to appreciate the very obvious fact that the boys and girls whom we try to teach are living human persons. The conception of education as the training of personality has therefore not always received due recognition in contemporary theory.

#### THE MEANING OF PERSONALITY.

No one, it is true, denies that school education is the process of training boys and girls as living persons. This is at any rate implicitly assumed in all discussions of the subject. My contention is that, instead of being implicitly assumed, the concrete personality of our boys and girls must be put in the forefront of the argument, and that this personality must be recognized in the fullest possible sense. But the question at once arises, what then do we mean by personality? I cannot pretend to offer any adequate answer to this question. My acquaintance with philosophy is quite insufficient. As Lewis Nettleship tells us, personality is probably the hardest of all subjects. All I can do is to indicate certain characteristics of personality which are of importance for our purpose. The characteristics of a person to which I shall confine myself are three—viz., unity, intrinsic value, and the power to create his own value by the achievement of his interests.

The first characteristic, then, of personality is its unity, however this unity may be explained or qualified. We are conscious of ourselves as living agents, relatively distinct from other people and from the world around us. This consciousness involves a unity of experience, "a feeling," as Wm. Wallace puts it,\* "that we exist in our several modifications, that the various feelings, desires, emotions are ours, belong to us, have a common ground, and a mutual interdependence, thus constituting a system with necessary relations." Secondly a person has, as such, intrinsic value, and has therefore the right to be treated always as an end and not a means. It may, I think, be shown that our whole sense of value is ultimately derived from our consciousness that we ourselves as living persons are intrinsically valuable. "Our ultimate standard of worth," says T. H. Green,† "is an ideal of personal worth. All other values are relative to value for, of, or in a person." And thirdly the value of a person in his own creation; we make ourselves valuable, or the reverse, by the achievement of our interests. By the achievement of an interest in botany, for example, I mean the realization of the value for ourselves and others of the various aspects of the vegetable world. This realization is a gradual process, and involves effort in practical activity no less than effort after fuller knowledge. The interest may begin, for instance, with the child's desire to pick a daisy; it may end in a life's devotion to the study of plant life. As we achieve our interests they grow more intense and also more comprehensive. This makes their achievement intrinsically valuable. I am aware that these statements involve assumptions which I cannot attempt to justify, and I must ask you to let me take for granted that our personal value is measured by the worthiness of our interests and by the extent to which we are successful in achieving them.

Now the consciousness that it is really worth while to achieve our interests gives us a feeling of satisfaction when this achievement has been accomplished or promoted. In other words, we have what I shall call an interest in achievement. This is the interest we try to stimulate in order to make slack boys keen. It is the achievement of this interest which makes a form feel satisfied when it is working hard and getting on. "What is it," asks Mr. J. W. Headlam in his brilliant defence of a classical curriculum, "What is it that gives the peculiar tone and strength to a strong well taught sixth form? It is the unconscious feeling of intellectual growth and energy arising from the willing and pleased absorption in the noblest works of letters and the greatest of intellectual problems."\* This feeling can, I believe, be developed in any form and not only in the sixth, and is the satisfaction of the interest in achievement.

But besides this general interest in achievement we have also interests in particular aspects of the world around us, and these particular interests fall roughly into three main classes, connected respectively with our material environment; with our fellow men, and the social groups of which they and we are members; and with the spiritual realities of art, philosophy, and religion.

In the first place the material world is one great field in which our interests can be achieved: this is so because the world is for us a system of opportunities. "One profound characteristic," says Bosanquet,† "runs through the whole. And that is, that the world does not let us alone; it drives us from pillar to post, and the very chapter of accidents, as we call it, confronts us with an extraordinary mixture of opportunity and suffering, which is itself opportunity." In relation to this material world our primary interest is, therefore, to take advantage of the opportunities it offers, or, as I shall put it, to master our environment. Only we must remember that we can do this, as Bacon told us long ago, not by defying, but by obeying Nature.

The second class of interests are those which centre in the world of our fellow-men. These interests belong to us as social beings. If the world of Nature is a world of opportunities, the world of man is a world of co-operation. It is only as members of society that we can achieve any interests worthy of the name. As members of society we make our own the interests of our fellow men, so that our life is widened by comprehending theirs. We see this most clearly in our ethical experience. "Only a revived social consciousness," says Edward Caird,‡ "... can bring moral deliverance; and he who will not take upon himself the burden of the evil of others, and even accept it also as if it were his own guilt, can never get rid of his own. But for him who does accept this responsibility for all evil. ... the very principle that makes him, so to speak, throw down the barrier between his own life, and that of others, ... also gives him a consciousness of unity with that power of goodness which is 'above all, in all, and through all.'"

Thirdly we have our ideal interests, the interests which are concerned with what Plato calls the world of absolute good and beauty. Their achievement is the central problem of our life. It involves at any rate humility, the renunciation of all hostile interests, loyalty to the uttermost, and in some form or other the love of God.

Personality, then, we shall take to imply unity and intrinsic value, and we shall think of it as creating its own value by the achievement of its interests, material, social, and ideal. I do not pretend that these characteristics exhaust the meaning of personality. We must consider them only as elements in our idea of what a person is. This idea is derived from our consciousness of ourselves as persons and is incapable of complete analysis. We all know what we mean by being a person, and we must hold fast to this notion of a living concrete person, if we would avoid the errors of abstraction.

\* "Special Reports," 20, page 43.

† "The Principle of Individuality," page 27.

"Kant," Vol. II, page 624.

\* "Lectures," page 286.

† "Prolegomena," page 184.

## PERSONALITY IN OUR SCHOOL EXPERIENCE.

Our next step will be to ask whether our conception of education as the training of personality, in the sense just described, will explain our actual experience in our schools. Do we as a matter of fact try to train our boys as individual persons? And do they as persons exhibit the characteristics we have noted? I think a little reflection will show that the effectiveness of our teaching and the educational influence of the school's corporate life are to some extent explained by the definite recognition of our boys and girls as persons.

Let us take, first, our actual attitude in school. When we are doing our best work as masters, do we not deal with Brown and Jones as persons? Is there not that personal intercourse between us which is absent when we treat them as units in a mass or as congeries of mental processes? Is not one test of a good master his ability to come into contact with the boy's personality—his power to make the boy feel that he is understood? When Tom Brown and his comrades listened to the Doctor's sermon they heard not the cold clear voice of one giving advice and warning from serene heights to those who were struggling and sinning below, but the warm living voice of one who was fighting for them and by their sides, and calling on them to help him and themselves and one another.

If, on the other hand, we think of our boys as something less than persons, as essentially inferior to ourselves, we shall inevitably attempt to mould them according to our own ideas. We shall try to make them treat our standards of knowledge or morality as unconditionally binding. But if we do so, we shall hinder, and not help, their progress towards true personality, for they will not be achieving value for themselves. Authority and punishment are necessary, but they must always be means to the attainment of a higher end, they must be used to strengthen the boy's higher interests against the lower, like voices of friends and kinsfolk recalling him to his better self.

This instinctive recognition of the boy's personality might be illustrated from every department of school life. I will confine myself to our treatment of our boys when teaching. For perhaps it might be argued that we respect a boy's personality in so far as he is a moral agent, but that when we are teaching him in class we must deal with him as an inferior, the recipient of our thoughts or knowledge with no independent rights. This objection is true in a limited sense, or rather it represents a subordinate aspect of the truth. What I take to be our true attitude as teachers may be described as follows: We feel ourselves when teaching to be in the presence of certain facts, be they facts of grammar or moral truths, and these facts claim recognition from us and our boys alike. We, by hypothesis, know the facts better than our boys, and our business is therefore to help them to share our knowledge, or if possible to improve upon it. It is not our knowledge as such that we pass on. We have the right to teach only in so far as we are the representatives of the realities around us, the organs of the truth of things through whom this truth is made the property of other minds. We are, therefore, not infallible authorities, but co-workers with our boys in the appreciation of reality. But if this is a true description of our attitude as teachers, clearly it involves the recognition of the boys' personalities; we teach them as individuals like ourselves, members of the same world, with the right, so far as they are capable of it, to an independent assimilation of the truth. No doubt this statement must be modified in the case of teachers of quite young children, but in principle it applies to teachers of every kind.

Again, if we hold fast to the conception of our boys as persons we can understand the influence exerted by the school's corporate life. If school life does a boy any good, it is just because it makes him more of a person, and it does this by helping him to achieve, in some form or other, one or more of the types of interest we have distinguished. I cannot attempt to work this out in detail, but must content myself with considering one interest only, the boy's interest in the ethical ideal.

Let us notice first that the school is a place specially adapted for the development of this interest. I do not mean merely that the ethical interest can be achieved only by active membership in a society, and the school is a very intimate society. I mean also that in the school the ethical ideal takes a very real and practical shape. For in the school we meet with most, if not all, the problems of our moral life in their most simple and natural form. Life is here lived upon a smaller scale than in the world of men; boys' interests are more direct, their motives usually less complex than those of older people. The side issues which confuse us in later life are largely absent, and it is easier to view the events of daily life in the light of the ideal. A boy, for instance, is guilty of some petty act of meanness, perhaps one which would be hardly noticed in the world outside, but you know, and you have to help him to realize, that he has sinned against one of the great laws of social life. This imminence of the ideal is particularly evident in school games, and gives to them their ethical significance. "A game," says a wise schoolmaster, "has in 'a boy's' eyes certain high spiritual affinities, which are missed by our older selves. In his inner thought they have a sacred character, just as with primitive men; and this is the cause of his deep seriousness on the subject."\* He feels that every deed of pluck or cowardice, every unselfish pass or wrongful keeping of the ball is an act done in the sight of heaven, a sign of loyalty or treason to the moral law.

Great schoolmasters have always shared the boys' sense of the spiritual realities only half hidden behind the veil of the school's daily work and play. It was Dr. Arnold who, at the sight of a knot of vicious or careless boys gathered round the great school-house fire, said that it made him think he could see the devil in the midst of them.† In other words, Arnold realized more vividly than most of us that school life is a field for the development of a boy's whole personality, and not least of his highest interests, such as his interest in the ethical ideal.

I hope that I have now succeeded in making clear the point of view from which school teaching and school life may be regarded as means for the training of personality. If the line of argument which I have tried to illustrate is valid, we may assume that our view of education as the training of concrete persons does, as a matter of fact, help to explain our school experience.

## PERSONALITY AND EDUCATIONAL THEORY.

The next point to be considered is whether insistence upon personality will justify itself in the field of theory. Will this insistence make our theory of education more comprehensive and consistent? Will it enable us to define more definitely the educational point of view? In trying to show that it will help us in both these respects, I must again limit myself to a few illustrations of a point of view; anything like a complete discussion would mean a treatise on education.

In the first place, then, this view of education will save us from two educational heresies which are finding adherents at the present time, and which I shall call respectively the psychological and the sociological heresy.‡ These heresies are rife because we have not yet attained to a clear delimitation of the field of education. We have not made up our minds as to what processes or results have educational significance, and what processes or results have not. That is, we have not a clear conception of the educational point of view.

Our failure in this respect is due partly to the fact that education has not yet achieved its independence of its sister sciences, psychology and sociology, from which much of its doctrine has been derived. We still occasionally hear education spoken of as applied psychology, or as a branch of sociology, sometimes by those who should know better.

The psychological heresy fixes our attention upon the various processes which go on in the boy's mind to the comparative neglect of his personality as a whole. A statement

\* Skrine: "Pastor Agnorum," page 72.

† Stanley's "Life of Dr. Arnold," Chapter III.

‡ I need not say that no disrespect is intended to psychology or sociology.



of this heresy in its most flagrant form is given by Prof. Thorndike in his "Principles of Teaching." "If there existed," he says, "a perfect and complete knowledge of human nature—a complete science of psychology—it would tell the effect of every possible stimulus, and the cause of every possible response, in every possible human being. A teacher could then know just what the result of any act of his would be, could prophesy just what the effect of such and such a page read, or punishment given, or dress worn, would be—just how to get any particular response, or attention to this object, memory of this fact, or comprehension of that principle."\* And again, in the *Journal of Educational Psychology* for January 1910, he says: "Just as the science and art of agriculture depend upon chemistry and botany, so the art of education depends upon physiology and psychology. . . . A complete science of psychology . . . would aid us to use human beings for the world's welfare with the same surety of the result that we now have when we use falling bodies or chemical elements."†

It is hardly necessary to point out that these extracts imply a view of education totally opposed to that which we have found to be consistent with our experience. It ignores all the characteristics of the boy as a living person, or, if it does not ignore them altogether, it keeps them in the background. In particular it treats our boys as if they were automata capable of being stimulated by doses of reading or of punishment, or as if they were musical instruments upon which the educator can play at will.

Even if we assume the possibility of such a science as psychology as that here described, I believe that a knowledge of it would be positively harmful to the teacher. We should have to make ignorance of psychology an essential qualification for any master or mistress in our schools, and the reason would be this: If a master enters his classroom knowing that he can manipulate his pupils' minds with as much certainty as he can chemical elements or falling bodies, then his attitude towards them will be that of a chemist or mechanic, but assuredly not that of a teacher. For a teacher, as we have seen, treats his boys as ends, not means, as creating their own value by their own activity, not as having value implanted in them from without. Above all, Thorndike's view shows an absence of that reverence for personality which is so marked a characteristic of all great teachers. Let us rather hear Edw. Bowen: "The experience of teachers," he tells us, "has not generally brought the conviction that specially directed efforts can do much to change a boy's nature. It does most of the changing for itself. The building grows, like the temple of old, without a sound of mallet and trowel. What we can do is to arrange matters so as to give virtue her best chance. We can prevent tendencies from blossoming into acts, and render pitfalls visible. How much indirectly and unconsciously we can do none but the recording angel knows. And in the effort to control the spirit of a pupil—in the craving for moral power and visible guiding—lie some of the chief temptations of a schoolmaster's work."

And again, in speaking of the morbid effort to exercise conscious influence, "Fancy the attitude of mind of the captain of the eleven who should say at the beginning of an innings, 'Go to, I will now use my moral influence on my team.'"

I turn now to the second educational heresy—the sociological heresy. The root error of this heresy is that it treats the boy not as a relatively independent person, but primarily as a member of society, that is, either of society as it actually exists or of society as it may be expected to become in a few years' time. As illustrative of this standpoint I will quote some statements of Prof. Dewey. "We must take the child," he says, "as a member of society in the broadest sense, and demand whatever is necessary to enable the child to recognize all his social relations, and to carry them out"‡ He then specifies the relations of voter, subject of law, member of a family, worker, member of some neighbourhood and community.

From this point of view the school's aim is described as follows: "The moral responsibility of the school, and of those who conduct it, is to society. The school is fundamentally an

institution erected by society to do a certain specific work—to exercise a certain specific function in maintaining the life and advancing the welfare of society."\* And that this society is not an ideal society, but society as it actually exists, appears clear from Dewey's argument. The school is to reproduce in typical form, he says, "the processes by which society keeps itself going." The life of the school is to reproduce on a smaller scale the life of the world around it. "The child," he tells us, "ought to have exactly the same motives for right doing, and be judged by exactly the same standard in the school as the adult in the wider social life to which he belongs."† And it is important to notice that social life is regarded as essentially industrial. This is shown by the interesting description given by Dewey of the typical school-building, which is symbolic of the occupations of its inmates. The school-building consists of two stories, each with four rooms and a central hall. On the ground floor we should have a kitchen, a dining room, a shop, and a room for textile industries, with a library in the central hall. Upstairs would come the physical and chemical laboratory, the biological laboratory, rooms for art and music, and a museum in the centre.‡

No one, I think, can read Dewey's writings on education without finding them most suggestive, and I am not attempting any statement of his position as a whole. But the doctrine in the extracts I have given is clearly tainted by the sociological heresy. The child's personality is recognized to some extent, but only in so far as he is a member of society. There is no recognition of a personal life aiming at ideals which in their essence are more than social. "We get no moral ideal," Dewey says, "no moral standard for school life excepting as we interpret these in social terms."§ "One with God is a majority" would assuredly not be written on his school walls. If religion means the realization of our relationship with unseen and absolute realities, Dewey's schoolboy is regarded as having no religion. The implied conception of personality is therefore fatally defective. A boy is more than a member of society: he is also a citizen of the unseen world. Hence Dewey's ideal must be supplemented by Prof. Muirhead's when he tells us|| that "the main problem of the immediate future is to re-inspire our educational system with the religious idea, the idea that the task to which the teacher is called is nothing less than the opening of the soul to all the influences—spiritual, social, aesthetic, cosmic—that call to it from the unseen, and thus to fit it for its true life."

By holding fast, therefore, to the principles of personality we can maintain the educational point of view against these heresies. But heresies are always one-sided statements of partial truths, and our principle enables us to see the element of truth in the views we have rejected.

#### THE TRAINING OF PERSONALITY.

Of the three great spheres of interest which we have distinguished—mastery of environment, the common life, and devotion to the ideal—Thorndike is concerned primarily with the first, and Dewey with the first and second. Their theories are incomplete because they fail to do justice to ideal interests, but they have much to teach us in regard to the subjects of which they treat.

From Thorndike, for instance, we may learn the importance of many details in the boys' school environment which we are tempted to neglect. From Dewey we may learn that our curriculum and teaching methods in the broadest sense must provide the boy with an introduction to his after-life, and therefore he must begin to achieve at school the interests which will occupy his manhood. To work these lessons out in detail would lead us too far afield, and I must proceed to touch very briefly upon one or two characteristics of the process of education viewed in the light of our conception of personality.

First, then, education as the training of personality will not be a thing of rules and observances, though these, too, have their place. Its atmosphere is rather one of freedom, of inspiration, and of adventure. For it aims at stimulating the boy's achievement, not at merely bringing him under discipline. I would apply to education William Wallace's

\* Page 9. † Page 6.  
‡ "Educational Essays," page 28.

\* "Essays," page 27. † *Ibid*, page 37. ‡ "School and Society."  
§ "Essays," page 33. || "Moral Training," Vol. I, page 68.

description of morality: "Let us not forget—we all do forget—that the art of education is not how not to do it. Its function is not merely to keep us from falling, nor is it to help us to become proper. It is to teach us to love God with all our hearts and strength and mind, and our neighbour as ourselves. . . . In the work of education you enter on a grand enterprise, a search for the holy grail, which will bring you to strange lands and perilous seas. For you cannot say, interpreting, 'Thus far and no further,' merely according to the hour and duty. . . . You follow by what has been, what is ruled and accomplished, but you follow after what is not yet."

If we like we may describe this aspect of education by saying that education is concerned with the boy's self-realization or that self-activity is the law of mental growth. Only we must remember that self-realization means also self-transcendence, the achievements of interests deeper and wider than those which we call our personal interests. It involves hardship and self-renunciation. "The man who chooses the life of thought and wisdom," says Socrates in the "Philebus,"\* "it may be lives without pleasure; and who knows whether this may not be the most divine life of all?" "The higher, yet obvious and dominant, experience," says Bosanquet, † "carries you at least as far as, for example, strength and endurance, love and sacrifice, the making and achievement of souls."

Perhaps you will now object that this statement, at any rate, is an example of the abstract theorizings which have little bearing on the boy's actual life at school. On the contrary, I believe that school life ought to be literally the making and achieving of souls, and we fail to recognize it as such, partly because we do not keep before our minds the full meaning of the boy's personality. Do we not, as a plain matter of fact, know some boys or girls who during their school life have passed through the vale of soul-making spoken of by Keats? Have they not achieved, not merely certain interests, but, in some measure, personality as a whole?

But if the school is really to be a field in which souls are made, every department of the school's life and work must do justice to each of the great fields of interest as elements in the boy's concrete personality. It must help him to master some portion of his environment; it must in some way develop his social interests; and it must increase the unity and coherence of his personality by promoting the subordination of all his lower interests to his interests in the ideal world. May I illustrate what I mean by an example from a narrow field—the teaching of geometry? In teaching geometry we must, by exercises in drawing and measuring, and by a course of theory, enable a boy to master the simple geometrical properties of the bodies in his environment. And I would add that this mastery must be thorough. But our teaching must bear a direct relation to the boy's present and after life. I refer not only to the study of geometry as a direct preparation for such callings as that of an engineer, but also to the utility of geometry as an aid to the appreciation of the scientific thought common to educated men and to its practical use in daily life. "There is no reason," says Dr. Nunn, "why mathematics should not be taught systematically as a means necessary for appreciating the main results of human industry and invention, including those embodied in the mechanism of commerce and the financial machinery of civic and national life." And, lastly, we have the ideal purpose of learning geometry which must permeate all our teaching of it. This purpose has been described as follows by one of the most suggestive thinkers of our day. "For the health of the moral life," says Bertrand Russell, "for ennobling the tone of an age or nation, the austere virtues have a strange power, exceeding the power of those not informed and purified by thought. Of these austere virtues the love of truth is the chief; and in mathematics, more than elsewhere, the love of truth may find encouragement for waning faith. Every great study is not only an end in itself, but also a means of creating and sustaining a lofty habit of mind, and this purpose should be kept always in view throughout the teaching and learning of mathematics." ‡

It would, I think, be possible to show that the conception of education which I have endeavoured to indicate gives us a point of view from which we can discuss the various problems of organization, curriculum, and method which meet us in our schools. It will not forthwith solve these problems. Truth, whether of thought or practice, is not so easily attained, but it will show us the direction in which progress can be made. Upon this inquiry, however, I cannot enter now, as I wish, in conclusion, to say a few words upon the character and equipment of the teacher, as I conceive him.

What kind of person must the master be if he is to be a trainer of concrete persons? In the first place, he must himself be a person, not an instructor merely, or a good disciplinarian. Prof. Adams, in his suggestive book on "The Evolution of Educational Theory," seems to look forward to the disappearance of personality in teachers. "What the future has to do," he says, "is to improve the machine. All the present indications . . . point . . . to a future in which the profession will be made up of men and women of a high level of average intelligence and virtue, but without any special initiative, officered by a small body of highly specialized men and women of particularly high capacity and attainments, and with a large amount of initiation." I can only say that such a future appears to me to be one which we must strive with all our earnestness to avert—for in it education would be like Homer's ghosts in Hades, only a shadow of its former self.

Unfortunately, we cannot deny the tendency to magnify the machine. We hear of the introduction of methods, whether Montessori or other, as if method in itself, apart from personality, were a remedy for our weakness. I doubt, however, whether this tendency is on the increase. Not that method is unimportant. A master must have as a foundation for his work a mastery of his material. He must be a skilled workman, and his material is perhaps the hardest of all to work—namely, human nature. Hence we welcome all the light which can come from a study of psychology and of teaching methods, new and old. And still more, we insist upon the necessity for that personal sympathy upon which we have already spoken. But this is only one branch of the master's interest. He must also have a social interest in education. He is the organ of the community for handing on its life. Hence he must hear the call which comes to him from the spirit of his time. He must be able to distinguish the true demands of the age from the cries which would lead astray. And in our own day that is no easy task. It demands a wide outlook and broad sympathies, but also a judgment both disciplined and fearless. And this, as well as a lasting inspiration for his work, he will gain only by the achievement of his own interests in some form of the ideal. In the case of the majority this central interest will be religious—using the term "religious" in its widest sense; but it may also take the shape of an interest in truth and beauty—that is, it may be philosophical or artistic. Still, whatever be the particular aspect under which he views the ultimate reality, he must in his own fashion be a servant of the ideal. To him must be applicable in some measure the description Plato gives of those who in his ideal city are to mould the souls of men, a description of which my words to-night have been little more than an expansion. The true educators, Plato tells us, "when engaged upon their work will often turn their eyes upwards and downwards—I mean that they will first look at absolute justice and beauty and temperance, and again at the human copy; and will mingle and temper the various elements of life into the image of a man; and this they will conceive according to that other image, which, when existing among men, Homer calls 'the form and likeness of God.'"

THE Eighteenth Annual Report of the Women's Industrial Council indicates a year's work of great activity. The Nursery Training School, under the management of Miss E. M. Zimmern and Mrs. Millington, has passed through its experimental year with great success and may now fairly claim the support of the Educational Authorities.

THE seventeenth Annual Conference of the Parents' National Educational Union will be held in the Caxton Hall on May 5, 6, and 7.

\* 33 B. † "The Principle of Individuality and Value," page 5.

‡ "Philosophical Essays," page 86.

## EASTER IN ROME.

By DE V. PAYEN-PAYNE.

It is a commonplace to say that no city has so much to tell an educated man as Rome, and that no teacher can consider himself fully prepared for his work until he has paid at least one visit to the cradle of Western civilization. As the Christmas holidays have such short days, and as the summer holidays would hardly suit the ordinary Englishman for sight-seeing in the heat, the average schoolmaster is reduced to visit Rome at Easter or not at all. And as his holidays at this season are usually limited to three weeks, very often he never gets there. It is true that Mr. Douglas Sladen in his recent book, "How to see Italy," has written very convincingly to prove that Italy is never so pleasant as in the summer and never so cheap. But we fear his appeals will fall on deaf ears among English teachers.

Of course three weeks is an absurdly insufficient period to give to such a city as Rome. Some great author has said that after three weeks you think you know Rome, after three months you begin to get doubtful, and after three years you are quite sure you know nothing about it. But let us essay the impossible, and show what a man could do in that time, especially if he were aided by being able to snatch a few extra days—by the favour of his head master or his colleagues—at the beginning or end of the vacation. It is doubtful whether it really pays to take the whole forty-four hour journey to Rome at one gulp. Most of us who are not in our first youth find that we reach our destination so fatigued that it requires a day or two to recover, and so, very often, the longer way is the better. By taking the train leaving Charing Cross at 2.20 p.m., one can sleep in Paris on the first night, whence there is a train at 8.45 the next morning which lands one, via the Simplon Tunnel, at Milan before midnight. From Milan it takes twelve hours to Rome, so one can reach one's destination in time for dinner on the third day. The above itinerary has been composed for those who do not like travelling by night, but those who can sleep comfortably in the train could easily shorten the time.

The experienced sight-seer knows well that the part is greater than the whole. He therefore makes up his mind beforehand what he intends to see, or, to put it in another way, what he has resolved to miss. There are at least three divisions of Rome—first, the ancient monuments; secondly, the Rome of the Popes, and, thirdly, modern Rome since 1870. Of these the average English teacher will find the first by far the most absorbing and most helpful to him in his work. He has read about it since he was a child, and has seen many illustrations of its beauties. Therefore it is not unlikely that he will give the major portion of his time to what interests him most. To draw up a time-table of one's intended plan of campaign before starting on a trip of such importance as this is, of course, essential, but it must be an elastic time-table, as from reading guide-books one gets but an indistinct notion of how long is needed for each sight one has resolved to visit. Besides, the same thing does not interest each man equally; the classical teacher, the history specialist, and the form master will each look at the point of interest with a different eye.

The ideal method of seeing Rome would be, we suppose, to begin with the monuments of earliest date—*e.g.* the Servian Wall, and work chronologically through them. This is the method pursued in the new guide by Mr. H. T. Inman (Stanford, 1912, 4s. net), but this method would require not an Easter vacation, but a whole winter. For, unfortunately, monuments are not always to be visited chronologically without a great deal of travelling to and fro. The hurried tourist must often visit a church or gallery when he is near it or not at all. As it is, he spends quite enough time in getting to places and returning from them without complicating his difficulties. But, as far as possible, the chronological order should be preserved to keep things clear in one's mind.

It is not a bad plan on reaching a city for the first time to seek out a coign of vantage whence the whole city may be viewed so as to get one's topography right from the beginning.

As most of the Roman hotels are in the new Ludovisi quarter, a good point of view is the Terrace on the Pincian, which view has been often described, especially by Zola in his "Rome." Having got his bearings the tourist may walk the whole length of the Corso to the new national monument erected to Victor Emanuel II. He is then at the base of the Capitol, and, passing up the famous steps which lead to it, pausing on the top to realize the history that has been made on this hill and leaving the Capitoline Museum for the present, he cannot do better than to descend the further slope into the Forum. This is one of the big things and should not be hurried over. The whole day at least must be given to it and possibly part of another. Unless one's hotel is in the older portion of the town, which is often noisy and dusty, it is advisable to have lunch in a neighbouring *trattoria*; for thus the journey back to one's hotel and out again is saved and one may economize one or two hours of precious time.

The Forum, like most national monuments, is open till dusk, so that, if one's brain does not get too tired, one can remain there until it is time to return to dinner. With the Forum should be taken the Colosseum and the Arch of Constantine. Another day is needed for the Palatine, and yet another for the Imperial Fora. The Campus Martius, which was the only part of Rome to be inhabited in medieval times, could occupy a student for many weeks. But the busiest must not omit the Pantheon, the only ancient building in Rome which preserves its original roof, and which strikes most spectators with that delicious feeling of unexpectedness only too seldom felt by those who have seen the most notable erections of man throughout the world. If it is visited on a day when the rain pours through the open roof on the marble pavement below it will be an experience that our tourist will recollect along with his first glimpse of Venice and of Milan Cathedral. Another sight not to be missed is the adjacent church of Santa Maria sopra Minerva, which is the only ancient Gothic church in Rome, and which will remind him of Florence. But as weather is not always favourable for visiting out-of-door sights, the experienced traveller always prepares a second itinerary in case of rain. So in visiting classical Rome one can spend the rainy days, should any occur, in the museums, of which the Capitoline, the Terme, and the Borghese will fit in well with what he has already seen.

With little additional excursions to minor sights in the neighbourhood of what has been named above, the first week of our three will have been more than filled. The second may well be given to Christian Rome, which, although perhaps not so interesting to English travellers as the great monuments of the Western Empire, demands a visit. Of them, the most important of all is St. Peter's and the Vatican; and as the Vatican Galleries contain some of the most famous of classical sculpture, they make a convenient connecting link between the two. But the hours of the Vatican Galleries are very awkward for the average sight-seer, as they are open only from ten till three, and are in the extreme north-west of the city, very far from most hotels. Therefore, unless one wishes to go three or four times for the morning only, it is better not to return to lunch, but either to take one's lunch with one or go to one of the restaurants to the west of St. Peter's Piazza. If one does this, it is possible to see the chief things in the Vatican in two days, or better in three. The remainder of the third day could then be given to St. Peter's itself. Two visits must be paid to the Lateran, for the Classical and Christian Museums are never open on the same day; but with them can be combined the third great church, Santa Maria Maggiore. Nor must that most interesting early Christian church of San Clemente be omitted when in this neighbourhood.

The rest of this second week could well be devoted to churches of great interest, although not so essential as the four we have named. In the neighbourhood of Santa Maria are Santa Pudenziana and Santa Prassede (Browning's St. Praxed's, where the Bishop ordered his tomb). More interesting even than these are the churches on the Aventine and the monuments in the neighbourhood of the Piazza Bocca della Verità, such as the Arch of Janus, Santa Maria in Cosmedin, the Round Temple (continually, but erroneously, called the Temple of Vesta), the so-called House of Rienzi, Santa Sabina, and others.

But the exhausted tourist will exclaim, "Are we never to have a day off?" The wise ones will know when they have had enough sight-seeing and when exhausted nature demands repose. Never let them be gluttons for sights, for this would only end in mental indigestion and do them more harm than good. When they feel fatigued or when a particularly fine day reminds them of rural delights let them take a tram to San Paolo *fuori le mura* and enjoy loafing in some of the most perfect cloisters they have seen since visiting the Lateran. They can wander as far as the Tre Fontane, where St. Paul is said to have been beheaded, or they can sit outside some country inn, sipping their bottle of native wine and smoking their three-halfpenny cigars. It was Grant Allen who said that no tourist needed to be guided in his moments of distraction, for he will easily find such delights as he desires always on his path. Other fine days or afternoons can be given to excursions to Tivoli and Hadrian's Villa or to the Alban Hills with Frascati and the matchless Lake of Nemi. For these two latter a whole day is needed, but San Lorenzo and Sant' Agnese need but an afternoon. The former of these should certainly not be missed, but that might be said of countless churches in and round Rome. Nor should a drive down the Via Appia be omitted which gives such a splendid view of the Campagna, and reminds foreigners of the salutary Roman law that no bodies should be buried within the walls.

Thus the second week will also have been more than filled. The third should be left almost free, for many will desire to pay a second visit to the Capitoline, the Vatican, or some other monument that has particularly interested them and of which they desire to carry away a life-long memory. At the same time there are many first-class sights that even the three weeks' visitor should have glanced at, such as Michael Angelo's "Moses" in San Pietro in Vincoli or the mosaics in Santa Maria in Trastevere, which are almost as important as those in Santa Maria Maggiore. With this latter can be visited Santa Cecilia, with its unforgettable recumbent statue of the saint with her decollated head facing the earth. In the vicinity of the Lateran are, in addition to those we have already named, Santi Giovanni e Paolo, with its adjacent underground house of these two saints and San Stefano, the only round church in Rome, which although bare is an interesting monument of the fifth century. The church of Santa Maria in Ara Coeli will have been visited on one of the days given to the Capitol.

This third week also might be devoted to the special interests of the visitor. Those who specialize in early Christian history will visit the catacombs; librarians and classical scholars will go to the Vatican Library; the baths of Caracalla will interest archaeologists, and nearly all Englishmen, whether interested in literature or not, will visit the graves of Shelley and Keats in one of the most delightfully situated cemeteries they have ever seen. Those interested in art will be pleased to see the Villa Medici, which is the home of the fortunate French scholars.

But we might go on for many columns in this way, for in the matter of fountains alone Rome could occupy a visitor for some days. Perhaps what most will agree in omitting are the many *baroque* churches of the seventeenth and eighteenth centuries and the palaces of the Roman nobility. These can always be left for a second visit, for everyone who has been to Rome drops a coin in the Fontana di Trevi, which ensures—so impeccable tradition avers—one's return at a future date. No one who has spent even an Easter holiday in Rome does not wish to return on a subsequent occasion.

But for the teacher money is no less an important consideration than time. A second-class return ticket, allowing one to stop at all important towns on the way, costs from £8 to £10, according to the route chosen. Quite good hotels can be obtained whose pension terms do not exceed 8 to 10 lire a day, so that all *necessary* expenditure need not exceed £25, and everyone may add to this according to his means. In addition to the large works on history or art that he has read at home, every visitor will have with him, in addition to the indispensable Baedeker ("Central Italy," 8s. net), the two volumes on Rome in the Grant Allen series (Richards, 3s. 6d. net each), and Mr. Norway's contribution to the "Medieval Towns Series" (Dent, 4s. 6d. net.). In these he will find many references to larger works, should he need them.

## REVIEWS.

*The Teacher's Companion.* By Brother de Sales.  
(2s. 6d. net. Longmans.)

This is a curious form of a teacher's commonplace book. It consists of exactly a hundred pages of miscellaneous letter-press, each page being faced by a ruled page of blank paper headed by the words "My Own Notes." The reader is expected to add his own comments on and additions to the text, so that in the course of time there will come into being a treatise that the teacher who has partly made it "will prize very much." The subjects dealt with include elementary psychology, with about a page to each of the modes of being conscious, and a somewhat fuller treatment of the various methods of teaching school subjects. In addition, there are model lessons, notes of lessons, schemes of work, lists of books for pupils and for teachers, selections for recitation, subjects for composition exercises, and various forms of "useful mems" and "wrinkles." As the author aims at being useful, he tells us bluntly that he has "made no attempt at literary excellence." Still, a man may be useful without writing English like this: "Welcome the pupils when they arrive in the morning, and especially at their departure in the evening." There is a confiding friendliness about the whole book that almost disarms criticism, but it has to be said that the teacher cannot always rely upon what he finds here. We would like to believe our author when he tells us that "it is a mistake to think that children like to have their own way," and that "children who are said to have no ear for music are those who grew up in unmusical surroundings," and that after a few months' listening "to the singing class and being told to follow it mentally, they, too, will be able to sing." It does not greatly help us to be told in all seriousness not to make our questions "nonsensical," or to be informed that "any system is good when well taught." One of the useful "wrinkles" is how to make a graph, by which our author means how to make a composition that will enable the teacher to multifold something he has written or drawn with special ink. In describing the process of boiling, he remarks casually: "Add glycerine." Anyone who has made such compositions knows that the quantity of each ingredient is of the essence of success. But here no hint is given. Matters are still worse in the "wrinkle" how to make ink. Not a single quantity is given. There are possibilities of good in the scheme of the book, but they have not been realized.

*Teaching in School and College.* By WILLIAM LYON PHELPS.  
(4s. 6d. net. Macmillan.)

It is difficult to see for whom this book is written. It consists of 186 pages, each of which contains less than 200 words. It has no plan; the ten essays appear to be quite independent of each other. It cannot be meant for students in training to be teachers, since its author proclaims, "I know nothing whatever of the science of pedagogy," and in spite of a disclaimer it is clear that he rather takes pride in his ignorance. This does not, however, prevent him from laying down the law with much vigour on pedagogical subjects. He appears to be a professor of English literature who has had considerable experience in teaching his subject both in school and college, and who now wishes to give the public the benefit of that experience. It is a pity that his contribution, if intended to be of practical use, should have taken such a fragmentary and unsystematic form. To be sure, he believes that teaching cannot be taught, though, when he comes to his own subject, he disposes of the same sort of argument in this naive way: "It is a common saying that English literature cannot be taught; but it is false, for I have been teaching it twenty years."

When Mr. Phelps deals with the teaching of English literature he is entitled to have his opinion treated with respect, since, after all, he is on his own ground, and has successful experience behind him. In cognate subjects, like English composition and English pronunciation, he is still within his sphere, but when he gives in twenty-two pages his views on

"Education and Instruction," any reader who knows the literature of the subject can only wonder. The truth is that this is a book that gives merely the personal reactions of its author. Since that author is a man of wide knowledge, much intelligence, and keen wit, the result cannot but be interesting, though it forms no contribution to the literature of education. Applying the excellent principle of always working from the concrete—a principle that he appears to regard as something very recently discovered—Mr. Phelps makes a very strong appeal to his readers, and even one who is already bored through over-familiarity with the commonplaces of educational theory cannot but enjoy the pleasant way in which our author presents them. The merits of the book are to be sought on the artistic side. It presents educational matters from the same angle as D'Arcy Thompson in his "Day Dreams of a Schoolmaster." If Mr. Phelps wishes to use his undoubted talents to the best purpose, he should try to give us a companion volume to that classic.

*A History of the British Nation from the Earliest Times to the Present Day.* By A. D. Innes, sometime Scholar of Oriel College, Oxford. (3s. 6d. net. Jack.)

For some time Mr. Innes has been steadily working his way to the front as a writer of sound popular history, and the present volume places him in a commanding position. Notwithstanding the exiguous price, the work is a bulky volume of a thousand pages, with more than 350 illustrations drawn mainly from contemporary sources and with somewhere about fifty maps and a score of genealogical tables. It is addressed to "that vast public who do desire to know the history of their native country, but are repelled by the textbook." Regardless of class-teaching and of examinations, Mr. Innes seizes the essential facts and sets out their meaning in a lucid and attractive narrative. If the book is expressly framed not to be a textbook, yet the class should have access to it for collateral reading. We have tested it at many crucial points and are well satisfied of Mr. Innes's historical scholarship. The style is plain and sober, but at the same time it is flexible and vigorous; and the reader that once begins will be in no hurry to lay the book aside. It is a vivid, virile, masterly work. The publishers deserve special commendation for adventuring on such a public-spirited enterprise. We cannot doubt that the volume will help enormously to spread a real knowledge of the course of British history—a knowledge not merely of isolated dates and events, but of the growth and development of the nation in all its main aspects, political, social, industrial, and intellectual.

*The "Method" of Archimedes.* Edited by Sir Thomas Heath, K.C.B., Sc.D., F.R.S. (Pp. 51. 2s. 6d. Cambridge University Press.)

Mathematical writers have often remarked upon the tantalizing absence of any indication of the steps by which the great Greek geometers arrived at the discovery of their theorems. Their way was to present their works to the world only as finished masterpieces, "with every trace of the scaffolding removed." This method is so particularly characteristic of the greatest mathematician of the ancient world that Fermat, in criticizing (c. 1660) what he considered to be the lax methods of Wallis, assumed that the *via Archimedeae* and the *via legitima* are identical. For this reason, the romantic discovery by Heiberg in 1906 of a previously unknown book, in which Archimedes reveals to his friend Eratosthenes the methods by which he had reached his most celebrated results in geometry, is an event of incomparable interest. English readers will therefore rejoice to know that Sir Thomas Heath has translated Heiberg's recension of the ancient palimpsest, has illuminated the text with valuable editorial comments, and now publishes it as a supplement to his well known "Works of Archimedes."

The chapter has an importance out of all proportion to its bulk. Moreover, it has special interest for teachers of elementary mathematics, at a moment when debate centres round the difficult question of the proper use of heuristic and logical methods of presentation. Defenders of the "newer methods"

cannot fail to find a strong argument for their position in the fact that the greatest of the Greek "purists" discovered his most famous geometrical theorems, not by strict geometrical deduction, but by arguments involving the mechanical theory of moments. Speaking generally, his method is analogous to the procedure of the modern teacher, who leads his class to discover the theorem of the intersections of the medians of a triangle by considering the centre of gravity of equal masses at the apices. One detail of especial interest exemplifies the fact that the order of theorems in a systematized logical presentation is often different from the order of discovery. In the logical order, the theorem concerning the area of a sphere precedes that concerning the volume of the sphere; but Archimedes, like the "new" teacher, actually discovered the volume-theorem first, and deduced the area-theorem from it by the simple device of regarding the sphere as a mass of cones with their apices at the centre. The pamphlet and the pedagogical lessons which it contains should be studied by every teacher of mathematics.

*A Mathematical Theory of Spirit.* By H. Stanley Redgrove. B.Sc. Lond., F.C.S. (2s. 6d. net. William Rider & Son.)

There are more things in heaven and earth, Horatio,  
Than are dreamt of in your philosophy.

The words which our greatest dramatist has put into the mouth of Hamlet have an indirect rather than a direct, but nevertheless a very real, relation to the clever and imaginative little treatise in which Mr. Redgrove essays ingeniously to apply the laws and processes of mathematics to the discussion of metaphysical problems. The reader may be pardoned if at a first glance he fails to grasp the intention of the work from its title alone. The author, be it understood, does not for a moment set himself the task either of upholding or of disproving, in the present volume, the creed of the spiritualist. His aim is solely that of endeavouring to establish an "organon" of thought by means of which it may be possible to solve problems of a transcendental character with the aid of an instrument which has abundantly proved its competence to further the interests of physical research. Mr. Redgrove's whole argument is based ultimately on his belief that there is an exact correspondence between the constituents of the spiritual world and those of the material world: a correspondence that involves no arbitrary resemblance, but a constant relation as of cause and effect between pairs of elements. It is a "Law of Correspondences" of this type that Swedenborg first clearly formulated, and, if it be once shown to hold universally, then it must be possible to transform every physical proposition into its metaphysical analogue. The spiritual world and the material world, according to the Swedish philosopher, stand to each other in the relative positions of prototype and symbol and, as indicated above, of cause and effect. Hence it follows that the spiritual world is the higher. Moreover, the two exist side by side as a *discrete*, not as a *continuous*, whole, nowhere merging one into the other. The Greeks and others believed that number was the primary principle underlying an ordered universe. The "organon" outlined in the present work is borrowed from the science of number in its extended sense. The field of "real" number suffices for Mr. Redgrove to represent individually and collectively the components of the material world; for him the absolutely *parallel* series of "imaginary" number is—on the correspondence hypothesis—equally capable of representing individually and collectively the elements of the spiritual world. Nowhere does the pure "imaginary" cross the path of the "real" except at the value zero. The "imaginary" occupies a higher plane, for whereas the "real" number can be derived from powers of the "imaginary" unit, no arithmetical process ever produces the "imaginary" from the "real." The principle of ratio and proportion serves to secure relative similarity, or similarity of appearance, in each world and in both, and it is by means of that principle that strange phenomena are, perhaps, to be explained. We have said enough to suggest the nature of the author's attitude, and need but add that his arguments are characterized by consistency in detail. He does not claim that his theory is more than tentative and speculative, but he presents it as one whose validity it is worth while to investigate thoroughly.



## GENERAL NOTICES.

## EDUCATION.

*Education and National Life.* By Henry Dyer. (1s. net. Blackie.)

This neat little volume in Blackie's "Library of Pedagogics" is the partly condensed, partly elaborated reproduction of a lecture that its author delivered before various educational organizations. It is fresh and up to date, and gives as fair a view of the general question as is possible in such small compass. This is the day of small books and every teacher will wish that this little volume should fall into the hands of members of educational boards, many of whom are in need of just the information here given. Dr. Dyer speaks with the authority that long experience of educational administration rightly confers.

## MATHEMATICS.

*New Analytic Geometry.* By P. F. Smith, Ph.D., Professor of Mathematics at Yale University, and A. S. Gale, Ph.D., Professor of Mathematics at Rochester University, U.S.A. (6s. 6d. Ginn.)

This book, although comparatively small, is very comprehensive in its scope and nothing of importance has been omitted; but much of the purely acedemical work has been reduced to a minimum, thereby increasing the utility of the book from the practical point of view. Methods of dealing graphically with logarithmic, exponential, and trigonometrical functions are considered from a practical standpoint, and a useful and comprehensive chapter on parametric equations gives an insight into forms frequently met with in applied mathematics. There are also chapters dealing with various types of surfaces, including quadric surfaces, and interpenetration. The solutions inserted in the text throughout the book are exceptionally clear to follow and form excellent models on which to base the working out of the numerous examples given. A student who masters the book will have learnt all that is practically necessary for general purposes.

*Elementary Integrals.* By T. J. P.A. Bromwich, Sc.D., F.R.S. (1s. net. Cambridge: Bowes & Bowes. London: Macmillan. Glasgow: Maclehose.)

A valuable compilation, giving in a short pamphlet a list of elementary results in integral calculus which the author believes to be complete. The table of integrals is supplemented by helpful notes, and the student has also opportunities for the exercise of skill in deriving additional formulæ. In some cases the writer has succeeded in combining results which are given separately in the ordinary textbook on the subject.

(1) *An Introduction to the Infinitesimal Calculus.* By H. S. Carslaw, Sc.D., Professor of Mathematics in the University of Sydney. Second edition. (Pp. vii, 137. 5s. net. Longmans.) (2) *Differential and Integral Calculus.* By L. S. Hulbert, Collegiate Professor of Mathematics in the Johns Hopkins University. (9s. Longmans.)

The sub-title of each of these works indicates that it is written in view of the needs of students of science and engineering. Their difference in bulk is due to a difference in scope. Prof. Carslaw aims merely at providing a first-year course which shall show the young student the "good" of the calculus, and establish the principles of the subject in his mind upon a trustworthy foundation. Prof. Hulbert's program is a good deal wider, and includes all that the ordinary engineer needs to know about such topics as multiple integration, expansions by Taylor's theorem, and the commoner differential equations.

(1) Prof. Carslaw, as teachers of the subject are well aware, believes that high logical ideals should be held before even the beginner and the student who needs mathematics for practical purposes. While, therefore, he confines himself strictly to essentials, he takes great care that his treatment shall be thoroughly sound as far as it goes. For this reason his little book may be recommended to the numerous school teachers who are now including a brief course of Calculus in the curriculum of their "non-specialist" pupils. The fact that the discussions of the various topics, while "practical" in their outlook, are not in any sense technical, makes it the more suitable for general use. In the case of pupils of this kind, as well as for engineering students, the differentiation of  $x^n$  and  $\log x$  offer considerable obstacles to a conscientious treatment. In view of these difficulties, Prof. Carslaw has, in this edition, relegated to an appendix proofs which depend upon the properties of infinite series, and has substituted simpler, but less complete, demonstrations in his text. The teacher who uses these should beware, on page 39, of an unlucky misprint ( $dx$  for  $dy$ ) which has escaped the proof-reader.

(2) Prof. Hulbert's book is "live" and contains a large number of interesting applications to the theory of curves and especially to kinematics. The substitution of the  $D$  notation for the confusing (though sacred)  $dy/dx$  is to be commended, with the correlative substitution of "derivative" for "differential coefficient." His treat-

ment of Taylor's theorem and other important topics is also good as well as simple. It is doubly unfortunate, therefore, that he has permitted himself quite unnecessary looseness in his definitions of "limit" and other fundamental ideas. To say that an "infinite" is a variable which may "at some stage of its variation be a small quantity," provided that it "eventually" becomes and remains "very large," is to make a most unhappy use of a term which is already sadly misused in too many elementary textbooks. Such blemishes as this should be removed in the second edition of the book by a friendly, but rigorous, critic.

## GERMAN.

*Das Erste Jahr des deutschen Unterrichts.* By D. L. Savory, M.A. (2s. 6d. Clarendon Press.)

Those who have already benefited by Mr. Savory's work as an editor and annotator of German reading books on the Direct Method will rejoice to find that he has at last given them a complete course of German instruction for the first year of study. As was only to be expected from the author's previous work, grammar is far from being a dull and lifeless subject in his hands, and the skilful way in which it is introduced and revised should do much to ensure a love as well as a knowledge of German. The *Lesestücke* cover a variety of subjects likely to interest the pupil, and the grammatical drill in connexion with them should confute those who maintain that the Direct Method sacrifices grammatical accuracy to the acquisition of vocabulary. Stress is laid on phonetics. Mr. Savory suggests that, before beginning the book, pupils should be familiarized with German sounds and the phonetic script. In each lesson he gives a few words in the script for oral practice, and at the end of the book the whole of each of the passages for reading is to be met with again—this time transcribed into the script, an arrangement that is useful for reference and revision. Altogether, it should prove a most useful and stimulating book. It is, however, to be regretted that the *Fragen* and *Erklärungen* are printed in such small type, as it may go far to justify the parental dictum still occasionally heard: "German is bad for the eyes."

## SCIENCE.

*A Primer of the Internal Combustion Engine.* By H. E. Wimperis, M.A., A.M.I.C.E. (2s. 6d. net. Constable.)

When it happens that a student does not intend to carry the study of a subject beyond the initial stages, at any rate to start with, a book which gives just an outline of the subject is of more use than one which treats it fully. The book under consideration, written to fulfil this requirement, will be found suited to the needs of students in technical schools, evening especially, who are attending classes in heat engines, or automobile engineering of an elementary character. A defect of the book, especially in dealing with thermodynamics, is that in some places lucidity has been sacrificed for the sake of brevity, and additional preliminary explanatory matter would have added to the usefulness of the book. Some paragraphs also, printed in small type and intended to be omitted on a first reading, might have been inserted with equal advantage in the normal type, for, excepting one or two isolated cases, the work they refer to is in no respect more difficult than that in the context. With these exceptions, the information given is well chosen and arranged, and nothing of any real importance has been disregarded. There are plenty of illustrations, and a special feature is a chart (which, by the way, should be facing page 126, and not page 1), giving particulars of the data to be obtained when testing, with an explanatory chapter on the objects and methods of testing. Had a test been completely worked out and the results inserted in their proper columns on the chart, the efficiency of this section of the book would have been materially increased. Heat quantities are measured throughout on the Centigrade Heat Unit (C.H.U.) system.

*Experimental Mensuration.* By H. S. Redgrave, B.Sc., Assistant Lecturer at the London Polytechnic. (2s. 6d. Heinemann.)

An elementary textbook of inductive geometry which will be found to be very suitable for beginners, and especially for evening students at technical schools. The author has kept in mind the fact that for the purpose indicated the practical aspect of the subject is of far more importance than the merely theoretical one, with the result that all academical problems of no practical use have been rigidly excluded. The book leaves very little to be desired.

*A Second-Year Course of Organic Chemistry for Technical Institutes: The Carbocyclic Compounds.* By F. B. Thole, B.Sc. Lond., F.C.S., Lecturer in Organic Chemistry at the East Ham Technical College. (2s. 6d. Methuen.)

This book, dealing with the carbocyclic or aromatic compounds, their general synthesis and uses for industrial purposes, will be found of some advantage to students working for Intermediate Science examinations, and for Stage 2, Board of Education. The subject-matter is so arranged as to prove especially useful to students in

(Continued on page 134.)



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## Grammaire Française

### Élémentaire. Avec Exercices.

By W. M. POOLE, M.A., Head of the Modern Language Department, Royal Naval College, Osborne. Third (Revised) Edition, 2s. 6d.

In the new edition the Terminology recommended by the Joint Committee on Grammatical Terminology has been adopted.

## Lesestücke mit Fragen.

By A. S. WILSON, B.A., Senior German Master at Winchester College, and A. G. DENNISTON, B.A., R.N.C., Osborne. 2s.

The first 24 pages contain a digest of elementary grammar. Following this are 40 reading pieces with numerous questions (in German) facing the page of text to which they refer.

## Character in the Making.

By ABEL J. JONES, M.A., B.Sc., Ph.D., formerly Assistant Lecturer in University College, Cardiff. 2s. net.

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technical institutes. There is a special chapter on qualitative practical organic chemistry, which, although necessarily brief, enables the student to appreciate the intimate connexion that exists between theory and practice.

*Astronomy.* By F. W. Dyson, F.R.S., Astronomer Royal.  
(1s. net. Dent.)

This little book, one of Dent's scientific primers, is abridged from the author's larger work on the same subject. The book commences with a brief review of astronomy as known prior to the "new astronomical era," which was introduced about the middle of the sixteenth century by the important work of Copernicus, Galileo, and Kepler, whose observations and theories are concisely summarized. The sun and solar system is dealt with in an interesting manner, and the book closes with a brief chapter on the fixed stars.

### HISTORY.

"Bell's English History Source Books"—(1) *Puritanism and Liberty* (1603-1660). Compiled by Kenneth Bell, M.A., Fellow of All Souls College, Oxford. (2) *A Constitution in Making* (1660-1714). Compiled by G. B. Perret, M.A., Peterhouse, Cambridge.  
(1s. net each.)

Though some excellent "Source Books" of history have come over from America, and Messrs. Black's full and careful series is well known and appreciated, there is abundance of room for Messrs. Bell's new series, which is planned to extend to twenty volumes. The present two volumes cover a century of important constitutional movements, and provide valuable illustrations of current events and leading characters. The records of contemporary fact and opinion are extremely valuable; still more important is the text of great constitutional documents for which the ordinary histories cannot find space but without which the history can be but imperfectly conceived. This series promises to be most helpful to students of all grades. The volumes are attractively printed and got up.

*A Brief Story of the World.* By H. B. Niver.  
(2s. 6d. net. Harrap.)

The book is divided into parts (which may be had separately, 1s. 6d. each): (1) *Ancient People and their Heroes*, (2) *Modern Nations and their Famous Men*. But what can be done with such a mass of matter in such a narrow space? Mr. Niver necessarily confines himself to picturesque selections, with summaries that seem scarcely worth giving at all: for instance, what can be the use of the story of England from John to the Restoration of Charles II. in less than two pages? The style is too much of the infantine order, and the scholarship is defective. Thus, Mr. Niver tells us that "two men were sent to Athens to study the good laws made by Solon and Clisthenes," with a view to the betterment of the laws of Rome. The number was three, not two (Livy III, 31); and the whole statement has been disputed. Justinian did not come to the throne in 521, but in 527; and his Code is not "a great collection of the best of the old Roman Laws, and of the writings of the great Emperors, judges, and lawyers." Cyth'-e-ra, Me'-de-a, Eurysth'-e-us are examples of mis-markings of pronunciation; and the King of Colchis (in the legend of Jason) is uniformly called Aetes, instead of Aetes.

*Leading Figures in European History.* By R. P. Dunn Pattison, M.A.  
(6s. net. Rivingtons.)

The volume is intended for the general reader who, though interested in history, may have neither time nor opportunity nor patience to tackle a full and consecutive narrative. The purpose is to illustrate the growth of the main ideas and principles that have contributed to form the Europe of our day. The method is to present substantial biographies of sixteen "leading figures," from Charlemagne down to Bismarck. England is not represented; perhaps her time will come. An introductory chapter sketches the history of Europe from the time of the Roman Empire to Charlemagne; and the connexion of each of the sixteen heroes with the past is carefully shown in the opening pages of each biography. The plan is excellent, and it is carried out with distinct ability and good judgment. The style is bright and fluent.

"Cambridge Historical Series."—*A History of the Australasian Colonies from their Foundation to the Year 1911.* By Edward Jenks, M.A., Principal and Director of Legal Studies of the Law Society, formerly Fellow of King's College, Cambridge, and Dean of the Faculty of Law in the University of Melbourne.  
(4s. 6d. net. Cambridge University Press.)

We heartily welcome a third edition of this very comprehensive and careful work. The main points of change are: (1) the completion of the history of the movement towards federation, and (2) a brief and pointed account of the various experiments in politics and in social organization that have been made in recent years by Australasian statesmen. The part played by New Zealand in originating such experiments is striking. An admirable handbook on a subject of great interest.

### GEOGRAPHY.

"The Oxford Geographies."—*The British Empire.* By A. J. Herbertson, M.A., and R. L. Thompson, B.A., late Assistant Master at Bedales School. (112 figures. 2s. 6d. Clarendon Press.)

The title of the work, though strictly accurate, is rather misleading. Of the 250 pages, upwards of 120 are devoted to the British Isles; and as Vol. VII of the "Elementary Geographies" deals with this matter, there appears to be little to justify the arrangement of the present book. To dismiss Asia and the Far East with about twenty pages of letterpress means, of necessity, very superficial treatment. The general description is distinctly "breezy" and entertaining, and, on the whole, is accurate. The method of obtaining mean daily temperatures, on page 21, is not sufficiently clear, and the "hardy annual" error of "Welspool for flannels," on page 52, still persists, notwithstanding the long-past decease of this industry. The figures are generally numerous and good, though one or two lack clearness, notably Fig. 40, which is rather involved; Fig. 28 suggests that in Wales over 50 per cent. speak Gaelic. With an expansion of the second part of the book and one or two minor corrections, it should prove a useful addition to the series.

"Cambridge County Geographies."—*Forfarshire.* By Easton S. Valentine, M.A. (1p. 160, viii; 52 diagrams. 1s. 6d. Cambridge University Press.)

Mr. Valentine's book represents the tenth volume for Scotland, and the forty-second of the series; and, as these interesting publications have a common form of arrangement, it is sufficient to say that "Forfarshire" well maintains the high standard of its predecessors. Its illustrations are well chosen; its descriptions are complete; and, both as an educational manual and as a pleasantly written and instructive guide book, it should meet with considerable demand.

*Map Projections.* By Arthur R. Hinks, M.A., Chief Assistant, Cambridge Observatory. (Pp. 126, xii; 19 figures. 5s. net. Cambridge University Press.)

An excellent book. The author does not claim that it is a mathematical treatment of the various projections, and yet, starting from first principles, he steadily carries the reader to a complete elucidation of the various formulæ of projection. The manual traces the relations between the various projections, and points out their several good qualities, their defects, modes of construction, and limits of usefulness. The chapter containing the analyses of various atlases and the identification of projections in use is particularly good. The book is rendered self-contained by a valuable chapter containing tables with which to calculate the properties of a projection.

### ENGLISH.

*Rogee's Thesaurus of English Words and Phrases.* New and Revised Edition. (Pp. 671. 2s. 6d. Longmans.)

The reissue of this well known classic among books of reference, at a price that will bring it within the reach of all, is an event to be welcomed. That it has proved abundantly useful in the past is proved by the fact that it has now maintained its place for sixty years, a constant demand requiring a new edition from time to time. It is interesting to find that the task of revision has descended from father to son, the present editor being the grandson of the original compiler. The "Thesaurus" has at once a scientific and practical function. It forms a valuable contribution to the history of language in general as well as of our own language in particular, and it meets the immediate needs of those who are struggling with the difficulties either of original composition or of translation. Offering as it does a classification of all the words and idiomatic phrases that any one could ever wish to employ, and presenting these in such a form as to suggest their meanings and accepted uses, the work offers an opportunity for discovering the right expression for every emergency which it is to be hoped many will be tempted to embrace.

*Esau and the Beacon.* Five Plays. By Kenneth Weeks.  
(5s. net. Allen.)

It is to be presumed from the elaborate stage directions and the suggestion of incidental orchestral music that these plays were written with some idea of a stage production, but it would be difficult to imagine anything less dramatic either in theme or in treatment. In respect of atmosphere the plays present a strong contrast, the first and last being very unsuccessful efforts to imitate Maeterlinck in the vein of medieval romanticism, and the others being as ultra-modern as the most up-to-date American slang can make them. In neither of these fields does the author show any power of portraying character or of reproducing natural dialogue, nor is there anything of value in his ideas or sentiments to atone for his entire lack of dramatic effectiveness.

*A First Book in English Literature.* Part VI. By C. L. Thomson.  
(2s. 6d. Horace Marshall.)

In this volume, which deals with the literature produced between 1798 and 1835, Miss Thomson continues to follow her well advised plan of selecting only the most important writers for treatment:

(Continued on page 136.)

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supplying sufficient illustration of their works to make them more than mere names to the young student. The chapters on Wordsworth and Coleridge, on Scott, on Byron, and on Shelley and Keats, will be found very interesting reading. The biographical material is well chosen and effectively presented, while the criticism offered is in the main sound and suggestive. The selection of extracts is, for the most part, well judged, and the book is adorned with some excellent portraits. It may be suggested that the dates of publication of all but the most important works might, with advantage, have been omitted, and that the outlines of the plots of the novels dealt with are scarcely necessary. In the list of Coleridge's best poems Miss Thomson might well have included "Love," which is surely one of the most perfect in our language.

*Aids to the Writing of English Composition.* By Fred W. Bewsher, B.A. (Pp. 79. 1s. net. G. Bell.)

The title-page of this little volume states that it has been prepared for the use of boys in the lower forms of public schools, but it does not appear whether it is intended to be put into the hands of the boys themselves or merely to be used by the master. It seems better suited for the latter purpose and may be found useful by teachers who have not thought out for themselves a plan for teaching composition in the early stages. The author says many things that are true, if they are not very new, and no one could go far wrong in following the course he proposes. The lists of subjects suggested for essays will certainly be found useful.

*Patience: a West Midland Poem of the Fourteenth Century.* Edited by Hartley Bateson, B.A. (Pp. 149. 4s. 6d. net. Manchester University Press.)

This is a valuable contribution to the study of our early literature, though the editor has to admit that the poem he is dealing with has more of a linguistic than a literary interest. The whole question of the authorship and chronology of the four poems included in the single MS. in the British Museum that is known by the title of "Gawayne" is discussed in a scholarly fashion in the introduction, but it is disappointing to find that the results are so inconclusive. Great pains have been taken with the text, and the exhaustive bibliography, notes, and glossary that are appended contribute to its elucidation.

#### MISCELLANEOUS.

*Historia de la Instrucción Primaria en la Republica Argentina, 1810-1910* (Atlas Escolar), proyectada por el Presidente del Consejo Nacional de Educación, Dr. Jose Maria Ramos Mejia, compilada y redactada por Juan P. Ramos, Inspector General de Provincias, is a most ample centenary survey in two large volumes, issued by the Argentine Consejo Nacional de Educación (Buenos Aires: Jacobo Penser). The First Book expounds "las ideas directrices de la enseñanza y el concepto social de la escuela"; the Second, the "desarrollo sucesivo de la instrucción primaria en la Republica"; and the Third, occupying the whole of the second volume, the educational history of each of the provinces, in so far as not anticipated in the general account contained in the Second Book. There are numerous portraits of the more important educationists of the period. The History has been compiled with great labour and care, and it shows a remarkable educational development.

*Mythological Rhymes.* By Sir Reed Gooch Baggorre. (Pp. 108. 4s. Francis Hodgson.)

These rhymes seem to be offered in all seriousness as a means of popularizing classical myths, but it is to be feared that in one important respect the author has missed his aim. If, as would appear from his preface, he wished to add an idealizing touch to these old legends, he was ill advised in adopting so largely a loose anapestic metre which has an irresistibly comic effect, provoking reminiscences, now of the doggerel rules for Latin genders, and now of Lear's nonsense verses. Take the following specimen:—

"Our hero to Merope ever was true,  
But the love of a goddess was something quite new;  
'Twill immortalize me,' thought Orion,  
Then Eos made use of a goddess's power,  
And conveyed him asleep to her Delian bower,  
Where untroubled his breast she could sigh on."

## PUBLICATIONS RECEIVED.

### EDUCATION.

*Life and Work of Pestalozzi.* By J. A. Green, M.A., Professor of Education in the University of Sheffield. Clive, 4s. 6d.

*Hand and Eye Training; or Education through Work: its scientific and practical principles.* By Henry Holman, M.A., formerly H.M.I. Second edition, enlarged and revised. Pitman, 3s.

### CLASSICS.

*The Loeb Classical Library.* Edited by T. E. Page and W. H. D. Rouse.—(1) Appian's Roman History. With an English trans-

lation by Horace White, M.A., LL.D. Vol. II. (2) Catullus, Tibullus, and Pervigilium Veneris. The first translated by F. W. Cornish, Vice-Provost of Eton; the second by J. P. Postgate; the third by J. W. Mackail, formerly Professor of Poetry at Oxford. (3) Euripides. With an English translation by Arthur S. Way, D.Litt. Vols. III and IV. (4) Lucian. Translated by A. H. Harmon, of Princeton University. Vol. I. Heinemann, each volume, 5s. net.

*A Pocket Dictionary of the Latin and English Languages.* Part I. Latin-English: with an introduction to the History of Latin Sounds. Compiled by Prof. Karl Feyerabend, Ph.D., of Gothen. Toussaint-Langenscheidt Method. London: H. Grevel & Co., 2s. net.

*Greek Divination: a Study of its Methods and Principles.* By W. R. Halliday, B.A., B.Litt., Lecturer at Glasgow University. Macmillan, 5s. net.

### FRENCH.

*Direct Method French Texts.* Edited by R. R. N. Baron, M.A., Cheltenham Grammar School.—For Juniors: (1) Tamango and José Maria le Brigand. By Prosper Méricée, 1s. For Seniors: (2) Pierille. By Jules Claretie. 1s. 6d. Mills & Boon.

*Longmans' Elementary French Texts.*—Ulysse chez les Cyclopes. Par Octave Simone. Edited, with notes, exercises, and vocabulary, by T. H. Bertenshaw, B.A., City of London School. Pupils' edition, 6d.; teachers' edition, 8d.

*Cahier Français Illustré pour les Enfants.* (Pictures of objects with space for the writing of sentences connected with the objects.) Dent, 8d.

*Tous les Chefs-d'Œuvre de la Littérature Française.*—(1) Cardinal de Retz. Meilleures pages des Mémoires. (2) L'Emile. Par J. J. Rousseau. Tome III. Dent, 1s. each net.

### GERMAN.

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(Continued on page 138.)

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- Astronomy in a Nutshell: the Chief Facts and Principles Explained in Popular Language for the General Reader and for Schools. By Garrett P. Serviss. The Knickerbocker Press, 5s. net.
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- The English Bible: an Historical Survey from the Dawn of English History to the Present Day. By the Rev. J. D. Payne, M.A., Vicar of Charlbury. Wells Gardner, 2s. net.
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- The Imprint: January. 1s. net.
- The Matriculation Directory. Burlington House, Cambridge, 1s. net.
- The Basis of National Strength. By Miss Charlotte Mason. Reprinted from the *Times*. Published by the Parents' National Educational Union, 1s. net.
- Education and Peasant Industry: Educational Pamphlet, No. 26. Board of Education, 5d.
- The Public Feeding of Elementary School Children. By Phyllis D. Winder. Longmans, 2s. net.
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- The War against Bribery. By R. M. Leonard. With a Preface by Sir Edward Fry. The Secrets Commission and Bribery Prevention League, 6d.

## THE COLLEGE OF PRECEPTORS.

## MEETING OF THE COUNCIL.

A MEETING of the Council took place at the College, Bloomsbury Square, W.C., on February 15. Present: Sir Philip Magnus, President, in the chair; Prof. Adams, Dr. Armitage Smith, Mr. Bain, Rev. J. O. Bevan, Rev. J. B. Blomfield, Mr. Brown, Mr. Eagles, Mr. Hawe, Mr. Longsdon, Mr. Millar Inglis, Mr. Morgan, Mr. Rushbrooke, Mr. Starbuck, Mr. Storr, Rev. Canon Swallow, Mr. Thornton, Mr. Vincent, Mr. White, and Mr. Wilson.

On the announcement of the death of the Secretary, Mr. Charles Robert Hodgson, it was resolved that a letter be sent to Mrs. Hodgson expressing the Council's sense of the great loss the College had sustained, and their appreciation of Mr. Hodgson's conspicuous ability and devotion to the interests of the College.

Diplomas and prizes were awarded to the successful candidates at the recent Christmas Examination of Teachers. (See list on page 116.)

The Diploma of Licentiate was granted to Frank Masters Hudson and Roland Thomas, who had satisfied the prescribed conditions.

On the recommendation of the Examination Committee, the Rev. Canon Simpson was appointed Reviser for Scripture History, Mr. F. H. Colson Reviser for Classics, and Mr. A. C. Bray Reviser for French; Mr. F. de Baudiss was appointed an additional Examiner in French, and Mr. W. E. Clifford Browne an additional Assistant Examiner.

On the recommendation of the Finance Committee, a grant of £5 from the College Benevolent Fund was made to the widow of a former life member of the college.



Sir Philip Magnus was re-elected President of the Council, and Prof. John Adams, Mr. R. F. Charles, and the Rev. Dr. Scott were elected Vice-Presidents.

Mr. W. G. Rushbrooke was appointed Dean of the College. Dr. G. Armitage-Smith was appointed Treasurer of the College.

The Moderators, Examiners, Revisers, and Inspectors for the current year were appointed.

The six Standing Committees and the By-Laws Committee were appointed.

The following persons were elected members of the College:—

- Rev. H. C. Brooks, M.A., Alfred Street, Westbury, Wilts.
- Miss M. Etherington, Upton House, Slough.
- Mr. R. B. Lattimer, M.A., Dunham Lodge, Teddington.
- Mr. J. Polack, Craufurd College, Maidenhead.
- Mr. A. C. A. Wildman, The Grammar School, Ongar.

It was resolved that Mr. Chalmers's appointment as Secretary of the College date from February 15, and that Mr. C. R. Mardling be appointed Assistant Secretary.

The following books had been presented to the Library since the last meeting of the Council:—

- By the AUTHOR.—Bedwell's Elementary Botany for the Junior Locals.
- By A. & C. BLACK.—Black's Sentinel Readers, Book VI; Elliott's Elementary Historical Geography of the British Isles.
- By BLACKIE & SON.—Blackie's English Texts (Waterloo); Barfield and Trotter's The Baron of Brandaun; Bell's Verne's Voyage au Centre de la Terre; Davis's Translation of Bruck's Plant Diseases; Draper's Magnetism and Electricity; Franzen's Gas Analysis; Monteverde's The Spanish Language; Ohlson's The Rose and the Ring; Tindall's Féval's Le Petit Gars; Verrill's Experimental Hygiene.
- By THE CAMBRIDGE UNIVERSITY PRESS.—Cambridge Greek Testament (James's Second Peter and Jude, and Parry's Romans).
- By HEFFER.—Foakes-Jackson's Biblical History for Junior Forms (Old Testament); Foakes-Jackson and Smith's Biblical History for Schools (New Testament); Jones and Appleton's Perse Latin Plays.
- By MACMILLAN & CO.—Green's First Book of Rural Science; Loane's Longer Narrative Poems (Nineteenth Century); Philip's Achievement of Chemical Science; Whitton's First Book of Experimental Science.
- By METHUEN & CO.—Malden's Rights and Duties of a Citizen.
- By MILLS & BOON.—Baron's Claretie's Pierrille, and Mérimée's Tamango and José Maria le Brigand; Norris's Experimental Mechanics and Physics.
- By the OXFORD UNIVERSITY PRESS.—English Songs and Ballads (World's Classics); Balston's Washington Irving's Sketch Book; Browning's Saul; Cresswell's Macaulay's Essay on Milton; Cross's Elementary Physical Optics; David's Test Papers in Elementary German Grammar; Heath's Elementary Trigonometry; Leonard's The Pageant of English Prose; Hude's Lysias' Orations; Keeling's Coleridge's Ancient Mariner; Lucas's Greater Rome and Greater Britain; Notman's Exercises in Dictation and Composition; Scott's Lay of the Last Minstrel; Smith's Essay Writing, Rhetoric, and Prose; Syrett's Stories from Medieval Romance.
- By RIVINGTONS.—Hassall's Class Book of English History, Parts I and II; Smith's British History, Part II.
- By the UNIVERSITY TUTORIAL PRESS.—London Matriculation Directory, January 1913; University Correspondent, 1912; Chope's Junior Arithmetic; Collins and Hearnshaw's Burke's Speeches on America; Cracknell's Test Questions in Junior Arithmetic; Davidge and Hutchinson's Technical Electricity; Green's Life and Work of Pestalozzi; Roberts's New Junior French Course; Young's Virgil's Georgic II.
- Calendar of the Durham University.
- Calendar of the Liverpool University.
- Calendar of the University College of Wales, Aberystwyth.
- Calendar of the Pharmaceutical Society.
- Journal of Education, 1912.

C. B. FRY ON KEEPING "FIT."

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MATHEMATICS.

Readers desiring to contribute to the Mathematical columns are asked to observe the following directions very carefully:—

- (1) To write on one side only of the paper.
- (2) To avoid putting more than one piece of work on a single sheet of paper.
- (3) To sign each separate piece of work.

17422. (Professor H. LANGHORNE ORCHARD, M.A., B.Sc.)—Find the coefficient of  $a^5$  in

$$(10) \cdot (10+a) \cdot (10+2a) \cdot (10+3a) \cdot (10+4a) \dots (10+9a).$$

Solutions (I) by HAROLD BOAG, A.I.A., F.S.S.;

(II) by FREDERICK PHILLIPS, F.C.P., B.Sc., F.C.S.

(I) The first factor is 10,

The product of the first 2 factors is  $10^2 + 10a$ ,

$$" \quad " \quad 3 \quad " \quad 10^3 + 10^2 a (1+2) + 10a^2 (1 \times 2),$$

and generally, if  $10^{n-r+1} c(n)(r)$  denote the coefficient of  $a^{r-1}$  in the expansion of  $n$  such factors, then to find the coefficient of  $a^r$  in the expansion of  $(n+1)$  factors, the coefficients of  $a^r$  and  $a^{r-1}$  must be multiplied by 10 and  $n$  respectively, i.e.,

$$10^{n-r+1} c(n+1)(r+1) = 10 \{ 10^{n-r} c(n)(r+1) \} + n \{ 10^{n-r+1} c(n)(r) \},$$

whence  $c(n+1)(r+1) = c(n)(r+1) + n \cdot c(n)(r)$ .

It is evident that  $c(n)(1) = 1$  and  $c(n)(n) = (n-1)!$  for all values of  $n$ ; and  $c(n)(r) = 0$ , when  $r > n$ . Therefore, commencing with  $c(1)(1) = 1$ , and working with the relation given above, a table can readily be formed for ascertaining the coefficient of any power of  $a$  in the expansion of any number of such factors.

In the particular case when  $n = 10$  and  $r = 9$ , only certain values are required, as  $n = r + 1$ , and therefore  $c(n)(r+1) = (n-1)!$ , which gives the values for the first column below. The second column is  $n$  multiplied by the value in the third column on the preceding line, and the third column is the sum of the first and second columns.

	(Col. 1)	(Col. 2)	(Col. 3)
$n$	$c(n)(r+1) + n \cdot c(n)(r) = c(n+1)(r+1)$		
1	1	0	1
2	1	2	3
3	2	9	11
4	6	44	50
5	24	250	274
6	120	1,644	1,764
7	720	12,348	13,068
8	5,040	104,544	109,584
9	40,320	986,256	1,026,576

therefore required coefficient is  $10^{n-r+1} c(n)(r)$ , when  $n = 10$  and  $r = 9$ ,  
 $= 10^2 \cdot 1,026,576 = 102,657,600.$

$$(II) \quad 10(10+a)(10+2a)(10+3a) \dots (10+9a) \\ = 10^{10} (1+x)(1+2x)(1+3x) \dots (1+9x),$$

where  $x = \frac{1}{10}a$ ,

$$(1+x)(1+9x) = 1+10x+9x^2 \\ (1+2x)(1+8x) = 1+10x+16x^2 \} = 144x^4 + 250x^3 + \dots,$$

other terms not necessary,

$$(1+3x)(1+7x) = 1+10x+21x^2 \\ (1+4x)(1+6x) = 1+10x+24x^2 \} = 504x^4 + 450x^3 + \dots$$

The product of right-hand expressions contains  $72576x^4 + 190800x^3$ . There still remains the factor  $1+5x$ , giving  $1026576x^4$ ; therefore coefficient of  $a^9 = 10^2 \cdot 1026576$ .

17418. (Communicated by C. M. Ross, B.A.)—Three equal smooth spherical balls are at rest on a horizontal table with intervals between them, and with their centres in a straight line. One of them is set moving directly towards the other two. Show that the

number of collisions which occur is four, if  $2(1-e)^2/(1+e)^2 > 1$  and  $< \sqrt{5-1}$ ,  $e$  being the coefficient of restitution. (Cambridge Math. Tripos, Pt. I, 1908.)

*Solution by A. L. ATKIN, B.A.*

Let A, B, C denote the order of the balls, and suppose that unit velocity is given to A in the direction of BC. (It is clear that this case is perfectly general.)

Now, if two equal balls moving in the same direction with velocities  $u, v$  impinge directly, the velocities after impact are  $u', v'$ , where  $u' - v' = -e(u - v)$ ,  $u' + v' = u + v$ ;

therefore  $u' = \xi u + \eta v$ ,  $v' = \eta u + \xi v$ , where  $\xi = \frac{1}{2}(1-e)$  and  $\eta = \frac{1}{2}(1+e)$ .

(i) A first collides with B, and their respective velocities after impact are  $\xi, \eta$ .

(ii) B now collides with C, and their respective velocities after impact are  $\xi\eta, \eta^2$ .

(iii) Since  $\eta < 1$ , the velocity of B is now less than that of A, and A and B collide. Their respective velocities after impact are  $\xi^2 + \xi\eta^2, \xi\eta + \xi^2\eta$ .

(iv) In order that B may again collide with C, we must have

$$\xi\eta + \xi^2\eta > \eta^2, \text{ or } \xi + \xi^2 > \eta, \text{ or } \xi^2 > (\eta - \xi)(\eta + \xi),$$

since  $\xi + \eta = 1$ , i.e.,  $2\xi^2 > \eta^2$ .

The velocities of B and C after impact are respectively

$$\xi(\xi\eta + \xi^2\eta) + \eta^2, \quad \eta(\xi\eta + \xi^2\eta) + \xi\eta^2,$$

and no more collisions can occur if this new velocity of B be greater than the present velocity of A. That is, provided

$$\xi(\xi\eta + \xi^2\eta) + \eta^2 > \xi^2 + \xi\eta^2, \text{ or } \eta^2 > \xi^2(1-\eta) + \xi\eta^2 - \xi^2\eta,$$

or  $\eta^2 > \xi^3 + \xi\eta^2 - \xi^2\eta$ , or  $\eta^2 > \xi^4 + \xi\eta^2$ ,

or  $\eta^2(\xi + \eta) > \xi^4 + \xi\eta^2(\xi + \eta)$ , or  $\eta^4 > \xi^4 + \xi^2\eta^2$ ,

or  $x^4 + x^2 - 1 < 0$ ,

where  $x = \xi/\eta = (1-e)/(1+e)$ ,

$$\left[\frac{1}{2}(\sqrt{5}+1) + x^2\right][x^2 - \frac{1}{2}(\sqrt{5}-1)] < 0,$$

or  $x^2 < \frac{1}{2}(\sqrt{5}-1)$ , or  $2[(1-e)/(1+e)]^2 < \sqrt{5}-1$ .

The condition obtained earlier, viz.,  $2\xi^2 > \eta^2$ , may similarly be written  $2[(1-e)/(1+e)]^2 > 1$ .

The following is due to the PROPOSER:—

Let A, B, C denote the three balls.

I. *Impact of A and B.*—Let  $v_1, v_2$  be the velocities of A and B after impact; then if  $u$  is the velocity of A before impact,

$$v_1 - v_2 = -e(u) \text{ and } v_1 + v_2 = u,$$

whence  $v_1 = \frac{1}{2}u(1-e)$ ,  $v_2 = \frac{1}{2}u(1+e)$ .

II. *Impact of B and C.*—Let  $v_3, v_4$  be the velocities of B and C after impact. Now  $v_2 = \frac{1}{2}u(1+e)$  is the velocity of B before impact; therefore  $v_3 - v_4 = -e \cdot \frac{1}{2}u(1+e)$ ,  $v_3 + v_4 = \frac{1}{2}u(1+e)$ ,

whence  $v_3 = \frac{1}{4}u(1-e^2)$ ,  $v_4 = \frac{1}{4}u(1+e^2)$ .

III. *Impact of A and B for the second time.*—Let  $v_5, v_6$  be the velocities of A and B after impact. Now

$$v_1 = \frac{1}{2}u(1-e), \quad v_2 = \frac{1}{2}u(1+e)$$

are the velocities of A and B before impact; therefore

$$v_5 - v_6 = -e\left[\frac{1}{2}u(1-e) - \frac{1}{2}u(1+e)\right] = \frac{1}{2}eu(1-e)^2,$$

and  $v_5 + v_6 = \frac{1}{2}u(1-e) + \frac{1}{2}u(1+e) = \frac{1}{2}u(1-e)(3+e)$ ,

whence  $v_5 = \frac{1}{8}u(1-e)(3+e^2)$ ,  $v_6 = \frac{1}{8}u(1-e^2)(3-e)$ .

IV. *Impact of B and C for the second time.*—Let  $v_7, v_8$  be the velocities of B and C after impact. Now

$$v_3 = \frac{1}{4}u(1-e^2)(3-e), \quad v_4 = \frac{1}{4}u(1+e^2)$$

are the velocities of B and C before impact, therefore

$$v_7 - v_8 = -e\left[\frac{1}{4}u(1-e^2)(3-e) - \frac{1}{4}u(1+e^2)\right] = -\frac{1}{8}eu(1+e)(1-6e+e^2),$$

$v_7 + v_8 = \frac{1}{4}u(1-e^2)(3-e) + \frac{1}{4}u(1+e^2) = \frac{1}{4}u(1+e)(5-2e+e^2)$ ,

whence  $v_7 = \frac{1}{16}u(1+e)(5-3e+7e^2-e^3)$ .

It is clear there will be a fourth collision if

$$v_6 > v_4 \dots\dots\dots(1),$$

and that no others ensue if  $v_5 < v_7 \dots\dots\dots(2)$ .

Consider the inequality (1), substitute the values for  $v_6, v_4$ , and thus  $\frac{1}{8}u(1-e^2)(3-e) > \frac{1}{4}u(1+e^2)$ , or  $(1-e^2)(3-e) > 2(1+e^2)$ .

Put  $P \equiv (1-e)/(1+e)$ , then  $e = (1-P)/(1+P)$ . Hence  $4P/(1+P)^2 \cdot 2(1+2P)/(1+P) > 2 \cdot 4/(1+P)^2$ ,

i.e.,  $P(1+2P) > 1+P$ , i.e.,  $2P^2 > 1$ ,

i.e.,  $2(1-e)^2/(1+e)^2 > 1 \dots\dots\dots(A).$

Again, the inequality (2) becomes

$$2(1-e)(3+e^2) < (1+e)(5-3e+7e^2-e^3),$$

which reduces to  $(1-e)^2 - 8e(1+e^2) < 0$ ,

i.e.,  $[4P/(1+P)^2] - 8(1-P)/(1+P) \cdot 2(1+P^2)/(1+P)^2 < 0$ ,

i.e.,  $P^2 - (1-P^2)(1+P^2) < 0$ , or  $P^4 + P^2 - 1 < 0$ ;

therefore  $[P^2 + \frac{1}{2}(\sqrt{5}+1)](P^2 - \frac{1}{2}(\sqrt{5}-1)) < 0$ ,

whence  $2P^2 < \sqrt{5}-1$ , since P must be real, i.e.,

$$2(1-e)^2/(1+e)^2 < \sqrt{5}-1 \dots\dots\dots(B).$$

(A) and (B) are the required conditions for four collisions.

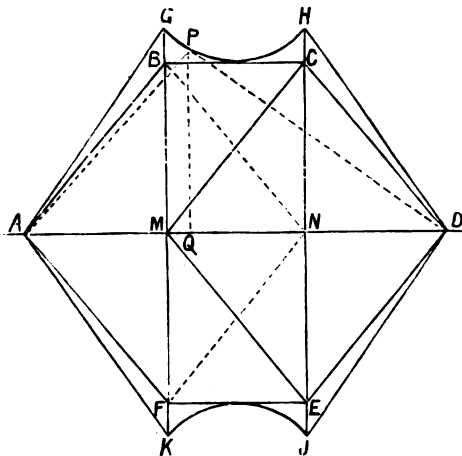
12819. (Professor WHITAKER.)—A cube is revolved on its diagonal as an axis. Define the figure described, and calculate its volume.

*Solution by W. J. ASHDOWN.*

In the diagram ABCDEF is a projection of the cube. Let the edge AB = 1. BD =  $\sqrt{2}$ , and the diagonal and axis AD =  $\sqrt{3}$ . Let BM, CN be perpendiculars on AD. Because, in the cube, ABD is a right angle,  $AB \times BD = BM \times AD$ .  $BM = \sqrt{2} \div \sqrt{3} = \frac{1}{3}\sqrt{6} = CN$ .  $AM = ND = \frac{1}{3}\sqrt{3}$ . Make

$$GBM = HCN = MFK = NEJ = \frac{1}{3}\sqrt{6}.$$

Join AG, AK, DH, DJ. GAK, HDJ are sections of cones produced in revolving by the six edges meeting at A and D. The volume of one cone is  $\pi \times \frac{1}{3} \times \frac{1}{3} \sqrt{3} \times (\frac{1}{3}\sqrt{6})^2 = (\pi \sqrt{3}) \div 27$ .



The six edges of the cube which do not meet A or D form in revolving a curved surface GH. Let P be any point on the edge BC, and therefore on GH, and let BP =  $a$ .

$$PC = 1-a, \quad AP^2 = 1+a^2, \quad PD^2 = 1+(1-a)^2.$$

Let PQ, the perpendicular on AD, =  $y$ , and AQ =  $x$ .

$$y^2 = 1+a^2-x^2 = 1+(1-a)^2-(\sqrt{3}-x)^2, \quad a = x\sqrt{3}-1,$$

$$y^2 = 2(x^2-x\sqrt{3}+1).$$

This is the equation, the origin being at A, of the curve GH, which is a section of the surface by a plane through AD; and the remaining five edges form identical surfaces. If  $x = AM$ , then  $y = \frac{1}{3}\sqrt{6} = GM$ , as before. If  $x = \frac{1}{2}AD$ , then  $y = \frac{1}{2}\sqrt{2}$  is the central ordinate. The volume of GHJK is

$$\pi \int_{\frac{1}{3}\sqrt{3}}^{\frac{2}{3}\sqrt{3}} y^2 dx = 2\pi \left[ \frac{1}{3}x^3 - \frac{1}{2}x^2\sqrt{3} + x \right]_{\frac{1}{3}\sqrt{3}}^{\frac{2}{3}\sqrt{3}} = (\pi\sqrt{3}) + 27,$$

making a total volume  $\pi \frac{1}{3} \sqrt{3} = 1.8137 \dots$ . This volume is equal to that of a cone with edge of the cube for radius of base and diagonal for height, and is the same as that of a cylinder with diagonal of the cube for length and one-third diagonal for radius, or the cylinder may have edge of cube for radius and one-third diagonal for height.

The solid may be described as a spindle with conical ends, the central third being concave.

17160. (C. E. HILLYER, M.A.)—A given circle O touches two fixed straight lines AB, AC at B and C; a variable circle touches O at a point P and passes through A, cutting AB in Q and AC in R. Prove that the circles ARB, AQC meet again in a point S in the straight line AP, and find the locus of S.

*Solutions (I) by G. W. BORDER; (II) by M. T. NARANIENGAR, M.A.*

(I) Take ABC as triangle of reference. Then since it is isosceles  $b = c$ . Equation of O is  $b^2x^2 - a^2yz = 0$ . Equation of a variable

circle touching O at  $(x'y'z')$  is

$$b^2x^2 - a^2yz - \lambda [2b^2xx' - a^2yz' - a^2y'z] [x + y + z] = 0.$$

Since it passes through A  $(1, 0, 0)$ ; therefore  $\lambda = 1/2x'$ . Hence equation becomes

$$a^2z'y^2 + a^2y'z^2 + a^2(y' + z' - 2x')yz + (a^2y' - 2b^2x')zx + (a^2z' - 2b^2x')xy = 0.$$

This meets AB where  $a^2z'y^2 + (a^2z' - 2b^2x')xy = 0$ ; therefore co-ordinates of Q are given by  $x/a^2z' = y/(2b^2x' - a^2z')$ . Similarly we find for co-ordinates of R,  $y = 0, z/(2b^2x' - a^2z') = x/a^2y'$ . Equation of circle AQC is

$$a^2yz + b^2(zx + xy) + (x + y + z)my = 0, \\ m = -a^2z'/2x'.$$

where

Equation of circle ARB is

$$a^2yz + b^2(zx + xy) + (x + y + z)nz = 0, \\ n = -a^2y'/2x'.$$

where

Hence the equation of the radical axis of ARB, AQC (i.e., AS), is  $my - nz = 0$ , i.e.,  $yz' - y'z = 0$ , which is the equation of AP; therefore S lies on AP.

To find the locus of S we must eliminate  $x'y'z'$  between (AS)

$$yz' - y'z = 0 \dots\dots\dots (i).$$

$$\text{Circle (AQC)} \quad a^2yz + b^2(zx + xy) - a^2z'/2x' \cdot y(x + y + z) = 0 \dots\dots(ii),$$

$$\text{with the condition} \quad b^2x'^2 = a^2y'z' \dots\dots\dots(iii).$$

$$\text{From (i),} \quad y' = y/z \cdot x';$$

$$\text{from (ii),} \quad x' = \frac{1}{2}a^2z' \cdot [y(x + y + z)]/[a^2yz + b^2(zx + xy)];$$

therefore required locus is

$$a^2b^2yz(x + y + z)^2 = 4(a^2yz + b^2zx + b^2xy)^2.$$

(II) (i) Inverting with respect to the circle (centre A, radius AB or AC), the problem reduces to the well-known property that the joins of the vertices of a triangle to the points of contact of an escribed circle are concurrent. Hence the result. [Rest in Reprint.]

**17841.** (F. G. W. BROWN, B.Sc., I.C.P.)—Find the equation of the locus of the centre of the circle which touches and encloses two given circles of unequal radii.

*Solution by HENRY J. HIGGS, B.A. (Cantab.).*

Let the equations of the two circles be

$$x^2 + y^2 = a^2 \dots\dots\dots (1);$$

$$(x - b)^2 + y^2 = c^2 \dots\dots\dots (2).$$

Let the coordinates of P be  $(l, m)$ , where P is the centre of a circle, which touches the above circles externally.

$$\text{Then} \quad (R - a) = PA;$$

therefore

$$R^2 - 2aR + a^2 = PA^2 = l^2 + m^2 \dots (3).$$

Similarly,  $(R - c) = PB$

$$\text{whence} \quad R^2 - 2cR + c^2 = PB^2 = (l - b)^2 + m^2 = l^2 - 2bl + b^2 + m^2 \dots (4).$$

$$\text{From (3) and (4),} \quad R = \frac{b^2 - 2bl - c^2 + a^2}{2(a - c)};$$

Substituting in (3) for R, we have

$$\frac{(b^2 - 2bl - c^2 + a^2)^2}{4(a - c)^2} - \frac{2a(b^2 - 2bl - c^2 + a^2)}{2(a - c)} + a^2 = l^2 + m^2,$$

$$\text{or} \quad 4l^2(b^2 - a^2 + 2ac - c^2) - 4bl(b^2 - a^2 + 2ac - c^2) + b^4 + c^4 + a^4 - 2b^2c^2 - 2a^2b^2 + 6a^2c^2 + 4ab^2c - 4a^3c - 4ac^3 - 4m^2(a^2 - 2ac + c^2) = 0,$$

and which is the equation of the locus of P.

This can be written

$$4x^2(b^2 - a^2 + 2ac - c^2) - 4bx(b^2 - a^2 + 2ac - c^2) + (b^2 - a^2 + 2ac - c^2)^2 - 4y^2(a - c)^2 = 0,$$

the equation to a conic.

The PROPOSER and Mr. A. M. NESBITT, M.A., point out that this equation may be written in the form

$$(2x - b)^2 - 4(a - c)^2 y^2 / \{b^2 - (a - c)^2\} = (a - c)^2,$$

from which it is easily seen that the locus is

(1) an ellipse, when  $b < a - c$ ,

(2) a straight line, when  $b = a - c$ ,

and

(3) a hyperbola, when  $b > a - c$ .

**17440.** (Lt.-Col. ALLAN CUNNINGHAM, R.E.)—Let

$$N_x = (x^{10} - y^{10}) + (x^2 - y^2), \quad N_{xii} = (x^{12} + y^{12}) \div (x^4 + y^4).$$

Show that  $N = 2(N_x + N_{xii})$  can be expressed in the form  $(T^2 - DU^2)$  for three different values of D.

*Solution by the PROPOSER.*

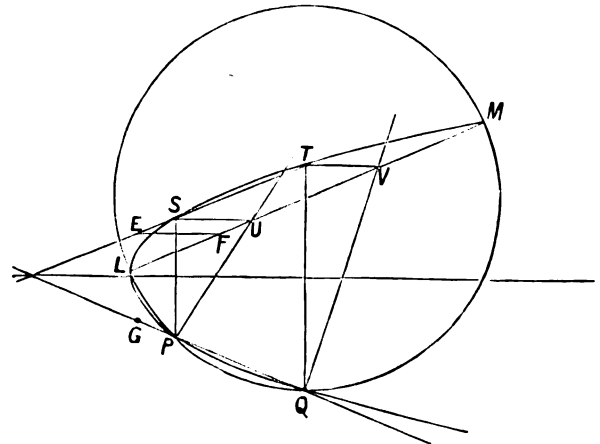
$$N = 2(N_x + N_{xii}) = 4x^{10} + 2x^6y^2 + 2x^2y^6 + 4y^{10} \\ = 4(x^4 + 3x^2y^2 + y^4)^2 - 22x^2y^2(x^2 + y^2)^2 = T_1^2 - 22U_1^2 \\ = 4(x^4 + \frac{1}{2}x^2y^2 + y^4)^2 - 33(\frac{1}{2}x^2y^2)^2 = T_2^2 - 33U_2^2 \\ = 4(x^4 + x^2y^2 + y^4)^2 - 6x^2y^2(x^2 + y^2)^2 = T_3^2 - 6U_3^2.$$

**17428.** (W. F. BEARD, M.A.)—A circle on any focal chord of a parabola as diameter cuts the curve again in P, Q. Prove that PQ passes through a fixed point.

*Solution by HENRY RIDDELL, M.E.*

This theorem is not confined to focal chords, but is quite general for any set of concurrent chords of a parabola.

Let LM be one of a set of chords concurrent in F, and let the circle upon LM as diameter cut the parabola again in P and Q, then PQ passes through a fixed point G. Draw the double ordinates PS and QT, and join ST. Draw the normals PU and QV, and the diameters SU and TV. Now PL is at right angles to PM, and therefore LM passes through a fixed point on the normal PU,



which is the intersection of the normal with the diameter through S. (By the well known theorem that, if through any point upon the curve pairs of chords be drawn at right angles to each other, the joins of the other extremities of these will pass through a fixed point on the normal, evidently found as above.) Therefore LM passes through U, and, by similar reasoning, we see it passes through V. But  $SU = TV =$  twice the sub-normal = constant. Therefore ST is parallel to LM, and passes through the fixed point E, such that FE measured along a diameter through F =  $SU =$  constant. But PQ, being the reflection of ST in the axis, passes also through the fixed point G, the reflection of E in the axis.

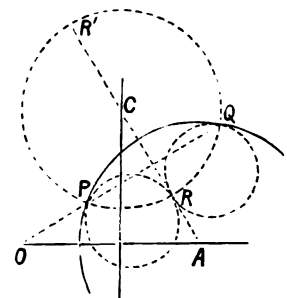
**17358.** (E. L. SCOTT, M.A.)—PQ is a chord of a circle drawn through a fixed point O. Circles of equal radius are drawn to touch one another and touching the given circle at P, Q respectively. Find the locus of their points of contact with one another.

*Solutions (I) by C. E. YOUNGMAN, M.A.; (II) by FREDERICK PHILLIPS, F.C.P., B.Sc. (Lond.), F.C.S., and others.*

(I) Let R be one of the points of contact, A the centre of the fixed circle, and C the centre of the circle PQR.

Evidently these two circles cut orthogonally, and R lies on AC; also C moves in a straight line, the polar of O for the fixed circle.

Thus the circles PQR are coaxial, and the required locus is that of the feet of the normals drawn to them from A: a circular cubic passing through its double focus A. [Rest in Reprint.]



QUESTIONS FOR SOLUTION.

17472. (Professor F. J. NANSON.)—Under what circumstances is it possible for the three vertices of a triangular lamina to describe each a circle in space?

17473. (C. M. ROSS, B.A.)—If

$$U = \int_0^x \int_0^y e^{-x+y+a^2xy} x^{-1} y^{-1} dx dy,$$

prove that  $\partial U/\partial a = -3U$ . Hence show that  $U = 2\pi/\sqrt{3} \cdot e^{-3a}$ .

17474. (J. A. COBB.)—What are the odds in favour of the bank at "Trente et Quarante"? (Cf. Silberer: *Roulette and Trente et Quarante*, p. 76.)

17475. (Professor H. LANGHORNE ORCHARD, M.A., B.Sc.)—Sum to  $n$  terms the series  $1 + 4 + 27 + 256 + 3125 + 46656 + \dots$

17476. (J. HAMMOND, M.A.)—If  $\phi(x, n)$  means the number of numbers which are prime to  $n$  and do not exceed  $x$ , prove that

$$\phi(210a/12, 210) = 4a \text{ and } \phi(210a/16, 210) = 3a$$

when  $a$  is any positive integer. Prove also that

$$\phi(210a/24, 210) = 2a \pm 1$$

when  $a$  is prime to 12, the upper or lower sign being taken according as

$$a \equiv 5, 7, 13, 23 \pmod{24} \text{ or } a \equiv 19, 17, 11, 1 \pmod{24},$$

and  $\phi(210a/48, 210) = a + \kappa$ ,

where  $\kappa = 0$  if  $a \equiv \pm 1, \pm 5, \pm 7, \pm 13$ ,

$$\kappa = 1 \text{ if } a \equiv 11, 17, 19, 25,$$

and  $\kappa = -1$  if  $a \equiv 37, 31, 29, 23 \pmod{48}$ .

17477. (Rev. T. R. TERRY, M.A., F.R.A.S.)—Find  $P, Q, R$  so that the sum of their squares is

$$(a^2 + b^2 + c^2 + d^2)(a^2 + b^2 + c^2 + d^2) - (aa + bb + cc + dd)^2.$$

Give a mnemonic rule for writing down the values of  $P, Q, R$  without any calculation. How many different sets of values are there?

17478. (J. J. BARNIVILLE, B.A.)—If  $a$  and  $b$  are roots of  $z^2 + z = 3$ , prove that

$$\frac{(x^{13}-1)/(x-1)}{(x^6-1)/(x-1)} = \frac{(x^6 - ax^3 + 2x^4 + bx^3 + 2x^2 - ax + 1) \times (x^6 - bx^3 + 2x^4 + ax^3 + 2x^2 - bx + 1)}{(x^6 - 1)^2}$$

Similarly resolve  $x^{17} - 1$  in terms of the roots of  $z^2 + z = 4$ .

17479. (Professor K. J. SANJANA, M.A.)—Denoting by  $H(n, -r)$  the sum of those homogeneous products of two dimensions of the  $n$  quantities  $x_1, x_2, x_3, \dots, x_n$ , which do not contain  $x_r$ , prove that the eliminant of the  $n+1$  equations

$$H(n, -1) = a, \quad H(n, -2) = a_2, \quad H(n, -3) = a_3, \dots, \\ H(n, -n) = a_n, \quad \text{and } \sum x_r = 0$$

is  $(n-2) \sum a_r^2 - 2 \sum a_r^2 a_n^2 = 0$ ,

$r$  and  $s$  having different values from  $1, 2, 3, \dots, n$ .

17480. (Professor F. J. NANSON.)—If  $f(x)$  is of order  $m$  in  $x, g(y)$  is of order  $n$  in  $y$ , and  $h(x, y)$  is of orders  $p, q$  in  $x, y$  respectively, and  $x, y$  are eliminated from  $f(x) = 0, g(y) = 0, h(x, y) = 0$ , find the orders of the eliminant in the coefficients of  $f, g, h$  respectively.

17481. (C. E. YOUNGMAN, M.A.)—Normals meeting at  $N$  and tangents meeting at  $T$  are drawn at any two points on a tricusp: prove that the third normal from  $N$  is parallel to the third tangent from  $T$ .

17482. (C. W. T. HOOK.)—If a cubic curve have three real inflexions,  $L, M, N$ , the tangents at any two of them meet on the polar harmonic of the third, and, further, these polar harmonics are concurrent.

17483. (C. V. L. LYCETT and W. N. BAILEY.)—Two conics have a common focus  $S$ , and a line cuts them in  $P, P'$  and  $Q, Q'$  respectively, such that  $\angle PSP' = \angle QSQ'$ . Show that the points of intersection of the tangents at  $P, Q$  and  $P', Q'$  are collinear with the point of intersection of the directrices, and that the intercept on this line between the intersection of the directrices and the original line subtends a right angle at the focus.

17484. (W. F. BEARD, M.A.)— $O$  is a fixed point on a parabola, and  $PP', QQ'$  are any two chords perpendicular to the axis;  $OR, OR'$  are drawn at right angles to  $OP, OP'$  to meet  $QQ'$  at  $R, R'$ . Prove that the locus of the mid-point of  $RR'$  is a straight line.

17485. (A. M. NESBITT, M.A.)—The normals at the points of contact of the conic  $\sqrt{(la)} + \sqrt{(mb)} + \sqrt{(nc)} = 0$

with the sides of the triangle of reference are concurrent. Prove that

$$\begin{vmatrix} l^2 & m^2 & n^2 \\ a^2 & b^2 & c^2 \\ a \cos A & b \cos B & c \cos C \end{vmatrix} = 0.$$

17486. (H. D. DRURY, M.A.)—Prove geometrically that the sum of the distances of the orthocentre of a triangle from the vertices is equal to the sum of the diameters of the in-circle and circum-circle.

17487. (R. F. DAVIS, M.A.)—If  $ABC$  be a triangle and  $X, Y, Z$  the images of its angular points in  $BC, CA, AB$  respectively, prove that the sides of  $XYZ$  are proportional to  $a \cdot AN, b \cdot BN, c \cdot CN$ , where  $N$  is the nine-point centre of  $ABC$ .

17488. (Professor NEUBERG.)—Sur les côtés d'un triangle  $ABC$  on construit extérieurement les carrés  $BCDE, CAKL, ABMN$  et l'on trace les droites  $KN, ME, DL$ . Soient  $S$  l'aire du triangle  $ABC$  et  $S'$  l'aire du triangle qui a pour sommets les centres de gravité des triangles  $AKN, MBE, DCL$ . Démontrer que

$$S' = S(4 + \frac{2}{3} \cot V),$$

$V$  étant l'angle de Brocard du triangle  $ABC$ .

17489. (Professor J. C. SWAMINARAYAN, M.A.)—If

$$x = \sin \frac{1}{2}(\beta - \gamma) \operatorname{cosec} \frac{1}{2}(\gamma - \alpha) \operatorname{cosec} \frac{1}{2}(\alpha - \beta),$$

$$y = \sin \frac{1}{2}(\gamma - \alpha) \operatorname{cosec} \frac{1}{2}(\alpha - \beta) \operatorname{cosec} \frac{1}{2}(\beta - \gamma),$$

and  $z = \sin \frac{1}{2}(\alpha - \beta) \operatorname{cosec} \frac{1}{2}(\beta - \gamma) \operatorname{cosec} \frac{1}{2}(\gamma - \alpha)$ ,

$$\text{show that } 2yz \cos(\beta + \gamma) + 2zx \cos(\gamma + \alpha) + 2xy \cos(\alpha + \beta) \\ = x^2 \cos 2\alpha + y^2 \cos 2\beta + z^2 \cos 2\gamma.$$

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It is requested that all Mathematical communications should be sent to the Mathematical Editor,

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THE LONDON MATHEMATICAL SOCIETY.

Thursday, February 13, 1913.—Prof. A. E. H. Love (President) in the chair.

The following papers were communicated:—

"Figures in  $n$ -dimensional Space analogous to Orthocentric Tetrahedra": Mr. T. C. Lewis.

"A Property of the  $\zeta$ -Function": Mr. J. E. Littlewood.

"On the Summability of a Fourier Series": Mr. G. H. Hardy.

"Trigonometrical Series which Converge Nowhere or almost Nowhere": Messrs. G. H. Hardy and J. E. Littlewood.

"A Theorem concerning Power Series": Dr. H. Bohr.

"On a Graphical Demonstration of the Fundamental Properties of Quadratic Residues": Prof. P. J. Heawood.

"The Irreducibility of Legendre's Polynomials" (Third Paper): Mr. J. B. Holt.

"On the Mode of Oscillation of a Fourier Series and its Allied Series": Prof. W. H. Young.

"Some Non-primary Perpetuant Syzygies of the Second Kind": Mr. H. T. H. Piaggio.

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To be delivered by Professor J. ADAMS, M.A., B.Sc., LL.D., F.C.P., Professor of Education in the University of London.

The First Course of Lectures (Forty-first Annual Series) commenced on Thursday, February 13th, at 7 p.m.

This Course will to a certain extent prepare for the Examinations of the College in connexion with the Associateship, the Licentiate, and the Fellowship; but its main purpose will be to present the facts of Psychology in such a way as to enable the teacher to make use of them in the practical work of the School. The work will be so arranged as to give the students an opportunity of comparing the results of their experience with the latest results of psychological research into educational processes. The Lectures will be illustrated by frequent references to the work in all classes of Schools.

**SYLLABUS.**

I. (Feb. 13.) *Nature and Scope of Psychology.*—Relation to physiology: science of consciousness: polarity: the ego: subjective and objective: relation of psychology to education: Munsterberg's view: kinds of psychology: interaction of individuals in a group: growth as opposed to development: the idea of organism: self-activity: the completed series: difference from a machine: stages of development in the child: Claparede's classification.

II. (Feb. 20.) *The Habitual.*—Meaning of habit: relation to consciousness: co-ordination and accommodation: place of association in organic development: continuum of common interest: convergent and divergent association: reintegration: projection: habit making and habit breaking: intellectual side: fact into faculty: imitation and suggestion: manipulation of habits: suggestion depends on paid-up mental capital.

III. (Feb. 27.) *The Perceptual.*—Nature of sensation: sense organs: five gateways of knowledge: organization of knowledge: perception: cognitive aspect of sensation: objective reference: "training of the senses": fallacy: apperception: observation: relation to inference: observation zone: inference point: zone of inference: gaping point: the two worlds: nature of relation between them: resemblance and correspondence.

IV. (Mar. 6.) *The Conceptual.*—Conception distinguished from perception: conception essentially active and subjective: psychological and logical concept: nature of ideas: presented content and presentative activity: fusion, complication and arrest: mediate and immediate recall: concept really the power to behave intelligently in relation to certain stimuli: the series—percept, image, generalized image (type) concept.

V. (Mar. 13.) *Modes of Expression.*—Relation between impression and expression: various theories of origin of speech: possibility of thought without speech: words and their meaning: connotation and denotation: transitive and intransitive words: definition: laws of classification: gestures: deliberate and non-deliberate: term *gesture* sometimes limited in application: all kinds of gestures are important to the teacher.

VI. (Mar. 20.) *Memory.*—As natural endowment: not limited to intellectual processes: personal identity: possibility of improving the natural memory: retention and recall: Bergson's two kinds of memory: use of the memory: predominance of purpose: need for selection: learning by rote: mnemonics and the educational applications: "pictorial" and "rational" memory: memory in relation to imagination and to reality.

VII. (April 24.) *Imagination.*—An inverted memory: prevailing misconceptions: unwarranted restriction to the aesthetic side of school life: relation of conception to imagination: free and constrained imagination: limitations imposed by "picture thinking": importance of clearly imaged ends: function in science: the framing of hypotheses: place in the teaching of geography and history: nature and moral value of ideals: day dreaming.

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IX. (May 8.) *Temperament and Type.*—Nature of temperament: its permanency: Lotze's view and its educational applications: physical attributes of the temperaments: relation of temperament to personality: meaning of type: contrast with *average*: personal coefficients: classification of pupils by types: dangers: the superposition of classes: practical use of the type in school: abbreviated thinking: ideal pupil as standard: specification of types.

X. (May 15.) *The Emotions.*—Nature: cause of their dispute among philosophers: various theories: emotions to be utilized not eliminated: relation to passions and to the intellect: expression of the emotions: Lange-James theory: McDougall's theory of the relation between instinct and emotion: connexion between emotion and desire: the mechanism of the emotions and its manipulation by the teacher: practical distinction between emotions and sentiments.

XI. (May 22.) *The Will.*—Nature of will: relation to emotions and to desire: influence of mere knowledge on will: nature and function of motives: fallacy underlying the phrase "the strongest motive": freedom of the will in relation to the teacher's influence as an educator: relation of will to character and of character to conduct: genesis of the will in the individual: subjective and objective character: plasticity and rigidity of character.

XII. (May 29.) *Reasoning.*—General nature and relation to judgment: thinking means the fitting of means to ends by the use of ideas: always implies purpose: thinking as opposed to reverie: imagery in thinking: abstract thought: laws of thought as thought: conditions under which all thinking must have the same conclusions: possibility and causes of error: teacher's power to control the thinking of his pupils: manipulation of the matter of thought.

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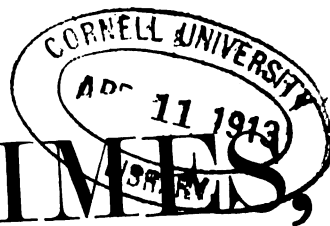
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These words were written by Mr. J. L. Paton in a recent number of a contemporary. They express, concisely and clearly, views that are widely held at the present time. These views have been gathering strength since the publication in 1895 of the report of the Royal Commission which first directed the public mind towards the organization of secondary education. In 1897 the Council of the College of Preceptors expressed the following opinion in reference to private schools: "That both in estimating the needs of any district in respect of secondary education and in allocating public money to the purposes of secondary education, efficient private and proprietary schools should be placed on the same footing as public schools; and that the setting up of schools established and maintained by public money in the neighbourhood of existing efficient schools (whether endowed, private, or proprietary) which are entirely or partially self-supporting, at such low fees as to undersell them, would tend rather to impair the efficiency of good schools than to eliminate the inefficient." In the same year the general meeting of the Incorporated Association of Head Masters passed this resolution: "That in the opinion of

this Association Local Authorities for secondary education should be empowered to aid any efficient secondary school, whether public or private, provided it satisfies the qualifications deemed necessary from time to time by the central authority as to (a) sanitation of premises; (b) adequacy of staff in respect both of numbers and of educational qualification; (c) efficiency of teaching as shown by the results of annual examinations conducted on behalf of some public examining body approved by the central authority." Two years later the Teachers' Guild resolved: "That this Congress cannot regard any legislation for secondary education with satisfaction which does not expressly provide that all efficient schools shall share, on the same terms and in like degree, in the aid rendered by the State to secondary education."

In March, 1901, on the eve of the Education Act of 1902, a Memorial was addressed by the College of Preceptors to the Duke of Devonshire, signed by Mr. Eve, Dr. Wormell, and Mr. Pinches, which strongly supported the claims of private schools to consideration. Later, in the same year, a similar manifesto was issued by the College of Preceptors, the Teachers' Guild, and the Private Schools Association, acting together. This was signed by Mr. Eve, Mr. Lyttelton, and Mr. Blomfield.

The present moment seems likely to mark an important stage in the story of private school endeavour. During the last month Mr. Pease, in the course of an address on the educational proposals of the Government, said that he thought we were entitled to have a survey of the position and condition of private secondary schools not coming at present under the Board of Education. This is an important pronouncement, and evidently indicates that the Board are not satisfied that private schools should be gradually extinguished by the competition of schools aided by public money. Another sign of the times is that Sir Lewis Selby-Bigge has just received a deputation from bodies interested in the maintenance of private schools in order to discuss their position. We give in another column a report of this deputation.

It will be noticed that throughout the resolutions that

we have quoted above, and also in the Act of 1902, the phrase "efficient private schools" is repeated. The first step, of course, in making grants of public money is to find out that the schools are "efficient." The Act gives no definition of an efficient school, nor does it say by whom or in what manner the efficiency is to be declared. It is reasonable to assume that the Board of Education should declare schools to be efficient, and that the manner of the inquiry should be the usual form of inspection. There are two sides to inspection, one of which is sometimes overlooked. Inspectors report to an Authority with the purse that a school is doing its work and needs financial aid; but inspection has also a beneficial influence upon the school. From the national point of view it is not reasonable that a group of schools should be deprived of the help that Inspectors give. Up to the present a number of private schools have hesitated to invite inspection; but there are now signs that this attitude is changing. The position seems clear. The country is determined to organize and control secondary education in order that every child attending a secondary school may have an opportunity of a sound education. Secondary education is too important to be left in the hands of individuals some of whom may lack proper qualifications for the work. Organization implies knowledge. There must be, in the first place, a general survey that the Authorities may know exactly what provision exists. Subsequently there must be inspection in order that the Authorities may know that the schools are doing what they claim to do, and also in order that the schools may have the benefit of the wider experience and guidance.

Private schools cannot secure grants of public money unless they are known to, *i.e.* inspected by, the Authority. The difficulty that is felt in some quarters is that under inspection freedom of initiative will be stifled. This need not be, and care must be taken that it shall not be. On the other hand, when public money is spent on secondary education parents who prefer a private school should not be penalized by losing their share of the grant, and private schools should not be rendered less efficient than their neighbours owing to the lack of the grant that helps to keep their neighbour efficient. We confidently expect that in the immediate future the private schools will welcome the Board's Inspectors; and we are quite sure that the Board have no wish either to check initiative or to crush out of existence a group of schools doing valuable work.

## NOTES.

It is at the very end of the King's Speech in opening Parliament that we find the words "Proposals will be submitted to you for the development of a national system of education." We do not complain that education should come in at the tail of a number of other proposals. A measure of the magnitude outlined by Lord Haldane

*Education in the King's Speech.*

Parliament that we find the words "Proposals will be submitted to you for the development of a national system of education."

must not and cannot be put through Parliament in a hurry. The ground needs careful preparation before the seed can germinate. The Government are pledged to introduce their measure, but it is clear that they will not do more in this Session than lay their proposals before Parliament and the country. These proposals are still somewhat shadowy, though their general aim is evidently to co-ordinate all grades of education and to remove the barriers that exist between the primary and secondary groups of schools. The important matter is to arouse a general feeling in the country that education really matters and to stimulate an inquiry into the essential principles. As to details there is nothing to add to our leading article of last month.

"If Lord Haldane has his head in the stars, I intend to plant my foot firmly on the earth," *Lord Haldane* said Mr. Pease to the members of the *"in the Stars."* National Union of Teachers at Sheffield last month. There was in his speech a certain note of irritation against, and of disagreement with, Lord Haldane. He was careful to point out that Lord Haldane's proposals had been initiated by the Board of Education. This is probably true. Lord Haldane must have had many consultations with the officers of the Board while he was studying the subject of education. When one wants to know anything one gets the best expert information one can. Lord Haldane was careful in his Manchester speech to say that he was working in co-operation with Mr. Pease. But Mr. Pease lays great stress on his desire that his term of office should be signalized by important reforms. This would appear to be almost as important as the reforms themselves. His address was largely occupied with the denominational problem, which he declared to be insoluble. This is cold comfort indeed. The Lord Chancellor believes that if we can set our minds upon a lofty ideal we shall acquire an enthusiasm that will enable us to surmount the denominational problem without difficulty. His is the more hopeful view. Faith is needed for reform. Signs of this faith were not apparent in Mr. Pease's address.

MR. PEASE also laid great stress upon the necessity of "getting the best brains" at the top. *Brains or Heart.* We certainly want to give to every child the opportunity of acquiring the best education that the times have to offer and that the child is capable of assimilating. But an obvious danger lurks in this often-repeated claim that the nation requires the services of the best brains it can produce. It is possible for the most highly developed intellectual powers to be combined with depraved morality. In such case the better the brains the greater the danger to the nation. Intellectual education is not all. Some years ago Prof. Sadler wrote: "The moral effects of educational enlightenment have been a grievous disappointment to the more sanguine among educational reformers." As a nation we are growing in knowledge and in material

prosperity, but it is a question if we are growing in moral power. It is moral power that really matters, and knowledge is a necessary condition to its sound exercise; but knowledge of itself does not produce morality. The schools know this, although it may not be proclaimed on the time-tables.

PROF. FINDLAY'S lecture to the College of Preceptors last month proved a most valuable contribution to the study of the Montessori method. He gave an account of certain experiments that had been conducted at the Fielden School in Manchester. We have had much talk about the claims of the Italian doctor—some well informed, some the reverse—but we have lacked definite inquiry and investigation. Prof. Findlay claims with justice that the conditions at the Fielden School are those in which a careful scientific investigation can be carried out with the expectation of accurately assessing results. Next month we hope to publish a full report of this important address, which is sure to attract the notice of all students of education, both in this country and in the United States. Pending the issue of the full report, we may say that Prof. Findlay and his lieutenant, Miss Steel, beginning with no predisposition in favour of the system, were convinced, after five months' experience, that a certain amount of time given to individual exercises of the Montessori type is distinctly beneficial.

SOME months ago we said that we could not believe that Madame Montessori made a fetish of her didactic material. Prof. Findlay takes the same view. In his experiments at Manchester the children were occupied individually with a "toy of the Montessori type" for about half the morning. The complete apparatus was not in use. In some quarters this moderation will discredit the experiment. In our view, this is an entirely wrong attitude to take. One of Madame Montessori's principles is that the individual training of the senses by means of certain material or toys produces valuable results. It is pedantry to say that the whole school period must be given to individual work, and that the whole of the twenty-five items must be used. This is the way in which Froebel's Gifts became formalized and barren. It is sometimes easier to accept the mechanical apparatus and to neglect the spirit. It is interesting to note that Miss Steel and her two assistants (with fifteen children) find the position of observer to be harder work than teaching.

BEFORE long we shall hope to have news from the Teachers' Registration Council in reference to the conditions of qualifications. The most important and the most difficult part of the task before the Council is to decide on these conditions; and it is well that the various questions involved should be fully discussed in successive meetings

before any announcement is made. No doubt, in due course, the Council will communicate with the Press, and so prevent the dissemination of unauthorized rumours whether well or ill founded. The Register, when formed, must satisfy certain conditions. It must be issued in such a form as to be useful to the scholastic profession, to appointing bodies, and to the public generally. A mere alphabetical list of thousands of names will not meet this condition. There is, at present, no compulsion upon teachers to submit their names for registration; therefore the Register must be in such a form as to make it a distinction to be admitted. Here, again, an alphabetical list of names will fail to attract.

As to the conditions of admission, there must be variation. Certain conditions may be exacted from entrants during the next one, two, or three years. Certain other conditions, which we may call permanent conditions, though, of course, they may from time to time be modified, will be exacted after the period of grace. Yet a third set of conditions must be laid down for those who are already established and experienced teachers. For the permanent conditions three things will be demanded—professional training, academic qualification, experience. The training and the academic qualification must vary considerably, and, in our opinion, it would be impossible to demand one uniform standard. There must be a number of sections, perhaps as many as twenty, to each of which certain conditions of entrance will be attached. Without the sections the Register would be of little use, and it would fail to attract entrants. It will also be necessary to provide opportunities of moving from one section to another in cases where a teacher gains additional qualifications.

WE give on another page the full text of a Memorial on Education that has been presented to the Prime Minister. The list of signatures is too long to give, but we may say that it includes a number of those persons who are most influential and most sympathetic towards fuller educational opportunities. The speech of the Lord Chancellor, to which frequent reference has been made, has set free a vast amount of feeling that was awaiting an opportune moment for its expression. The memorialists think "that large measures of social reform require for their full realization the compelling powers of lofty ideals which only a truly national education can inspire." They believe "that all sections of the nation are now more than ever disposed towards effective mutual endeavours to develop the intellectual, moral, and spiritual faculties of each citizen." "Treated as an affair of the spirit," education "would unite all the spiritual forces of the nation in a large tolerance and charity, for the protection and nurture of the unfolding spirit and character of each individual child."

THE words we have just quoted are splendid, and carry with them both inspiration and conviction. The early efforts of organized national education were intended to remove the reproach of ignorance of the arts of reading and writing, arts necessary to our civilized life. After forty years we have passed to another stage. Knowledge is of itself insufficient to life. And, indeed, schools as they exist, do afford a training ground for the development of moral and spiritual qualities. Yet the intellectual qualities are put first: the general public, *i.e.*, the parents, are apt to judge a school by its examination successes alone. The time has now come to proclaim boldly that the aim of education is to afford the best opportunities possible for the growth, development, and practice of spiritual and moral qualities. The right practice of these qualities is helped by knowledge. If we can become imbued with a high ideal, we shall, as Lord Haldane said, take in our stride the denominational difficulties. We shall become more tolerant, not because we become more indifferent, but because we respect more and more the individualities of others whose spiritual thoughts are different from our own.

WE are asked to state that the Law Accident Insurance Society has formulated a scheme by means of which the principal of a school can insure the whole of his pupils against illness, and so prevent loss to himself when a pupil is prevented by illness from attending school. Certainly the remission of fees on account of illness bears hardly upon the principal of a school, whose expenses are not lightened in proportion to the fee that he loses. A practical scheme of insurance might be valuable. We are informed that the scheme is by no means new; that it has been tried by at least two other offices; and that it has broken down owing to the necessity of charging high premiums. The proposal before us gives no figures, but suggests that parents should pay the premium. It would not be easy to ensure this. But we agree that the matter is of vital importance, and if a suitable scheme be provided it ought to meet with support.

WE would call the attention of our readers to an article of especial importance by the Head Master of Eton, which we publish in this issue. The subject is a difficult one to treat, because it requires composure, simplicity, directness, and reverence. Composure will come with a steady effort to face the difficulties and with an increased familiarity with the matter to be taught. We have to acquire the suitable vocabulary and the habit of expression. Familiarity with the subject, which is essential to its treatment, does not imply any loss of reverence. The teaching, as Canon Lyttelton well points out, must not be given merely in the cold light of impersonal science, but it must be part of the teaching of religion.

## SUMMARY OF THE MONTH.

MR. M. E. SADLER, lecturing at the Leeds University on John Locke, said (we quote from the *Manchester Guardian*):—

Locke was the first to insist upon the essential importance of health in the training of children. A skilful psychologist, he perceived that "knowing is seeing," and therefore that the forming of impressions from direct experience was a more vivid power in education than the memorizing of masses of words which attempted to convey experience at second hand. A man of the world, he scorned affectation and pedantry, and attached the highest importance to good judgment and to accuracy of observation. A great economist, he desired reforms which would make the English grammar schools the nursery of good men of business. Believing in the original equality of all men (though observant of the difference of quality in their mental powers), he emphasized the primary importance of a sound education among the other factors in human progress. He thus became one of the pioneers of public instruction, as a means to greater equality of opportunity. Deeming the basis of property to be "the mixing of a man's labour" with what God had originally given to all men in common, he maintained that manual training and the learning of a trade should form part of the education even of those born to a competence. And, in the conviction that virtue is the first and most necessary of a man's endowments, he made the teaching of a simple faith in God and of the practice of prayer the fundamentals of early education.

MR. NOWELL SMITH, Head Master of Sherborne School, in the course of a lecture on "Schoolmastering as a Profession," delivered at New College, Oxford, said, in reference to the need of getting good teachers:

What, then, remained to be done? One alternative was to be content with the present state of affairs; a second was to increase the amount of income that a man could make in the ordinary ranks of schoolmastering in public schools; and a third was to stir up people to think of the profession as a field of service to which they could offer themselves in spite of the want of material inducements. Among the people who nowadays went to the Bar or spent a few years amusing themselves with art, music, and literature, having independent means, and did not settle down to any particular form of work in the end, there were probably many who, if they put their gifts to a much more profitable use to the world, would ultimately find it pleasurable to themselves if they devoted their energies to the direct task of bringing up the next generation of Englishmen. A schoolmaster with no private means must be full of enthusiasm for teaching, and must count everything else as dross compared with the main purpose of his life.—*Times*.

MR. H. J. MACKINDER writes to the *Times* to utter a warning against the too ready acceptance of the cinematograph as an educational instrument. He says:—

As chairman of the Council of the Geographical Association, a body which consists of some nine hundred expert teachers of geography in all parts of the country, I desire by your courtesy to place on record the views of my Council in regard to the proposed adoption of the cinematograph for educational purposes, to which attention is drawn in your issue of to-day by the debate in the Education Committee of the London County Council. At our last meeting it was unanimously agreed that we should protest against any large expenditure of public money for this purpose, unless after considerable experiment and adequate discussion by those who are practically experienced in education. We realize that there are some things which only the cinematograph can do, but in our opinion there is grave danger of its abuse, especially in connexion with the teaching of geography. It is the constant aim of modern teachers of that subject to compel their pupils to visualize accurately and at will. Obviously effort must be called for on the part of the pupils, and we fear that the use of the cinematograph, except on rare occasions, will tend to decrease this effort and thus to weaken the imaginative power instead of strengthening it.

THE *Manchester Guardian* has been making inquiries from head teachers of elementary schools about kinema exhibitions, their influence, and the frequency of attendance. One head master writes:

Personally, I have found that the visits of children to the picture theatres have tended to stimulate the imagination, to cultivate closer observation, and generally to make them more alert. On the other hand, the picture theatre has created a love of excitement which needs curbing. In some instances it has tempted children to get

money by any means in order to pay for admission. But these cases can be dealt with, as they are generally soon discovered by the parent or the teacher. The kinematograph is destined to play a great part in the future work of colleges and schools. A small machine, with non-inflammable film that can be used in the classroom and at a cost well within the reach of our Local Education Authorities, has now been produced.

#### ANOTHER head master says :

I have made inquiries in my school to find how frequently the children visit picture-shows. This school is situated in Ancoats, one of the poorest districts in Manchester, and the children, with very few exceptions, come from very poor homes. Of 252 children, boys and girls of ages seven to thirteen years, I found that 219, or 87 per cent., were in the habit of visiting picture-houses frequently. Of these, two boys went every night, 37 children went twice, and 103 went once every week; 29, or 11½ per cent., went occasionally—once a month or so—and only 4, or 1½ per cent., had never seen the kinematograph. I expect similar facts will be found to obtain in other districts, and in my opinion the habit of attending a place of entertainment, irrespective of the fare provided, is one likely to be detrimental in many ways to children. Many of them, I find, go to the second houses—i.e., 9 to 11 o'clock, and this is an aggravation of the bad habit, since it is getting the children into the way of going very late to bed. The loss of fresh air and necessary rest after a day in school makes them restless, inattentive, and dull during the next morning.

#### AND a third head master thus accounts for the popularity the picture shows :—

Boys wish more and more to evade anything requiring mental effort. All they want is to sit still and have the subject placed before them in a graphic manner. Picture-houses encourage this tendency. We have known boys to go to the picture-houses to escape home and other duties, staying there from opening to close secure from discovery. The desire to escape duties and seek for amusement seems to be fostered. In this district, although money for boots and clogs is often wanting, there seems no lack of picture-house money. On January 29 last out of 524 boys I found that 106 go occasionally but not once a week, 281 go at least once a week, 56 at least twice, 9 more times, and 1 every night. Those who go often do not get enough fresh air and outdoor play. They get up late in the morning, come late to school, and are lethargic all day.

#### A HEAD MISTRESS is less condemnatory. She says :—

Granted that the attendance of children at picture theatres is in moderation and confined to the hours of the afternoon or early evening; granted also that the theatres are hygienically constructed and well-conducted and the management placed in the hands of a refined, clean-minded, conscientious man who will refuse to show films unworthy of himself or his house, I fail to see how the children can be injuriously influenced.

THE need for a new type of secondary school for the children of wage-earners was urged by Prof. Findlay at a Conference of the Workers' Educational Association. From a report in the *Morning Post* we take the following passage :

The ideal to aim at was to recognize the need for a new type of social institution, the secondary school of the working classes, meeting for a few hours per week, and organized with that freedom and variety to which the youth who earned wages was entitled. When such an organization was designed, with its own type of teacher or manager dedicated to his peculiar task, the State would be entitled to step in and require registration and active membership on the part of all wage-earning youth of both sexes up to the age of eighteen. The State could rightly regulate the relation of the youth to his employer, just as in an earlier epoch trade guilds regulated the relations of the apprentice to his master. The cost of this organization would be considerable, but it would soon be repaid: first, by the diminution in crime and social misery, and, secondly, in the increased efficiency of the workman, not only during youth, but in all the years of adult labour. After the lapse of a century the social conscience was again being stirred, and opinion was ripe for a declaration that the youth of the country must not be sacrificed to labour before they had grown to full development.

IN reference to a statement that the first woman graduate in the world received her degree from the University of New Zealand, Mr. Kenneth W. Millican writes in the *Morning Post* :

I had always understood that Dr. Emily Blackwell studied and graduated as M.D. at the Western Reserve University, U.S.A. ;

that Dorothea Christine Erxleben (*née* Leporin) took her degree of M.D. at the University of Halle on June 12, 1754; that Laura Maria Catharina Bassia took a doctor's degree at the University of Bologna in 1732; that Anna Morandi Manzolini was Professor of Anatomy at the University of Bologna in the middle of the eighteenth century; that Dr. Maria delle Donne was a female Professor of Obstetrics at the same University in 1799; and that Dorothea Bocchi received the degree of M.D. at the University of Bologna in 1436, and was Professor of Medicine in that University. I have taken these few notes at random from my reading. They by no means, I believe, exhaust the known list of women graduates of Universities long before the nineteenth century.

THE following is the text of a memorial presented to the Prime Minister on the subject of education. It is signed by a large number of influential men and women :

Your Memorialists rejoice to have Lord Haldane's declaration that the Government feel a deep obligation to grapple at once with the question of national education. They realize that his speech at Manchester, on January 10, raises educational policy to a higher plane, and believe that public opinion can now be roused to a serious consideration of this great problem. They therefore respectfully urge upon you and upon the Government that a comprehensive reform of the national education, making for the good of the nation as a whole, be entered upon forthwith.

Your Memorialists are of opinion that large measures of social reform require for their full realization the compelling power of lofty ideals which only a truly national education can inspire. They believe, too, that all sections of the nation are now more than ever disposed towards effective mutual endeavours to develop the intellectual, moral, and spiritual faculties of each citizen as the surest means of alleviating the present discontents and of securing the stability and prosperity of the country.

Your Memorialists are of opinion that education does not divide, but unites men. Treated as an affair of the spirit, deeper than political, theological, and social differences, it would unite all the spiritual forces of the nation, in a large tolerance and charity, for the protection and nurture of the unfolding spirit and character of each individual child. Your Memorialists, therefore, urge that in order to meet the immediate needs of our people the serious concern of all schools should be the inculcation of those fundamental moral qualities upon which the welfare of States depends.

Your Memorialists are of opinion that this country has been slow, as compared with some other nations, in recognizing how greatly education increases national strength when it permeates every class of the community and makes for the unity of the nation. They therefore urge that adequate provision for education in all grades, from the primary school to the University, be made in every defined area of the population; that the artificial barriers between grade and grade should be, so far as possible, broken down, and facilities given to every child, whatever his birth or creed, to proceed unhindered to his appropriate development and towards a national ideal of intellectual, spiritual, and vocational efficiency.

In other matters your Memorialists are of opinion that the physical necessities and health of children should be cared for; that smaller classes, a broader curriculum, and more teachers, better trained and better paid, should be the rule in all schools; that in the period of adolescence the State should assume some firmer guardianship of youth, linking up the family with the school and instruction with wage-earning employment, whilst paying due respect to the rights of parents and the interests of employers; and that the provision, where needed, of the requisite premises should be the special care of the State.

THE Board of Education have just published a list of forty-one Holiday Courses in Modern Languages which will be held at different times during the present year, but mostly in the summer months. It should be clearly understood that the inclusion of a Course in this list is not to be interpreted as the expression by the Board of any opinion as to its efficiency or otherwise. Eight of the Courses are in German-speaking countries—viz., at Berlin, Freiburg-in-Breisgau, Greifswald, Jena, Narburg, Salzburg, Lübeck, and Kaiserslautern; three in French Switzerland—at Geneva, Lausanne, and Neuchâtel; three in Spain—at Madrid, Burgos, and Santander; one in Italy—at Florence; four in Great Britain—at Edinburgh, Oxford, London, and Ramsgate; and the rest in France—at Besançon, Dijon, Grenoble, Nancy, Boulogne, St. Malo, Bayeux, Granville, Caen, Havre, Honfleur, Lisieux, Paris, Rouen, St. Servan, St. Valéry-sur-Somme, Tours, Trouville, and Versailles. The table published by the Board of Education gives the date of each Course, the fees, return fares from London, lowest cost of boarding, principal subject of instruction, address of

Local Secretary, and other details of importance to intending students. This paper is no longer distributed gratuitously, and copies (price 2d., by post 2½d.) can be obtained direct from Messrs. Wyman & Sons, Fetter Lane, London, E.C., or through any bookseller.

UNDER the supervision of the British Academy, the Universities, and the learned societies generally, the International Congress of Historical Studies will hold its meeting in London from April 2 to April 8. Those who desire to see the History of Education accorded its due place will note with pleasure that Education and Social Science form between them a sub-section of the division of Medieval and Modern Civilization. Mr. Sadler and Dr. Foster Watson are both reading papers, the first on "The Conflict of Social Ideals in the History of English Education," and Prof. Watson on "Vives," of whom he is the authoritative expositor. But the Congress includes within its scope the whole field of historical study, and a very attractive list of papers, British and foreign, has been prepared. The Executive Committee is presided over by Dr. A. W. Ward, P.B.A., and its secretary is Prof. J. Gollancz, Secretary of the British Academy.

### THE PRIVATE SCHOOLS' DEPUTATION TO THE BOARD OF EDUCATION.

ON March 19 the Secretary of the Board of Education received a deputation which desired to lay before the Board certain proposals in reference to private schools. The deputation was the outcome of a meeting held at the University of London in January, and was organized by a Committee consisting of representatives of the Private Schools Association, the Teachers' Guild, and the College of Preceptors. The Association was represented by Mr. Aveling, Miss Earl, Mr. Maxwell, and Dr. Sibly; the Guild by Miss Cocking and Miss Martin; the College by the Dean (Mr. Rushbrooke), Mr. Charles, and Mr. Millar Inglis.

The deputation was received in the Conference Room of the Board by the Secretary (Sir L. A. Selby-Bigge), the Chief Assistant-Secretary for Secondary Education (Mr. Bruce), the Chief Inspector of Secondary Schools (Mr. Fletcher), one of the Assistant Secretaries in the Secondary Branch (Mr. R. P. Scott), and the Secretary's Private Secretary (Mr. Sidgwick).

The resolutions which had been previously sent to the Board, and which had been ratified by the three bodies in question, are:

A.—(1) That, both on general grounds and in the special interests of educational experiment, it is desirable that efficient private schools should be preserved.

(2) That (i) scholarships awarded by any Local Authorities should, subject to the usual limitations as to age, income, and place of residence, be open to pupils without regard to place of education; and that (ii) subject to the approval of the Local Authority, successful candidates from private schools should be allowed to hold their scholarships at such schools.

(3) That the general standard of purely educational efficiency required for recognition by the Board of Education from private schools should not be lower than that which is required from schools publicly aided or maintained; but that every reasonable concession with regard to demands as to structure and equipment should be made.

(4) That there is need for the continued existence of small private schools of a preparatory character near to the homes of young children, and that some form of recognition should be made if such schools can be shown to be doing useful service under proper and hygienic conditions.

B.—(1) That, before further public provision for secondary schools is made in any area, a Council, in exercising their powers, shall have regard to any existing supply of efficient schools or colleges as required by section 2 (2) of the Education

Act, 1902. (It appears to the members of the Conference that this section of the Act has not been duly enforced in the past.)

(2) That the grants paid by the Board of Education for pupils under the age of twelve at secondary schools should be extended to include all such pupils whether previously educated in elementary schools or not.

Mr. RUSHBROOKE pointed out the danger of uniformity in administration, and drew a distinction between efficiency in teaching and efficiency in buildings and equipment. He urged that the latter was non-essential, the real essential being the influence of good teaching. He suggested that the Board might issue two certificates of efficiency; one for teaching and the other for equipment. In reply to a question whether the Associations spoke only for efficient private schools and whether they were prepared to exclude non-efficient schools from membership, it was stated that the deputation spoke only for schools which were believed to be efficient.

The Secretary then asked whether the Association had information as to the number of private schools, the number of their pupils, and the details of their organization. He pointed out that one great difficulty in the way of the Local Authorities or of the Board in taking the private schools into account as a part of the educational supply was the lack of information available about these schools.

Dr. SIBLY said they were willing to exclude non-efficient schools from membership, but that like everyone else they had no criterion to guide them as to which schools were efficient. He desired an extension of the Board's inspection so as to include a number of schools that at present hesitated to invite inspection from a feeling that their equipment would not come up to the standard of the Board. In answer to a question, he admitted that on the whole bad equipment was prejudicial to good education, but he thought it possible to over-emphasize equipment, which was less important than the spirit that pervaded the school. He added that private schools would at once proceed to improve their buildings and equipment if they had a feeling of security. They welcomed competition and had no fear that they could not hold their own unless they were thwarted by hostile administrative action. He would welcome inspection, but desired not to be fettered by regulations as to curriculum.

It was here pointed out that the Board's building regulations referred to new schools only, and that the Board had no rigid standard with regard to existing schools. It was also pointed out that no private school which had applied to the Board for recognition as efficient had been refused recognition on the ground of buildings or equipment alone.

Miss EARL spoke of her own experience in reference to recognition by the Board, and Miss MARTIN urged that preparatory day schools were necessary for young children who could not go long distances. Such schools were usually in private hands and deserved recognition. She had found inspection most helpful.

Mr. MILLAR INGLIS supported Dr. Sibly's statement that private-school masters would at once spend more money on equipment if a feeling of greater security could be given.

Mr. CHARLES spoke in reference to the duty laid upon Local Authorities by the Act of 1902 of taking into account any existing supply of efficient schools. He argued that the duty was laid upon them, and that therefore it was their business to institute inquiries and find out what schools existed in the area and how far they were efficient.

The SECRETARY then said that the Board could have no wish to discourage any school that was doing good experimental work; on the contrary, the Board wished to know more about



such schools. He recognized that private schools often carried out valuable educational experiments, but they could not claim a monopoly in this and must not under-estimate the experimental work done in public schools. The Board would welcome fuller information about private schools, and he gathered that the schools for which the deputation spoke would not be unwilling to supply the information. He had great pleasure in meeting the deputation and hoped that they would come again and have an informal conversation when they had other matters that they wished to lay before the Board.

After thanking the Secretary for their reception, the deputation withdrew.

## EUGENICS IN EDUCATION. EUGENICS EDUCATION CONFERENCE.

[COMMUNICATED BY THE HON. SECRETARY OF THE EUGENICS EDUCATION SOCIETY.]

THE Eugenics Education Conference was held on Saturday, March 1, under the Presidency of Major L. Darwin, at the University of London, South Kensington. About a thousand head masters and mistresses of elementary and secondary schools and training colleges were present. The meetings were held in the large hall at the University, which was well filled. On the platform were the delegates of the National Union of Teachers, the Head Teachers' Association, and other bodies, the head masters and mistresses of representative public and secondary schools and training colleges.

Major L. Darwin opened the session by welcoming the members of the Conference, and announcing that the Conference had been organized by the Eugenics Education Society as an indirect consequence of the growing interest taken in educational circles in the question of sex-hygiene; that is, in considering what educational methods are best calculated to safeguard the young and inexperienced against the many dangers connected with sex. Numerous inquirers have come to the office under the impression that sex-hygiene and eugenics were identical, which certainly they were not. He was not armed with any mandate from his society to express on their behalf any opinion concerning sex-hygiene; except, perhaps, to endorse the views of the Educational Committee, who held that it was essential that teachers should not be ignorant on such matters, and that the passing on to their pupils of the knowledge they acquired was a matter only to be undertaken slowly, cautiously, and indirectly. To this he might perhaps add his own belief that ignorance seldom made for safety. But he was there to plead in the name of his society, and with all the force at his command, that in all institutions where sex-hygiene was taught, it ought to be taught in connexion with the eugenic ideal; for not only would this subject thus be elevated and rendered less difficult, but at the same time the teachers would be doing their best to ensure the future progress of the race.

Some felt that the difficulty in postulating the ideal type formed an insuperable barrier to the formation of a eugenic ideal. If it is asked, Are we trying to ensure the advancement of the race—surely we must state clearly whether we are endeavouring to march? we in our turn ask whether the building of Utopias in the past has been of any real help to man in his upward path, should we not advance slowly, step by step, as our knowledge increases? No one denies the advisability of reducing the number of the insane, inebriate, feeble-minded and unemployable, and all agree as to the advisability of having as many men and women as possible of high character, great ability, and good physique. Progress is possible in many regions, and enough work is ready to our hand to occupy the eugenics of several generations. For the present we will endeavour to eliminate the definitely bad and encourage the definitely good. The character in one generation must in a manner depend on the marriages made in the preceding generation. We in this generation are absolutely responsible for the production of the next generation, and therefore, of all mankind in the future. Our problem is to inculcate the idea of racial

responsibility, and this can only be done by making the inculcation of the eugenic ideal part of our national system of education. Education is in three parts—practical, intellectual, and moral. Eugenic education belongs mainly to moral education and partly to the intellectual. The teachers, by exerting the influence on the ideals of their pupils, can do much to form those standards which will guide their affections in later years when they come to select their partners in marriage. In short, the conclusion I wish to urge with all my force is that by implanting the eugenic ideal in the minds of children to-day, you will be taking a definite step towards ensuring the racial progress of our nation in the future.

Mr. Nicholls, ex-President of the National Union of Teachers, gave a paper on "The Difficulties in the way of Introducing Eugenics into the Public Elementary Schools." He felt the main difficulties lay in the youth of the pupils in leaving school, and the difficulty of teaching sex-hygiene to large classes of children, and that the most suitable educator on this point was the parent. Also public opinion was not yet in favour of it, nor were many of the education authorities, so teachers would be liable to severe reproof if they touched on sex-education even in an elementary way. At a later stage from fifteen to seventeen, much good might be done by quiet talks from the teacher. It may be taken for granted that no persons are more interested in racial improvement than the teachers, and none can bear better testimony as to the sad results of physical and mental deterioration.

Mr. J. H. Badley, Head Master of Bedales School, replied in a paper entitled "How the Difficulties in teaching Eugenics in the School may be Overcome." He maintained that the difficulty of handling the subject of sex-hygiene in schools was acknowledged by all, but that the evils of the present *laissez-faire* policy were also known to all educationists; that, if the facts are not learnt in the right way, they will be learnt in the wrong; and that it is most important that the right idea of the laws of life should be given to the child from the first. His experience was of secondary, not of elementary schools; therefore the conditions under which he worked were different. To him, eugenics had two sides, not only the method of *breeding* the best, but also the method of *growing* the best. It was in the latter and educational sense they could help. He did not wish to see it on the school time-table as a class subject. There could not be much direct class teaching, but the best possible introduction to the evolutionary principle came through history, embryology and nature study, and was naturally understood when the surroundings of the child were those of the country, with its vegetable and animal life under natural observation.

But, as well as the head knowledge, there was what he would call heart knowledge, and that, he thought, should be given individually from master to boy, or from parent to child, when possible. The question as to what is the best age to give such personal teaching is often asked, and how the subject should be treated. The method should depend on the age of the child, taking it from the school standpoint only. There were two occasions which should be made for speaking on this subject: when the children arrived at school and before they left. If uncertain when to speak or how much to say, err, if at all, by speaking too soon rather than too late, and saying more rather than less than may be needed.

The Hon. and Rev. Edward Lyttelton spoke on "Eugenics and Ideals," saying that some misgivings existed as to the ideals of eugenics being in some sense divergent from those of religious educationists. There was a certain fluidity about both. The aim of both was correctly described as implanting the truth in young minds. The religious aim was primarily a bringing of the human mind into touch with the Divine mind. The eugenic aim was not in conflict with this, but would emphasize the indispensable character of training in science, and foster the scientific spirit that the action of heredity and environment might be discerned and the claims of posterity on the present generation clearly recognized. There was no conflict here. Probably eugenics might be said to aim at supplementing the religious ideal with something of a more intellectual kind. Religious people no longer objected to science being taught to the young. It was only a minority who now remained indifferent to the present social conditions, and, when once a man felt this world demands an expenditure of his energies in the cause of its improvement, he must see

that, in the grave matters connected with marriage and the laws of sex, science had a message for him which he might not ignore.

Prof. J. Arthur Thomson, of the University, Aberdeen, gave a paper entitled "Towards the Introduction of the Eugenic Ideal in School Education," in which he discussed both the need and the possible method of introducing such teaching. In introducing the "Ideal," the plan would not be one of dogma or coercion, but a development of the inherent capacity for hero-worship—a pride of race. It was not possible to give direct teaching of racial responsibility, but to discover the right surroundings which would set free the existing stimuli to eugenic conduct—conduct such as the artistic stimulus through poem and song, the stimulus of action: *i.e.*, games, discipline, &c., and knowledge. The idea that the present is the child of the past and the parent of the future was one of those true and deep ideas which were also clear. It could be made real in many ways—the best, perhaps, through zoology and botany. With regard to the method. There was no doubt in the minds of many that direct instruction in matters of sex would go far to reduce many existing evils. For young children theoretically the best instruction was through the parents; but, to face facts, few did it, and fewer did it well. The information was acquired haphazard; therefore, parental instruction needed supplementing. All admitted the advisability of voluntary courses of instruction in bodily and mental hygiene, the art of life, genetics and eugenics, but the college age was too late to begin in most cases. The lack of sex instruction was one of the great barriers to eugenic progress. Eugenics, in the words of Sir Francis Galton, was "a virile creed, full of hopefulness, and appealing to many of the noblest feelings of our nature."

## THE COLLEGE OF PRECEPTORS.

### MEETING OF THE COUNCIL.

A MEETING of the Council took place at the College, Bloomsbury Square, W.C., on March 15. Present: Rev. Dr. Scott, Vice-President, in the chair; Dr. Armitage Smith, Mr. Bain, Mr. Barlet, Rev. J. B. Blomfield, Mr. Charles, Prof. Dixon, Mrs. Felkin, Mr. Hawe, Mr. Millar Inglis, Rev. R. Lee, Mr. Longsdon, Mr. Morgan, Mr. Pendlebury, Mr. Rushbrooke, Dr. Sibly, Rev. C. J. Smith, Mr. Somerville, Mr. Starbuck, Rev. Canon Swallow, Mr. Thornton, Mr. Vincent, and Mr. Wilson.

The Secretary reported that Practical Examinations for Certificates of Ability to Teach had been held at the Holborn Estate Grammar Schools on the 24th and 25th of February. He was directed to express the thanks of the Council to the Head Master and the Head Mistress for affording facilities for the examinations.

He reported that the Corporation of Accountants, Glasgow, had consented to recognize the College of Preceptors' Third Class Certificate as exempting from the Corporation's Preliminary examination.

The Diploma of Licentiate was granted to Mr. F. C. Moore, who had satisfied the prescribed conditions.

On the recommendation of the Finance Committee, it was resolved that, in order to commemorate the late Secretary's conspicuous services to the College, a portrait of Mr. Hodgson be placed in the Council Room, and that his name be attached to one of the Prizes for General Proficiency offered at the Certificate Examinations.

It was resolved that an endeavour be made to secure certain new privileges for members of the College.

On the recommendation of the Examination Committee, it was resolved that Mr. G. E. Green, M.A., be appointed Reviser in English History.

The Dean, Mr. Brown, and Mr. Charles were appointed to represent the College on a deputation to the Board of Education to press the claims of private schools.

Mr. J. Bayley and Mr. F. Ritchie were elected members of the Council.

Mr. Hawe and Mr. Starbuck were appointed representatives

of the College on the Joint Scholarships Board for the current year.

Mr. Millar Inglis was appointed an additional member of the House Committee.

The Council appointed October 25, 1913, and March 28, 1914, to be the dates of the next two Ordinary General Meetings of the members of the College.

The following persons were elected members of the College:—

Rev. A. W. Batchelor, M.A., D.C.L., L.C.P., The Vicarage, Cookham, Berks.

Mr. W. H. K. de Creux-Hutchinson, A.C.P., The Grammar School, Brentwood.

Mr. H. A. England, A.C.P., 45 Chancer Road, Forest Gate, E.  
Mr. T. Maunder, Ascham House School, West End Avenue, Harrogate.

Mr. J. Malcolm Mitchell, B.A., Saltburn, Mountfield Road, Finchley, N.

Miss M. A. Parton, 203 Grove Lane, Camberwell, S.E.

The following were elected honorary members of the College:—

Prof. J. S. Reid, M.A., LL.M., Litt.D., Fellow of Caius College, Professor of Ancient History in the University of Cambridge.

Rev. James Gilliland Simpson, D.D., Canon of St. Paul's.

The following books had been presented to the Library since the last meeting of the Council:—

By BLACKIE & SON.—Blackie's Elementary Regional and Practical Geographies (Asia, and General Survey of the World); Blackie's English Texts (Don Quixote Abridged); Bloomer's Singing Games; Good's Garden Work; Lalitte's Mörimec's Lettres d'Espagne; Magee's Roland et Fleur de Mai; Moore's Moliere's Monsieur de Pourceaugnac; Saunois' Gerard's Le Tueur de Lions.

By the OXFORD UNIVERSITY PRESS.—Bartholomew's Physical and Political School Atlas; Brown's Selections from Ovid, Part II; Cleghorn's Burns's Poems Published in 1786; Goodwill's Elementary Mechanics; Makover and Blackwell's English Essays, 1600-1900; Mills's Thucydides' Histories, Book II; Scott's Dickens's Tale of Two Cities; Scott and Knight's Lessons from the Old Testament, Part I; Wheeler's Thackeray's English Humorists.

By the UNIVERSITY TUTORIAL PRESS.—Clayton and Hartog's Matriculation French Essays; Richards and Walker's Gospel of St. Mark; Shepherd's Qualitative Determination of Organic Compounds.

The Medical Register, 1913.

The Dentists' Register, 1913.

The Register of Veterinary Surgeons, 1913.

## THE COLLEGE OF PRECEPTORS.

### PRACTICAL EXAMINATION FOR CERTIFICATES OF ABILITY TO TEACH.

The following is a list of the successful candidates at the Examination held in February, 1913:—

<i>Class I.</i>		
Hughes, A. W.	Hunkin, Miss E.	Pugh, J.
<i>Class II.</i>		
Doidge, Miss H.	Henry, Miss G. M.	

## THE COLLEGE OF PRECEPTORS.

### PROFESSIONAL PRELIMINARY EXAMINATION.

#### PASS LIST.

MARCH, 1913.

The Professional Preliminary Examination was held on the 4th, 5th, and 6th of March in London and at ten other local centres—*viz.*, Birmingham, Bristol, Cardiff, Edinburgh, Inverness, Leeds, Liverpool, Manchester, Newcastle-on-Tyne, Nottingham. The following candidates obtained Certificates:—

#### First Class [or Senior].

##### Pass Division.

Bygott, E.	Jones, E. W.	Noad, F. M. a.
Goodyear, F. G.	Jones, J. T.	Webb, H. M. T.

**Second Class [or Junior].**

*Honours Division.*

Baxter, C. <i>a.al.</i>	Timperley, R. M. <i>a.al.</i>
Goldsmith, Miss I. M. <i>a.al.ch.</i>	Umpleby, Miss M. H. J.
Lawrence, F.	Veitch, C. <i>g.</i>
Robertson, R. D. F. <i>l.</i>	

*Pass Division.*

Amon, H.	Forsyth, C. <i>g.f.</i>	Piercy, G. B.
Ashling, H. <i>a.al.</i>	Hill, A. <i>g.</i>	Price, W. H. <i>al.</i>
Ball, R. W. C.	Greenberg, S.	Prynne, E.
Bartle, A. F.	Grossmann, S.	Ratcliffe, S.
Beaumont, A.	Gurd, R. V. <i>a.al.</i>	Reed, J. W. H.
Beaumont, W. <i>e.</i>	Hallett, B. E. <i>a.</i>	Rigby, W. G. M.
Bell R. G.	Herbert, J.	Robinson, J. A. <i>a. al.</i>
Bernhardt, Miss B. C.	Hill, A. <i>g.</i>	Robinson, O. F. W.
Bloomer, A. C. <i>a.</i>	Homer, P. C. H.	Ryder, H. G.
Bonnett, E. J. S.	Hopson, M. G. S.	Saunders, R. J.
Boswood, L. J.	Jones, R. D.	Sawyer, A. C.
Brooke-Thorne, H. V.	Joye, L. J. H.	Smith, G. F.
Brown, L. A.	Kempster, A. A. D. <i>g.al.</i>	Smylie, N.
Cofman, Miss E. <i>f.</i>	King, C. W. A. <i>al.f.</i>	Steel, J. S.
Cook, G. H. H. <i>g.a.al.</i>	Laurence, E. H.	Stevens, C. J. <i>all.</i>
Cooper, C. R.	Lawson, D.	Stocken, L. O.
Course, R. R.	Lewis, J. S.	Sunbul, Y. A.
Courtneidge, C.	Lywood, H. D. M.	Turner, W. H.
Dawes, H. B.	MacDonnell, J. J. M. <i>g.</i>	Unger, K. R.
Doughty, L. A.	Milton, W. E.	Watson, N. H. <i>al.</i>
Douglas, J.	Morris, S. G.	Whitlock, D. K.
Duffy, Miss I.	Munday, R. B. <i>al.</i>	Willcocks, J. S.
Edney, C. H.	Nisbet, W. H.	Williams, T. P. <i>l.</i>
El Shakankiry, M. N.	Nunn, E. A.	Winn, T. L. <i>al.</i>
Evans, J. P. <i>lt.</i>	Parker, Miss B.	Wood, P. G. <i>al.</i>
Evans, R. H.	Penketh, L. T.	Woodward, W. A.
Forbes, J.	Pickles, C. E.	Worth, H. M.

N.B.—The small italic letters denote that the Candidate to whose name they are attached was distinguished in the following subjects respectively:—

<i>a.</i> = Arithmetic.	<i>f.</i> = French.
<i>al.</i> = Algebra.	<i>g.</i> = Geography.
<i>ch.</i> = Chemistry.	<i>l.</i> = Latin.
<i>e.</i> = English.	<i>lt.</i> = Light and Heat.

**OPENINGS FOR EDUCATED WOMEN IN CANADA.**

[COMMUNICATED.]

EARL GREY presided over a crowded meeting of the Royal Society of Arts last month and paid a high tribute to the work of Miss Ella C. Sykes, who has recently made a tour in Canada to ascertain the openings there for educated women. Miss Sykes has previously lectured before the same society on her travels in Persia, and Earl Grey described her as a skilled and accurate observer, saying that in his seven years' experience her conclusions were correct. The Hon. Mrs. N. Grosvenor, the founder of the Colonial Intelligence League, said that Miss Sykes had sacrificed time and gained valuable experience for the cause of women. There were no "half timers" on poor pay in the Overseas Dominions, as was too often the case in England, where we had no agricultural labourers earning £1 a day but many who could not make it in one week.

The Colonial Intelligence League for Educated Women was established a couple of years ago, and Miss Ella C. Sykes is a capable exponent of its work. She volunteered as honorary delegate on a six months' tour in Canada, and during that time took five temporary posts to gain actual experience of the work. She said that the type that Canada is open for is the strong adaptable girl, skilled in the needs of a new country. Practical accomplishments found useful are school-teaching, dressmaking, millinery, phonography—above all, she must be able to cook and wash, as servants are only kept in 5 per cent. of the homes. "Too old at forty" applies, alas, with equal strength in a new country as in the old. That there are excellent openings for women is shown by the fact that west of Winnipeg the men outnumber them twelve to one and in some new towns a hundred to one. In a country thirty times the size of the United Kingdom, they may still say, with Earl Grey, "I live in the Empire, but Canada is my home." From first to last there is little of the call of the prairie, but much of the call of the kitchen! "Three cows to milk before breakfast, make the butter, cook and wash for a couple of farmers and the hired men," is a tall order that few girls would be equal to tackle; and in some cases laundry work is expected! In another experience the work seemed endless. Three hot meals a day,

and after each the washing-up for nine people. The dining-room to sweep after each meal, the kitchen floor to wash each day; milk pails and pans to be scalded. The weekly wash, followed by ironing, took several hours of a couple of days, to say nothing of churning, butter-making, bottling fruit.

**THE BRIGHTER SIDE.**

In the Pacific Slope and Vancouver Island Miss Sykes found a different state of affairs. There is a large Anglo-Indian community, and ladies give their "helps" a pleasant life, tennis and dances being often possible after working hours. Judging by the letters sent by girls in British Columbia, they are well content with the life. The large Western hospitals take probationers from twenty-two to thirty-four for a three years' course, and a well-paid future is assured. Prices are far better than in this country, private cases being paid £4 to £6 a week. Elementary school teachers are also greatly needed in Canada, and Miss Sykes was told by the Deputy Minister of Education in Alberta that he could find posts for a couple of hundred teachers annually. Girls helped out by the League have been earning £132 a year in their first posts, and board and lodging only costs £40. Shorthand typists are also delighted with their salaries of £8 to £20 a month. Skilled dressmakers are equally well paid, averaging eight to ten shillings a day, with meals included. It must be remembered that a coat and skirt which can be bought for £4 in England costs more than twice the money in the West. There is also a good opening for those with capital to run boarding-houses, restaurants, and tea-shops, but it is folly to go into such ventures without experience.

Outdoor life offers plenty of openings, and the League is starting a farm settlement for women, where girls trained in British colleges can gain the colonial experience necessary. Poultry farming pays well, but workers must be prepared to do all the work themselves. Market gardening and flower raising offer good openings, flowers being especially dear—roses fetching eight shillings a dozen, and arum lilies four shillings each. Still, high prices must not lead colonists to suppose "there are soft jobs in Canada." The League supplies reliable information; no girl should make the venture except under the advice of some such reliable authority. There is a loan fund connected with the movement from which half the passage money is advanced when necessary, and all candidates are examined as to fitness. Matrons accompany each party and make every safeguard possible. Girls are advised to lodge at the Y.W.C.A. or Government hotels, and those going to Vancouver or Victoria are met. The great point insisted on by Miss Sykes is that each girl shall be equipped for the work she seeks. It is too often said of us with truth that "the stock is all right, but the training is all wrong." The life is healthy, and the average girl who can cycle, play tennis or other games for hours, need have no fear on the score of health. The League has helped out 140 girls already, and it is gratifying to know that 95 per cent. are "making good." It cannot be too strongly urged, it may be added, that all emigrants to Canada should seek reliable advice from such bodies as the League and the leading emigration offices, and not place undue reliance on the roseate pictures sketched out for them by agencies. Dr. Parker was present at the meeting and spoke of the opening for well-trained teachers in Toronto, where one ladies' school alone employed forty mistresses. He advised sisters to go out with their brothers, make a home for them, and on no account to think of a matrimonial prospect only.

**CORRESPONDENCE.**

SIR R. G. BAGGORRE'S "MYTHOLOGICAL RHYMES."

To the Editor of "The Educational Times."

DEAR SIR,—"Mythological Rhymes" doubtless lies open to the criticism of your reviewer (March) respecting anapestic verse; but it is surprising how little the sentiment conveyed is dependent upon the verse employed. Dr. Longmuir wrote: "From its general use we might infer that it is best calculated for the expression of pensive subjects," and he instances Shenstone's "Pastoral Ballads" and Beattie's "Hermit"; and on the other side quotes Goldsmith's "Retaliation" and Anstey's "New Bath Guide" as examples of its use in "eight satirical and humorous compositions." Religious hymns occur to me also—e.g., Wesley's "Ah! lovely appearance of death."

I think the reviewer has partly mistaken my aim, which was chiefly to produce entertaining narratives, as the preface states. Certainly many of the legends merit treatment only in a serio-comic vein.—Faithfully yours,

R. G. BAGGORRE.

The Bungalow, Chavey Down, Bracknell, Berks.

March 5, 1913.

## SIMPLIFIED SPELLING.

[From the *Morning Post*.]

THE growing number of those who support the movement for a rational spelling will be grateful to Mr. Osborn for his admirable article in March 7's issue of the *Morning Post*. For a man of letters it is not easy to adopt an unbiased attitude towards those who propose to change the familiar form of words. The groups of letters which he employs in writing to express his ideas flow so readily from his pen; the groups he reads suggest the ideas so easily. When the familiar arrangement has been disturbed we notice it, and it gives us a little trouble. If it is a mere misprint we do not mind it much; but if the changed form of a word appears intentional we resent it. The idea of "correct spelling" is a comparatively recent one with us; but it has led to very serious consequences. Our spelling is based upon Elizabethan spelling, which was roughly phonetic, as will be better realized when a knowledge of Elizabethan pronunciation is more common in our schools; it is far removed from the pronunciation of our day. It is the haphazard work of the printers, whose descendants will not let Mr. Osborn write "past" and "prest" instead of "passed" and "pressed." A spelling which does not represent the sounds in a fairly consistent manner is difficult to learn and little able to prevent change.

Now change is neither desirable nor inevitable, as some seem to think, and as they imply when they say that a reform of the spelling would "interfere with the natural growth of the language." It can obviously not interfere with the growth of the vocabulary or changes in syntax; but it will have a conservative effect on standard speech. If it is objected that we have no recognized standard, the obvious answer is that we ought to have one. In practice we frequently assume its existence; we talk about a "good" or "pure" pronunciation, but when we come to details we find that on many points divergent opinions are expressed. It is essential that we should determine what we mean by "good" English speech; and when we have done so it should be recorded by a spelling that is at least as rational as the Italian. Then, with compulsory education and teachers possessing a good knowledge of phonetics, we shall be able to give every child the power of speaking clearly and well, and we shall prevent our language from splitting up into a number of languages: Canadian English, Australian English, South African English—anything but "pure" English.

Sounder ideas about the spoken language will lead to a better appreciation of dialects. Children will no longer be told that their native dialect is "incorrect" or "bad English"; but they will learn to realize that, if they are to extend their activities beyond a narrow sphere, if they are not to be seriously handicapped in their career, they must also know standard English. Teachers coming into a fresh district will make it one of their first tasks to study the local dialect, so that they may understand what difficulties the acquisition of standard speech presents to their pupils; and this study will often lead to further exploration in the fascinating realm of dialect speech. Further, a spelling that properly represents sounds will make it easier to write in dialect.

It is not the purpose of the "Simplified Spelling Society" to disturb those who have learnt the present spelling. Even these will find a rational spelling interesting, because it raises many questions as to our pronunciation. What the "Society" wants is to reduce the unnecessary waste of time and energy entailed in learning our unreasonable spelling. Those who have read Dr. Montessori's book will see what a simple and rational process learning to read and write can be made when a language is well spelt. Of the time saved we can make excellent use; and we shall remove from the curriculum the one subject in which the child has to depend blindly on the authority of the teacher.

The idea that one who reads much is necessarily a good speller is a delusion; and when the Board of Education suggests that the spelling should be taught incidentally it is paving the way for spelling reform. To spell perfectly the child must go through a long course of mechanical drill; and it is this drudgery that makes our teachers regard spelling as a terrible burden and makes our children often acquire a deep-seated dislike for learning.

As for proper names, it is clear that they must remain unchanged. We do not propose to deprive Mr. Browne of his *e* or Mr. Thompson of his *p*; and so I do not hesitate still to sign myself—

WALTER RIPPMAUN.

## QUALIFICATIONS FOR REGISTRATION.

[COMMUNICATED BY THE TEACHERS' GUILD.]

THE following are the conclusions arrived at by the Council of the Teachers' Guild, on Saturday, February 22, 1913:

The Teachers' Guild regard inclusion in the Register of Teachers as the only official certification of a qualified practitioner of the art of teaching, and recognize that the Teachers' Registration Council is, and should be, the sole authority for deciding upon the fitness of candidates for such registration. It is the opinion of the Teachers' Guild that the permanent conditions for registration should be: (a) evidence of adequate knowledge; (b) evidence of satisfactory training; (c) one year's satisfactory teaching; and (d) a minimum age limit to be determined later.

The Teachers' Guild recognize that the scope and character of the Register necessitate a large variety of qualifications for admission to it, and urge that the particular qualification or qualifications, by virtue of which a teacher is placed on the Register, be definitely indicated in the register.

A.—As the requirements of teachers vary according to the age of the pupils, the Teachers' Guild would suggest that the conditions of registration be adapted to the general requirements for teachers (I) of Infants, (II) of Juniors, (III) of Seniors, (IV) in Universities or Institutions of University standard.

These divisions would correspond approximately to the following age groups:—Under eight; from seven to thirteen; twelve to eighteen; and over eighteen.

I. For teachers of Infants: (i) Higher Certificate of the National Froebel Union or an equivalent as accepted by the Teachers' Registration Council; or (ii) the Board of Education Parchment Certificate.

II. For Teachers of Juniors: (i) a University Degree; or (ii) the Board of Education Parchment Certificate; or (iii) an equivalent accepted by the Teachers' Registration Council.

III. For Teachers of Seniors: (i) a University Degree; or (ii) an equivalent accepted by the Teachers' Registration Council.

IV. For Teachers in Universities: the same as III.

B.—The minimum requirements for adequate Training for all Teachers should be: Theoretical and Practical Training for one year in (i) a University Department of Education; or (ii) a Training College; or (iii) a school under approved conditions of supervision and guidance.

C.—The year's satisfactory teaching experience should not be concurrent with the year's Training Course.

D.—It is probably not advisable at present to determine a minimum age limit for admission to the Register.

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3.—*Specialists*.—With regard to the "Technological and Specialist Teachers," the Council of the Teachers' Guild regret that they are not in a position to make detailed suggestions at this stage; but they are of opinion that in each case reasonable evidence should be required of a sound general education, including some suitable form of training as well as of the necessary technical qualifications.

## MUSIC AND ITS CORRELATION WITH OTHER STUDIES.

BY HERBERT ANTCLIFFE.

IT has of late years become a truism that everything in life is relative, and whatever it may have been in the past, by its recent developments the art (and to a certain extent the science) of music has become closely related to life in nearly all its aspects. There is hardly a phase of our lives, however small or great, however obvious or subtle, but affects and is affected by our music. All music, from the great choral and orchestral works of the highly trained composer to the scarcely conscious, half-sung, half-spoken prattle of the child, owes its inspiration to something outside itself.

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This is most clearly seen in the songs and ballads of the people, but a little thought will make it clear that it is equally true of all kinds of music. Because music is in its essence an emotional art, its relation with purely intellectual pursuits is sometimes remote and difficult to see. For physical drill and other physical and sensuous purposes its uses are obvious and universally acknowledged. How far the art itself and its study may be made of use in other matters is not so obvious, and may well be a matter of careful consideration.

Yet, strange as it may appear to the serious musician, the possibilities of the study of music as an aid to other studies have been very much overlooked by the educationist, and especially by the educationist in England. Music has been used in conjunction with words, usually with words of a feeble character, to impress on the memories of young children facts which they might otherwise too readily forget; but in its higher and broader aspects, and its relation to higher studies, the utility and effectiveness of the study of music has been too much neglected and often entirely ignored.

Unfortunately, the blame is not to be borne altogether by the non-musical general educationist, for in the past the musician himself has been very culpable in this matter, and still errs rather in omission than in commission. Too often the musician is blissfully unconscious of the psychological problems presented to him by those whom he has to teach, and of the necessity of knowing each of his pupils as a complete and separate individual possessed of a nature and interests different from all others, and with interests and potentialities outside the mere study of this one subject. Much has been and is being done, however, on all sides, while still more seems likely to be done, largely through the efforts and influence of individual teachers. How much we owe, and always must owe, to the individual teacher, whether in school or engaged in private practice, will probably never be fully recognized.

The study of music may usually be made from four main stand-points. These are (i) the purely aesthetic, (ii) the mechanical, (iii) the formal, and (iv) the historical. Of these the first is the most advanced, and calls from the student for a considerable technical knowledge of music itself, and for a wide knowledge of and sympathy with art in general, a wide outlook upon life, and some knowledge and appreciation of the main principles of psychology. The study of the mechanics of music, of its production and reproduction, is the most elementary, and includes everything from the simple playing of a single tune to the direction of a large orchestra or the performance of a great art work. Music from its formal aspect affects chiefly the would-be composer, but, like all other arts and sciences of construction, a knowledge of its principles is an aid to complete appreciation. Last, but widest of all, is the historical aspect, which must of necessity be brought in to aid all the others. When these aspects of music study are tabulated in this manner, the various ways in which it may be employed as a study supplementary to others, and in which they may be employed to assist it, will appear more plainly.

That branch of music study which is most easily correlated with other studies is its history. To all it must be evident that the bare skeleton of the history of a nation and of its arts is the same—namely, that of dates and events. Yet it is not a little remarkable that, in spite of the position which music holds in the life of all nations, it is usually ignored by teachers and writers of general history. While reference is made to scientists, to orators and preachers, to painters, sculptors, and writers—even to poets and novelists—it is seldom that any reference is made to composers or musicians of any kind, or to the character or manner of the musical life of the period studies. How many children learning history in our British schools know anything, for instance, of "Lillibullero" and its composer, Henry Purcell? Yet the song is claimed to have "sung a deluded prince out of three kingdoms," and its composer, though a young man at the time of his death, took no mean place among the men of his day.

The reference to this one song should make evident what an important bearing music has upon the life of a nation. No other subject appeals quite so much to what, for want of a better term, we may call the imaginative aspect of history as does music. When we speak of the imaginative aspect of history we do not refer to any distortion or misrepresentation

of facts, or to any substitution of facts by theories or romance. Rather the term implies a deeper insight into the facts which dates and events represent; a knowledge of the real life of the people which makes, and is itself, history.

Because music is bound up with the life of the people some knowledge of its conditions and workings is not only desirable, but is absolutely necessary for a thorough appreciation of the history of such people. It may be that for the earliest periods of history this is not practicable, and therefore we have to be content with the partial knowledge obtainable; but from the twelfth century of the Christian era onwards it is both practicable and necessary, and such knowledge of the music and musical life as is obtainable is a help to the study of earlier periods. What a light on the life of the people the story of Israelitish music throws, for instance; and on the history of our own country the record of Taillefer, of the troubadours and the minstrels, and of the popular songs of various periods have no small bearing.

Historians of music, too, commonly omit any serious reference to the history of the people of whose music they are treating. This is a mistake also, which it is pleasing to find is being avoided by the more modern and progressive teachers and writers of musical history.

When we turn to the study of geography we find that the relation is more subtle but no less intimate. "France; that is where they sing the 'Marseillaise,'" is the boy's answer, which might well lead to a true and full appreciation of the real facts of both history and geography as well as to a wider knowledge of music. History and what is (or used to be) known as political geography are almost inseparable, and the study of the two is in constant correlation. Yet political geography cannot be studied without reference to that of the land, and each has a reflex bearing upon the other. To plumb the depths of such a subject as nationality in music is a task beyond the powers of the greatest psychologists and sociologists. To float on its surface to a fuller realization of the bearing upon life of its own circumstances is not so difficult as appears at first sight. Especially is this so with children, who, by simply hearing it, will often acquire a very remarkable insight into the character of music, which in its turn enables them to realize the character of the people from whom it springs. Physical conditions, of course, have no direct bearing upon the music of a nation, but they have an indirect bearing in stamping the character of themselves upon that of the people. Thus it is possible, as it is frequently necessary, to work backward from effect—that is, from music—to cause; that is, to the character of the people as largely moulded by the physical conditions which surround them.

The employment of the mechanical and formal aspects of music as a rule must be in less usual, though no less useful subjects than these. By way of analogy and comparison, however, grammar, and particularly prosody, may well be correlated with music. "The Grammar of Music" is really grammar, and not merely a series of rules which has a strong likeness to the grammar of speech. How close the relation between the analysis of a verbal sentence and a musical one is may be seen by a parallel of the terms employed in such analysis:—

In verbal language we have—	In music we have—
Sentence.	Sentence.
Phrase.	Phrase.
Word.	Motive.
Letter.	Note (or Chord).

The sentence in each case is a complete statement able to stand alone; the phrase is an incomplete, unfinished statement; the word and the motive may each convey some meaning which, however, varies as the word or motive is variously employed, while a single letter and a single note can convey nothing, except when on rare occasions either is employed to suggest or indicate something more than itself.

Then, too, an analogy between music and other subjects may be largely employed in the teaching of either, so their variation either from other may also be employed with profit. Each subject and each person possesses some characteristic entirely different from all others, and in wide opposition to some other. The pupil with tastes and talents lying in the direction of music will learn certain things more readily by seeing their contrast with, as well as their likeness to, that

which is most frequently in his thoughts. Or, conversely, the youthful mathematician will more quickly grasp the full meaning of his music lessons by learning not only the mensuration of music and its precise formal construction, but also its emotional qualities which contrast with these. Comparison and contrast are both powerful weapons in the hands of the teacher, and music affords many and very varied opportunities for the employment of both.

These suggestions as to the manner in which music may be employed in the teaching of other subjects are, of course, merely exemplary, and are not intended to form the basis of any actual lessons. The exact manner of its employment must depend very largely upon the immediate circumstances of the lessons, and may be the result of careful preparation or of spontaneous inspiration. Neither is it suggested that every teacher can employ it in the same manner or to the same extent as every other teacher. One of the most curious facts, one that is often extremely tantalizing to both teacher and taught, is that the best musicians are by no means necessarily those who in their teaching can most effectively correlate their own subjects with others. This is why we so often find that fine musicians—and also, it must be said, clever artists, expert mathematicians, learned historians, and other specialists—are poor teachers. Yet it would be absurd to pretend that anything short of a thorough knowledge of the subject taught is desirable. In the teaching profession more than in any other “a little knowledge is a dangerous thing,” and this little knowledge is often all of music that is possessed by teachers of other subjects. Yet music is a subject on which, and on the relation of which to other matters, much information is obtainable without the necessity of any practical ability. Where any considerable knowledge of the theory and practice of music and of its history is not practicable to the teacher of other subjects, and frequently also where it is so, there should be a constant and regular co-operation between him and the music teacher. This applies both ways, and the most successful music teacher (from an artistic point of view, if not from a commercial one) is the teacher who takes the greatest interest in the pupil's general education and pursuits.

To the matters of the building up of character and of mental and bodily health no reference has been made, as they lie somewhat outside the direct scope of this paper. What the possibilities are of co-operation between those directly concerned in these matters is a wide subject which must always be open to the fullest discussion and experiment.

## CURRENT EVENTS.

At the meeting of the members of the College of Preceptors on April 16, a paper entitled “The Teacher in the Making” will be read by Frank Roscoe, Esq., M.A., lately Head of the Training College for Men in the University of Birmingham, and now Secretary of the Teachers' Registration Council.

PROF. FINDLAY's lecture, “The Montessori Method: a Report of a Preliminary Investigation conducted at the Fielden School,” will be published in the May number.

THE Lord Chancellor will address the members of the N.U.T. Conference on the subject of education on March 25 at Weston-super-Mare; and also a meeting of secondary teachers at the London University at 3 p.m. on Saturday, March 29.

THE Association for the Reform of Latin Teaching has arranged a Summer School at Cambridge from September 2 to 12. Dr. Rouse is the Director. Particulars may be obtained from Mr. W. L. Paine, 26 Sydenham Road, Croydon.

THE University College of Wales, Aberystwyth, has arranged a Summer School in Geography from July 28 to August 16. There will be an exhibition of classroom equipment for the teaching of Geography under the direction of Mr. W. E. Whitehouse. Particulars from the Lecturer in Geography, Aberystwyth.

A CONFERENCE on Scripture Teaching in Secondary Schools will be held in Oxford on April 22 and 23, on the same lines as that held last Easter at Cambridge. The opening address will be given by Canon Scott Holland. The Head Master of Harrow will be in the chair. Names of intending visitors should be sent to Mr. N. P. Wood, 66 Hadham Road, Bishop's Stortford.

At a divisional meeting of the Assistant Masters' Association held at Manchester, it was resolved that, if reforms on the lines laid down in the Report of the Consultative Committee were adopted, no inspection other than that of the Board of Education should be imposed on schools.

THE annual Shakespeare Festival at Stratford-on-Avon opens on April 21, under the direction of Mr. F. R. Benson.

MR. E. W. DANN has been appointed Head Master of King Edward VI Grammar School, Saffron Walden.

SIR OLIVER LODGE has been nominated President of the forthcoming meeting of the British Association in Birmingham.

DR. FIELD, Warden of Radley, has been appointed to the Vicarage of St. Mary, Nottingham.

THE Imperial Education Scheme for the exchange of public-school masters has become effective. Mr. Luton Carter, of Clifton, the first master to be “seconded,” goes to Christ's College, New Zealand, and a member of the staff of that school will be “seconded” to either Clifton or Rugby.

SPEAKING of the University man in business, Mr. Lyttelton said that, on inquiring of one of the houses at Eton, he found that out of thirty-seven boys thirteen were destined for business.

THE Council of Bristol University has been informed that the late Mr. Augustus Nash has bequeathed the residue of his estate in trust to pay a near relative the income during life, and afterwards to pay the capital sum to the University in the hope that it may be used to advance natural sciences, particularly chemistry. The sum will be about £18,000.

MR. HENRY FROWDE, the Publisher to the University of Oxford, is, at his own wish, retiring on March 31 after thirty-nine years' active work as manager of the London business of the Oxford University Press. Mr. Humphrey Milford, who has for some years been associated with Mr. Frowde, has been appointed as his successor. Though Mr. Frowde is retiring from the active supervision of business at Amen Corner, he will, it is understood, be available for consultation, so that his knowledge and experience will not be lost to the Press.

THE Annual Meeting of the League of the Empire will take place on Saturday, July 19, at 3 o'clock, at the Caxton Hall. The Minister of Education for Ontario has notified the League that he hopes personally to be present at this meeting, as he desires to discuss with those present arrangements for the future Conference.

PROF. FIEDLER, of Oxford, accompanies the Prince of Wales to Germany.

APPLICATIONS are invited for the newly established Franks Studentship in Archeology, founded by the Society of Antiquaries in London in memory of Sir A. Wollaston Franks, K.C.B., sometime President of the Society. The object of the Studentship is to enable the student to carry on some research or preparation for research (as distinct from professional training) in the Archeology of the British Isles in its comparative aspects. The Studentship, which is of the value of £50, is tenable for one year, and is open, under conditions prescribed in the regulations, preferably to an internal graduate in arts or science of the University of London; but in special cases may be awarded to an external graduate or a graduate of another University reading for the M.A. degree in Archeology as an internal student. Applications should be made to the Academic Registrar.



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**SEXUAL INSTRUCTION OF SCHOOL CHILDREN.**

By the Hon. and Rev. **EDWARD LYTTETLTON, D.D.,**  
Head Master of Eton College.

As it is more than probable that the question of sexual instruction of the young will not be confined to any one type of school, I will attempt to indicate certain principles which seem to me to underlie all practical action in this subject, whatever may be the age of the young people under discussion—prefacing, however, what I have to say by the admission that my own actual experience has lain exclusively among public-school boys.

Since the first attempts were made to advocate systematic instruction in place of the policy of reticence which held the field undisputed till the eighties, one danger of the modern proposals has been occasionally pointed out, but it is still frequently ignored: it is the danger of isolation. For a time it was believed by reformers that great good could be done by a mere warning against impurity at the right age. But those who were so persuaded were the victims of no less than three fatal delusions. First, they forgot that, if there is a pre-disposition to self-indulgence, the mere warning against consequences is almost certain to be useless. At an early age it is not understood; later, the growing boy resents an interference with personal liberty, feeling that, whatever the consequences may be, it is his own concern. Secondly, if a deterrent pure and simple happens to be efficacious for the particular vice, the disposition to self-indulgence is only diverted into another channel. Thirdly, the very result dreaded by those who distrust instruction is more likely to occur—viz., an artificial prominence given to the subject, since the abruptness of the treatment must tend to excite curiosity. In short, it cannot be too strongly emphasized that the right treatment of children is not by warning, but by instruction, in the literal and correct meaning of the term. Something must be "built up" in the mind which

will be proof against the day of stormy temptation; and, further, regard must be had to the natural *pudor* which exists in every fairly well brought up child. Lastly, the broad precept "overcome evil with good" is of vital importance. I will quite briefly indicate to what these principles seem to point.

Impurity is only one form of self-indulgence, and it is extremely dangerous in the case of boys who show an early disposition for greediness, and who have been led to believe in childhood that the world is a place where appetites can generally be gratified. Let us picture, in imagination, a child slowly forming his estimate of the world from this point of view. Beginning by being equally prepared to find that appetites must be snubbed, or to discover that with the exercise of a little care they may be pampered, he acts accordingly. Experience builds up the idea that gratification is the normal and natural thing. In other words, the more gratification he has secured before the age when impurity is likely to set in, the more difficult it will be to save him from it.

But an objection will be raised here. It will be said that, if mere privation were a safeguard, there would be little or no impurity among the poor, and, as this is not the case, the statement must require correction. No; it requires no correction, but a supplement. Privation is insufficient by itself: it requires the addition of the building up of principle, the laying of the foundation of law and obedience in the mind. No real good in this matter, or in any moral matter, can be done mechanically. Privation by itself is obviously quite useless if at any time the opportunity for indulgence is given, as it certainly is in all cases and among all classes. The only preventive that can be relied on is the presence of right ideas in the mind, and a general preoccupation with high and wholesome matters.

Now we come to the central question: What are these right ideas? First, being such as can be apprehended by children, and being concerned with the highest thing a child knows, they must obviously be about the life received from the parent. Only ideas so connected can be relied on to be strongly operative in the right direction and to take their place in the mind invested with the reverence which the subject imperatively demands. Teaching about plant life, &c., is a useful adjunct and, from the intellectual point of view, indispensable. But we need, in the matter of impurity, teaching which will make a child spontaneously turn with loathing from any caricature of the facts; and it must be remembered that all impure talk is of the nature of a caricature. There is something often naturally attractive about a caricature; and so the personal affections and the sense of mystery with which a child thinks about his own life must be enlisted, if the truth is to be received with awe and the travesty of it rejected with disgust.

If I am asked: What about religion? I should answer that, if any, even the most rudimentary, religious ideas have been grafted into the child's mind, beyond all question the instruction as to the laws of Nature which deal with the transmission of life should be based on them; else it is inevitable that the child will unconsciously separate his morality from his religious beliefs, the most certain result of which is the perishing of the latter and the weakening of the former. If, on the other hand, there have been no religious beliefs implanted, I should say that, with a normal child, good moral instruction would very often secure chastity during boyhood, but would be an insufficient protection during adolescence and early manhood, when deeply laid principles are required to take the place of simple obedience to parents.

I have thought it necessary to state, as briefly as possible, what I believe to be the cardinal principles of the subject before going on to discuss the practical application. We are met by problems varying immensely in difficulty. Among educated people, and indeed wherever parental responsibility is recognized, the first step to take is for clergymen and schoolmasters to insist in season and out of season on the obligation resting on parents not to leave this particular sort of instruction out of account in the training of their children—and to tell them where plain and refined statements of the laws of nature can be obtained, written so simply that a child of nine or ten could read a fly-leaf containing it in his parents' presence and only require a few words of sympathy afterwards to be fairly equipped with the necessary knowledge. This, I

say, is the first step, for if others are required and the school teacher has to be called in to fill the gap it must be recognized that he starts handicapped by manifold disabilities from which the parent is free. Only one need be mentioned. If a parent has been at all wise during the earlier years, the child has come to rely implicitly on all advice and information which comes from that source, and if this instruction is added gradually, some of it by the mother, some later by the father, it comes into the child's mind invested with exactly the right kind of sanction. The school teacher can only approach such a vantage-ground, but cannot hope to reach it. Unless he is a very uncommon man his words will be charged with professional associations, and the child must unconsciously feel that he is something of a meddler. But in one respect he has an advantage. He learns by practice how to do it, and many a father finds that for want of practice he may easily fail to make his meaning clear.

And yet we must face the plain fact that, in spite of all that has been said and done, the negligence of parents even of well educated children is lamentable and disastrous, and that when we contemplate elementary schools we stand aghast at the utter want of a real sense of parental responsibility, manifested in many ways, but in the matter of impurity working with increasing havoc on the very vitals of the nation. I am informed that downright sexual vice is decidedly more rampant among children under twelve years of age than it ever was before, and that it is propagated by the conditions of school life. Nevertheless, I cannot imagine that any class teaching of a personal nature could be wisely attempted. Others may have had a happy experience, but I have heard of the lamentable failures of not a few teachers who have found that as soon as ever they begin the personal, human part of the subject as distinct from a biological talk about plants, a certain proportion of the children are found to know too much: they have imbibed poison already, and whatever is said to them turns to poison, and they are quite able to prevent any good effect on the more innocent. If you could ensure a class of innocent children, something might be done; but this is obviously impossible owing to the swarming numbers in our town schools. And, as individual teaching seems to be quite impossible also, we are apparently brought up short against a stone wall.

It seems to me plain however that, while the practical question bristles with difficulties, the principles are clear enough to point towards the right direction for practical action. Nothing can be done mechanically except harm. Just when teaching begins on that part of the subject which is likely to be effective, it must be withheld from a class. Yet that does not debar us from such preparatory teaching about the law of propagation in the plant world as will bring out the provision made by Nature for the perpetuation of beauty, safety, and health. If the plant-lesson is given without some such background of idea, it will become either sterile or mischievous. If given spiritually—*i.e.*, with constant suggestion of the Creator's power and forethought and with constant insistence on the presence of the mystery of life combined with the dominance of natural law—then the subject becomes a very useful preparation for the personal teaching required later.

But what personal teaching is possible? I am thinking now of the town elementary-school problem where the difficulty is most acute, the children being most numerous and least likely to be innocent. There will be a small minority of parents, I presume, who can be trusted, if appealed to, to do their duty. Let the teachers then look on it as part of their commission to work if possible with the local ministers of religion in bringing this matter before the sensible and high-minded parents first. They should be told that among the duties they owe to their children is that of vigilance, and of plain warning against foul companions, foul language, and foul habits. It should be taken for granted, I fear, in every town and in every large school that the pestilence exists and sometimes is rampant; therefore the urgency of the peril cannot be too clearly recognized nor the stupidity of supposing that the children may be left unwarned in the hope of preserving their innocence.

At the other end of the scale is a considerable batch of disolute or at any rate thoroughly careless parents to whom any appeal would be a waste of breath. These, for the present, I would leave alone. There is nothing to be done with their children through them. And, as for the children, the hope is very scanty. In public schools such boys are sometimes, not

always, saved from the abyss by influences which hardly exist in the elementary schools, such as the strict supervision of elders, a wholesome public opinion, corporal punishment and expulsion. There may be here and there circumstances favouring the introduction of some of these influences, but as far as my knowledge goes I see nothing much to be done except by segregation, where possible, from the remainder, especially from the most important class of all, viz., the large number of middling children, whose homes are very defective but not thoroughly bad, and whose habits and principles are capable of deterioration or improvement.

As to this class, the influence from which something may be hoped may be partly from the home, partly from the teachers, but in almost all cases must be individual. It will anyhow vary with the self-devotion of the ministers and the teachers. Unless the latter are infected with a large measure of the pastoral spirit, they will not take the trouble to worry about getting into touch with the ministers and following the children to their homes and undertaking what often seems a thankless and uncongenial task. But, till there are many teachers found who are inspired by the right kind of zeal or uplifted by faith in their vocation, the present hideous defilement of quite young lives will continue. Meantime, among this large middle section, it may sometimes be possible for a discerning teacher to select a class who have all the appearance of being innocent and who may therefore be profitably taught together. If there is the slightest indication given by one of them of the wrong sort of levity, he ought instantly to be turned out of the room. Though the selection of such a class will always be risky, it will often be necessary owing to the simple difficulty of time.

The problem of the secondary school is much simpler, and yet is very frequently neglected. We there deal with boys who have for the most part been brought up in homes not without some refinement and by responsible parents. The chief thing to be remembered is that instruction in the laws of Nature and the meaning of their own bodies is due to them as a valuable ingredient in their intellectual training. It is not merely a question how to steer them through the temptations of boyhood, though that is of vast importance, but to correlate their knowledge with their coming experience of puberty and the temptations of early manhood. Every possible effort should be made to induce the parents to undertake the task. Facilities of the simplest kind are nowadays provided by the publication of numberless fly-leaves suitable to be given to a young boy to read in his father's presence, after which a few words of sympathy from the father are all that is required, and the whole difficulty of finding the right words and emphasis for the warning is fairly met; and no father can make his own shyness or want of experience an excuse for neglect. The teaching should be based on many experiences of self-conquest and self-control in childhood and ought to be begun by the mother at about nine years of age and finished by the father later. The best forms I know to be given to parents are some drawn up by schoolmasters at the request of the Archbishop of Canterbury a few years ago. They can be obtained for 6d. from Messrs. Grigg & Son, St. George's Press, Worthington Street, Dover.

In conclusion: I have felt the want in writing this paper of experience of the masses of our town populations, and think it best to leave most of the practical side of the question to those who know the facts. But human nature in one class of society is very like human nature in another, and I feel certain that, when one or two of the principles I have ventured to emphasize are firmly grasped, a resolute but tactful crusade against this most terrible evil might soon be on foot. It seems to me that the first step must be to kindle the right kind of zeal among the teachers in the elementary schools, so that they may be filled with the spirit of the Good Shepherd, recognizing that, where society has allowed a state of things to grow up which has undermined much of the parental control as well as the desire to control, the only hope of saving swarms of children from woeful wreckage is for the teachers to band together and take the place of the parents. Experience teaches me year by year that vice among the young is unnatural and can be stopped if the home influence is in the direction of refinement, even if the religious influence has been weak or nugatory. But I am convinced that nothing will make either the parents or an adequate number of teachers grapple with this and similar

questions with singlemindedness, hope, and spiritual power, except a deeper and more widespread implanting of the truths of the Christian Gospel. Till men learn the meaning of their relation to God, they cannot feel inwardly the call of their fellow-men, not even of those nearest to them.

## MY EXPERIENCES OF THE MAHRATTA UNDERGRADUATE.

It is with diffidence that I approach the subject of educational work in India, since my experience was short to the point of insignificance. Circumstances of health sent me home at the end of one academical year; I taught in one college only, and came into contact with students of practically but one nationality. Impressions gained quickly, however, are commonly vivid to oneself, and sometimes even of a little interest to others. This is my only excuse for venturing to give any account of mine, when there are so many past and present members of the Indian Educational Service, as well as teachers in a non-Government capacity, who are so much better qualified to speak of the work than am I.

I was appointed a few years ago to a Professorship in English Literature, at a college affiliated to the University of Allahabad. Originally an exclusively "native" institution, it had come under partial Government control: the establishment of an Oxford man as Principal was the first result of the change, and I was the second.

### THE COLLEGE.

I mention these details inasmuch as the primitive conditions under which we worked might otherwise be difficult to understand. In India, as a rule, anything "does." When a house falls down, it is quite usual to build another on the site without bothering to remove the ruins. Succeeding generations can easily step over them. Why not? And even in Government affairs there is a certain leisureliness, perhaps born of the environment and of the sun. A distinguished engineer in the Public Works Department once observed to me, when I spoke of the delay incurred in giving us a new academical home, "We have to do out here with a bamboo and a bit of string what they have an expensive machine for in England." My more fortunate successors have at length been settled in an old Government building, destined originally, it is true, for a semi-military headquarters, yet at least fairly well situated and healthy. But at the time of which I speak, the college consisted of a curious medley of buildings in the worst and most suffocating quarter of the bazaar. Fragments of an old Indian mansion, with carving in black oak, formed our ground-floor; the upper heights consisted of a sequence of lofts, reached by an exterior stone staircase without balustrade, and with two steps missing. One formed the impression of crawling through holes in the wall as one passed to one's lectures. And what was perhaps the most unsatisfactory feature of the situation was that the students were closely surrounded by a quite undesirable element in the immediate quarter of the city. Those who have lived in India will well understand what I mean.

### FIRST IMPRESSIONS.

My appearance had created a mild sensation even in Government circles, as official information had only indicated the possible appointment of an additional man in nine months' time. I was received, however, with the warm hospitality and liberal courtesy for which the Anglo-Indian official is famous; and was almost immediately taken, in the usual bullock-cart, a couple of miles from the European "station," to see the College. Apparently rumours of my arrival had spread to the city; and I gained my first knowledge of the atmosphere into which I was to pass as I walked round the dilapidated buildings, and picked my way amongst the brick-bats and slumbering dogs of the compound, to the hostel of the forty resident students. Freshly scrawled in chalk upon the doors and walls were quaintly idiomatic English phrases, evidently meant to breathe defiance at authority, new and old. "Prohibition is chit-chat" had reference to a recent order affecting meetings. "Barking dogs seldom bite" was too cryptic to effect with me any Aristotelian catharsis. "God

helps those that help themselves" was not without a certain sinister import. "Mr. ——— is Satan" attested politely, if unconvincingly, an identity the truth of which I was already able, from personal knowledge, emphatically to deny.

Lounging about the inner courtyard of the hostel, or seated on the beds of their narrow, bare little rooms, were a few of my future pupils. They were as great a contrast to what I had expected as had been the College. The usually immaculate Indian students at Oxford and Cambridge—I had been on terms of pleasant acquaintanceship with several—are nearly always much Europeanized before they come to England at all: here, I felt myself in touch with the primitive. Lean, with sienna skin and dark sullen eyes; their foreheads, almost without exception, painted with the red trident of Siva or the yellow footprint of Vishnu; clad with ill-fitting alpaca jackets and with the flopping divided skirts known as *dhotis*, these *alumni* of Allahabad shuffled about in their heelless slippers, "looking vinegar," if I may use G. W. Steevens's phrase concerning their race as a whole. A few attempts at a friendly introduction met with little apparent success: there was in the air an obvious spirit in keeping with the childish inscriptions which had formed my welcome. One or two exceptions there were: I remember a bearded "First B.A." who replied with some amiability to an inquiry concerning a society of which he was secretary, and who even glanced deprecatingly at a smirking comrade in the rear. But the general impression was disheartening, and indicated a hardly concealed predisposition to definite antagonism.

#### EARLY TROUBLES.

I will not dwell long upon the circumstances of the following days. It chanced that we had almost immediately a series of disturbances, with which neither the students nor the staff were at first directly concerned, but which materially affected our work. A large "High School" in the neighbourhood of the college, under Indian control, had been gradually getting out of hand: trouble generally therein, and expulsions, happened to occur about this time, and police action was necessary once or twice to send groups of excited and chattering youths about their business. Partly, I suppose, because the infection spread, but chiefly from nothing more than a natural desire to see the fun, a few of our students also came into conflict with the law. Protests, ultimatums, a strike, apologies and fines followed in quick succession; and it was fully three weeks before I really came into touch with a slightly chastened series of classes.

#### WORK.

The course for the Allahabad degree resembled all Gaul in its divisions. The matriculant passed successively through classes called First Arts, Second Arts, and Final. The prescribed English studies increased year by year in difficulty from a book of snippets of easy poetry to "The Tempest" and Hamerton's "Intellectual Life." The writing of essays—which, needless to say, proved the bane of my existence—was exacted at each examination, a quite high standard being expected in the Final.

I well remember stepping through a massive, handsomely wrought door, upon a couple of discarded packing cases placed as steps, into the room where I gave my first lecture. It was upon "Silas Marner." About thirty keen dark faces gazed critically at me as, stumbling hopelessly over the unfamiliar nomenclature, I called the roll. Before long, a *faux pas*: I blundered, without prefix, upon an age-long name. Immediately a thin, hawk-like youth, with a pearl or two in the top corner of one ear, rose to his feet. "Are you aware, sir, that it is their custom in this College to address thee students as 'Mister'?" The fact that he was not himself the aggrieved person was to me once more significant of the general atmosphere.

A mild anti-climax, purposely brought about at the commencement of what I had to say, soon dispelled a good deal of the silly tension, however; and before long we were working together. I found them passably quick and, on the whole, keen to learn. They all spoke English—it is compulsory from middle forms in the so-called high schools—with the clipped semi-Lancashire dialect first made famous by Kipling. The loose style and essentially English descriptive work of George Eliot naturally presented great difficulties to them.

Shockingly executed blackboard sketches come to my mind as attempted visualizations of the mantelpiece with the doorway, the string, and the pendant joint cooking for Silas's meal—a hard conception, indeed, for those who had never seen a fireplace, and whose most horrible nightmares had not suggested the possibility of eating pork. This first academical effort, however, ended tranquilly: I felt that the ice was broken, and hoped for better things. And I was not, on the whole, disappointed.

The hardest class I met on the following day. The First Arts contingent numbered forty-five, and overflowed on to the steps of the platform. They were of course the youngest and the most uncultivated of all, many coming from remote villages and country towns where their environment had been little but what the Western mind regards as savagery. Their accent was so strong as almost to be unintelligible at times. I found it difficult to explain even the simplest English verse to them. And I soon came into touch with perhaps the greatest of the fundamental differences between East and West. In spite of a general tendency to exclude all amatory matter whatever, our book contained one or two well-known poems upon women and women's beauty; and the sensation of the impossible which came to me as I tried to deal with them in such company will not be easy to forget. The lofty purity of Wordsworth's thought in "She was a phantom of delight" was most evidently entirely outside the spiritual range of the elemental Mahratta. Even treated from the most detached point of view, and approached with studied coldness, such lines as

"A Spirit, yet a Woman too"

seemed to be received as symptoms of the accepted moral lunacy of the Anglo-Saxon.

#### HIGHER WORK.

It was a relief to find that the small, hard-working Final class revealed almost to a man the effects of a longer intercourse with the culture of my amiable and distinguished colleagues, both Indian and English. Here there was a very real appreciation of the grace and wondrous strength of "The Tempest"; and though, forewarned, I was prepared to skim lightly indeed over the charm of *Miranda*, I found no need for reserve. I would not say that Shakespeare's incomparable delicacy of attitude towards his heroines was understood as we should understand it; but there seemed to be a tacit acknowledgment that such a point of view could at any rate exist without being either comic or unworthy. It was noticeable in this connexion that the character of *Lady Macbeth* was studied with interest and real appreciation; and this fact seems to bear out an impression which I formed as to the oft-quoted influence of the *zenana* in India. One is frequently told that the supposed "lower plane" for women is a myth; and that it is they in reality who rule the husband and the son. It may be so as regards the advice and influence of the matured woman in social and even political life; but it certainly always seemed to me that the idealization of woman, which forms an essential of our romantic poetry, is quite incomprehensible to the Asiatic mind.

#### ESSAYS.

It was in the essay-writing throughout the college that, as I have previously intimated, I found my hardest work. The sheer elementary difficulties which our language presents to a youth of average intelligence, trained in oriental modes of thought, are enormous. I found little, if any, of that supposed universal tendency to the misapplied ornate which goes by the name of "Babu English." My students were far too deeply occupied in wrestling with the management of the definite article to wish to soar. And, as it is perhaps trite to remark, it would be interesting to see whether the humorists, from Mr. Anstey downwards, who have found copious material in the style of the average "native" correspondence-clerk or minor official, would do any better themselves had they to earn their living by writing and speaking in Mahratti or Hindi.

The most irritating feature in the mass of oddly expressed compositions which I corrected weekly was not, however, any one of the constantly recurring grammatical or idiomatic faults to which every language teacher is accustomed. It was a determination on the part of a good many of the youths to



be "agin the Government" at all times and at all places. The thing became a veritable King Charles's Head. If I prescribed a theme of so purely literary a nature as a character-study from "Macbeth," an apt comparison would be drawn between the tyrannical despots of early and modern ages. If I gave that hardy annual, "The Profession I wish to adopt," a large proportion were burning to become editors and "orators," that they might stir up their countrymen against the alien oppressor. It is only fair to say that this particular period was one of exceptional excitement; and that certain rather irresponsible persons in the town had been leading the lads on and filling their minds with exaggerated or nonsensical notions. A distinctly intelligent youth once wrote—in connexion with some widely removed subject, needless to say—that the English had "destroyed many Indian trades and manufactures by means too horrible to mention." I quote verbatim. This was a little too much. We had an interview. "Now, Mr. S., I won't even ask for any proof whatever. Just mention to me one trade, one manufacture, or one means; name it only." Silence.

#### SOCIAL INTERCOURSE.

In such circumstances it is not difficult to understand that the cultivation of a pleasant feeling was not easily effected. But after a time a certain number would come to see me at my bungalow, and would chat amicably enough upon subjects of general interest. I deliberately encouraged them to speak of political matters, and found, as I expected, that they had swallowed masses of incorrect or distorted statements regarding the presence and effect of the English in India. I always conceded that in the first place we went there, with Clive and Hastings, to make money; but I maintained that, at any rate for fifty years past, we had done our best to develop the country for its own sake as well as for our own.

There were some who were absolutely irreconcilable. One or two told me flatly that they would welcome the predicted internal disorders which would follow our evacuation of the country, if our final disappearance would be thereby assured: to be attacked by Pathans and Sikhs was preferable to being ruled by Europeans. But the majority were, on the whole, reasonable. And as I was on the point of leaving, one of the most *pukka* extremists of the College said to me at the station, "We know, of course, that you have done much for us. But you are aliens, and an alien Government will always be disliked everywhere." I do not think that the situation could be more succinctly expressed.

I could speak at greater length of this most interesting side of a most interesting experience—all too short, and made shorter, unfortunately, than it might have been, by a severe outbreak of plague, which closed the College before the expiration of full term. But I feel that I have already exceeded the narrow limits of comment which restrict the superficial observer. I would only say that, with others whose knowledge of the subject is deeper than mine, I think we are blundering in the right direction with regard to higher education in India. Money has been, and is being, spent upon good buildings and adequate equipment. Our own unfortunate situation was perhaps exceptional. A new and handsome institute for agricultural and scientific teaching existed already within a mile from our doors. I have heard much of the splendours of Aligarh. I have seen and explored the refinements of the Elphinstone College in Bombay. And it seems to me that if we allow for, and calculate upon, the gulf between Eastern and Western thought, we can, in the future, justify our attempt to educate in our own way the races to whom our strange and mysterious destiny has sent us.

"A."

MR. T. LL. HUMBERSTONE, B.Sc., has been appointed by the University of London to the Mitchell Studentship. The Studentship, which is of the value of £100, is awarded to the selected candidate to enable him to study and investigate some definite feature of business or industrial organization at home or abroad. Mr. Humberstone proposes to investigate a scheme of Industrial Fellowships in the Universities of Pittsburg and Kansas, under which research work in Applied Science is promoted with funds provided by, and to some extent under the supervision of, great industrial and commercial organizations.

## THE PRIMROSE PATH: A CRITICISM.

By Dr. JESSIE WHITE.

"Is this principle of liberty anything but the aged plea for the Primrose Path, garbed of course in the latest biological and psychological jargon?"—Dr. GERALDINE HODGSON.

It is curious how differently different things strike different people. The last thing that I should have expected would have been the identification of Dr. Montessori's "Principle of liberty" with the "aged plea of the primrose path." Dr. Geraldine Hodgson quotes from Quintilian, who says of the child, "Let his instruction be an amusement to him," and St. Jerome's advice to Laeta to draw her little daughter "onwards with little gifts such as children of her age delight in." Now the spirit underlying these dicta is, I take it, a spirit abhorrent to Dr. Montessori. She never urges that the child's instruction should be an amusement to him, for from first to last she makes it clear that she regards the child's education—the development of his inner force—as a thing of paramount importance on which depends the gaining of that self-control which makes him a "free" being. As for wooing him to efforts with little gifts, she shows that children taught on her plan do not value extraneous rewards. The activity of the child is his reward.

I purposely avoid the use of the word "system," because this is a term against which Dr. Geraldine Hodgson runs full tilt. Yet when we speak of an educational system we mean nothing more than a plan of procedure based on the adoption of a definite end and accompanied by insight into the relation which the details of the plan bear to the attainment of the end. Without persons able to carry out the plan, this is of course nought; but for one person capable of elaborating a plan, there must be a hundred persons capable of understanding and adapting it to varying conditions. It is questionable whether we can contrast "the potency of persons" with "the efficiency of systems." Both persons and plan contribute to the result. "A good system, inelastically applied by a mediocre person," says Dr. Hodgson, "may become a terrible engine of destruction." This may be true because "the inelastically applied" implies that the mediocrity shows itself in failure to recognize the needs of the particular children dealt with. Yet Dr. Montessori's "principle of liberty" puts the claim of the children to have their individual features and needs studied in the forefront and should make "inelasticity" impossible.

It seems to me that Dr. Hodgson has not even tried to understand what this principle of liberty means, otherwise she would not suggest that the suppression of acts which are useless or dangerous was a grave infringement of the vaunted principle of liberty. Dr. Montessori's young teachers fell into the mistake of letting the children do as they pleased in consequence of this principle; but Dr. Montessori had to show them "with what absolute rigour it is necessary to hinder and little by little suppress all those things which we must not do, so that the child may come to discern clearly between good and evil." What she wants is that there should be no danger of the young child's confusing immobility with goodness and activity with naughtiness. Without spontaneous action the child cannot reveal his nature to the teacher, and without knowledge of his nature the teacher cannot give him "active help" in the "normal expansion of his life." As for Dr. Hodgson's "apocryphal infant of unerring flair," there does not seem a suggestion of him in Dr. Montessori's work. The aim of the children's houses is to help and direct the growth of children in such an important period of development as that from three to six years of age, and, far from these "wondrous" children not requiring help, Dr. Montessori considers that those who help them should have a thorough training in all that is necessary to make this help effective.

When Dr. Montessori advocates "brief, simple, and objective lessons" she is wishing for the suppression of a type of collective lesson only too common in infant schools—a type which is the result of the idea of "the primrose path." In such lessons the teacher wraps up a grain of instruction in a bushel of verbiage, often unintelligible and confusing to the children, and with distracting accompaniments introduced

for the sake of interesting or amusing the children, so that the end of the lesson is defeated.

What I take to be Dr. Montessori's meaning in connexion with these early lessons is this. The teacher prepares such a simple brief lesson, and the material it relates to. She carefully watches the child throughout the lesson, noting every sign of interest which he takes in the object. At the end she naturally wishes to find out by some question that he has mastered this new piece of knowledge; but, if his answer shows that he has not understood, then Dr. Montessori thinks that it is better to leave the subject for that day without in any way disheartening the child. In repeating the lesson later, the teacher may see how to avoid the misunderstanding or absence of understanding of the first occasion. The fatigue factor is of course very potent with these little children, and if the child has not understood at first he will be less likely to do so on an immediate repetition of the lesson. Dr. Montessori's example of the lesson on red and blue makes this clear. The child is learning to distinguish and name red and blue. The distinguishing is probably easy. What is less easy is to associate a sound with each colour. The teacher shows him the colours and says their names distinctly. Then she probably lets the child name the colours as they lie before him. The test of acquisition is ability to pick out red or blue at command. But he fails in this. This shows that the associations are not established. The lesson needs repeating. In order not to dishearten the child he is not told of his mistake. He will not in future call blue red because of this, for if the repetitions correctly made previously have not fixed the association, this one incorrect association will not produce a greater effect. The teacher repeats the same another day, increasing the number of times the colour is named before the test on account of this experience, or securing in some way more attention on the part of the child. In dealing with other pairs of colours she will have this experience to go on. "The aim of instruction" comments Dr. Hodgson, "is that the teacher, not the taught, shall learn," but the fact is that the teacher, in order to teach, must learn. She must recognize, what Dr. Hodgson acknowledges later, that no two human creatures are quite alike, that whereas child A. learns to name red and blue correctly with half-a-dozen repetitions, child B. requires many more.

It is the great merit of the Montessori plan that by means of apparatus devised to enable the children to teach and test themselves, the teacher is set free to deal individually with some of the children and so become acquainted better than she could in collective teaching with the differences in their powers.

It makes one almost think that Dr. Hodgson has not read Dr. Montessori's book when she asks, "What are we offered in the place of order, discipline, endurance, self-sacrifice? A strange trio—patience, perseverance, and inexhaustible amiability"; for surely these three qualities, displayed by children from three to six spontaneously, contain the germ of all the virtues for which the misfortunes of later life may make a demand.

Without taking a pessimistic view, I agree with Dr. Montessori that most children of four cry frequently, that they are not allowed to touch things because they would break them, and that they need to be waited on. The speeches of some labour leaders describing the wearing life of the mother of a young family are evidence that this is a common view, and the misunderstanding of young children is one of the things that has struck me most in riding in trains and trams and walking in public parks.

Dr. Montessori's story of the baby of one-and-a-half occupied in the Pincian Gardens in filling his pail with pebbles and who would not leave off when exhorted to do so by the nurse, seemed to me quite a good illustration of the kind of misunderstanding. It was the activity that was pleasing to the baby, and to get him away without tears the nurse might have suggested his filling his pail to take home to mother. When we see a child with an "expression of protest against violence and injustice on its face," we may be sure that there is something wrong. In this case the nurse filled the child's pail and then plumped him and it into the perambulator. She made no attempt to make another activity attractive. It is this kind of stupidity in nurses and parents that some psychological training would remove. Of course Dr. Montessori does not mean that the child was in any way conscious of why he de-

rived so much satisfaction from filling his pail. She describes, in her scientific language, what this activity was doing for him. But surely there is no upside-down view of real life here.

Dr. Hodgson quotes another passage which strikes her as unreal. It describes the advent of the young teacher trained to maintain the usual kind of discipline into the children's houses. The "free discipline," as we call it, for it is not unknown even in English schools, seems to her disorder. She is embarrassed, and looks apologetically at the adults present. This would certainly happen. On visits I have paid to schools where "free discipline" is approved, I have frequently met this apologetic appeal from the teachers who have questioned me anxiously about whether I thought there was too much noise. As long as the teacher thinks that absolute quiet is the standard in the mind of the visitor, so long will she feel uncomfortable even when the children make only an amount of noise which would pass unnoticed if the visitor were not there. Finally, Dr. Montessori's new teacher had to be told only to watch. To be told this might very well appear to imply that she was unfit to teach, and it would not be surprising if she spoke of resigning.

Gradually such a teacher would discover how necessary a part of the work this watching was, and find that more, much more, was expected of her than under the old system. Certain of the acts which she sees are to be hindered, but just which cannot be as simply defined as in the system which prescribed immobility. The rest are to be studied for the sake of that knowledge of the individual children which is necessary if the teacher is to be really effective.

Experiment, and not tradition for tradition's sake, is the keynote to Dr. Montessori's attitude. When she appears in revolt against school tradition it is because she regards the customary practice as detrimental to the development of the individual child as a member of a social community. In England, perhaps, many of the faults of infant teaching which Dr. Montessori aimed at suppressing have disappeared or are tending to disappear under the influence of Froebelian ideas. It is not part of my task to compare the ideas of Froebel and Dr. Montessori. The latter is to my mind fortunately free from the symbolism of the former, and I regard the abolition of collective teaching for such young children, except in so far as they form themselves into groups and ask for it, as an advantage of the Montessori plan.

Why a scheme which is directed to securing self-control and to encouraging natural effort and the power of doing real work should be regarded as advocacy of "the primrose path" I cannot understand. It was just because I feel that there is so little of this "primrose path" in Dr. Montessori's plan, that her ideas seem to me ideas which all who care for the real education of the people ought to do their best to save from misunderstanding.

## EDUCATION IN AUSTRALIA.

[COMMUNICATED.]

LECTURING on Australia to the Incorporated Phonographic Society in the Cripplegate Institute, Mr. H. Kneebone, of the Publicity Department of the office of the High Commissioner for the Commonwealth, referred to the education systems in Australia. He said that, after having secured employment in Australia, the intelligent worker would naturally next inquire into the opportunities for educating his children so that they might be equipped for the battle of life, and here he thought Australia had no need to yield to any country. Throughout the Commonwealth education was compulsory and free; compulsory in the sense that the children had to attend school a certain number of days each year until they had reached the age of thirteen, and free in so far as there was no charge made for the instruction given. Profiting by the experience of older countries Australia had been able to construct the schools on modern lines having regard to lighting and ventilation, while the methods of instruction were right down to date. Attempts, attended by considerable success, were made each year to make the way for the scholar from the kindergarten to the University as smooth as possible, so that at all events poverty should be no bar and wealth no unfair advantage to the young student. The miner's son or daughter with the necessary talent had the same opportunity as the son or daughter of the mine owner or the wealthy squatter in the matter of education. The fine climate, again,

added materially to the advantages possessed by Australia. The children were able to attend school regularly and to receive their education in comparative comfort. Even in the sparsely peopled parts of the country, the various education departments provided teachers where the minimum number of scholars are available, and in some instances there were travelling schools, so that education was brought right to the door of the pioneer's hut or the farmer's homestead. There were secondary schools in the bigger towns, colleges and Universities in all the capitals, as well as technical schools where the lad could obtain advanced instruction in agriculture, mining, and almost any trade, so that he might be armed with a scientific training, and where the young woman also could obtain tuition in domestic economy and thus be a better helpmate for the young citizen and artisan.

## REVIEWS.

*The Life of the Spider.* By J. H. Fabre. Translated by Alexander Teixeira de Mattos. With preface by Maurice Maeterlinck. (6s. net. Hodder & Stoughton.)

In the course of the fifty-four years or so that have passed since the publication of "The Origin of Species," the belief in evolution has become widespread and generally accepted. It has indeed come to pass that passion, and even bitterness and wrath, have been roused in some of the notable quarrels between, say, the Darwinians and the Mutationists—those who believe in the cumulative effect of small variations, and those who see differentiation made possible only by sudden leaps. Still but very few voices are now raised to deny that the progress of the organic world has consisted in the gradual production of the unlike from the like. The *modus operandi* has not yet been discerned and established beyond a doubt, but the results suggest the process, and delvings into the records produce numerous pretty instances to supply links in the chain that binds the misty and synthetic past to the clear and analytic present. Science is popularly supposed to believe in nothing the causes of which it cannot understand, yet this is far from the truth. If the solution of the question "why" is its ultimate goal, yet nevertheless a large part of its work consists in the clearing up of the necessary preliminary "how." Physical and biological science can furnish their examples of this, the one, say, in gravitation, the other in evolution. Both are believed in, though neither can be explained, and it is not a sufficient refutation of evolution for a writer to say that the only ways in which he can conceive of its having been brought about are puerile or insupportable. Evolution, however, is not all a forward progress. Here and there it has led downward instead of upward, as "reduced" types testify, here and there its paths have ended in blind alleys, here and there it has been arrested, and "primitive" animals still walk the earth side by side with the highly specialized descendants of the same common stock.

The highest product of evolution, man himself, is a creature with unspecialized instincts with the power of benefiting by education, and dependent as much for successful development upon his "external heritage," as Prof. J. A. Thomson calls it, of knowledge and tradition, as upon the bodily structure bequeathed to him by his parents. In sharp contrast to man in this respect we have the insects. In this term spiders are justifiably included by J. Henri Fabre in his recent book, "The Life of the Spider." "The Insect's Homer," as he is called by Maeterlinck, who writes the preface, has for his subject those living creatures in which instinct has developed and specialized almost beyond belief. And what is the consequence? It is that while they are most admirably fitted to carry out the functions necessary to their existence as long as these are demanded in the normal order, absolute helplessness overcomes the spider confronted with the unexpected. The almost uncanny power possessed by the Narbonne *Lycosa* of stabbing her victim precisely in the fatal spot and nowhere else, is coupled with a childish inability to make a new tunnel for herself when taken from her old one and put in a place where no prepared hole exists.

Their devoted chronicler says himself of the race that they are stupid, incapable of reflection, and so forth.

It is an amusing coincidence, if it is a coincidence, that Fabre, who thus devotes himself to the study of creatures in

one of evolution's blind alleys, might himself be described from the evolutionary point of view as a "primitive" type; for he is that wonder among modern scientists, a disbeliever in evolution. He is a type of the faithful, patient, and interested observer from whom modern, i.e. post-Darwinian, biologists are descended. He sets himself problems, but troubles himself very little with the construction or verification of theories; nevertheless, he brings an infinity of care to the solution of isolated questions and the accurate observation of habits. His books, this one equally with others, interest the general reader and point the way to the scientist, suggesting, as they do, the importance of the study of habits, which are apt to be neglected in favour of anatomical structure, by the professional worker. The whole book is fascinating. It does not contain a single dull chapter. It fills the reader with astonishment at the patience, the industry, and the love of nature which have been put into the work it describes. It is only when the writer turns aside to ridicule the evolutionists, to gibe at the human law of copyright, or to propound a strange and untenable explanation of the source of the spider's energy, that he becomes dull. As long as he keeps in his own field he is inimitable.

All the chapters are interesting, and it is difficult to say which are most so, though perhaps to many the account of the spider's telegraph system will appeal most. We read how some species, e.g., the Angular *Epeira*, retire to hiding places from the heat of the day and come down to the web only when they receive a message telling them there is prey to be had there. The message is conveyed in some occult manner by a single thread stretching from the middle of the web to the hiding place, and the spider is able to interpret it so as to know when the web is merely being shaken by the wind and when it is something caught in the threads which is setting up the disturbance. Curiously enough the sight of prey, if indeed it is seen by the spider when it is placed in her way, does not excite her at all. She attends to those messages only which come by wire. When her wire is cut, no game, however tempting, draws her down. How the message is conveyed by the thread is difficult to understand. Perhaps the explanation of the spider's indifference to the wind-produced jerks and excitement in the other cases, is that the telegraph wire indicates when it is the whole web, and when only a part of it that is being shaken. In any case the suggestion of possible problems for the reader's own attempts at solution, and possible causes of difference from the author are only additional reasons for becoming acquainted with this fascinating series of essays.

*A Housemaster's Letters.* (6s. net. Smith, Elder.)

In the issue of the *Spectator* for February 1912 there appeared a "Letter to Matrona," which, as is remarked by the publishers of the present volume, attracted some attention. The author now reprints it in company with seventeen other essays of a similar nature. He writes under the name of R. C. Taylor, and he is patently a public-school master of experience and discrimination.

The letters, without exception, conform to a strict application of *ne sutor ultra crepidam*. A most modest prefatory note deprecates all claim to originality, but expresses the hope that the letters may give evidence that "the schoolmaster is alive to the problems that confront his age, is anxious to contribute his share to the solution of them, and is not, in brief, the unpractical recluse that he is sometimes supposed to be."

There is throughout the book that combination of leisured style and of entire familiarity with the immediate matter in hand, which produces the effect known as easy reading. The general tone is not dissimilar from that which is usually adopted in the writings of Mr. A. C. Benson. There is something of the same genially orthodox view of life, the same kindly sympathy for those in the foreground of the writer's experience, and the same Anglo-Saxon sense of duty, which we expect as by right from the distinguished Fellow of Magdalene. It is impossible to read "The Boy at Fifteen," "The Father," or "Marriage," without feeling that we are in touch with the mind of a man whose knowledge of his traditional work is thorough, and whose zeal for its letter and spirit is comprehensive. And through the sober reflections which are inevitable to such a mind in its particular *milieu* there runs a vein of the quiet personal humour and of the quick appreciation of

the farcical which is a fundamental of all successful dealing with the English boy. The chapter on "Sermons to Boys" is perhaps especially indicative of the author's ready faculty in this respect.

The letters to and concerning parents, moreover, contain certain plain truths which will produce in the hearts of fellow schoolmasters a pleasurable feeling that they are here "getting a little of their own back." "Stalky & Co.," as Mr. Benson has observed, gave them another kick down the ladder which they had been painfully ascending since the apparition of Squeers. Here is in truth a capable and popular exposition of some of the views of the other side. From the retreat in good order of the Gradgrind father, to the annihilation of the pestering mother of the lyrical prodigy of twelve, there is matter for the furious thinking of many homes and for the chuckles of every common room and study.

There is, however, an atmosphere in this book which we think is rather at variance with the writer's desire to show that he and the ideas he represents are in touch with the problems of the day. His championship of the established studies may be passed over: he mentions them but little, being more concerned with the work of "the House." And indeed there would be few who, face to face with men of the type of Sir Wormold Denton, would not be goaded into enthusiasm for any subject whatever, in direct proportion to its uselessness. But, taking his duties at his own estimation, it is difficult to think him in touch with matters external to the peculiar microcosm of English specialization which is known as the public school. With regard to the social questions of the day—and there are few others—he reminds us of the Guard at the door of the railway carriage in "Alice Through the Looking-Glass." Alice, it will be remembered, occupies in Tenniel's drawing the seat next the window. The Guard looks at her at this range first through a telescope, then through a microscope, and then through an opera-glass. At last he says to her, "You're travelling the wrong way," shuts up the window, and departs.

A similar sense of perspective and a similar attitude of detached if conscientious interest appear to be manifested even in the letters which deal with social matters. There is an account, indeed, of an experiment of bringing to a pupil's notice the way in which two-thirds of his countrymen live. Affectionate and earnest advice is given, moreover, to those who wish to do "social work." Phrases here and there refer to the millions who are so occupied with the elusiveness of the next meal that they are unfortunately unable to be interested in a stylish cut or in a really safe place-kick. But the general impression received is one of aloofness from the imminence of things. The writer does not appear to regard the world as it stands for him as anything but axiomatic. He recognizes that its evils are regrettably numerous, and is concerned that they should be the subject of palliative treatment at the hands of the fortunate few whose characters and lives he so admirably moulds. But he does not seem to have any idea that beneath the stratum of society which sends its boys to be guided by his splendid care and to receive every advantage which can be conceived by his anxious brain, there is a mass of ever-growing, confident, and insistent opinion—incorrect, no doubt—that he and they ought not even to exist as they are. Such concessions as "We have much lee-way to make up in our understanding of the masses and their conditions, and it is good for the rich and well-educated to occupy their thoughts in such matters" are almost stupefying in view of the present state of feeling in the country.

Does "R. C. T." really believe that the transport workers, the railway men, the miners, the bakers, the dockyard artificers, whose demands and threats we hear perforce with greater readiness every day of our lives, are going to be settled into satisfactory quiescence by such means as a revival of a house-to-house visitation of their "uninteresting" dwellings by their employers' wives? Has he ever tried the experiment of reminding a modern meeting of working men that he and they both "serve the same King" as an inducement to better behaviour?

We cannot but think that an entire mental readjustment concerning the position of the "privileged class" might be advisable in the case of the author and, probably, of the majority of those of his pupils who are old enough to think. We have in fact rarely met personally the public-school boy of the higher

forms who has anything but a remote and academic interest in the power and meaning of the advanced democracy of the day. It is usually to him not more than a subject for the unpopular and humorous side of the Debating Society meeting. And yet the probability that the force of which we speak will before long be strong enough to affect very materially his whole life and position is very far from being remote.

This, however, is but one point in an interesting and attractive volume, which will be read with pleasure for its intimacy with the sphere of work of which it treats; and which, despite the disclaimer in the preface, throws new light upon the subtle relationships between teacher and taught, as developed in what is perhaps the most favourable environment in the world.

*Lord Chatham and the Whig Opposition.* By D. A. Winstanley, M.A., Fellow and Lecturer of Trinity College, Cambridge. (7s. 6d. net. Cambridge University Press.)

Mr. Winstanley needs to offer neither apology nor defence for a special and detailed narrative of the struggle between the Crown and the Whig factions during the five years from the formation of Lord Chatham's Ministry in July 1766 to the triumph of Lord North over the Whig Opposition in the summer of 1771. The result of the struggle, indeed, has long been reversed, the story of the conduct of the struggle is often tiresome and oftener stupid, and the whole episode is "ancient history" enacted in a political atmosphere that lies beyond the experience of modern times in this country. But, for all that, the establishment of the personal power of the Crown under George III had vital consequences in English history, and it is well that a competent student should devote a substantial volume to a detailed analysis of the means adopted by the King to attain his end and of the proceedings of the political groups that exerted themselves to thwart his aspirations. Mr. Winstanley has diligently availed himself of the information stored in the Newcastle, Hardwicke, Wilkes, and Pitt Papers, and indeed has not neglected any of the available sources. Generally he shows good judgment in dealing with situations where the precise facts are wrapped up in discrepancies of statement or can be attained only by inference; and it may be that it is not altogether an amiable weakness to relieve occasionally the darkness of the colours in which some of the foremost men of the period have been traditionally painted by historians. Without questioning the honesty of the King, one is inclined to doubt whether the superior credit that Mr. Winstanley assigns to George's ability should not rather be apportioned to his obstinacy, though no doubt he was tolerably shrewd. Again, it is difficult to sympathize with the praise of Grafton for his devotion to Chatham in a position that he acknowledged himself incompetent to fill, and was in fact incompetent to fill, in the national interests. Even when full account is taken of Chatham's disablement by illness, his conduct or non-conduct of the Government was painfully unsatisfactory, and his principles of action were obviously hopeless of success. Probably Rockingham, with all his weaknesses, comes most successfully out of the ordeal. But what result other than disaster was to be expected from a multifarious Opposition so singularly unable to combine on the main points of attack? We agree with Mr. Winstanley, however, that the battle, such as it was, was usefully waged, though perhaps for somewhat different reasons—for its more immediate effects rather than for its ultimate influence as an example. "No little instruction," says Mr. Winstanley, "can be gleaned from blunders and mistakes in the past"; and everybody will agree, provided always that the facts are studied and laid to heart. "And a study of this brief though critical period in the reign of George III enforces the old lesson contained in the well-known adage 'United we stand, divided we fall.'" But really who wants to study this episode in order to be satisfied of the truth of the "well known" adage? And what statesmen ever go to history for guidance? Let Mr. Winstanley but look into the columns of his daily newspaper, and meditate on what he finds there in the light of his "well known" adage. The fact is, we must probe the matter deeper: if the opposition to the King had been the strongest motive with each of the different sections, then they would have united promptly enough. It is the reserves that exercise the ultimate control. All the same, if not for unteachable states-

men, at any rate for students of our constitutional history, this work will be found valuable. It is fluently written, but the style is grievously redundant: it might advantageously be reduced by one-third in bulk, mostly by mere omission of verbiage.

With great reluctance we must add a word on the punctuation, which is manifestly controlled by the publishers, for the same system is applied in other works issued by them. It may be partly influenced by the vagaries of German printers, or by the incalculable freaks of older English compositors; it is divorced from common sense; and, fortunately, it is far from consistently applied—indeed, from its irregularity one gets the impression that it is in the tentative stage. We must say at once that it is intolerable. "Townshend, not only revealed . . . , but frankly avowed . . ." Who wants a comma after "Townshend"? "And, what anyone might have foreseen, had come to pass"—where is the use of those irritating, and indeed misleading, commas? And who wants a sentence chopped up by isolation of adverbs or small adverbial phrases totally destitute of emphasis? The very different cases of co-ordinating and restrictive phrases and clauses seem wholly beyond the grasp of the punctuator. We are accustomed to such excellent work from the Cambridge University Press that we feel bound to make a protest against a perverse and irritating practice.

## GENERAL NOTICES.

### MATHEMATICS.

*A School Algebra.* Parts II and III. By H. S. Hall, M.A. (2s. 6d. Macmillan.)

Mr. Hall's lucid methods of discussion are thoroughly familiar to teachers and students of algebra. In his "School Algebra" the author has necessarily had regard to the recent scheme for the reform of the teaching of elementary mathematics generally. Parts I and II of the present textbook have already been brought to our readers' notice. Part III, which completes the school course suggested for the average pupil, considers the binomial theorem, together with the theory leading up to it, partial fractions, the use and some of the applications of the exponential and logarithmic series, scales of notation, elementary inequalities, and advanced equations of various types.

*A New Algebra.* Vol. II. By S. Barnard, M.A., and J. M. Child, B.A., B.Sc. (4s. Macmillan.)

An excellent continuation of a textbook the first volume of which was favourably reviewed in these columns rather more than a twelve-month since. Numbers IV to VI of the six "Parts" which form the entire ordinary school course are included in the second volume. The remarks made on the earlier publication are not less applicable to the present one. Sound principles underlie the treatment of the subject, and, regarded as a teacher's manual, the work will be found to occupy its highest position. It may be anticipated that the third volume, which will be issued later and which provides a course for public-school pupils specializing in mathematics, will be of a similar order of excellence.

*Algebra for Beginners.* By C. Godfrey, M.V.O., M.A., and A. W. Siddons, M.A. (2s. 6d. Cambridge University Press.)

Essentially modern in character and well and attractively written, this little work affords a good introductory course in the subject.

*Numerical Trigonometry.* By J. W. Mercer, M.A. (2s. 6d. Cambridge University Press.)

This is a brightly written, useful little volume, designed for pupils under fifteen years of age, and directly connected with the author's "Trigonometry for Beginners," from which a large proportion of the present work has been borrowed. The diagrams and exercises are very numerous, the former being clearly drawn and satisfactorily reproduced.

*Lectures on Fundamental Concepts of Algebra and Geometry.* By John Wesley Young. (7s. net. Macmillan Company.)

A very interesting volume, not merely embodying the subject-matter of a valuable series of University lectures, but also presenting it to the reader in practically the same direct and vivid form in which it was discussed orally. The author combines with the knowledge of the scholar the power of the teacher; hence the specially attractive quality of the instruction, which, thanks to the assistance of an expert in shorthand, Prof. Young has been enabled to afford to a circle of students far wider than that privileged to listen to the lectures themselves. Naturally, the individual lectures cannot all be

(Continued on page 174.)

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of equal interest; perhaps the second of the series, in which Poincaré's non-Euclidean world plays an important part, may be referred to as one of the best in the entire course. It is also fitting to draw attention to Prof. U. G. Mitchell's able contribution to the volume, which takes the form of a chapter on the growth of algebraic symbolism.

- (1) *Elementary Geometry*. By A. E. Layng. (3s. Murray.) (2) *A Shorter Geometry*. By C. Godfrey, M.V.O., M.A., and A. W. Siddons, M.A. (2s. 6d. Cambridge University Press.) (3) *An Introduction to Geometry*. By E. O. Taylor, B.A., B.Sc. (1s. 6d. Clarendon Press.)

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(3) Mr. Taylor's "Introduction to Geometry" is an excellent little book, dealing with Stages I and II of the course in geometry recommended by Circular 711 issued by the Board of Education.

*A Chapter in the Differential Calculus*. By Sarádákánta Gangopádhya, M.A. (Cuttack: Orissa Mission Press.)

The author of the pamphlet claims to have established a rigorous direct proof of Taylor's theorem, and, assuming the validity of the line of argument he has adopted, he is to be congratulated on having carried through an important piece of work. Unfortunately, the pages of the text are by no means easy to follow. The notation of the main investigation is cumbersome and the demonstration is preceded by the enunciation and discussion of a number of lemmas. Of these, the first requires that the nature of the quantities  $q$  and their relative magnitudes should be definitely indicated, since the theorem does not permit them to be entirely free from restriction. Again, whilst the fourth lemma may be absolutely accurate, at least one important step in the proof is omitted, and it is difficult to supply the lacuna. Instances of defective printing occur here and there. It follows that in its present form the publication, however ingenious, is scarcely likely to be widely read by the student of the calculus.

*Geometry for Schools*. Vols. I-IV. By W. G. Borchardt, M.A., B.Sc., and the Rev. A. D. Perrott, M.A. (3s. Bell.)

The modern methods of teaching the elements of mathematical subjects to junior pupils differ so entirely from those that preceded them that there is no reason to marvel at the host of fresh textbooks which are constantly being produced and which aim at giving practical expression to the new ideas. It is certain that only a strictly limited number out of them all can become established firmly as standard treatises; the weaker will, of necessity, be forced into the background or disappear from use altogether. In the struggle for existence, the present work probably stands as good a chance of survival as most amongst its many rivals, for the course of instruction outlined is useful, the language of the text is, as a rule, satisfactory, and the varied forms of issue—all attractive—make the book very suitable for class purposes.

*Practical Geometry and Graphics*. By D. A. Low, Professor of Engineering, East London College. (Pp. vi, 448. Longmans.)

The author states that he has sought "to provide in this work a fairly complete course of instruction in practical geometry for technical students." Examination will show not only that he has compressed into very moderate compass a vast amount of valuable material, but also that he has done so with surprisingly little sacrifice of clearness. His success is due very largely to the admirably clear and informative illustrations, of which there are over eight hundred. The large number of excellent examples—most of them original—will help to make Prof. Low's book indispensable to the serious student of engineering.

#### SCIENCE.

*Modern Inorganic Chemistry*. By J. W. Mellor, D.Sc. (7s. 6d. Longmans.)

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information has a definite educational and practical value. The historical treatment is only one of many excellent and pleasing features, and we feel assured that the book will not only arrest, but will hold, the attention and interest of all classes of readers.

*A Systematic Course of Practical Physics*. Book I: *Introductory Physical Measurements*. By A. W. Mason, B.Sc., B.A. (1s. 6d. net. Rivingtons.)

A useful little book that can be well calculated to help train the student in acquiring a knowledge of scientific method and at the same time assist in the development of a feeling of initiative. The method of carrying out the various exercises and experiments is described in clear, concise language, and the system indicated for the tabulation of results will tend to both neatness and accuracy, and lead ultimately to results being recorded in a logical and satisfactory manner.

*Junior Sound and Light*. By R. W. Stewart, D.Sc. Lond., and John Satterly, D.Sc., M.A., Lecturer at the University of Toronto. (2s. 6d. University Tutorial Press.)

A useful and comprehensive textbook on elementary sound and light. The text is interspersed with well chosen experiments and examples, and the diagrams are clear. Encouraging the student to experiment for himself, the book at the same time discourages him from using those set formulæ which are so frequently just memorized, and thereby prove a stumbling-block to an intelligent appreciation of the physical principles that form the basis of the work.

*Modern Research in Organic Chemistry*. By F. G. Pope, B.Sc. Lond., F.C.S. (7s. 6d. Methuen.)

Students frequently experience difficulty in following up the progress of research work when studying a complex subject like organic chemistry, where it is essential that current ideas should be closely kept in touch with. By giving not only a summary of all recent research work, but, in addition, an idea of the development of some of the more important branches of organic chemistry, this book can be undoubtedly said to form a most valuable asset to the student of the subject. A list of the sources of reference appended at the end of each chapter greatly enhances the value of the work.

*A Course of Elementary Practical Physics*. Part I: *Mensuration, Mechanics, Hydrostatics*. (2s.) Part II: *Heat and Light*. (3s.) By H. V. S. Shorter, B.A., Senior Science Master, King Edward VII School, Sheffield. (Clarendon Press.)

A comprehensive collection of laboratory experiments interspersed with appropriate questions which, it is intended, experimental observation should enable the student to answer. Spaces are left on which the student is expected to enter up an account of the experiment, with the calculations. The books are suitable for use in any laboratory with the average equipment, but special notes on apparatus are given in an appendix. A disadvantage is the absence of illustrations or diagrams, but in spite of this the books may be classed amongst the best of their type.

*Essentials of Physics*. By George Anthony Hill, A.M., formerly Assistant Professor of Physics in Harvard College. (5s. Ginn.)

The author considers that the best way of teaching physics is through a system of question and answer, and has arranged the subject-matter in the form of a series of questions, arranged in excellent sequence, and covering the whole range of elementary physics. Each main branch has been subdivided into distinct sections. The first two or three questions in each of these sections are answered concisely, and, being fundamental, are intended to give the information necessary for answering the other questions in the section. The book will enable students to get constant practice in numerical work as well as in descriptive work, but the whole value of the training to be derived from it will depend chiefly on the amount of supervision possible. Apparently no one branch receives more detailed treatment than any other; but the sections dealing with the practical application of heat problems might, perhaps, have been omitted as unsuited for elementary treatment. Illustrations have been inserted where necessary.

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*A Short History of Early England to 1485*. By H. J. Cape, M.A. Oxon., B.A., B.Sc. London, F.R.Hist.S., Head Master of St Joseph Williamson's Mathematical School, Rochester. With six maps. (2s. 6d. Methuen.)

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he should have made him "sign" it on page 114. We do not think there is anything like adequate evidence that Bruce "treacherously murdered" Comyn, or indeed "murdered" him at all; and it is quite certain that the extravagant numbers of the combatants at Bannockburn are unhistorical guesses of stay-at-home chroniclers. It is unfortunate, too, to repeat the absurd title of the "English Justinian," which some writers that ought to know better have conferred on Edward I. The book, if somewhat overburdened with details, is clearly and agreeably written, and will be useful for its purpose.

*Queen Anne.* By Herbert Paul. (7s. 6d. Hodder & Stoughton.)

This work was originally published half a dozen years ago with numerous illustrations. The present is a "new and revised" edition without illustrations. It is a piquant sketch of politics, literature, society, and manners, during the reign of Queen Anne. It should find a place in the school library for collateral reading.

"The English People Overseas."—Vol. III, *British North America*; Vol. IV, *Britain in the Tropics*; Vol. V, *Australasia*. By A. Wyatt Tilby. (6s. each. Constable.)

Another volume, on South Africa, will complete the series. The space that the author has allotted himself enables him to set forth the history of the various dominions on a considerable scale. He has evidently worked indefatigably in multifarious records beyond the ordinarily accessible books—in old newspaper files and forgotten pamphlets; and generally he shows independent thought in dealing with the great variety of situations, political, social, and other, that are developed in these volumes. The style is simple and easy; indeed, it would be improved by compression. The latest volume, on Australia and New Zealand, is perhaps the most important and the most opportune of the three, including, as it does, an adequate discussion of the main questions now to the fore; but they are all very useful and ample contributions to the history of the English people overseas.

*A Source Book of English History.* For the use of Schools. Edited by Arthur D. Innes, M.A., formerly Scholar of Oriel College, Oxford. Vol. I, 597-1603 A.D. (4s. 6d. Cambridge University Press.)

The era of the Source Book has fairly set in, and the present volume will at once take front rank. The series of extracts are drawn entirely from works of writers contemporary with the events illustrated; there is only a single exception to this rule—the case of the

Venerable Bede. The contemporary writer may not always see the facts and their bearings so clearly as later students, but his view is always important and interesting. The various aspects of the national life and development are reflected in prose and verse, and there are 31 illustrations—reproductions of authentic portraits, pictures from old manuscripts, photographs of historic scenes. The book will be extremely useful as a companion to the classbook History. It is admirably printed and got up.

*In Byways of Scottish History.* By Louis A. Barbé, B.A., Officier d'Académie. (10s. 6d. Blackie.)

The title of this very attractive book prepares the reader for detached sketches, and not for a connected and systematic narrative of any period. The chapters deal mainly with episodes of the sixteenth and early seventeenth centuries. Seven of the twenty are concerned with Mary Queen of Scots (the Morton portrait of whom makes a fine frontispiece) and the Four Marys. M. Barbé prints the complete "Song of Mary Stuart"—for the first time at full length in this country, we think—and argues strongly that the poem was composed by Brantôme, and not at all by Mary. Besides these, some of the other chapters are devoted to the Stuarts. The last essay is "The Story of the Long-Tail Myth," which is admitted on the remote ground "that it was French at a time when, as regards antipathy against England, the agreement between France and Scotland was a very close one," with the supplementary excuse "that some of the Scottish chroniclers are amongst those who supply the most valuable information concerning both the prevalence and the alleged origin of the quaint medieval belief that Englishmen had tails infixed on them in punishment of the impiety of some of their pagan forefathers." Anyhow, it is too amusing to be quarrelled with. The whole work is extremely interesting, and it is written with fluent ease.

## ENGLISH.

*The Pageant of English Prose.* Edited by R. M. Leonard.

(743 pp. 1s. 6d. net and 2s. Oxford University Press.)

This volume, which forms a companion to "The Pageant of English Poetry," casts a very wide net, including representative passages from no fewer than 325 authors. It is not easy, indeed, to think of any memorable prose writer in our language who has been omitted from the list. Space might, perhaps, have been found, however, for a specimen of the work of so characteristic an Elizabethan writer as Richard Mulcaster. No pains have been spared in performing the

task of selection, and excellent judgment has been shown. The book offers a very valuable conspectus of our prose literature, and should prove useful alike to the schoolmaster and the general reader.

- (1) *The Indian Theatre*. By E. P. Horowitz. (215 pp. Blackie.)  
 (2) *Persian Literature*. By Claud Field. (331. 3s. 6d. net. Herbert & Daniel.)

These two little volumes serve a useful purpose in popularizing a knowledge of the literature of the Asiatic branches of the Aryan peoples, whose life and thought must always have a special interest for their Western cousins. In the former we have a very pleasantly written account of the development of the Sanskrit drama, the independence of which is fully vindicated. In the latter volume, which forms one of the series of "Illustrated Literary Cyclopedias," the great Persian writers are skilfully passed in review from the earliest times up to the works which in our own day expound the doctrines of Babism. The book is usefully illustrated by reproductions from illuminated manuscripts.

*The Baron of Brandaun*. By Margery Barfield and Eleanor Trotter. (75 pp. 1s. net. Blackie.)

This little historical play makes a very useful addition to the storehouse of material that is now accumulating for the purpose of enlisting in young people a more active interest in the life of bygone times. The scene is laid in the days of Magna Carta, and considerable ingenuity is shown in introducing a variety of phases of contemporary manners and customs. The characters are numerous and are such as both boys and girls would find pleasure in representing. The dramatic interest is well sustained and the requisite flavour of antiquity is given to the dialogue by the excusable device of introducing freely such expressions as "prithee" and "methinks." Some useful hints are given in regard to suitable costume by the diagrams at the end.

*Longer Narrative Poems (Nineteenth Century)*. Edited by George G. Loane, M.A. (109 pp. 1s. Macmillan.)

This latest addition to Mr. Fowler's series of reading books for use in secondary schools will be welcomed as likely to fill successfully an obvious niche in the curriculum. Perhaps Sir Samuel Ferguson's "Conary" is scarcely worthy of a place beside such works as Keats's "St. Agnes' Eve" and Tennyson's "Morte d'Arthur"; but, on the whole, the selection is decidedly to be commended.

*English Life and Manners in the Later Middle Ages*. By A. Abram, D.Sc. Lond., F.R.Hist.S. With 77 illustrations. (6s. Routledge.)

Dr. Abram means by "the Later Middle Ages" mainly the years that lie between the Black Death and the end of the fifteenth century—"a period which is fairly homogeneous and of immense importance in the history of the development of our national character, for it was a time when old institutions and ideals were breaking down and many new influences were brought to bear upon the people." In those days class distinctions were far more real and important than now. Dr. Abram illustrates life among the aristocracy, life in towns, in the church and in the monastery, in business, in the family; the condition of the unemployed and the aliens; fashions in eating and drinking as well as in dress; the housing, education, and amusements of the people; the state of the public health and the difficulties of travel; and finally sums up the more pronounced characteristics of the period. One scarcely needs the long and useful array of authorities in the appendix to appreciate the immense difficulty of bringing together in systematic narrative those typical illustrations. The author has laboriously sought them out in contemporary sources—historical and literary works, official documents, illustrated manuscripts, and so forth. The text is most interesting as well as most variously instructive, and the pictures, many of them sufficiently curious, add sensibly to the value of the work.

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- How New York City Administers its Schools: A Constructive Study. By Ernest Carroll Moore, LL.B., Ph.D. World Book Company, New York.  
 Plays for Pedagogues. By F. H. Hayward. Ralph, Holland, 1s. 6d. net.  
 Where Education Fails. By Preston Weir, B.A. Ralph, Holland, 1s. net.  
 A Montessori Mother. By Dorothy Canfield Fisher. With an Introduction by E. G. A. Holmes. Constable, 4s. 6d. net.  
 Thomas Ruddle of Shebbear: A North Devon Arnold. By G. P. Dymond, M.A. Hooks, 1s.  
 Technical School Organization and Teaching. By C. Hamilton, with preface by G. Udny Yule. Routledge, 2s. 6d. net.  
 Character in the Making. By Abel J. Jones, M.A. Murray, 2s. net.

### CLASSICS.

- Selections from Ovid: Heroic and Elegiac. Edited by A. C. B. Brown, M.A. Part II. Clarendon Press, 1s. 6d.  
 Homer's Iliad: Books XIX and XX. Translated by E. H. Blakeney, M.A. Bell, 1s.  
 The Year's Work in Classical Studies, 1912. Edited by Leonard Whibley, M.A. Murray, 2s. 6d. net.  
 Thucydides: Histories. Edited by T. R. Mills, with a general introduction by H. Stuart Jones. Clarendon Press, 3s. 6d. (Notes only, 2s. 6d.)

### FRENCH.

- Gobseck et Jésus-Christ en Flandre. By Honoré de Balzac. Edited with introduction, notes, and index by Dr. R. T. Holbrook, of Bryn Mawr College. Frowde, 3s. net.  
 Blackie's French Text.—Monsieur de Pourceaugnac, 10d. Le Petit Gars, 8d. Le Tueur de Lions, 4d.  
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 Matriculation Directory, January 1913. The Universal Tutorial Press, 1s. net.  
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 A Theory of Time and Space. By Alfred A. Robb, M.A., Ph.D. Heffer, 6d. net.  
 Day Technical Schools for Boys. Cookery and Waiting. L.C.C. Westminster Technical Institute.  
 The Schoolmasters Yearbook and Directory, 1913. The Yearbook Press, 12s. 6d. net.  
 The Public Schools Yearbook, 1913. The Yearbook Press, 5s. net.

MATHEMATICS.

Readers desiring to contribute to the *Mathematical columns* are asked to observe the following directions very carefully:—

- (1) To write on one side only of the paper.
- (2) To avoid putting more than one piece of work on a single sheet of paper.
- (3) To sign each separate piece of work.

17248. ("SOLIDUS.") — Write down the equation whose roots are  $a/\beta, \beta/a, a/\gamma, \gamma/a, a/\delta, \delta/a, \beta/\gamma, \gamma/\beta, \beta/\delta, \delta/\beta, \gamma/\delta, \delta/\gamma$ , where  $a, \beta, \gamma, \delta$  are the roots of  $x^4 + px^3 + qx^2 + rx + s = 0$ .

Solution by F. E. RELTON, B.Sc., B.A., and others.

Denoting the ratio of two roots by  $\kappa$ , we have  $a$  and  $\kappa a$  both roots; whence

$$a^4 + pa^3 + qa^2 + ra + s = 0 \dots\dots\dots (1),$$

$$\kappa^4 a^4 + p\kappa^3 a^3 + q\kappa^2 a^2 + r\kappa a + s = 0 \dots\dots\dots (2).$$

To eliminate  $a$ , first subtract and divide by  $(\kappa - 1)a$ ; therefore

$$La^3 + pMa^2 + qNa + r = 0 \dots\dots\dots (3),$$

where  $L = 1 + \kappa + \kappa^2 + \kappa^3$ ,  $M = 1 + \kappa + \kappa^2$ ,  $N = 1 + \kappa$ .

Eliminating  $a$  between (1) and (3), we have as the result

$$\begin{vmatrix} 1 & p & q & r & s & 0 & 0 \\ 0 & 1 & p & q & r & s & 0 \\ 0 & 0 & 1 & p & q & r & s \\ L & Mp & Nq & r & 0 & 0 & 0 \\ 0 & L & Mp & Nq & r & 0 & 0 \\ 0 & 0 & L & Mp & Nq & r & 0 \\ 0 & 0 & 0 & L & Mp & Nq & r \end{vmatrix} = 0.$$

17362. (A. W. H. THOMPSON.)—Prove the following space analogue of the sine formula of a triangle:—Let  $a, b$  be two points and  $\gamma$  a line in space; denote the plane containing  $a, \gamma$  by  $B$ , that containing  $b, \gamma$  by  $A$ , and the join of  $a, b$  by  $\gamma'$ . Then

$$\frac{|(ab)|}{\sin(AB)} = \frac{|(b\gamma)|}{\sin(B\gamma')} = \frac{|(\gamma a)|}{\sin(\gamma'A)},$$

where  $(ab)$  denotes the distance between  $a, b$ ;  $(a\beta)$  or  $(\beta a)$  the perpendicular distance from  $a$  on  $\beta$ ;  $(AB)$  denotes the angle between  $A, B$ ; and  $(A\beta)$  denotes the angle between  $A$  and  $\beta$  and  $(\beta A) = -(A\beta)$ .

Solutions (I) by Professor T. L. CSADA;

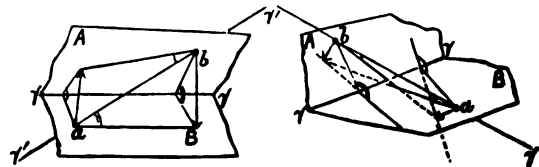
(II) by Professor J. C. SWAMINARAYAN, M.A.

(I) Denote by  $(aA)$  and  $(bB)$  the perpendicular distance between  $a, A$  and  $b, B$ . Then

$$|(aA)| = |(ab)| \sin |(\gamma'A)| = |(\gamma a)| \sin(AB)$$

$$\text{and } |(bB)| = |(ab)| \sin |(B\gamma')| = |(b\gamma)| \sin(AB).$$

These expressions give the result required.



(II) Let the straight line  $\gamma$  be taken as the axis of  $Z$ , and the plane through  $a, b$ , perpendicular to  $\gamma$ , as the plane of  $(xy)$ .

Then the coordinates of  $a, b$  may be taken to be  $(x_1y_1), (x_2y_2)$ , respectively. The equation of plane  $A$  is

$$x/x_2 = y/y_2 \text{ or } y_2x - x_2y = 0,$$

and the equation of plane  $B$  is

$$x/x_1 = y/y_1 \text{ or } y_1x - x_1y = 0.$$

$$\sin(AB) = \frac{x_2y_1 - x_1y_2}{\sqrt{[(x_1^2 + y_1^2)(x_2^2 + y_2^2)]}}$$

$$|(ab)| = \sqrt{[(x_1 - x_2)^2 + (y_1 - y_2)^2]} = \delta \text{ say,}$$

$$\frac{|(ab)|}{\sin(AB)} = \frac{\delta \sqrt{(x_1^2 + y_1^2)} \cdot \sqrt{(x_2^2 + y_2^2)}}{x_2y_1 - x_1y_2} \dots\dots\dots (1),$$

$$|(b\gamma)| = \sqrt{(x_2^2 + y_2^2)},$$

(Continued on page 180.)

1913.

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## SYLLABUS.

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II. (Feb. 20.) *The Habitual.*—Meaning of habit: relation to consciousness: co-ordination and accommodation: place of association in organic development: continuum of common interest: convergent and divergent association: reintegration: projection: habit making and habit breaking: intellectual side: fact into faculty: imitation and suggestion: manipulation of habits: suggestion depends on paid-up mental capital.

III. (Feb. 27.) *The Perceptual.*—Nature of sensation: sense organs: five gateways of knowledge: organization of knowledge: perception: cognitive aspect of sensation: objective inference: "training of the senses": fallacy: apperception: observation: relation to inference: observation zone: inference point: zone of inference: gaping point: the two worlds: nature of relation between them: resemblance and correspondence.

IV. (Mar. 6.) *The Conceptual.*—Conception distinguished from perception: conception essentially active and subjective: psychological and logical concept: nature of ideas: presented content and presentative activity: fusion, complication and arrest: mediate and immediate recall: concept really the power to behave intelligently in relation to certain stimuli: the series—percept, image, generalized image (type) concept.

V. (Mar. 13.) *Modes of Expression.*—Relation between impression and expression: various theories of origin of speech: possibility of thought without speech: words and their meaning: connotation and denotation: transitive and intransitive words: definition: laws of classification: gestures: deliberate and non-deliberate: term *gesture* sometimes limited in application: all kinds of gestures are important to the teacher.

VI. (April 17.) *Memory.*—As natural endowment: not limited to intellectual processes: personal identity: possibility of improving the natural memory: retention and recall: Bergson's two kinds of memory: use of the memory: predominance of purpose: need for selection: learning by rote: mnemonics and the educational applications: "pictorial" and "rational" memory: memory in relation to imagination and to reality.

VII. (April 24.) *Imagination.*—An inverted memory: prevailing misconceptions: unwarranted restriction to the aesthetic side of school life: relation of conception to imagination: free and constrained imagination: limitations imposed by "picture thinking": importance of clearly imaged ends: function in science: the framing of hypotheses: place in the teaching of geography and history: nature and moral value of ideals: day dreaming.

VIII. (May 1.) *Attention and Interest.*—Attention as general innate quality: index of educability: prehensile process: quarrels about classification of kinds of attention: absorption: relation to the will: interest the pleasure-pain aspect of attention: interaction between interest and attention: confusion between the interesting and the pleasant: drudgery: interest as means and as end: the mechanism of attention: rhythm: concentration and diffusion beats.

IX. (May 8.) *Temperament and Type.*—Nature of temperament: its permanency: Lotze's view and its educational applications: physical attributes of the temperaments: relation of temperament to personality: meaning of type: contrast with *average*: personal coefficients: classification of pupils by types: dangers: the superposition of classes: practical use of the type in school: abbreviated thinking: ideal pupil as standard: specification of types.

X. (May 15.) *The Emotions.*—Nature: cause of their disrepute among philosophers: various theories: emotions to be utilized not eliminated: relation to passions and to the intellect: expression of the emotions: Lange-James theory; McDougall's theory of the relation between instinct and emotion: connexion between emotion and desire: the mechanism of the emotions and its manipulation by the teacher: practical distinction between emotions and sentiments.

XI. (May 22.) *The Will.*—Nature of will: relation to emotions and to desire: influence of mere knowledge on will: nature and function of motives: fallacy underlying the phrase "the strongest motive": freedom of the will in relation to the teacher's influence as an educator: relation of will to character and of character to conduct: genesis of the will in the individual; subjective and objective character: plasticity and rigidity of character.

XII. (May 29.) *Reasoning.*—General nature and relation to judgment: thinking means the fitting of means to ends by the use of ideas: always implies purpose: thinking as opposed to reverie: imagery in thinking: abstract thought: laws of thought as thought: conditions under which all thinking must have the same conclusions: possibility and causes of error: teacher's power to control the thinking of his pupils: manipulation of the matter of thought.

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$\sin(B\gamma') = \cos(\text{angle between } \gamma' \text{ and normal to the plane B})$   
 $= -\frac{(x_1 - x_2)y_1 - x_1(y_1 - y_2)}{\delta \sqrt{(x_1^2 + y_1^2)}} = -\frac{x_1y_2 - x_2y_1}{\delta \sqrt{(x_1^2 + y_1^2)}}$

$|(a\gamma)| = \sqrt{(x_1^2 + y_1^2)}, \quad \sin(\gamma'A) = -\frac{x_1y_2 - x_2y_1}{\delta \sqrt{(x_2^2 + y_2^2)}}$

therefore  $\frac{|(b\gamma)|}{\sin(B\gamma')} = \frac{|(\gamma a)|}{\sin(\gamma'A)} = \frac{\delta \sqrt{(x_1^2 + y_1^2)} \cdot \sqrt{(x_2^2 + y_2^2)}}{x_2y_1 - x_1y_2}$

therefore  $\frac{|(ab)|}{\sin(AB)} = \frac{|(b\gamma)|}{\sin(B\gamma')} = \frac{|(\gamma a)|}{\sin(\gamma'A)}$

17257. (Professor R. SRINIVASAN, M.A.)—Show that

$$\int_0^{\pi} x \operatorname{cosec} x \sin \alpha \, dx = \pi + \int_0^{\pi} \frac{x \cot x \cos x \, dx}{(1 + \sin x \sin \alpha)^2}$$

Solutions (I) by Professor E. J. NANSON; (II) by A. M. NESBITT, M.A.

(I) Since  $\int_0^{\pi} x f(\sin x) \, dx = \pi \int_0^{\pi/2} f(\sin x) \, dx$ ,

it is sufficient to prove

$$\int_0^{\pi/2} \frac{1 + \sin x \sin \alpha - \cos^2 x}{(1 + \sin x \sin \alpha)^2} \frac{dx}{\sin x} = 1,$$

i.e.,  $\int_0^{\pi/2} \frac{\sin x + \sin \alpha}{(1 + \sin x \sin \alpha)^2} \, dx = 1,$

i.e. (replacing  $x, \alpha$  by their complements),

$$\int_0^{\pi/2} \frac{\cos x + \cos \alpha}{(1 + \cos x \cos \alpha)^2} \, dx = 1.$$

Now this follows by differentiating to  $\alpha$  the obvious result

$$\int_0^{\pi/2} \frac{\sin \alpha}{1 + \cos x \cos \alpha} \, dx = \alpha.$$

(II) We have to prove that the difference between the two integrals =  $\pi$ ; i.e., that

$$U \equiv \int_0^{\pi} \frac{x \sin x + z}{(1 + z \sin x)^2} \, dx = \pi,$$

$z$  being  $\sin \alpha$ . Now we have

$$\int x \sin^m x \, dx = \frac{m-1}{m} \int x \sin^{m-2} x \, dx - \sin^{m-1} x \frac{mx \cos x - \sin x}{m^2};$$

so that, if  $I_m = \int_0^{\pi} x \sin^m x \, dx$  ( $m > 1$ ), we get

$$I_m = I_{m-2}(m-1)/m.$$

Since  $z \sin x < 1$ , the expression to be integrated is

$$(x \sin x + z)(1 - 2z \sin x + 3z^2 \sin^2 x + \dots + \text{ad inf.}).$$

Integrated between the limits, this yields

$$\frac{1}{2}z^2\pi^2 + I_1(1-2z^2) - I_2z(2-3z^2) + I_3z^2(3-4z^2) \dots \\ = \frac{1}{2}z^2\pi^2 + I_1 - 2I_2z + z^2(3I_3 - 2I_1) - z^3(4I_4 - 3I_2) \dots \\ \pm z^m [(m+1)I_{m+1} - mI_{m-1}] \pm \dots$$

The expressions in brackets all vanish, while  $I_2 = \frac{1}{2}I_0, I_0 = \frac{1}{2}\pi^2$ . So that the final result is  $I_1$ , which =  $\int_0^{\pi} x \sin x \, dx = \pi$ .

12382. (R. F. DAVIS, M.A.)—Prove that, if  $x = p$  is a solution of the Diophantine equation  $ax^3 + bx + c^2 = \text{square}$ , then two other solutions are the real rational roots of the quadratic

$$(apx - b)^2 = 4ac^2(x + p).$$

[For instance, the equation  $3x^3 + 12x + 16 = \text{square}$ , has solutions  $x = 0, 2, 4, 10, \frac{1}{3}, \frac{2}{3}, \frac{3}{4}, \frac{1}{2}, \frac{2}{3}, \frac{2}{9}, -1, -\frac{2}{3}, -\frac{2}{9}, -\frac{1}{6}, \&c.$ ]

Solution by R. NORRIE, M.A.

We may, with perfect generality as far as rational solutions are concerned, assume  $c + \lambda x$  for the root of the required square, so that we have

$$ax^3 + bx + c^2 = (c + \lambda x)^2 \dots \dots \dots (1).$$

By hypothesis,  $x = p$  makes  $ax^3 + bx + c^2$  a perfect square, say  $q^2$ , so that, by taking  $c + \lambda p = \pm q$ , we get two values of  $\lambda$  which satisfy (1) when  $x = p$ , namely,

$$\lambda = (\pm q - c)/p \dots \dots \dots (2).$$

But equation (1) is the quadratic

$$ax^2 - \lambda^2 x + (b - 2c\lambda) = 0,$$

and, if  $x = p$  is a root of this equation, another root is

$$x = (b - 2c\lambda)/a\lambda.$$

Substituting then from (2) the two values of  $\lambda$  we derive two new values of  $x$ , namely,  $x = (bp + 2c^2 \pm 2cq)/a\lambda^2$ ;

which, since  $x_1 + x_2 = 2(bp + 2c^2)/a\lambda^2$ ,  
 $x_1 x_2 = \{(bp + 2c^2)^2 - 4c^2 q^2\}/a^2 \lambda^4$ ,

are the real rational roots of the equation

$$a^2 p^4 x^2 - 2ap^2 (bp + 2c^2) x + (bp + 2c^2)^2 - 4c^2 q^2 = 4c^2 p^4 = 4c^4 + 4c^2 bp + 4c^2 ap^2,$$

i.e., of  $(apx - b)^2 = 4ac^2(x + p)$ .

The following is the PROPOSER'S solution:—

Assume  $4c^2(ax^3 + bx + c^2) = \{atr^2 - bx - 2c^2\}^2$ ;

then, after reduction and division by  $x^2$ , we have

$$a^2 t^2 x^2 - 2ax(bt + 2c^2) + b^2 - 4ac^2 t = 0.$$

It will be found that the roots of this equation in  $x$  are real and rational when  $at^2 + bt + c^2 = \text{square}$ , which is the same Diophantine equation as that with which we started.

We must therefore write  $p$  for  $t$  in the last equation, &c.

See *The Proceedings of the Edinburgh Mathematical Society*, Vol. XIII (1895), pp. 179, 180.

17256. (Communicated by C. M. ROSS, B.A.)—A wheel of radius  $r$  is revolving (with its centre fixed) in a vertical plane. Water is thrown off in drops from the rim of the wheel. Prove that the locus of the drops of water envelopes a parabola whose focus is distant  $r^2/4h$  vertically above the centre of the wheel, and whose axis is vertical. The wheel is revolving with an angular velocity  $\sqrt{(2gh)}/r$ .

Solution by Professor R. SRINIVASAN, M.A.

Consider the drop leaving the rim at P ( $\angle POY = \alpha$ ). The equation to the path of that drop referred to the horizontal and the vertical through P is

$$y = x \tan \alpha - x^2/(4h \cos^2 \alpha)$$

(vide Loney's Dynamics).

Referred to parallel axes through O, the centre of the wheel, the equation becomes  $y - r \cos \alpha = \tan \alpha (x + r \sin \alpha) - (\sec^2 \alpha/4h)(x + r \sin \alpha)^2 \dots (I)$ . The envelope of this is required.

Differentiating with respect to  $\alpha$ ,

$$r \sin \alpha = \sec^2 \alpha (x + r \sin \alpha) + r \sin \alpha - [2 \sec^2 \alpha \tan \alpha (x + r \sin \alpha)^2 + 2 \sec^2 \alpha (x + r \sin \alpha) r \cos \alpha]/4h,$$

i.e.,  $2h - r \cos \alpha = \tan \alpha (x + r \sin \alpha) \dots \dots \dots (II)$ .

Substituting in (I), we get

$$(y - 2h) = -\sec^2 \alpha (x + r \sin \alpha)^2/4h.$$

Squaring (II) and adding this to it,

$$4h(y - 2h) + (2h - r \cos \alpha)^2 = -(x + r \sin \alpha)^2,$$

i.e.,  $4hy - 4h^2 + r^2 \cos^2 \alpha - 4rh \cos \alpha + x^2 + 2xr \sin \alpha + r^2 \sin^2 \alpha = 0,$   
i.e.,  $x^2 + r^2 + 4hy - 4h^2 + 2r(x \sin \alpha - 2h \cos \alpha) = 0.$

Also, from (II),  $2h \cos \alpha - r \cos^2 \alpha = x \sin \alpha + r \sin^2 \alpha,$

$$\text{i.e., } x \sin \alpha - 2h \cos \alpha = -r;$$

therefore  $x^2 + r^2 + 4hy - 4h^2 - 2r^2 = 0,$   
i.e.,  $x^2 = -4h(y - h - r^2/4h)$

is the required envelope.

The latus rectum is  $4h$ , and the vertex is distant  $h + r^2/4h$  above the centre of the circle. Hence the result.

[Rest in Reprint.]

17432. (W. N. BAILEY.)—A broken line  $AP_1, P_2, \dots, P_n, \dots$  is drawn within a triangle ABC, so that  $P_1, P_2, P_3, \dots, P_n$  are on CB, BA,  $AP_1, \dots, P_{n-3}, P_{n-2}$ , and  $AP_1, P_1P_2, \dots, P_nP_{n+1}$  divide the angles CAB,  $BP_1A, AP_2P_1, \dots, P_{n-1}P_n, P_{n-2}$ , in the ratio  $k : 1 - k$ . If  $\theta_n$  is the angle between the  $n$ -th and  $(n-2)$ -th portions of the line, show that  $\lim_{n \rightarrow \infty} \theta_n = \pi/(1 + 2k)$ .

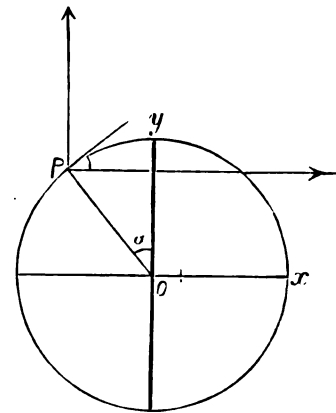
Solution by V. DANIEL, B.Sc.

The  $n$ -th triangle  $P_{n-1}P_nP_{n-2}$  gives the relation

$$\theta_n + k\theta_{n-1} + k\theta_{n-2} = \pi \dots \dots \dots (1).$$

Hence, if  $\Sigma \theta_n$  is the first difference series constructed from  $\Sigma \theta_n$ , we have

$$\phi_n + k\phi_{n-1} + k\phi_{n-2} = 0,$$





which may be written

$$\phi_n + p\phi_{n-1} = (-q)(\phi_{n-1} + p\phi_{n-2}),$$

where  $p$  and  $q$  are roots of the quadratic  $[x^2 - kx + k = 0]$ , having the forms  $k^2e^{i\alpha}$  and  $k^2e^{-i\alpha}$ ,  $k < 1$ . Hence

$$\phi_n + p\phi_{n-1} = k^{i(n-1)}(A + iB),$$

$A$  and  $B$  finite; therefore

$$[\phi_n + p\phi_{n-1}]_{n \rightarrow \infty} = 0.$$

This involves  $[\phi_n]_{n \rightarrow \infty} = 0$ ,

i.e.,  $[\theta_{n-2} = \theta_{n-1} = \theta_n]_{n \rightarrow \infty}$ ,

whence, from (1),  $\lim_{n \rightarrow \infty} \theta_n = \pi/(1 \cdot 2k)$ .

**17394.** (Lieut.-Col. H. W. L. HIME.)—The minor axis of the Brocard ellipse of an obtuse-angled triangle is cut internally in  $X$  by the chord of intersection of the ellipse and the Brocard circle, and externally in  $Y$  by the axis of perspective of the triangle with respect to  $S$ , the symmedian point, which also lies on the minor axis. Then  $YS/SX = 3$ .

*Solution by the PROPOSER.*

Let  $M = a^4 + b^4 + c^4 - b^2c^2 - c^2a^2 - a^2b^2$ ,  $\sigma = \Sigma a^2$ ,

$$\theta = (b^2 - c^2)c^2\gamma - (a^2 - b^2)a^2\alpha,$$

where  $\alpha, \beta, \gamma$  are the vectors of the corners of the triangle connected by the equation  $a^2\alpha + b^2\beta + c^2\gamma = 0$ .....(1).

Taking the symmedian point  $S$  as origin, the equation of the axis of perspective of the triangle with respect to it is

$$x + y + z = 0$$
.....(2).

The anharmonic equation of the minor axis of the Brocard ellipse is  $(b^2 - c^2)x + (c^2 - a^2)y + (a^2 - b^2)z = 0$ .....(3).

The equation of the chord of intersection of the Brocard ellipse and circle is  $(b^2 + c^2 - 3a^2)x + (c^2 + a^2 - 3b^2)y + (a^2 + b^2 - 3c^2)z = 0$ .....(4).

The anharmonic co-ordinates of the cross of (3) and (4) are

$$X = \{3M - a^4 + b^2c^2, 3M - b^4 + c^2a^2, 3M - c^4 + a^2b^2\}.$$

Eliminating  $\beta$  from the expression for the vector of  $X$  by means of (1),  $SX - OX = \theta/2M$ .

The anharmonic co-ordinates of the cross of (2) and (3) are

$$Y = \{\sigma - 3a^2, \sigma - 3b^2, \sigma - 3c^2\},$$

and eliminating  $\beta$ ,  $SY = OY = (-3\theta)/2M$ .

Therefore  $YS/SX = YO/OX = 3$ .

**17389.** (J. J. BARNVILLE, B.A.)—Resolve  $x^{12} + 2^6$  into four,  $x^{18} + 3^9$  into five, and  $x^{30} + 3^{15}$  into six rational factors.

*Solutions (I) by Lieut.-Col. ALLAN CUNNINGHAM, R.E.; (II) by JAMES BLAIKIE, M.A., T. STUART, M.A., D.Sc., and W. N. BAILEY.*

(I)  $N = x^{12} + 2^6 = \frac{(x^3)^4 + 2^2 \cdot 2^1}{x^4 + 2^2 \cdot 1^4} (x^4 + 2^2 \cdot 1^4)$ .

Now  $\xi^4 + 2^2\eta^4 = (\xi^2 - 2\xi\eta + \xi\eta^2)(\xi^2 + 2\xi\eta + 2\eta^2)$ , the well known Bin-Aurifeuillan. Writing  $\xi = x^3, \eta = 2$  gives the factorizations of  $[(x^3)^4 + 2^2 \cdot 2^1]$ ; and, writing  $\xi = x, \eta = 1$ , gives that of  $(x^4 + 2^2)$ , each into two factors, whereby

$$N = \frac{(x^6 - 4x^3 + 2^3)(x^6 + 4x^3 + 2^3)}{(x^2 + 2x + 2)(x^2 - 2x + 2)} [(x^2 - 2x + 2)(x^2 + 2x + 2)] \\ = \{(x^4 - 2x^3 + 2x^2 - 4x + 4)(x^4 + 2x^3 + 2x^2 + 4x + 4)\} \\ \times \{(x^2 - 2x + 2)(x^2 + 2x + 2)\}.$$

ii.  $N = x^{18} + 3^9 = \frac{(x^3)^6 + 3^3 \cdot 3^6}{(x^3)^2 + 3 \cdot 3^2} (x^2 + 3) = N_3 N_1 N_0$  suppose.

Now  $\xi^6 + 3^3\eta^6 = (\xi^2 - 3\xi\eta + 3\eta^2)(\xi^2 + 3\eta + 3\eta^2)$ ,

the well known Trin-Aurifeuillan. Writing  $\xi = x^3, \eta = 3$  gives the factorization of  $N_3$ , and writing  $\xi = x, \eta = 1$  gives the factorization of  $N_1$ , and, writing  $\xi = x, \eta = 1$ , gives the factorization of  $N_0$ , each into two factors

$$N_3 = (x^6 - 3 \cdot 3x^3 + 3 \cdot 3^2)(x^6 + 3 \cdot 3x^3 + 3 \cdot 3^2) = L_3 M_3 \text{ suppose,}$$

$$N_1 = (x^2 - 3x + 3)(x^2 + 3x + 3) = L_1 M_1 \text{ suppose,}$$

so that  $N = (L_3 M_3)(L_1 M_1) N_0$ , i.e., five factors.

iii.  $N = x^{30} + 3^{15} = \frac{(x^{10} + 3^5)(x^2 + 3)}{(x^{10} + 3^5)(x^2 + 3)} \frac{(x^6 + 3^3)}{(x^2 + 3)} \frac{(x^{10} + 3^4)}{(x^2 + 3)} (x^2 + 3) \\ = \{N_6/N_1\} N_1 N_7 N_0,$

where  $N_5 = \frac{x^{30} + 3^{15}}{x^{10} + 3^5} = \frac{(x^5)^6 + 3^3(3^2)^6}{(x^5)^2 + 3(3^2)^2}, N_1 = \frac{x^6 + 3^3 \cdot 1^6}{x^2 + 3 \cdot 1^2},$

are Trin-Aurifeuillians.

$$N_7 = \frac{x^{10} + 3^5}{x^2 + 3} = x^8 - 3x^6 + 9x^4 - 27x^2 + 81, N_0 = x^2 + 3.$$

Writing  $\xi = x^5, \eta = 3^2$  in the Trin-Aurifeuillan formula of Case ii, and resolving  $N_1$  as before gives

$$N_5 = \frac{x^{10} - 3 \cdot 3^2 x^5 + 3 \cdot 3^4}{x^2 + 3x + 3} \frac{x^{10} + 3 \cdot 3^2 x^5 + 3 \cdot 3^4}{x^2 - 3x + 3} = L \cdot M \text{ suppose.}$$

Effecting the divisions,

$$L = x^8 - 3x^7 + 6x^6 - 9x^5 + 9x^4 - 27x^3 + 54x^2 - 81x + 81,$$

$$M = x^8 + 3x^7 + 6x^6 + 9x^5 + 9x^4 + 27x^3 + 54x^2 + 81x + 81.$$

Also, as before,  $N_1 = (x^2 - 3x + 3)(x^2 + 3x + 3) = L_1 M_1$ , so that  $N = (L \cdot M)(L_1 M_1) N_7 N_0$ , i.e., six factors.

(II) (1)  $x^{12} + 2^6 = (x^6 + 2^3)^2 - 2^4 x^6 = (x^6 + 2^3 x^3 + 2^3)(x^6 - 2^3 x^3 + 2^3)$ , also  $x^6 \pm 2^3 x^3 + 2^3 = (x^2 \mp 2x + 2)(x^4 \pm 2x^3 + 2x^2 \pm 2^2 x + 2^2)$ .

Thus four factors have been found.

(2)  $x^{18} + 3^9 = (x^6 + 3^3)^3 = (x^6 + 3^3)(x^{12} - 3^3 x^6 + 3^6)$ ,

also  $x^6 + 3^3 = (x^2 + 3)(x^2 + 3x + 3)(x^2 - 3x + 3)$ ,

and  $x^{12} - 3^3 x^6 + 3^6 = (x^6 + 3^2 x^3 + 3^3)(x^6 - 3^2 x^3 + 3^3)$ .

Thus five factors have been found.

(3)  $x^{30} + 3^{15} = (x^{10})^3 + (3^5)^3 = (x^{10} + 3^5)(x^{20} - 3^5 x^{10} + 3^{10})$ .

Now  $x^{10} + 3^5 = (x^2 + 3)(x^2 - 3x^2 + 3^2 x^4 - 3^3 x^2 + 3^4)$ ,

and  $x^{20} - 3^5 x^{10} + 3^{10} = (x^{10} + 3^5)^2 - 3^6 x^{10} = (x^{10} + 3^5 x^5 + 3^5)(x^{10} - 3^5 x^5 + 3^5)$ .

Also  $x^{10} \pm 3^5 x^5 + 3^5 = (x^2 \mp 3x + 3)(x^2 \pm 3x^2 + 2 \times 3x^6 \pm 3^2 x^3 + 3^2 x^4 \pm 3^3 x^3 + 2 \times 3^2 x^2 \pm 3^4 x + 3^4)$ .

Thus six factors have been found.

QUESTIONS FOR SOLUTION.

**17490.** (The late R. KNOWLES.)—Prove that the sum of a finite number of terms of the series

$$1 + (m+1)^3 x + (2m+1)^3 x^2 + \dots + (mr-m+1)^3 x^{r-1}$$

is  $[1 + (m^3 + 3m^2 + 3m - 3)x + (4m^3 - 6m + 3)x^2 + (m-1)^3 x^3 - (mr+1)^3 x^r + \{(3r^3 - 3r^2 - 3r - 1)m^3 + 3(3r^2 - 2r - 1)m^2 + 3(3r - 1)m + 3\} x^{r+1} - \{(3r^3 - 6r^2 + 4)m^3 + 3r(3r - 4)m^2 + 3(3r - 2)m + 3\} x^{r+2} + (mr-m+1)^3 x^{r+3}] \div (1-x)^4$ ,  $m$  being any positive integer.

**17491.** (C. M. ROSS, B.A.)—Prove that

$$\iiint \dots \int dx_1 dx_2 \dots dx_n,$$

is equal to  $\frac{1}{\sqrt{(n+1)}} \left( \frac{\pi}{n(n+1)} \right)^{1/2} \frac{1}{\Gamma(\frac{1}{2}n+1)}$ ,

the limits of integral being given by the equation

$$x_1^2 + x_2^2 + \dots + x_n^2 - x_1 x_2 - x_2 x_3 - \dots - x_{n-1} x_n = 1, [2n(n+1)].$$

**17492.** (Professor J. C. SWAMINARAYAN, M.A.)—Absolute curvature and tortuosity at a point of a curve in space are  $1/\rho$  and  $1/\sigma$  respectively. If the length of the arc, measured from a fixed point on the curve, be equal to  $s$ , show that the co-ordinates  $(x, y, z)$  of the point are given by the formulæ,

$$x = s - \frac{s^3}{6\rho^2} + \frac{s^4}{8\rho^3} \frac{d\rho}{ds}, \\ y = \frac{s^2}{2\rho} - \frac{s^3}{6\rho^2} \frac{d\rho}{ds} + \frac{s^4}{24\rho^3} \left[ 2 \left( \frac{d\rho}{ds} \right)^2 - \left( 1 + \rho \frac{d^2\rho}{ds^2} + \frac{\rho^2}{\sigma^2} \right) \right], \\ z = \frac{s}{6\rho\sigma} - \frac{s^4}{24\rho^2\sigma^2} \left[ 2\sigma \frac{d\rho}{ds} + \rho \frac{d\sigma}{ds} \right],$$

where powers of  $s$  higher than the fourth are neglected.

**17498.** (J. HAMMOND, M.A.)—Let  $\rho(n)$  denote the sum of the squares of all numbers less than  $\frac{1}{2}n$  and prime to  $n$ . Then (i), if  $n$  is an odd prime  $\rho(n) = n(n^2 - 1) + 24$ ; (ii) if  $n$  is the double of  $p$ , an odd prime,  $\rho(2p) = p(p-1)(p-2) \div 6$ ; (iii) if  $n = 2^{a+1}$ ,  $\rho(2^{a+1}) = 2^a(2^{2a} - 1) \div 6$ .

What is the general value of  $\rho(n)$ ?

**17494.** (J. J. BARNVILLE, B.A.)—(1) Reduce

$$(x^4 - x^3 + 5x^2 + 2x + 4)^2 - 5(x + 2)^2(x^2 - x)^2$$

to the form  $A^2 - 3B^2$ . (2) Express  $(x^2 - x)^2 + (x - 2)^2$  in the form  $A^2 + 3B^2$  in three ways.

17495. (A. M. NESBITT, M.A.)—If

$$(1 + x + x^2 + x^3)^n = A_0 + A_1x + \dots + A_r x^r + \dots + A_{3n} x^{3n},$$

and  $(1 + x)^n = c_0 + c_1x + \dots + c_r x^r + \dots + c_n x^n$ ;  
and if, further,  ${}_n H_r$  be denoted by  $K_r$ , prove that (1),  $r$  being  $< n$ ,  
 $A_r + A_{r-1} + A_{r-2} + \dots = 4^{n-1}$ ;  
(2),  $r$  being  $\leq 3n$ ,  $A_r = K_r - c_1 K_{r-1} + c_2 K_{r-2} - \dots$ ;  
(3)  $A_r + K_1 A_{r-1} + K_2 A_{r-2} + \dots = K_r$ .

Show also that, if  $n > 4$ , and  $r < n$ ,  $A_r + A_{r+n} + A_{r+2n}$  is greatest when  $r = \frac{1}{2}n$  or  $\frac{1}{2}(n \pm 1)$ , according as  $n$  be even or odd; and is  $> A_0 + A_n + A_{2n} + A_{3n}$ . [If  $n = 2$  or  $4$ , the two or four expressions are equal; if  $n = 3$ , the last becomes 22, while the other two are 21.]

17496. (Professor F. J. NANSON.)—Two tetrahedra ABCD, A'B'C'D' are such that B'C', C'A', A'B', D'A', D'B', D'C' intersect DA, DB, DC, BC, CA, AB, respectively. Given ABCD and two opposite edges of A'B'C'D', construct the remaining edges of A'B'C'D'.

17497. (Professor J. E. A. STEGGALL.)—Show that the equation  $(r-3a)^3 (r+5a)(r^2+2ar+5a^2)^2 = 512r^3 (1-\cos 3\theta) a^3$ , represents the three-cusped epicycloid. Express this result in areal co-ordinates, taking the triangle formed by the cuspidal points for reference.

17498. (C. E. YOUNGMAN, M.A.)—Find, for an ellipse, the locus of P when its feet on the axes, and one of its feet on the periphery, are collinear.

17499. (W. N. BAILEY and C. V. L. LYCETT.)—Through any point on a hyperbola lines are drawn parallel to the asymptotes to meet a fixed line, which is parallel to the minor axis and lies between the vertices, at P and Q. Show that PQ subtends a constant angle at two points on the major axis, and that, if the fixed line is a directrix, the corresponding focus is one of the two points.

17500. (R. F. DAVIS, M.A.)—If  $S \equiv ax^2 + 2hxy + by^2 + 2gx + 2fy + c$ , interpret (in its connexion with the conic  $S = 0$ ) the result of substituting in S the co-ordinates of any point whatsoever in the plane.

17501. (Communicated by N. SANKARA AIYAR, B.A.)—Prove that the locus of the centres of the system of conics inscribed in the quadrilateral formed by the tangents at the feet of the normals drawn to a given central conic from a fixed point O, is the diameter of the conic which is at right angles to the diameter which passes through O.

17502. (V. V. SATYANARAYAN.)—If two circles intersect, the powers of any number of points on one circle with respect to the other circle, are in the ratio of their respective distances from the common chord.

17503. (Professor NEUBERG.)—Les tangentes menées par les sommets du triangle ABC au cercle circonscrit forment un nouveau triangle A'B'C'. Soient A'', B'', C'' les centres des cercles circonscrits aux triangles A'BC, B'CA, C'AB. Trouver l'aire du triangle A''B''C'' et démontrer que les droites AA'', BB'', CC'' concourent en un même point.

17504. (Professor K. J. SANJANA, M.A.)—Prove that six squares can in general be described so that the several sides of each pass through the vertices of a given quadrangle, and that their twenty-four vertices can be obtained by the following construction. On two opposite connectors as diameters describe circles and draw their diameters P<sub>1</sub>P<sub>2</sub>, Q<sub>1</sub>Q<sub>2</sub>, perpendicular to the connectors; then P<sub>1</sub>Q<sub>1</sub>, P<sub>1</sub>Q<sub>2</sub>, P<sub>2</sub>Q<sub>1</sub>, P<sub>2</sub>Q<sub>2</sub> intersect the two circles again in eight of these vertices; similarly, sixteen vertices may be found from the remaining two pairs of opposite connectors. Examine the case when two opposite connectors of the quadrangle are (i) at right angles, (ii) equal and at right angles. [See Reprint, New Series, Vol. XIII, pp. 36, 37.]

17505. (H. D. DRURY, M.A.)—Let ABCD be any trapezium, parallel sides AB and CD. It is required to draw a line HK, parallel to the base CD, dividing the trapezium into two portions which shall have to one another a given ratio ( $m/n$ ).

17506. (W. F. BEARD, M.A.)—If  $A + B + C = 180^\circ$ , prove  $\sin^2 A [\cos^2 B + \cos^2 C - 2 \cos A \cos B \cos C] = \cos^4 B + \cos^4 C - 2 \cos^2 B \cos^2 C \cos 2A$ .

17507. (R. SUNDARAM AIYAR, B.A.)—If  $\cos \alpha + \cos \beta + \cos \gamma = 0$  and  $\sin \alpha + \sin \beta + \sin \gamma = 0$ , prove that, if  $n$  is not a multiple of 3,  $\cos na + \cos n\beta + \cos n\gamma = 0$ ,  $\sin na + \sin n\beta + \sin n\gamma = 0$ , and if  $n$  is a multiple of 3, prove that  $\cos na + \cos n\beta + \cos n\gamma = 3 \cos \frac{1}{3} [n(\alpha + \beta + \gamma)]$ , and  $\sin na + \sin n\beta + \sin n\gamma = 3 \sin \frac{1}{3} [n(\alpha + \beta + \gamma)]$ .

OLD QUESTIONS AS YET UNSOLVED (IN OUR COLUMNS).

11014. (Professor PURSER.)—Describe a polygon such that the  $n$  sides shall respectively subtend, at  $n$  given points, triangles each of given species.

11367. (Professor SYLVESTER.)—Let there be  $n$  and  $\nu$  given positive quantities  $a$  and  $\alpha$ , such that  $\Sigma a = \Sigma \alpha$ . When  $x$  is any positive quantity, let  $-m$  be the least and  $M$  the greatest value of  $\Sigma E(ax) - \Sigma E(\alpha x)$ . Prove that  $M - m = \nu - n$ .

11650. (Professor SARKAR.)—A thin cylindrical glass tumbler, whose height is  $a$  and radius  $r$ , is immersed, mouth downwards, in a cylindrical vessel whose radius is  $R$  and height  $h$ , and which is filled with water to a height  $b$ . Prove that, if the axes of the tumbler and the vessel be coincident in direction, and the mouth of the tumbler meet the base of the vessel, the water not rising to the level of the base of the tumbler, the image of the centre of the base, as seen by an eye at a considerable distance vertically above it, will be depressed below that of its circumference through a space  $z$ , where  $z$  is a quantity determined by the equation

$$\left( \frac{\mu}{\mu-1} + h \right) \left\{ \left( 1 - \frac{r^2}{R^2} \right) \frac{\mu}{\mu-1} z + a - b \right\} = ah.$$

12111. (R. A. ROBERTS, M.A.)—If  $u$  be a quadratic and  $r$  a binary cubic, show (1) that if the skew invariant  $M$  vanishes,  $u^2 + Kr^2 = 0$  will represent six points in involution; (2) if  $u^2 + Kr^2$  has a square factor,  $K$  is determined by the equation

$$K^2 D^2 + 2K^2 (DR + 3I\Delta R - 8I^3) + K (R^2 + 6I\Delta R - 3I^2 \Delta^2 + D\Delta^2) + \Delta^3 R = 0;$$

(3) if  $u^2 + Kr^2$  can have a cube factor,  $D\Delta^2 - 4\Delta I^2 - 4IR = 0$ , the notation being that used in Art. 198 of Salmon's *Higher Algebra*.

12429. (D. BIDDLE.)—Three circles A, B, C, having their centres collinear, are in successive external contact, and have common tangents. The diameter of A is given and the sum of the diameters of B and C. Describe the circles.

12467. (H. MACCOLL, B.A.)—A point is taken at random in the diameter of a square, and from this point three straight lines are drawn in random directions to meet the perimeter of the square; find the chance that these three lines can be the sides of a triangle.

12781. (MORGAN BRIERLEY.)—Find three squares in arithmetical progression, such that the sums of every two of their roots may each be a square.

18187. (Professor HEAL.)—If  $N \equiv 3 \pmod{1}$ , prove that  $N$  is the sum of three squares.

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“The Natural Radiation from Transparent Media”: Mr. S. Lees.

“Indeterminate Equations of the Third and Fourth Degrees”: Mr. L. J. Mordell.

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MAY 1, 1913.

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**MEMBERS' MEETING.**

A Monthly Meeting of the Members will take place on Wednesday, the 21st of May, when The Very Rev. H. MONTAGU BUTLER, D.D., Master of Trinity College, Cambridge, will read a Paper entitled "Intellectual Enthusiasm." The chair will be taken at 7.30 p.m. by W. G. RUSHBROOKE, Esq., Dean of the College of Preceptors.

A discussion will follow the reading of the Paper. Members of the College have the privilege of introducing their friends.

**THE COLLEGE CALENDAR.**

The College Calendar for 1913-14 is now ready for issue. It contains lists of the Members, Examiners, and Diploma-holders of the College, the Charter and By-Laws, a list of Schools from which pupils are presented for the Examinations, a list of Educational Bodies, and information concerning the various activities of the College. Price, by post, 2s. 6d.

**LECTURES FOR TEACHERS.**

The First Course of Lectures (Forty-first Annual Series), by Prof. J. ADAMS, M.A., B.Sc., LL.D., F.C.P., on "Educational Psychology," commenced on Thursday, February 13th, 1913, at 7 p.m.

This Course will to a certain extent prepare for the Examinations of the College in connexion with the Associateship, the Licentiate'ship, and the Fellowship; but its main purpose will be to present the facts of Psychology in such a way as to enable the teacher to make use of them in the practical work of the school. The work will be so arranged as to give the students an opportunity of comparing the results of their experience with the latest results of psychological research into educational processes. The Lectures will be illustrated by frequent references to the work in all classes of schools.

For Syllabus, see page 188.

**EXAMINATIONS.**

**Diplomas.**—The Summer Examination of Teachers for the Diplomas of the College will commence on the 1st of September, 1913.

**Practical Examination for Certificates of Ability to Teach.**—The next Practical Examination will be held in May, 1913.

**Examination of Foreign Teachers for Certificates of Proficiency in English.**—These Examinations may be held at any date.

**Certificate Examinations.**—The Midsummer Examination for Certificates will commence on the 23rd of June, 1913.

**Lower Forms Examinations.**—The Midsummer Examination will commence on the 24th of June, 1913.

**Professional Preliminary Examinations.**—These Examinations are held in March and September. The Autumn Examination in 1913 will commence on the 9th of September.

**Inspection and Examination of Schools.**—Inspectors and Examiners are appointed by the College for the Inspection and Examination of Public and Private Schools.

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VI. (April 17.) *Memory.*—As natural endowment: not limited to intellectual processes: personal identity: possibility of improving the natural memory: retention and recall: Bergson's two kinds of memory: use of the memory: pre-eminence of purpose: need for selection: learning by rote: mnemonics and the educational applications: "pictorial" and "rational" memory: memory in relation to imagination and to reality.

VII. (April 24.) *Imagination.*—An inverted memory: prevailing misconceptions: unwarranted restriction to the aesthetic side of school life: relation of conception to imagination: free and constrained imagination: limitations imposed by "picture thinking": importance of clearly imaged ends: function in science: the framing of hypotheses: place in the teaching of geography and history: nature and moral value of ideals: day dreaming.

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XII. (May 29.) *Reasoning.*—General nature and relation to judgment: thinking means the fitting of means to ends by the use of ideas: always implies purpose: thinking as opposed to reverie: imagery in thinking: abstract thought: laws of thought as thought: conditions under which all thinking must have the same conclusions: possibility and causes of error: teacher's power to control the thinking of his pupils: manipulation of the matter of thought.

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## The Educational Times.

### THE EDUCATION ESTIMATES.

IN presenting to the House of Commons the annual estimates for expenditure proposed by the Board of Education, the Minister of Education has his opportunity of telling the country what has been done during the year and what ought to be done in the future. Mr. J. A. Pease dwelt especially on the first of these. He began with a reference to the "under fives," and urged the importance of the establishment of nursery schools, where there would be an absence of mental pressure or physical discipline, but which "should be kept warm and well ventilated, places where there would be plenty of freedom of movement for the children, constant changes in their occupation, and opportunities for sleep." He spoke with great emphasis on the subject of physical training, and said that "the object of education should be to turn the child out of school in a sound physical condition and with a knowledge, when he or she left school, how to look after his or her health in the following years." On this subject Mr. Pease was distinctly optimistic. Though he gave figures to show the unsatisfactory physical condition of large numbers of children when medical inspection was instituted, he was able to point to a very definite advance.

Mr. Pease was equally emphatic on the need for adequate playground space, especially in towns; and he also spoke with approval of the movement towards making education more practical and less bookish. The connotation of the word "education" grows daily wider. In 1870 the main idea was that children should be taught the three arts necessary to commerce—the arts of reading, writing, and counting. For many years, whatever advance was made upon this view, education was held to be mainly a training of the intellect based upon the study of books. We are now widening the term to include training of the hand and eye and the muscular frame. At

present we have reached the stage of trying to deal directly with the body and the mind, and we are content with indirect influences for the soul. The next stage will be to include the development of the spiritual and moral being of the children in our scheme of education.

The third point in Mr. Pease's review was the superannuation of teachers. He said that a sum of money had been placed at his disposal for this purpose and that he would pay great attention to any helpful proposals which might be submitted to him. In reply to a question from Sir Philip Magnus, Mr. Pease stated that all teachers in secondary schools receiving Government grants, as long as they remained in secondary schools, would share in the scheme. To a further question, he said that teachers of manual training, outside secondary schools, would not be included so long as they were teachers in elementary schools or were not certificated teachers.

The real difficulty at the present moment in the further provision of opportunities for secondary education is found in the amount of the Government grant. The Local Education Authorities have for long been demanding increased grants. Mr. Pease was sympathetic: "he would do his utmost, having regard to the other claims made upon the Exchequer, to press for such grants as it was possible for him to obtain." This is cold comfort, and the fact that he was not able to speak with greater precision clearly indicates that a great change must come over public opinion in order to exert the necessary pressure upon the Treasury.

In these columns the matters that interest us most directly are the references to secondary schools. Mr. Pease had something to say in approval of the scholarship system that brings children from the elementary to the secondary schools, but on the subject of the secondary schools he was less optimistic. He spoke with some severity of the absence of training shown by the majority of the teachers in secondary schools. The total output from the 20 training colleges for secondary teachers amounted last year to 40 trained teachers. His know-

ledge only extended to the 800 or 900 secondary schools which received grants from his Department; he knew nothing of the 12,000 or 14,000 "so-called secondary schools up and down the country, but he believed it would be found that the majority of the teachers were no better trained than those in the schools receiving Government grants." We may deduce two things: in the first place, that the Board of Education will use their influence to secure, through the action of the Teachers' Registration Council, that a gradually increasing number, and, finally, that all teachers in secondary schools, shall receive some sort of professional training. This does not necessarily mean that teachers will be required to pass through a training college of the existing type. There are other possibilities of training. But we are quite sure that professional training will become in the future a necessary condition of a licence to teach.

The second point is that the Board of Education are preparing to make an inquiry into all schools. The Board will require a largely increased staff to deal with the whole of the schools that are at present officially unknown. The work must be done gradually. The first class of school to be investigated will probably be the class known as Preparatory Schools—i.e. the schools that prepare boys up to the age of fourteen for entrance to the public schools. These schools are limited in number, are organized into an Association, and are homogeneous in character. The Head Masters of the Public Schools have suggested to the Preparatory Schools that they should invite inspection. One difficulty in the way of their inspection by the Board is that technically they are "elementary," as they do not keep their pupils up to the age of sixteen, and so do not fulfil the Board's definition of a secondary school; but this difficulty can easily be surmounted. Other good private secondary schools will have to wait their turn for the benefits of inspection; and the country will have to wait some time for protection against those schools that are not efficient.

Mr. Pease did not escape without criticism. The Local Authorities have passed the stage of caring for sympathy. They want money down. Their expenditure has increased largely, and has not been met by an increased grant in proportion. It is possible to argue that education is as much a national service as the Army, the Navy, the Insurance Act, or Old Age Pensions; and that therefore the total cost should be borne by the National Exchequer. But the principle of local expenditure has been established, and is not likely to be changed. The best suggestion that has been made is that the Government should pay a definite proportion—say two-thirds—leaving the rate-payers to find the remaining third. This would maintain local interest and also check local extravagance.

The severest criticisms came from Mr. Balfour. He spoke of the great reforms foreshadowed by Lord Haldane, and asked how it was possible for the Minister of Education to give no hint in his annual review of the faults and shortcomings which the new great reform was to remedy. For Mr. Pease had been optimistic through-

out, and Mr. Balfour thought this an extraordinary position to take up, when "his colleagues in another place are sketching a somewhat grandiose revolution." We deal with this divergence of view between Mr. Pease and Lord Haldane in a "Note." Mr. Balfour's further criticism was directed against competitive examinations. He described them as "soul-killing institutions" which "put the human mind absolutely in a wrong position as regards knowledge." Sir Philip Magnus doubted the expediency of sending on to the secondary schools so many pupils from the elementary schools while the former had "the academic bias of the traditional curriculum." The whole of the speeches on the Estimates were in reality overshadowed by the wider discussion that has been set on foot by Lord Haldane and Lord Crewe, and had in consequence less vitality than is usually the case.

## NOTES.

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THE Commissioners consider that the organization of the University of London is fundamentally defective, both because of the relations existing between the internal and

### *Defects in Existing Constitution.*

external sides, and because of the existing combination of a large number of institutions differently related to the University. We give on another page a brief summary of the principal recommendations. The Report is very full and very carefully considered. Its recommendations affect many teaching institutions and many classes of students. Next month we shall deal more fully with the report as it affects secondary schools. There will be no lack of criticism. Sir William Collins has voiced some of the objections in the *Morning Post*. He says: "Speaking broadly, the Report seems to me both reactionary and revolutionary, instead of evolutionary; destructive, in-

stead of constructive; and parochial, instead of imperial. The Commission misconceives and insufficiently appreciates the strong feeling in favour of the retention of the open examination system. The claim is made for academic freedom on the part of the professor. There is no less need for academic freedom on the part of the student. Under the proposed new scheme all higher learning would be put under the heel of the University professor, which might prove a bar to originality and tend to stereotype knowledge of a particular pattern."

LORD CREWE has dotted some of the *i*'s in Lord Haldane's proposals. The *Times* sees in his recent speech an indication that the Government will deal in the forthcoming Bill with the three claims recently made by the Free Church Parliamentary party in a deputation to Mr. Pease. Lord Crewe said that it ought not to be impossible to devise means by which parents who desire it may have a better chance of sending their children to an undenominational school. He said that, with the powers of compulsion possessed by the Board, it might be possible to compel joint action on the part of Authorities working in close neighbourhood. And, thirdly, he said that "we cannot co-ordinate our system without incurring a heavy cost." The Government are under a pledge to try to remove the Nonconformist grievances in the lifetime of the present Parliament. To meet these grievances by a special Bill will let loose again all the bitterness of sectarian controversy; but these points included in a Bill of wider scope may take their true proportion.

LORD HALDANE has explained more fully in an article in the *Nation* what is meant by a national system of education. "The essence of a national system," he says, "is that the education of the people and of every class of the people of the country is of vital concern to the State. The State has, therefore, the right to see that those who conduct education are fit to conduct it properly, and the State has also the duty of enforcing this right by seeing that unfit persons do not teach." He points out two prevailing misconceptions that militate against a national system. One is the idea that secondary education is not a matter for the State; the other, that elementary and secondary education are not two successive stages in one entire system, but are two different kinds of instruction meant for different social classes. Lord Haldane also says that our view of education is too narrow, that education rightly understood "must embrace the physical and social as well as the mental and moral life of the scholar." The education of all children is a matter of importance to the State—*i.e.*, ourselves.

THE first step in effecting a scheme of national education is to convince the country of its necessity. Hence the missionary tone of Lord Haldane's speeches, and his appeal

*Lord Crewe  
and the  
Nonconformist  
Disabilities.*

*National  
Education.*

*An Educational  
Missionary.*

to secondary teachers at the great meeting in the University of London to go forth as missionaries to convert the man in the street to a belief in the value of secondary education. We do not at present want details. A national scheme is only possible when a very large number of the people desire it. Elementary schools have established themselves: they are valued by the people. But secondary education is little understood and little valued by the nation as a whole. The driving force of a great national desire must precede any attempt at a national scheme. To bring forward detailed proposals would be to divert public attention from the main issue, and to fritter away energy on controversial points. Lord Haldane is certainly right. The nation can, we are sure, be stirred to enthusiasm when it understands the points at issue and their bearing on our position as a nation.

IF Mr. Pease is a little disappointing in not appearing to share Lord Haldane's enthusiasm, the explanation must be looked for in the fact that he is the Minister of Education responsible for carrying out the educational provision as it exists. In his official position he knows just what the difficulties are that the Board meet with in their daily administration. He told us a short time ago that if Lord Haldane had his head in the clouds, he (Mr. Pease) had his feet firmly fixed on the earth. We confess we should like a little less caution. The faith and confidence that carry out all great movements are based on enthusiasm. In 1870 there was a wave of educational enthusiasm, and the establishment of elementary schools was the result. We want a fresh wave of enthusiasm that will help to complete the work that was then begun, and to carry a scheme that will make every child in the country a potential pupil of a secondary school and a potential student of a University. To quote Lord Haldane again, "Equality of educational opportunity surely ought to be a watchword with our democracy."

WE teachers in secondary schools cannot but ask ourselves how these far-reaching proposals will affect us and our schools, and—our daily bread. We may take it as certain that in the future all teachers will need to receive training in the profession they have adopted, no less than the doctor or the sailor receives training in his profession. The State will undoubtedly institute a licence to teach; and unlicensed teachers will be debarred from teaching. It is equally certain that every educational institute will be inspected and approved if it is to keep its doors open. But this inspection can be carried out, and we teachers must see to it that it is carried out without undue interference on the part of the State. The State must aid and guide and stimulate the work, but it does not desire to lay down an iron code of conduct. For the rest, we must remember that changes come about slowly. It would be impossible, even if any one wished it, to insist that all teachers should be trained to-morrow, or that all school

*Mr. Pease's  
Caution.*

*The future of  
Secondary  
Schools.*

buildings should be inspected within the year. The changes will come so gradually that it will be possible to avoid any case of individual hardship.

MR. MICHAEL SADLER has a trenchant criticism in *Indian Education* of Lord Haldane's proposals.

*Mr. Sadler's Criticism.*

In Mr. Sadler's view Lord Haldane is behind the times. He quotes Matthew Arnold where he ought to quote John Ruskin, and he appears to know nothing of the more recent development of education in this country. "Some ten years ago," says Mr. Sadler, "Lord Haldane looked into questions of English education rather closely. He has a lawyer's mind and a good memory. It appears that, when he has a speech to make on education he turns up, so to speak, the files of his memory and uses notes that are already a decade old." Perhaps Mr. Sadler forgot Lord Haldane's recent education as a member of the Royal Commission on the University of London. We find Mr. Sadler's criticism not only interesting, but valuable; much of it hits the mark. At the same time, we are inclined to believe, with the Lord Chancellor, that now is the moment to arouse the nation to a sense of the importance of the matter; criticism will come later.

THE *Morning Post* of April 14 contained a leading article on the subject of education, in whole-hearted support of Lord Haldane's proposals. This may be welcomed as an indication that the question is one of interest to the nation as a whole, and is outside the limits of party boundaries. One passage in particular we are tempted to quote, as it well expresses the purpose of education. Before we can agree upon a scheme of national education, we must be sure what purpose we have in mind. This is what the *Morning Post* says: "The purpose is to give every boy and girl the chance of becoming as fine a man or woman as his or her gifts admit of, in respect of conduct, manners, intelligence, power of work and of serving the nation." We like to see "conduct" placed first in this list. And we are also glad to see the emphasis laid here, and in other parts of the article, upon the education of women. A national scheme cannot exclude women, and cannot offer them opportunities inferior to those offered to men.

MR. BALFOUR'S criticism upon examinations will be widely quoted. It must be remembered that, in applying the epithet "soul-killing," he was speaking of competitive examinations. School examinations are a necessity. If they are suitable, they are an invaluable aid to the teacher. Mr. Balfour appeared to have in mind competitive examinations which decided a boy's future career. He went on to say that we had a wrong sense of values in education; that any parent would tell you that what he most desired for his son was success in examinations. This is an apt criticism; but the schoolmaster is not

responsible for the abuse of examinations. He knows well enough that examinations are not the only test of the value of education. But examinations are a useful handmaid to education. The net result of the recent attacks that have been made on examinations merely shows that, as the life of the school has broadened, so must examinations broaden their basis and include other things besides a test of the power to reproduce intelligently literary information. And, of course, school examinations in which every pupil is desired to reach a certain standard are very different from the competitive examinations which assign posts on the result of a test of a limited range of powers.

A NUMBER of important addresses were given at the Educational Conference organized by the promoters of the Kinematograph Exhibition at Olympia. Canon Lyttelton had some grave words of warning. He thought the potentialities for evil of the picture shows were great, and that caution was necessary lest these potentialities should be realized. It is said that some £10,000,000 of capital are already invested in this industry. In order to get a return for their money, the capitalists desire to make the pictures popular and attractive. The educational value of the pictures is not their first care. Canon Lyttelton asked whether the nation was to aim at material wealth or at the ideal, and said that we must be prepared to oppose what was contrary to the ideal. He thought it not unreasonable that the Local Education Authorities should exercise control in this matter. At the conclusion of the discussion a resolution was passed urging Local Authorities to appoint committees to investigate and to find out what powers they possessed.

THERE are certainly very serious evils connected with the frequent attendance of children at the "pictures." The popularity of the entertainment is based upon the natural curiosity of children. They want to know. This desire for knowledge is natural, and should receive suitable satisfaction. But it is important to remember that the constant absorption of facts, without leisure for digestion, in the end atrophies the desire to know. If knowledge is to be real it must be gained by effort and assimilated in leisure. There are other objections to the "pictures." The excitement, the strain upon the eyesight, the late hours, frequently the unsuitable ideas suggested: all these are unhealthy for children. The State has widened from time to time the area of the control exercised over children, and there seems to be no reason why the State should not limit attendance at public entertainments on the part of children if it is felt that too frequent attendance has an unsound influence. We are inclined to think that, when the kinematograph is introduced into schools and witnessed by the children once or twice a week, the desire to attend the public entertainments will grow less.

In the preceding notes we have spoken of the picture shows as they exist to-day. Some little confusion was apparent at the Conference because the idea of the kinematograph as it exists was not always kept distinct from the idea of its possibilities if introduced into schools. In science and in surgery the moving films have been found necessary if progress is to be made. It is very probable that if suitable films are produced they may prove a useful piece of educational equipment. Mr. Morley Dainow argued that they had a great value in suggesting themes for composition; and Prof. R. A. Gregory spoke strongly of their usefulness generally. "For educational purposes," he said, "whether in school or college, the kinematograph is destined to be an aid of first importance, and before long it will be regarded as an indispensable part of the equipment of every up-to-date teaching institution." Prof. Lyde, on the other hand, expressed a conviction that had grown during the last ten years, that already too much appeal was made to the eye in education—a form of forcible feeding which he thought to be unhealthy.

At the Annual Meeting of the Teachers' Training Association, held last month, Prof. Welton was elected President in succession to Mr. Keatinge, who had held the office for two years. Prof. Welton's address dealt largely with the ineffectiveness of the "practical work" in training colleges. He thought it impossible that the training colleges could turn out students skilled in the art of teaching, and it was misleading to make such a claim. The students must learn principles and theory in the college, and so be prepared to acquire a sound art when they had experience. Prof. Green thought Prof. Welton had over-stated the case against the practising school, and Miss Punnett made a strong claim for the value of practice. She stated that her students had eight or ten teaching periods every week during the post-graduate year of training. Dr. Geraldine Hodgson supported the view that the conditions of the practising school were artificial, and thought all the necessary training in theory could be based on the study of the history of education.

The Teachers' Training Association also discussed the proposals contained in the Report of the Board of Education that an additional method of training teachers for secondary-school work should be established, to centre round the school instead of the training college. As the exact conditions of the proposals have not been made public, the discussion was limited to general principles. There was evidently a strong feeling that the training in the theory underlying the art of teaching, as given in the training colleges, was of especial value, and it was resolved to communicate with the Board of Education with a view to securing that in the new scheme of training means

should be taken to obtain an adequate treatment of theory in addition to the practice.

In the May number of the *Educational Times* of the year 1853 a strong appeal was made in a leading article for a State provision of pensions for teachers. "We can see no reason," says the writer, "why the fighting professions should receive a monopoly of reward." For sixty years the claim has been put forward, and now at last is likely to be allowed. A sum of money has actually been provided for this purpose by the Treasury, and it remains to decide exactly upon the conditions attaching to the proposed pensions. At present it is suggested that only teachers in schools receiving State grants should be eligible for pensions. But the matter cannot stop there: there are thousands of teachers in schools that do not receive grants who are no less deserving of pensions than their colleagues in the State-aided schools. A national system of education under which all teachers are known and registered will lead to a national system of pensions. The additional grants that the Exchequer must make towards education will probably take the form of providing for the Local Authorities the salaries and pensions fund.

The seventeenth Annual Conference of the Parents' National Educational Union, which takes place at the Caxton Hall on May 5, 6, 7, and 8, promises a number of valuable addresses and discussions. Miss Charlotte Mason's pamphlet "Knowledge the Basis of National Strength" gives the keynote to the papers that will be read. The speakers include Mr. Stanley Leathes, Miss Woutrina Bone, Mr. J. L. Paton, and the Bishop of Southwark. Season tickets (3s. 6d.) admitting to all the lectures and social functions, or day tickets (1s. 6d.), may be obtained from Miss Parish, 26 Victoria Street, S.W.

JUST at the moment the public mind is apt to view with distrust any educational proposals that come from Germany. But the scheme that Dr. Georg Kerschensteiner has carried out in Munich with such marked success does not greatly differ from schemes that have been already elaborated (but not put into practice) in England. The difference is that such evening continuation schools as we possess have failed to impress the nation, mainly, it is probable, because the students arrive in them in order to repose after a long day's work in their trade. The schools in Munich which are compulsory for all children between the ages of fourteen and eighteen are carried on during the day. When the scholar leaving school at the age of fourteen has chosen his trade, he is instructed by experts in his particular calling while continuing his general education. Mr. Chiozza Money contributes an interesting article on Dr. Kerschensteiner's work to the *Westminster Gazette*. As an example of the German thoroughness he relates that in the linoleum classroom he saw a table

covered with anatomical models, and he found that the students were being taught the meaning of their bodies and the laws of health that they might protect themselves from the dangers that attach to the making of linoleum.

THE Annual Report of the Board of Education deals somewhat fully with the training of *Untrained Teachers.* Board do not attempt to minimize the seriousness of the problem. "Only a small portion," they say, "of those who teach in secondary schools have made any attempt to qualify themselves for their work by professional training"; and "a large number of teachers are employed who are seriously deficient in professional skill." The Report goes on to say that "the work of a large number of those engaged in teaching is to a large extent ineffective; and that this ineffectiveness is, at any rate in many cases, partially caused by faults which are capable of remedy by advice and instruction; and that there are often serious defects in the work of even the abler teachers, which are also such as might have been avoided by timely help." These are serious charges, and they are made by competent Inspectors who have not been brought up in the tradition of a narrow professional training. We cannot dismiss the charges as ill-founded or irrelevant.

THE Board are no less trenchant in their criticism of the existing provisions for training. *Methods of Training.* "There are indeed," says the Report, "a considerable number of individual men and women who have derived real assistance from a course at a training college; on the other hand, there are many who hold a diploma of practical training, but are in fact inefficient teachers." Again, the Report states that "neither schoolmasters nor Inspectors seem to be convinced that training, as at present provided, is an effective remedy for many prevailing faults." And again: "Far more serious than lack of training in the vast mass of teachers is lack of scholarship. Unless a man knows his subject no amount of training can make him teach it efficiently." In one breath we are charged with lack of professional training, with lack of scholarship, and are told that training does not make efficient teachers. The problem is indeed difficult. We are blamed for not being trained; we are told that training is not an effective remedy for our faults; and that "instruction in training colleges is too general, and does not give sufficient help to the students in dealing with the particular subjects that they will have to teach."

It is clear that the criticisms we have quoted in the preceding notes are intended to lead up to proposals for a fresh attempt to provide training for secondary teachers. *The Remedy.* The Board are very anxious that the University course should not be interrupted by preparation for teaching, for fear lest scholarship should suffer. The remedy will be

a system of training which centres round the secondary school instead of round the University. The Board published for private circulation among head masters before Christmas a scheme for the training of teachers in connexion with certain selected secondary schools. These teachers in training would carry on a course of theoretical study in connexion with their University while they resided at a school and learnt by practice, guidance, and observation how to teach. This is apparently the scheme that the Board hope to issue "before the summer." They do not propose to withdraw their financial assistance from the training colleges, but they hope to find money to assist this system of training at secondary schools.

## SUMMARY OF THE MONTH.

COUNCILLOR PORTER, of Maidenhead, in addressing a political meeting at Waltham St. Lawrence, touched on the question of the cost of secondary education, and presented figures which are so startling and important that we desire to give them the prominence they deserve, and as emphasizing the protest we made at the apparent waste of public money by the County Authority in the building of schools in this particular locality. "The County Boys' School at Maidenhead," he said, "was built and equipped at a total cost of nearly £13,000, with accommodation for 150 pupils. It had a first-rate head master and staff, but at the present time only 44 pupils, of whom many were free or assisted scholars. For the year ending March 31, 1912, the maintenance cost was £1,420, the receipts from Government grant and parent fees £620, and the county rate-payers had to find £800. The estimates for the current year are: Receipts, £615; expenditure, £1,487; deficit, £872. To this must be added £766, the annual repayment on the building loan, making £1,638 for the rate-payers to find this year to educate 44 boys at a day school! As taxpayers they also find the Government grant of £250. Thus every boy costs his parents about £10, the Government £6, and the rate-payer £37 for the current year!"—*Maidenhead Advertiser.*

THE Cambridge correspondent of the *Times* has worked out the distribution of scholarship funds at his University during the four months December to March. He finds that Mathematics received £2,445, which was divided amongst 48½ scholars, the half representing a candidate who obtained a scholarship for mathematics together with some other subject. Classics obtained £3,640, divided amongst 71½ candidates; Natural Science, which is still regarded at Cambridge as "hungry and aggressive," received £2,500, divided amongst 53½ candidates; History received £1,275, divided amongst 33½ candidates; Modern Languages received £210, divided amongst 6 candidates; and Hebrew £90, divided amongst 3 candidates.

A DEPUTATION urging the views expressed at the Eugenics Education Conference was received at noon on April 2 at the Board of Education, by Mr. Trevelyan, Parliamentary representative. It was of a private nature. The deputation presented the following resolution: "That the Minister of Education be asked to receive a deputation requesting an inquiry as to the advisability of encouraging the presentation of the idea of racial responsibility to students in training and children at school." Mr. Trevelyan, in reply, expressed his sympathy with the general objects which the deputation had put before him. He said that, while it was out of the question, as the deputation recognized, for the Board of Education to make sex hygiene or eugenics compulsory subjects of instruction in public elementary schools or in training colleges, they had no wish to discourage any experiments in teaching on these lines. The Board recognized the importance of the matter referred to and would consider carefully the representations made by the deputation.



THE following clause is the important one in the Defective and Epileptic Children Bill which has been brought in by Mr. Pease. The remaining clauses deal with the Obligations of Parents and the Determination of Residence.

1.—(1) It shall be the duty of the Local Education Authority for the purposes of the Elementary Education (Defective and Epileptic Children Act, 1899 (herein called the principal Act), to make provision for the education of children belonging to their area whose age exceeds seven years and who are ascertained to be mentally defective within the meaning of the principal Act, and accordingly after the words "they may" in Subsection (1) of Section 2 of the principal Act there shall be inserted the words "and in the case of mentally defective children whose age exceeds seven years shall."

(2) Where, in respect of any mentally defective child, the Board of Education are satisfied that the Local Education Authority have failed to make suitable provision for the education of the child under the principal Act as amended by this Act, the Board may, without prejudice to their right to take any other proceedings, make a deduction from any grants payable to the authority under Section 10 of the Education Act, 1902, to such amount as the Board of Education think just.

OCCUPYING no responsible position in the State (writes Sir Philip Magnus in a letter to the *Morning Post*) I may be permitted to indicate some of the directions in which it appears to me our elementary education may be improved. For the last twenty years some of us have been engaged in the endeavour to make the teaching in our schools less bookish and more real, dealing with things rather than with words. Considerable progress has been made in this direction, and our Board of Education are fully alive to the necessity of advancing further along these lines. They recognize that facilities for hand and eye training, originally introduced into our schools by help of the City Guilds, should be provided in every elementary school; that workshop training, or its equivalent, should be made a prominent feature of the instruction; that the teaching should be disciplinary rather than commercial, its object being the general development of the intellectual and moral attributes of the child.

IN reply to questions, on March 27, on the prevalence of co-education, Mr. J. A. Pease said there were 232 among the 1,037 secondary schools in England and Wales recognized as efficient during the school year 1909-10, in which boys and girls were taught together either in all or in some of the forms of the school. There were, in these 232 schools, 32,764 pupils. Of these 232 schools, two have been closed, three have become schools for boys or girls only, one has been split up into two separate schools (boys and girls respectively), and in one other boys and girls are now taught separately throughout. There are 262 schools among the 1,110 recognized as efficient for the current school year in which boys and girls are taught together in all or some of the forms, and there are 39,891 pupils in these schools. Thirty-three schools, in which boys and girls are taught together either in all or some of the forms of the school, have been placed on the grant list since the year 1909-10. The increase is mainly attributable to the establishment of new schools in districts in which the small number of the inhabitants, the demands of proper school organization, and financial necessities render it difficult to establish efficient secondary schools for boys and girls separately.

REFERRING to the same subject at Derby on April 16, Mr. Pease said that "doctors proverbially differed, and there were a number of very good educationists who believed in mixed schools. It was certainly an advantage to boys to come under the softer and subtler influences of the feminine nature, but educationists as a body had come to the conclusion that there were such differences between boys and girls that efficiency was generally promoted by separating them in schools."

MR. A. W. DAKERS made a telling presidential address at the Conference of the National Union of Teachers. In his opening paragraph he said:

The educational policy of our organization may be summarized as "Equality of opportunity for all, regardless of rank, fortune, or social status." This is a doctrine which the State has not as yet recognized, for although nearly half a century has gone by since the Act of 1870 was passed, there is still a great gulf of prejudice and class exclusiveness dividing the schools of the rich from those of the poor. This

gulf exists in spite of the great reforms carried out by many public-spirited Ministers, and until it is finally bridged no permanent and satisfactory settlement of our educational problems can be hoped for. The public-school spirit has, almost from time immemorial, been lauded as the foundation of our national greatness. If this is so, then it is the duty of our statesmen to afford every child in the country an opportunity of coming under the influence of this spirit, and class favouritism should not block the way. Human nature is essentially the same in the beggar or the statesman, and what is good for the pupils of Eton, Harrow, and Rugby must be equally good for the scholars of the primary schools, whatever their social conditions and environment may be.

HE advocated free secondary and higher education:

The time has come to cease talking of the ladder from the primary school to the University. The welfare of the nation demands, not a ladder, but a broad, firm and well laid highway along which the poorest may travel if they possess the ability. We are told that only a small minority of the workers' children will ever be able to take advantage of further educational opportunities. This statement has been repeated so often that many have begun to accept it as a self-evident axiom; but before jumping to conclusions let us remember this: Children who have gone from the primary schools to the secondary schools, and from thence to the Universities, have almost invariably beaten the offspring of the plutocrats on their own ground. This is true of both town and country primary-school scholars. It is not want of ability, but lack of opportunity, which prevents others from achieving similar triumphs. Reform the staffing conditions of the primary schools, sweep away the unqualified teachers, reduce the size of the classes to the level prescribed by the Secondary School Code; then, after these reforms have had their effect, pronounce judgment on the mental calibre of the worker's child. The result would probably be a surprise to those who are so eager to deliver that judgment to-day.

THE Association for the International Interchange of Students, of which Lord Strathcona is the President, have just made their award of the Strathcona Medal. This medal is awarded for the best report on any educational tour undertaken by any "student" (using that word in its wider sense) under the auspices of the Association. The medals now given have been awarded to Mr. H. M. Gell, an ex-student of the University of Birmingham, and to Mr. Stephen Glennie, an ex-student of the University of London at the Central Technical College. The medal for Scholarship Report is awarded to Mr. J. Burnard Bullock, of the University of the Cape of Good Hope and of Armstrong College, Newcastle-on-Tyne. The two former gentlemen have now undertaken engineering work in British Columbia, while Mr. Bullock has returned to South Africa.

THE Yorkshire Summer School of Geography will be held at Whitby from August 4 to 23. The buildings of the Council School have been lent by the Governors for the purpose. The Summer School has been instituted by the Universities of Leeds and Sheffield with the co-operation of Armstrong College, and of the Education Committees of the three Ridings, and of county boroughs in Yorkshire. The object of the school is to provide theoretical and practical instruction in the methods of Geography and to furnish opportunities for the discussion of problems connected with the teaching of the subject. The course will consist of lectures, laboratory work, field work, and demonstrations, and there will be whole-day and half-day excursions in connexion with field work. All the apparatus used will be simple and inexpensive, and methods applicable to school work will be adopted. The subjects of the lectures will include: The Geological Structure of Yorkshire, its Historical Geography, Language and Place-names, Sites of towns, Architecture, Vegetation and Agriculture, General Economic Geography, Yorkshire Mining (past and present), Textile and Iron and Steel Industries of Yorkshire, Meteorology and the Teaching of Geography. Among the Lecturers will be Prof. Kendall, M.Sc., F.G.S.; Prof. F. W. Moorman, B.A., Ph.D.; Mr. A. Gilligan, B.Sc., F.G.S.; Mr. L. Rodwell Jones, B.Sc.; Dr. W. G. Smith, Ph.D.; Mr. W. P. Welpton, B.Sc.; Mr. P. W. Dodd, B.A. Other lecturers will deal with special branches of the work. The charge for admission to the whole course is £3, and the number of students will be limited to about 200. The Program of the school is now ready and may be obtained from the Secretary, Summer School of Geography, The University, Leeds.

THE Annual Conference of the Association of Teachers in Technical Institutions will be held this year in Bradford at Whitsuntide. The proceedings will be opened on Whit Monday, when the Lord Mayor of Bradford, Alderman Fred Foster, will officially welcome the Conference to Bradford. This will be followed by the address of the President, Mr. P. Coleman, of the Northern Polytechnic Institute. The meeting on Tuesday evening will be addressed by the Right Hon. J. A. Pease, President of the Board of Education, and in view of the introduction of the new Education Bill soon after Whitsuntide, this address will be looked forward to with exceptional interest. This meeting will also be addressed by Mr. Michael E. Sadler, C.B., Vice-Chancellor of the University of Leeds; Sir William Priestley, M.P.; Sir Alfred Keogh, K.C.B., Rector of the Imperial College of Science and Technology; F. W. Jowett, Esq., M.P., and others. Papers will be read to the conference on "Corporate Life in a Technical Institution," by W. Hibbert, Esq., The Polytechnic, Regent Street; "Vocational Education," by A. C. Coffin, Esq., Director of Education, Bradford; and "Co-ordination within a County Area," by F. N. Cook, Esq., Secretary for Higher Education in the West Riding of Yorkshire. A special service has been arranged in the Parish Church for Whit Sunday, and a Conference Sermon will be preached by the Bishop of Ripon.

SIR WILLIAM ANSON, M.P., speaking at a dinner given by the Salters' Company to Old Etonians, said that he had been nearly thirty years a Fellow of Eton, a circumstance which enabled him to keep in touch with his old school and compare the present with the past. His own education largely consisted in the composition of original Latin verse for himself and his friends. His course of study would have been the despair of those amiable busybodies who were now so much to the front under the self-styled title of educationists. The classrooms at Eton in his days, if they had been in an elementary school, would have been condemned offhand by any intelligent Inspector, and would probably have come in for contumelious remarks from the Board of Education. As to the boys' ordinary habits of life in his Etonian days, he believed they would have been a distress to the Professors of Eugenics or whatever the science was termed which looked after the health and future of the coming generation. Yet, in spite of it all, he thought that the boys of his generation could give a pretty good account of themselves. He liked to think not only of those whom Eton sent forth to fill great places in the Church and State, to govern our distant Dependencies, or lead our armies in the field, but of those who did their work in humbler spheres in the parish or the country, and did it well and conscientiously without asking for praise or recognition. It was that type of man that Eton, in common with other great public schools, sent forth, to the benefit of the country and the Empire, and he believed that they would continue to train such men.

### THE ROYAL COMMISSION ON THE UNIVERSITY OF LONDON.

WE give a summary of the principal recommendations of the Report of the Royal Commission on the University of London (Cd. 6717, 2s.).

The Commissioners consider that the present organization of the University is defective, because (1) of the present relations of the external and internal sides; and (2) the combination in the University of a large number of educational institutions differently related to it, of different educational standard and aims.

They propose the establishment of a Court, consisting of about two hundred members in all. The Court will be the supreme governing body, with legislative powers. The Senate, consisting of fifteen persons, will be the executive body of the University. There will be an Academic Council, with powers to advise the Senate upon certain matters. Convocation will retain its present constitution and powers. The Students' Representative Council will be one of the constituent bodies of the University.

The Commissioners accept the Faculty as the basis of organization. They define the constitution, powers, and duties of each Faculty. The following Faculties are named:

Arts, Science, Technology, Economics, Medicine, Laws, Theology.

The University professors will be teachers in constituent colleges or University departments. The constituent colleges will be educational institutions incorporated in the University and controlled, educationally and financially, by the University. The first constituent colleges will be the Imperial College of Science and Technology, University College, King's College, Bedford College, the London School of Economics. These institutions, together with the London Day Training College and King's College for Women, will also form Departments of the University in certain branches of learning. The Birkbeck College and the East London College will become constituent colleges when certain conditions are complied with.

Other educational institutions, not under the educational and financial control of the University, will become schools of the University. These are: in Arts, Westfield College; in Arts and Science, Royal Holloway College; in Arts, Science, and Engineering, East London College; in Science (Agriculture), Agricultural College, Wye; in Medicine, all the existing London medical schools, except those of them which might become University medical colleges, the Royal Army Medical College, and the London School of Tropical Medicine; in Theology, Hackney College (Hampstead), New College (Hampstead), Regent's Park College, the Wesleyan College (Richmond), and St. John's Hall (Highbury).

The area of the University for the recognition of schools will be the Administrative Counties of London, Middlesex, Surrey, Kent, Sussex, Essex, Hertfordshire, and the County Boroughs within those areas. The area of the University for the admission of constituent colleges and University Departments will be the County of London.

The Commissioners recommend that, so far as possible, the colleges should be concentrated in Bloomsbury. They estimate a need of a further annual income of £99,000.

The normal qualification for admission to the University will be a school examination based upon the curriculum of the school. No student will be registered as an undergraduate until he has reached the age of seventeen. The University will cease to inspect schools, but will for the present continue to examine them.

The examination of students in the Colleges and Departments will be conducted by the Faculties. The examinations for degrees of students in schools of the University will be a general examination common to all schools presenting candidates, and will be conducted as at present. Matriculated students other than those in schools of the University will be admitted to all examinations for degrees except those in Medicine and Technology, subject to these limitations: (1) Pupils still at school will not be admitted; (2) students in Colleges or Departments will not be admitted, without leave, if a special examination in the Faculty is open to them; (3) the examinations will be held in the United Kingdom only.

### THE FUTURE OF LONDON UNIVERSITY.

#### PROTEST BY THE GRADUATES' COUNCIL.

At a full meeting of the Council of the University of London Graduates' Association, held on April 24, the following resolution was carried unanimously:—

That the Council of the University of London Graduates' Association, having considered the report of the London University Commission, emphatically protest against the suggestions—(1) that the open examination system upon which the great reputation of the University has been established should be severely restricted and ultimately superseded; and (2) that the Imperial work of the University should be surrendered. The Council fail to find in the revolutionary proposals sketched in the report any guarantee that the higher type of University teacher would thereby be attracted to London, or that University education in its widest and deepest meaning would be thereby promoted.

LORD HALDANE, in his speech at Weston-super-Mare, paid a high tribute to the Board of Education. "Mr. Pease," he said, "is attacking this problem with an earnestness and a diligence that are beyond praise, and I wish to say that his staff are working with him in the same spirit."

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**THE MONTESSORI SYSTEM.**

REPORT OF AN INVESTIGATION RECENTLY CONDUCTED AT THE FIELDEN SCHOOL.

At the Evening Meeting of the members of the College of Preceptors on March 12, Mr. W. G. RUSHBROOKE, Dean of the College, in the chair, the following paper was read by Prof. J. J. FINDLAY.

It is not necessary, in addressing a society of teachers in London, to describe the principles expounded by Mme Montessori; not only have you had a number of meetings where the pros and cons of this work have been vigorously argued, but it was one of the chief items in a rich bill of fare provided by your Education Authority in January.\* Coming from the north, one can only congratulate London teachers on being able to produce papers of such high quality as those concerned with the Montessori pedagogy, as well as with other matters of great moment at the present time. Nor do I think it very helpful to contrast Montessori with other great teachers, such as Froebel. There should be no question of rivalry or partisanship: to understand exhaustively the ideals and practices either of the German or the Italian we need to realize the environment of race and culture in which their systems have evolved, and then to sift out the universal and permanent from what is ephemeral and local. Froebel's pedagogy has suffered great transformation since the days when Frl. Heerwart and Mme Michaelis first landed in England; it is no disrespect to their memory or his if we hold ourselves open to new revelation which will confirm the foundation on which they built. Indeed, this transformation has already been begun as regards the Montessori system also. The remarkable book just published by Mrs. Fisher,† as well as the papers at your London Conference, show that the time is now gone by for any new "system" to be imposed

\* Conference of Teachers, 1913. (1s. 6d. P. S. King &amp; Son.)

† "A Montessori Mother." (London: Constable.)

in all its details on the teaching body without discrimination or the exercise of private judgment.

You will probably be aware that the Fielden School, among other purposes, is designed for the investigation of teaching problems. It is one of the functions of that institution, when ideas of importance are brought to our notice, to examine them, and if they appear *a priori* to promise a fruitful field for practical investigation, we are bound to do our best to make a fair trial, provided that our resources in staff and equipment are equal to the task. Now it seemed to us, on reading "The Montessori Method," that a clear case for investigation was made out, and our duty was plain. We have a class of scholars under six years of age, which we call the kindergarten; and the Senior Mistress of our Primary Department, Miss K. Steel, takes special charge of this class, bringing to her work a trained familiarity with Froebelian and infant-school methods both in theory and practice. She has one, and sometimes two, assistants to help in the kindergarten, and as the class does not number more than twenty it is possible to make studies of the progress of individual children. I mention these circumstances because they are necessary as conditions for a fair investigation. You cannot "try" a new educational scheme offhand as you can try the effects of a new drug. Miss Steel was not only convinced that this investigation was worth while, but had behind her a ripe judgment and experience with children, as well as the energy and devotion necessary to carry on the investigation from month to month, varying and adapting as circumstances demanded. It ought, perhaps, not to be necessary to make these personal explanations, but little seems to be at present understood as to the nature of this sort of scientific investigation, and I am sure that critics will ask the questions which I have here anticipated.

Let me make it quite clear as to what we intended to investigate. We were simply concerned to find out whether, by following some of the principles expounded in "The Montessori Method," using the same or similar apparatus, our own children would appreciably benefit; and this inquiry involved our noting their reactions, and judging whether Montessori interpretations of child behaviour are confirmed by our observations. It will be seen that we are not concerned to report as to whether "the system," or any part of it, can be adopted by any school or any teacher. That is another problem on which our investigation may, or may not, throw light. It will only help teachers and schools elsewhere so far as it convinces them that we have faithfully interpreted the powers and behaviour of children. When such an interpretation is accepted, then the special adaptations in this or that school, with this or that teacher, will follow their own course.

Our children were not introduced to the entire Montessori apparatus all at once. By the kindness of the Froebel Institute samples of the frames for buttoning and tying were lent to us: these we had copied, together with the cylinder insets; we also copied the sand-paper and other alphabet forms: and we ventured to devise some exercises with dominoes and buttons that are not in the Montessori repertoire. This constituted our entire stock-in-trade up to Christmas. Only last month have we been able to equip ourselves with the complete outfit, and with large cupboards specially designed by Miss Steel for easy access by the little ones. Now I feel sure that it was a great advantage to the teachers, if not to the children, to have to begin with only a small part of the equipment; for each piece of apparatus needs to be studied by the teacher and its use by the children observed and analysed. In our case, at any rate as regards the frames, important modifications were found necessary. For one thing, Italian and English children do not dress alike, and since the frames are directly designed to achieve an immediate outcome in personal independence, it was obviously necessary to choose materials such as these little girls and boys find in their own dress.

At first, there was some uncertainty as to the amount of time to be assigned to "Montessori," but after some trials the regular kindergarten morning is now conducted to a timetable roughly as follows:—The kindergarten room, being the largest room in our house, is used for the daily morning gathering of the primary department at 9.15. When the other classes leave this room the kindergarten children stay behind for a "Morning Talk" for a few minutes. After this,

the youngest of them go to the Montessori cupboard to find the "toys" which they wish to select, while the elder ones get out the tables (low collapsible tables specially made to suit these employments) and a rug to spread on one part of the floor. These, then, go to the cupboard and take what they require, and very soon all are busy. The cupboard is divided into three portions, in successive grades. Until the teacher divided the children and the apparatus in this way there was too much freedom in selection. If children get hold of a toy that is unsuitable, they soon show that they are bored with it or they misuse it (see "The Montessori Method," Chapter XX). No orders are given; each child knows that he is allowed to choose any toy in his own cupboard. Having chosen their toys, they go to a table or sit on the floor (a rug is provided to lessen the noise when using the Long Stair or the Tower). They pay no attention to the teachers, who sit down and note what goes on. After a few minutes a child may find his toy (we call all this apparatus "toys," for these children live a life of play-activity) unsatisfactory. He is at liberty, within limits, to change it, but the teacher satisfies herself that the child understands what should be done with the toy before it is rejected. Some children will come to a teacher with pride and show her when they have completed a frame or filled envelopes correctly; others are not so communicative. Some spend the whole time on one employment; others take many days before they can steadily pursue one idea through. But a month is a short span in the child's life: we should give him time!

10.15.—A bell rings; a little time is given to gather toys and put them away; then they fall in line, march out to the transition room, where they take their lunch. Here is a note written by a student (an experienced teacher), observing their proceedings at lunch (the children bring their own food): "Cups, plates, milk, or water are distributed by monitors, and an orderly and pleasant time is spent. The well controlled movements of the children are again noticeable; small children of five years pour out milk from a rather large jug into tiny cups without spilling a drop or shaking. Again, in washing up, these children carry enamel bowls full of water without spilling any."

10.50—11.—After ten minutes' romping in the garden, they come back to their own room and quietly lie down on the floor wherever they please. They shut their eyes, and some fall asleep. After five minutes' rest, the teacher very softly calls the name of each in turn. [We are not enamoured of the semi-hypnotic effect which Mrs. Fisher describes; it may be all right, but such extreme effects seem to us to be treading on uncertain ground.] When called each child rises with most careful quietness so as not to disturb his neighbours. One or two are asleep; if they do not respond to the call they stay where they are. This ends the distinctive "Montessori" time. All except those who are sleeping join in a collective lesson in some "occupation," followed by kindergarten play. When noon arrives the children are off to the cloak-room. Until recently mothers or sisters met them as valets in the cloak-room. But the frames have done their work; both teachers and scholars are now—most respectfully, of course—asking these fond relatives to cease their attentions!

The kindergarten does not meet in the afternoon: thus these scholars are under our charge only for some fifteen hours per week. Thus, from these, ten have been allotted for some five months to employments which may be called "Montessori."

Before proceeding to report results, I may be reminded that this allotment of a short ten hours per week is entirely inadequate, for in Rome the entire day is taken up with these pursuits. The devout Montessorian may perhaps hold that our proceedings should be condemned beforehand on this account. Now, if we had set out to subject these children to an absolute scientific experiment akin to work in a laboratory, this criticism would be quite in place. Such an experiment requires a "control" test for the purposes of strict comparison; it requires also conditions absolutely identical with those laid down in earlier experiments; in short, it requires conditions that can never be fulfilled in so-called educational experiment. [I have never used, and think it unwise to borrow, the term "experiment" from natural science for the purposes of schooling; and I regret that the Training College Association, by the title of its journal, have given countenance to the



idea.] All that we can do is to "investigate"—i.e. to give to new doctrines and apparatus a fair trial, under such conditions and modifications as seem to us just and reasonable. It is open to any one to say that our conditions were not just and reasonable, and that our results are not to be accepted. But my point is that in schooling you cannot, with the best of good will, conduct precise quantitative experiments, repeating exactly the plans of the original operator; you must make such variations as, in your judgment, are likely to answer the purposes of your inquiry. If we had been able to bring these children back in the afternoon, and help them again to play with these educative toys, I think it is very likely that some of them would have been much the better for it; and our report of results would in that case have been more emphatic; but the fact that we could not imitate Mme Montessori in that particular does not invalidate our report so far as it goes. Moreover, Miss Steel might have dropped the Morning Talk or the Collective Lessons and let the children continue their individual employments the entire morning; but we were satisfied that we could judge of the worth of these new ideas if we gave them a trial in the first part of the morning. In other words, we planned this investigation with due regard to what we believed, in the exercise of our independent judgment, to be best for these children. The "collective" teaching of the regular kindergarten type has been abridged, but by no means abandoned. Nothing that we have heard or read of this new system leads us to "scrap" the pedagogy of Froebel; rather, we think that Montessori has come "not to destroy, but to fulfil."

In order to secure definite records of results, Miss Steel and her assistants have kept a diary of each child in a separate file, recording as far as possible the apparatus selected day by day, with notes of definite changes in behaviour and suggestions to account for these. In addition, more general impressions have been written at longer intervals. An account of the home life and health of each scholar has also been prepared. Space and time will not permit me to give these reports in detail. I must ask you to take my account as an impartial conclusion from these papers, helped out by my own observation of these children during the past five months. It should be borne in mind that none of the persons, including myself, who are concerned in this investigation had any bias towards a favourable conclusion; our prejudice, if we had any, was rather the other way, for the extravagant and pushful methods adopted by the magazine articles which first exploited the system by no means recommend it to cautious students. Our general conclusion is undoubtedly favourable, although our "results" will no doubt appear quite unsensational by comparison with the account from Italy. The report I now give has been prepared after reading through the diary records of each child, in addition to my own observations of the children's reactions and further inquiries from Miss Steel. I analyse the result under a series of headings which appear to include the most important topics.

#### A.—INITIATIVE.

Generally speaking, all the children are exhibiting two contrasted qualities to a degree which we had not witnessed in similar children before this change in their life was introduced—viz., a growth in independence and initiative, side by side with a quieter demeanour and more consideration for others. It would appear that these children really needed to be left alone, not only for cultivating what is called individuality, but for the mental repose which seems needful for adjustment to the social milieu. At first, each child played repeatedly with a toy of his own selection; but they soon begin to observe each other, to exchange experiences and gradually come to help each other, both in play and in the practical affairs which each morning's experience brings to their attention. Independence has been naturally most manifest to the observer in the cloak-room as the outcome of exercise with the frames. This may seem a small matter to outsiders, but our records show that to these children the achievement is a great event.

#### B.—REPOSE.

It will be seen that this self-direction is concerned not only with some freedom in choice of apparatus, but in the time spent upon it. In collective teaching all must go at the same pace, or drop out by inattention. Here the slow child can go

slow, and achieve the desired result on his own plane. The result is repose and steadiness. All the teachers, as well as some mothers, comment on the increased quietness in the general atmosphere; the little ones go about their business with less excitement, but with equal joy. Further, little children vary from day to day more than adults; weather, food, a bad night's rest, all tend to vary the power of continuous effort, especially with children whose health has been irregular in infancy. The daily records show this variation in a striking degree; and this isolated activity allows scope for it by permitting each to proceed at his own pace.

#### C.—ATTENTION.

The possibilities of mental progress depend very largely on the growth of power for sustained and absorbed attention. There are at least three sharply contrasted types among these children. (1) The child of dreamy, introspective temperament. In class teaching such a child, usually shy and retiring, gets left behind; and in the nursery he will often be allowed to grow lethargic because he is so willing to be good! Now, such cases require the stimulus of a purpose to be achieved on the level of sensory-motor activity; when such children realize this, and find the pleasure of achievement, they revert to it again and again; gradually they emerge from their apparent dullness and find new pleasures in life. The record of one case—"T. S."—illustrates this type admirably. For many weeks all he seemed to care for was "the laced-up thing," or some frame. These are still his favourites, but he is gradually overcoming his shyness with his comrades, is ready to join them with other toys; and his demeanour shows an alertness and interest which previously had only been manifested in the home circle. This type is quite capable of sustained attention, but the shy nature is inhibited in class teaching. (2) The child who is really lethargic, and will be quite satisfied to sit aimlessly with a toy and achieve nothing. In such cases the principle of non-interference, as it seems to us, can be carried too far. When it is quite clear that the listlessness is not due to ill-health or to inability to understand the purpose of the toy, then the teacher is surely justified in using personal influence to induce activity. With patience, such a case is remedied, for the normal tendency of little children is towards achievement. As soon as success has been reached by such a child a few times, the power of sustained attention grows of itself. Here again the opportunity for isolated effort on a suitable problem seems to be a necessary condition for development—a condition impossible to arrange when a class is taken collectively. (3) The contrasted type is much more common, volatile, and distracted. "E. B." has presented a capital example of this: full of assurance and independence, but with little staying power. The mind is full of fancies (fostered by attendance at the picture house in these days!). These educative toys answer capitally in such a case, for the child is compelled to solve the problem each toy presents. Of course, the teacher has to interfere when "E. B." uses the Broad Stair to make a ship with funnels instead of a stair; there is a time for ships and funnels, but also a time for counting blue and red steps. "T. S." and "E. B." do best when they work together: the one is sociable and volatile, the other shy but steady. The habit of attention seems to be fundamental as the starting-point for further intellectual development: hence the progress here made seems to be conclusive.

#### D.—MOTO-SENSORY EXPERIENCE.

While admitting the benefits of isolated activity, a critic may, however, inquire whether this fundamental power of attention might not be equally well developed in other employment. Our answer is "Yes, so long as you select purposeful toys which provide employment on the child's plane at his present range of powers; with aims such as he can, by exercise of these powers, quickly achieve." Such a critic should read Chapter IV in "A Montessori Mother" to secure evidence that these toys are typical of the employments which infants of three to six will naturally select if they get the chance. Personally, I am not prepared to attach much importance to the view that these employments will make the children in later years more gifted with special powers in "hand and eye." The point rather is that the child, here and now, develops only through employments which give his varied senses room for exercise, at once intellectual and practical.

The silk tablets are a case in point. Some allege that this (very favourite) toy will help the child in later years to a finer power in the discrimination of colours generally. Others say that this is unlikely, since colour in Nature, in dresses, in pictures, &c., is so variable. The point does not seem to me to be important. Our records show, first, that the task of arranging eight shades of eight colours gives intense pleasure and can be successfully achieved; secondly, that it secures sustained attention to a pursuit at once intellectual and æsthetic. That suffices to justify its introduction either to the nursery or the infant school. The day before this paper was read it was noted that "T. S." and "E. B." had jointly sorted the 128 tablets in half an hour; few adults could do better.

#### E.—THE USE OF TOYS OR "GIFTS" FOR SYMBOLIC REPRESENTATION.

These records show that the children often show a desire (as with "E. B." mentioned above) to use a toy for purposes other than the quite prosaic purpose for which it is designed. I need not enlarge upon this feature of mental development; it is, indeed, the basis of all fine art, and its application by Froebel to the purposes of school is one of the great merits of kindergarten pedagogy. But children are not desirous of building castles in the air all the time; their intellectual development is also concerned with discriminating differences, arranging facts in sequence, completing a realized purpose. Froebel knew this also, and his gifts afford some scope for the prosaic as well as the poetic use of apparatus; Mme Montessori has, however, shown that he had by no means exhausted the possibilities of child activity in this direction.

It must be borne in mind that these children have their afternoons free; when left entirely to themselves they will, no doubt, give scope to the fanciful side of their nature by using bricks and other toys to express their imagery. We have not yet found time (see below) to secure a report of how these children spend their afternoons; but when the need is felt for symbolic and fanciful construction, it can undoubtedly find expression apart from teaching.

#### F.—DEPRIVATION OF EYESIGHT.

This is one of the Montessori devices to which great exception has been taken; for it is argued, rightly enough, that in the ordinary activities of life each of the senses aids the other. And yet it appears likely that the special conditions of modern life tend to make us rely more on the eyesight than primitive man was prone to do; and hence that we are liable to train our children without giving them fair scope to develop through tactile and motor experience. We therefore devised "spectacles" made of cotton and elastic; each child, for hygienic reasons, has his own, and can use them at will. (They wash them themselves each week.) The records show that many of them, without stimulus, are glad to put on their spectacles; they are especially pleased to watch one another arranging insets or buttons by handling them without seeing. It is merely the reduction of "blindman's buff" to a charming pedagogic exercise! If we recognize thoroughly the importance of the psychology underlying, e.g., O'Shea's "Dynamic Factor in Education," we shall more readily admit the advantage of measures which limit the attention of the child by shutting his eyes. More than one child has afforded striking evidence on this point. Those who displayed a habit of dreamy inattention were evidently satisfied too readily by looking around; perceptions of sight actually distracted the attention from the steady control of hands necessary to tie a bow or fasten a button; as soon as eyesight was cut off this control became possible. Thus, one child spent twenty minutes in listlessly toying with a frame; when his eyes were covered his whole attitude altered, and he became alert and completed the frame in one and a half minutes. Thus concentration, here as in other realms of experience, was only secured by isolation, and at this stage of development the isolation can only be secured on the moto-sensory plane.

#### G.—ACQUIREMENT OF IDEAS OF NUMBER.

Many of these toys implicitly involve both order and quantity, and when Grade III is reached the children are ready for addition. We have devised\* a simple apparatus

\* See "Demonstration School Record," No. II, now in course of publication. (Manchester University Press, 1913.)

with envelopes and beans, which greatly attract the children, so soon as they reach a level where they need the written symbols of number to aid their thought. Here, again, the fact that each child plays independently makes it possible for each to approach this new and decisive step in experience just when he is ready for it. Our records show that when this stage is reached the child makes rapid progress in mastering the symbols from 1 to 10, both in addition and subtraction; and we anticipate that subsequent progress in the transition class and beyond will be greatly assisted: as to this, however, we need not speculate.

#### H.—ACQUIREMENT OF LANGUAGE SYMBOLS.

In the treatment both of number and language, the Montessori system is essentially in line with the general principles of reformed teaching,\* except that as regards letters this system makes use of motor experience far beyond what has been the rule in modern times. Our children do not display at so young an age as those of Italy the desire to master the alphabet, and we have nothing to report analogous to the vivid outbreak of power in writing, such as is narrated from the "Case dei Bambini." Many collateral considerations must be examined before we can decide how and when to introduce any group of children to letters and words—e.g., the home environment as regards stimulus to such experience greatly affects the question. Our records show that at six years of age most of these children are glad to play letter games—i.e. making up words from cardboard letters. Thus "E. W." is noted on February 26 as spending forty-five minutes, making up her own name and then "my, you, cat, door, wall, chair": the last three being copies of what she "read" pinned against these objects in the room. Further investigation is in process as regards writing, but this has not advanced far enough to reach a definite conclusion.

#### I.—DOMESTIC ACTIVITIES.

The proceedings at lunch, and other situations where the little ones help to attend to themselves, are quite important, but they are not distinctively Montessorian, and need not detain us in this paper.

These notes on separate topics may now be summarized in a sentence or two. Our opinion is that a moderate amount of time taken from the kindergarten morning for individual exercises of the Montessori type has been distinctly beneficial. In fact, since children at this age are so impressionable, and show changes in a few weeks which can be plainly recorded, it becomes possible to produce evidence of a decisive kind in favour of this reform with far greater confidence than is possible with reforms proposed for older scholars. It will be noted that I deliberately state this approval in cautious terms; it is sufficient to declare that these children are being decisively assisted in normal development on many sides of their nature.

I venture, in conclusion, to offer advice as to what can usefully be done by teachers who are in sympathy with these principles. First of all, it will be seen that we do not regard it as imperative that a teacher should be exhaustively trained at Rome before venturing to introduce some of this apparatus. I am glad indeed that the Montessori Society is raising funds, and sending out a few teachers to learn from this most distinguished investigator. No one with a desire for professional knowledge and inspiration could fail to welcome such an opportunity. Every effort, indeed, to enable teachers to study and research is to be commended. Some day it will even be thought worth while to secure funds to enable us to carry on researches in England, after the example of the Lancashire lady to whom the Fielden School owes its foundation. I am sure also that the students who go to Italy will be encouraged by Mme Montessori to think for themselves—not to copy the details of her plans, but to imbibe the spirit and understand the philosophy. What they bring from their pilgrimage will depend upon what they carry with them to Rome.

Further, we are quite ready to admit that, apart from such direct contact with the original source, it is probable that we may be making mistakes, and expert Montessorians will, likely enough, point out that this report misconceives what is in-

\* See "Demonstration School Record," No. II, now in course of publication. (Manchester University Press, 1913.)

tended in certain particulars. But this need cause no great anxiety; sufficient has now been published on the subject to enable us to grasp the essential principles; to apply these we need to study the manifestations of child nature at first hand, and then rely upon our own trained judgment; this is needed as much as fidelity to an original. Thus equipped, I should counsel an infant or kindergarten teacher to try first what her little ones make of the frames and one or two other toys of the First Grade. If these are given a fair trial with a few children, then a teacher can with more confidence investigate further, as the Fielden School is now doing. I deprecate entirely the effort made in America to foist the whole sixty-dollar equipment on an ordinary public school straight away. And, if this has been done by Mme Montessori's injunction, I must quite clearly disagree with her opinion as a matter of practical wisdom. Secondly, I agree with Mrs. Fisher that this is a reform which concerns the parent and the nursery as much as the teacher and the classroom. Doubtless a thorough mastery of the psychology and the physiology is required for a perfect handling of this, as of any other complete, educational scheme; but we need not be too timid in making practical acquaintance with these principles of child nature. One of the signal advantages of this system lies in our being compelled to treat each child as an individual. This is what parents, rather than class teachers, can do, and I am convinced that it is worth while to try to explain to parents how educative toys of the Montessori type can be introduced to the nursery. We have in mind to plan a course for parents and governesses, with children younger than the ordinary school age, in order to find out, first, whether at the age of three to four these educative toys can serve with English children; secondly, whether parents and governesses, after witnessing the way in which the toys are used, can be induced to help their little ones at home on similar lines. It will be recognized that this appeal to parents is in line with many other efforts towards educational reform, since the day when Pestalozzi published "Lienhard und Gertrud."

Finally, let no one undertake to introduce even a fragment of Montessori apparatus into a school without being prepared for some novel and fatiguing experience. I noted above that our teachers at 9.30 sit down and write notes about the children instead of talking to them, and this might be supposed to be an easy job. But although there are sometimes two, or even three, teachers observing only some fifteen to twenty children, they tell me that the work is far harder than collective class management. And I can well believe it, for it is harder to observe a small number of individuals than to direct a company as one man. A very subtle art is demanded—viz., to suggest to these children that they are "free," while affording, through the teacher's foresight, the necessary minimum of guidance and control. And if this were an occasion for expressing thanks, my audience, as well as the lecturer, would wish to express our indebtedness to Miss Steel.

But, whatever the strain may be at first, I have no hesitation in affirming that the organization by teachers of individual child study, such as we are compelled by this mode of schooling to undertake, will lead the way to far-reaching reforms, both in the training of teachers and in child psychology. For one of the most difficult problems in training colleges has been to organize a systematic procedure for our students analogous to that undertaken by students in other professions. Mme Montessori, like all her predecessors from the days of Pestalozzi, has laid the foundations of her method on the detailed observation of individual cases; and where the masters have led the disciples must follow.

Miss PHILLIPS expressed the indebtedness of teachers to Prof. Findlay for the valuable material he had presented for consideration. The movement which was associated with the name of Dr. Montessori was welcomed in England as a contribution towards the development of a native system of education which was proceeding on lines of thought of English origin. Some of the methods advocated by Dr. Montessori had been successfully practised in English schools for the last ten years.

Miss GRANT thought that the methods which had been described were specially helpful in the case of children whose parents were unable to provide toys of the kind possessed by children in more fortunate circumstances. She doubted whether the methods could be applied to large schools.

Prof. FINDLAY having replied to a number of questions addressed to him, a vote of thanks to the Lecturer concluded the proceedings.

## THE TEACHER IN THE MAKING.

At the evening meeting of members of the College on April 16, Prof. JOHN ADAMS in the chair, Mr. FRANK ROSCOE read a paper on the above subject. He said:—

THE title of this lecture suggests an unwillingness to accept fully and without question the common saying that the teacher is "born and not made." The possibilities in the matter of "making" a teacher are, perhaps, illustrated by a remark made to me by a little girl who was watching me plant some flowers. She said: "You don't really make the flowers grow. They grow themselves when you put them into the ground." This principle extends over a field far wider than a suburban garden, and its application to teaching in general may well be borne in mind. We cannot, in truth, "make" teachers, but we can endeavour to put the born teacher through a course of training which will foster his natural aptitudes and enable him to set about his work without any avoidable waste of time or of energy.

Even in considering the making of a teacher in this limited sense we ought properly to have regard to his future work. The teacher in training is destined to become himself a trainer of children, and in fitting himself for his future task he must consider what its nature will be. Thus the training of teachers involves a close and constant consideration of the business of education in general. It is here that the first difficulty presents itself, for it is as true now as it was in the days of Aristotle that "Mankind are by no means agreed about the things to be taught, whether we look to virtue or the best life. Neither is it clear whether education is more concerned with intellectual or with moral virtue. The existing practice is perplexing; no one knows on what principle we should proceed—should the useful in life, or should virtue, or should the higher knowledge, be the aim of our training? All three opinions have been entertained."

We can only hope that in course of time men's ideas may become more clear and definite in regard to educational ends. In the meantime our task is to see that the teacher in training is brought abreast of the most enlightened opinion of our own day. In the early attempts to train teachers this was attempted only in a manner far too restricted and narrow. The first training colleges for teachers were set up in order to give their students some knowledge of the "monitorial system" of Bell and Lancaster, and even thirty years ago it was possible to find men who had in their early manhood spent three or six months at the Borough Road College in "learning the system." This meant that they had acquired certain tricks of class control and a knowledge of routine, but it did not mean of necessity that they had gained any knowledge of educational principles. The term "master of method" lingers in our training colleges to this day, suggesting one who deals with the mechanical and routine part of teaching rather than one who teaches the principles of the craft.

It is true that our knowledge of these principles has grown since the monitorial system was in its prime, other and better systems having superseded it; but the tradition which became attached to the training colleges dies very slowly. The law always lags behind morality, and teaching practice often fails to reflect adequately the better opinion and sounder principles which are available. Thus, while it is recognized on every hand that a good lesson and an orderly class, excellent things as they are, are yet only means to an end, one finds everywhere a tendency to measure the teacher's power by his ability to give a demonstration lesson or by his skill in controlling a class. These are the tests, too often, to which the young teacher who has just left a training college is subjected by head masters. It should be remembered that the raw product of the training college is not in any sense a trained teacher. He has been engaged in considering the principles and some of the methods of his craft. Much practice and further consideration will be necessary before he can be regarded as fully equipped for his work.

Any attempt to arm him with a set of methods in lesson-giving, or of devices in class-control, may do incalculable harm unless he is at the same time made acquainted with the principles which underlie them. Narrowness and rigidity will result, and his teaching will be dull and automatic

instead of being the free exercise of craftsmanlike power. No set of devices, however excellent in themselves, can be prescribed to serve the needs of all schools and of all teachers. They must be modified as circumstances and occasion demand, being fitted to the hand of the user. Such modifications can be made only by the teacher himself in the light of his knowledge of principles.

But it may be urged that the principles of education are too vague to furnish any real guide in practice. It is true that education, like other sciences, rests on principles which cannot be regarded as permanently established. The hypotheses may be completely changed by fresh investigations and ampler knowledge, but the teacher in the making cannot rightly be deprived of his heritage on this account. He should be sufficiently informed as to the present body of knowledge concerning his craft. This is not to say that he should himself be required to research. His relation to the scientific psychologist may be likened to that between the farmer and the agricultural chemist. Just as the farmer in his business of growing crops should apply intelligently the results of the labours of the chemist, so the teacher in his business of training children should apply the results of the labours of the psychologist.

But this intelligent application requires knowledge, not only of the results to be employed, but also of human nature, and hence the young teacher must have a good general education, a training which will engender that "activity of the soul" without which he cannot hope either to learn or to teach successfully. It is unfortunately the case at present that the general education of teachers is too lightly regarded. The proper place for the training of teachers is the University. Here a good general education is available, and here, too, the investigation of principles may be properly carried on. But the Universities should be encouraged to set up departments of Educational Research in addition to the training colleges which they already have. Investigators should be employed in experimental work, and should not be expected to take any large share in the training of teachers. Their work is different, and, until the difference is recognized by the authorities, educational research will continue to be imperfectly carried on.

Beyond a good general education and a working knowledge of principles, the young teacher should have some acquaintance with the history of education. History has been well described as an antiseptic against credulity, and certainly a knowledge of the history of educational ideas will often serve to prevent teachers from embracing too readily every new "system" or "method" that may be imported from abroad or constructed at home.

There will remain the need for practice, and this, it may be suggested, should be carried out during the period following the training course proper. Selected schools, specially staffed, might be used for the probationer service of young teachers. There they would have helpful supervision and continued experience. The brief spell of a few weeks now considered adequate would be replaced by a year or more of regular service under responsible teachers. The present plan leads to an unduly high estimate of the product of the training college. It cannot be insisted too often that the so-called trained teacher is not a finished article when he leaves college. He still needs the training of practical experience and an opportunity for sifting and proving what he has learned concerning his craft.

Mr. DAINOW expressed agreement as to the advantage of contact with men of varying aims and different points of view, but he considered that variety of temperament was of more importance than diversity of study. At Oxford the benefit to be gained from interchange of ideas was hindered by the social barrier.

Mr. PASS urged the necessity of distinctive professional training for teachers. The present practice of allowing men to go straight from the University to teach was detrimental to education, and he hoped the new Registration Council would find means to put a stop to it. Salaries must be increased if men of the right stamp were to be attracted to the profession.

Mr. BRACH could not agree that the investigation of educational principles should be left to the Universities. Enthusiasm was essential to any real and useful work of this kind, and an extensive and productive field for research in the school classroom would go uncultivated if the duty of investigation were confined to the Univer-

sity. As to the desirableness of a University course for the teacher it was his experience that many University men well up in their own subjects were by no means possessed of a good general education.

Dr. P. W. DARUVALA pointed out that the plan advocated had long been in force in Germany, where training, including actual practice, was an essential preliminary to the charge of pupils. He mentioned that in India great stress was laid upon the University training of the teacher.

The CHAIRMAN objected to the mischievous fallacy implied in the assertion that teachers were "born and not made." It was true that the teacher must be endowed at birth with a certain amount of backbone or vigour, and that the really brilliant teacher must be born with the potentiality of becoming such. But in some way or other all teachers must be made. When the trainers of teachers had done all they could the making was still by no means complete, and at this stage the phrase "trained learners" was more suitable than "trained teachers," for what had been acquired up to this point was the power to learn how to teach. If they were looked upon as "trained teachers," classes prematurely given into their charge might suffer injury and the men themselves would be injured by the criticisms of ordinary untrained persons; but if regarded as "trained learners," far less damage was likely to ensue. The vicious circle to which Mr. Roscoe had drawn attention had a very evil effect upon young teachers; they should be given a proper chance. Even if at the outset they had a trifle or even a good deal of conceit, they had also much enthusiasm, which should not be damped. He deprecated the use of the phrase "That is all very well in the training college." It was a canker at the root of the whole spirit of the newly trained teacher; other checks to enthusiasm were only too abundant, and it was undesirable to discourage efforts towards a high ideal, even if that ideal were impossible of attainment.

#### THE VALUE OF THE KINEMATOGRAPH.\*

THE first series of photographs of animals in motion was taken by Mr. Edward Muybridge in the United States thirty years ago, and were combined by him in a zoetrope. Later, he arranged successive pictures on glass discs, and by rotating them in front of an optical lantern he was able to produce the visual impression of motion. Mr. Muybridge showed these living pictures at the Royal Institution in 1882, King Edward, then Prince of Wales, being in the chair; while a long descriptive article upon the realistic effects produced, written by George Augustus Sala, appeared in the *Illustrated London News* of March 18 of that year. Moving pictures were shown at the Polytechnic Institution twenty years earlier, but they were not produced by a combination of photographs.

The invention of the celluloid ribbon enabled pictures to be taken on a continuous strip of film, instead of being arranged on a glass disc; and after careful attention Mr. Edison succeeded in doing this in 1893. The modern kinematograph pictures may be said to date from this development, though in principle it began when Mr. Muybridge took his hundred thousand pictures of living things in movement. His first aim was to analyse the movements of animals rather than to synthesize them, and it is in this respect that kinematography has proved of value to science. Movements which are too rapid to be seen in different stages by the eye can be impressed upon a succession of rapid photographs, which can then be examined at leisure. For instance, the long debated question as to whether, in trotting, a horse has ever its forefeet simultaneously off the ground was settled in the affirmative by Mr. Muybridge's photographs. Referring to the analytical function of such photographs, the following humorous verse was quoted some years ago:—

A centipede was happy quite,  
Until a toad in fun  
Said, "Which leg moves after which?"  
This troubled him to such a pitch  
He fell exhausted in a ditch,  
Not knowing how to run.

Whether it is the mode of progression of a quadruped or a bird, or the movements of leucocytes or trypanosomes or spirochetes in the blood, they all can be analysed by the kinematograph. The actual time interval between successive pictures may be multiplied or diminished at will, so that the life history, which may last weeks or months, can be compressed into a few minutes. In his first fantastic romance,

\* Address delivered by Prof. R. A. Gregory at Olympia on March 30.

Mr. H. G. Wells created a time-machine by means of which time could be accelerated or retarded, and a journey could thus be made into the past or the future. The kinematograph is a veritable time-machine, so far as the past is concerned. It can show the life of an insect or the life of a man in a period which is but a fraction of the true duration, and the period of projection may be the same in each case. If the insect may be imagined to be endowed with a mind, its life, though but a day, will seem as long as the three-score years and ten of man, for the ultimate conception of time is in terms of duration of life. A thousand years may be but a day to the time-machine. Man has, however, an advantage over the insect, inasmuch as he may experience a succession of good and bad years, whereas the insect which is born on a wet day must consider the world a dismal place.

Though the developments of cinematography have been marvellous and extensive in recent years, much more may be anticipated for the future. The capabilities of the kinematograph for reproducing biological phenomena have been abundantly demonstrated, and good use has been made of the instrument to reconstruct the historic scenes and represent life in many parts of the world. For educational purposes, whether in school or college, the kinematograph is destined to be an aid of first importance, and before long it will be regarded as an indispensable part of the equipment of every up-to-date teaching institution.

## CURRENT EVENTS.

THE Council of St. Peter's College, Radley, have elected to the Wardenship the Rev. E. C. Selwyn, Fellow of Corpus Christi College, Cambridge.

THE next meeting of the Head Masters' Conference will take place at Reading, probably on December 22 and 23. Mr. Frank Fletcher, Head Master of Charterhouse School, will be the Chairman of the Conference.

DR. L. LANDAU has been appointed Examiner in German to the London University Extension Board.

A CORRESPONDENT writes from St. Petersburg to ask us to give him the title and price of "the best critical author dealing with contemporaneous children's literature." Can any of our readers help?

LORD CREWE does not like the metaphor of the educational ladder, but, if a metaphor must be used, prefers that of "an inclined plane, of a slope up which the student can climb by gentle ascent without abrupt changes from one kind of education to another."

MORE than fifteen hundred teachers registered in Column B have applied for the return of their guinea since the extension of time granted by Mr. Pease at the request of Sir Philip Magnus. There remain some thousands who have generously allowed the State to retain the fee.

THERE have been eight hundred applications from certificated head teachers in elementary schools for the twelve vacancies in the Inspectorate recently announced by the Board of Education.

MISS C. HEDLEY, of the County Secondary School, Peckham, has been appointed Head Mistress of King Edward VI Girls' Grammar School, Louth.

MR. W. W. HORNELL, of the Board of Education, has been appointed Director of Public Instruction in Bengal.

THE National Food Reform Association has organized a second Conference "dealing with cookery and personal hygiene as well as diet" to be held at the Guildhall, London, on June 30 and July 1.

PROF. L. BASCAN has transferred the Holiday Courses, which he organizes, from Villerville to Le Havre. The Courses are held during August. Information can be obtained from Prof. Bascan, Rambouillet, Paris.

THE Simplified Spelling Board, with the approval of its Advisory

Council, has issued a fourth list of additional simplifications in spelling. These deal mainly with the omission of unsounded letters.

THE Jena Holiday Course will be held from August 4 to 16. Classes in Phonetics will be taken by Dr. A. Lorey, of Frankfurt.

THE DEAN OF WESTMINSTER asks us to call attention to the opportunities of systematic instruction on the Bible and Church history that are now provided "for girls, between ten and twenty years of age, of the educated class, residing in London and other places." Application for information should be made to Miss Bevan, 39 Evelyn Gardens, S.W.

A CONFERENCE of University women engaged in teaching will be held to consider the subject of the Christian Education of Women in the East, in Holy Trinity Church House, 200 Great Portland Street, W., on the evening of May 9 and on the morning and afternoon of May 10. Application for tickets (1s. each) should be made to Miss Jelf, Westfield College, Hampstead, N.W.

MRS. BRYANT asks us to announce that Miss Sophie Nicholls will exhibit photographs she has taken of the Holy Land, at 108 New Bond Street, May 13 to 19. These photographs, in sepia and in colour, "have been taken with a view of enabling teachers and students to build up in imagination the geographical and scenic background in relation to which the Scripture story moves." The Frances Mary Buss scholarship was awarded to Miss Nicholls "to assist her in carrying out the expedition of which these photographs are part of the educational result."

MR. PEASE, speaking at Derby, said: I would like to say here and now, that I do not approve of our grant system. I think it is upon a wrong basis, and I hope that before long we may be able to alter it."

THE Bristol Education Committee have considered the serious interference with the attendance of children at school in consequence of the kinematograph entertainments being open during school hours and have urged the Justices to stipulate, in granting licences, that no children should be admitted during school hours, and no children under ten years of age should be admitted at any time unless accompanied by adults.

THE Sixth Annual Dinner of the University of London Graduates Association takes place at the Criterion Restaurant on May 6.

DR. FARNELL, Fellow and Senior Tutor of Exeter College, Oxford, has been elected unanimously to the Rectorship of the College, in place of the Rev. W. W. Jackson who has resigned.

MR. L. G. CHIOZZA MONEY has brought in a Bill to provide for the establishment of compulsory continuation schools. The Bill was read for the first time on April 16.

WHEN the London Chamber of Commerce established its system of commercial examinations for schools, it was found that 40 per cent. of the clerks employed in the city of London were not of English origin. The examinations have given an impetus to the study of foreign languages and commercial subjects.

MR. E. A. C. STOWELL has resigned the Head Mastership of Queen Elizabeth Grammar School, Kingston-on-Thames.

THE Senate of the Queen's University, Belfast, have decided to establish a Chair of Education, with a salary of £600 a year.

A FRESH development is announced at Bedford College (University of London) by the appointment on the staff of the Training Department of a lecturer who will deal especially with methods of teaching modern languages and who will devote her time to the training of students who intend to become teachers of modern languages. This is, we believe, the first attempt in a training college to give specialized instruction of this kind. The lady appointed is Miss F. S. M. Batchelor, of St. Hugh's College, Oxford.

DR. HAYWARD, assistant inspector to the London County Council, has been granted leave of absence for two months, with full pay, in order to lecture in the United States. Any fees in excess of expenses that Dr. Hayward may receive are to be paid to the Council.

MR. W. B. STEER, assistant master in the Municipal Secondary School, Derby, has been elected Vice-President of the National Union



of Teachers. "His election," says the *Schoolmaster*, "is an indication of the part which secondary education is playing within the Union, and will play increasingly as time goes on."

THE new premises of Bedford College, in Regent's Park, are now in use. The formal opening will take place in July, and it is expected that the Queen, who is Patroness of the College, will perform the ceremony.

DR. JANE WALKER, lecturing at Dewsbury on the Montessori system, said that the results achieved in Rome, which she had witnessed, were so marvellous that they almost bordered on the miraculous.

STILL one further change has been made in the appointment of a Director to succeed Otto Salomon at Naas. Kansiraad Dr. P. E. Lindström was appointed Director last year, but Dr. Lindström's health is not yet re-established, and he has resigned the post to which he was appointed. Dr. Rurik Holm, who served as temporary Director three years ago and also at one of the courses last year, is now appointed in his place. Dr. Holm, who is only thirty-six years of age, is a graduate from the University of Lund, where for a while he was *Docent* in History. He has since been Inspector of elementary schools in Gothenburg, and vacates his post there at the end of the Spring Term. We wish him all success in his new duties.

THE Association of Women Clerks and Secretaries has convened a Conference on the Training of Women Clerks and Secretaries for Thursday, May 22, at 8 p.m., at the University of London. Miss Haldane, a member of the Royal Commission on the Civil Service, will preside. The subjects under discussion will be the kind of training and the preliminary education necessary; and the question of the inspection, by some responsible authority, of schools and institutions offering training in clerical work will be broached. Admission is by ticket, obtainable from the Secretary to the Association, at 12 Buckingham Street, Strand, W.C.

WE regret to announce the death, which took place on April 9, of Mr. George Royer Dick, who was for many years a contributor to the *Educational Times*. Mr. Dick was Fellow of Gonville and Caius, and Auditor-General of Mauritius.

SIR THOMAS SHANN, Chairman of the Manchester Education Committee, referred, at a recent meeting of the Committee, to the proposals of Lord Haldane and said that they did not want schemes but money. Sir Alfred Hopkinson, Vice-Chancellor of Manchester University, concurred in Sir Thomas's views and said that there was too much danger in these days of being led by educational theorists.

THE Stanhope Prize has been awarded to Andrew Browning, scholar of Balliol College, Oxford.

THE Board of Agriculture announce for award in October next twelve research scholarships in Agricultural Science of the annual value of £150 for three years.

MR. TREVELYAN received last month at the Board of Education a deputation from the Moral Education League, asking that two character and conduct lessons should be given weekly to every child attending an elementary or secondary school under the control of the Board. Mr. Trevelyan, while sympathizing with the objects of the deputation, pointed out that compulsion in this matter was not possible, as public opinion was divided on the subject.

A FAREWELL supper was given to Mr. and Mrs. Mansbridge, the founders of the Workers' Educational Association, who are leaving England for a visit to Australia with a view to founding there a similar Association. Mr. Temple was in the chair, supported by Sir Robert Morant and Lord Haldane. The latter spoke very warmly of the value of the movement on its human side.

## THE COLLEGE OF PRECEPTORS.

### EXAMINATION OF FOREIGN TEACHERS FOR CERTIFICATES OF PROFICIENCY IN ENGLISH.

On the result of the Examination which was held in March, 1913, Mr. Joseph Weber obtained a Certificate of the Pass Division.

## REVIEWS.

*A Montessori Mother.* By DOROTHY CANFIELD FISHER.  
(4s. 6d. net. Constable.)

This book is written by a mother for mothers, and makes no direct appeal to teachers. For that reason it is of particular interest to those of our profession who have a reasonably broad outlook and desire to see how our special problems strike the intelligent outsider. No one could show fuller sympathy with our aims, or higher respect for our motives, than does Mrs. Fisher. We cannot but feel that it is a friend and not a hostile critic that is dealing with us, but she deals faithfully none the less. There is an introduction by Mr. Edmond Holmes that may be skipped without any serious loss. When a woman of the culture, insight, and resource of Mrs. Fisher writes a book it is surely unnecessary to drag in some outsider to perform the chairman-like work of supererogatory introduction.

The great value of this book is the directness of approach. The reader is introduced at once into a Montessori school. Nothing is taken for granted, and yet there is no prosy and obscure analysis. The author is indeed unduly modest about her own qualifications to deal with the philosophical aspects of her subject. As a matter of fact, when the proper time comes, she has quite an effective chapter entitled "Some Remarks on the Philosophy of the System." But when the reader has got this length in the book he has acquired confidence in his author, and is prepared to listen to her without the prejudice that usually diverts an English reader from a writer who ventures on philosophy. Mrs. Fisher, further, is careful to warn us that she has not read widely in the literature of education; but when one examines her references to the educational classics one is apt to wonder how many of our professional teachers could make as good a showing. She writes with great verve, and the brilliancy of her style is at least an extenuation, if not a justification, for the unduly high opinion she has of the American woman. She has the habit of claiming many of the finest qualities of human nature as "characteristic" of our "American women." We willingly concede that, while we have to deny the American monopoly of these qualities, Mrs. Fisher in her own person exemplifies most of them.

In particular she is remarkably open-minded. Like all of us, she is full of prejudices, but unlike many of us she knows that she is, and does her best to get rid of them. One of the great charms of the book is the frankness with which she confesses her prejudices against many of the aspects of the system, and she cannot fail to win the confidence of the reader by the way she accepts the teaching of her experience in the Montessori schools and of her intercourse with their originator. For it appears that Mrs. Fisher has had the good fortune to come somewhat closely into contact with Dr. Montessori, and to collaborate with her to some slight extent in the way of translation and other matters. The book is therefore based on just the right sort of knowledge, and exemplifies the best way of approaching a subject supposed to be unfamiliar to readers. We have the work of the Latin mind presented to Anglo-Saxon readers from their own point of view. Further, Mrs. Fisher is an expert in the art of exposition. The early chapters lay down all the concrete basis on which theorizing must be built if it is to be stable. By the time Mrs. Fisher comes to her more elaborate theorizings the reader knows what the system is, has been made to realize what a Montessori school is like, and has a clear mental picture of the essential apparatus. In several respects this book gives a better account of the system than does the authorized work of the originator herself. For the plain man who wants to know "what it is all about" no better answer could be supplied than what is here provided. The description of the apparatus is remarkably good, and is greatly aided by the copious illustrations. The only point on which, when tested, an inexperienced reader found a difficulty in interpreting the illustrations was in the case of the broad stair and the long stair on page 74. She was not certain whether the same blocks were to be used in both cases, though the text seems to make the point quite clear.

The concluding chapters deal with such matters as the difficulties in the way of the extension of the system, its

(Continued on page 212.)



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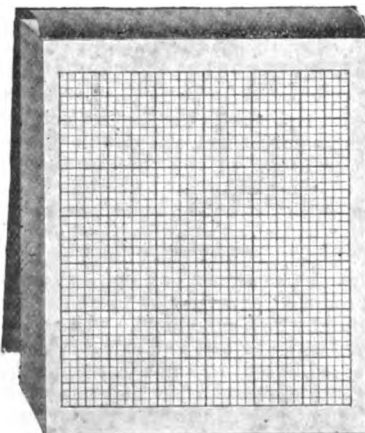
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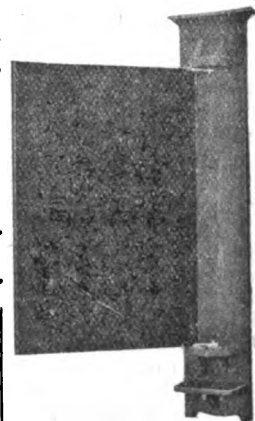
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relations to the kindergarten, and the possibilities of its application within the home. In this last particular Mrs. Fisher describes certain developments that have resulted from her own experience, particularly in the way of manipulating water.

To the ordinary reader the chapter on Dr. Montessori's life will probably be of very special interest. The life has been rather uneventful, its main distinction lying in the fact that it is the life of a new type. But what will irresistibly attract the intelligent reader will be the obvious necessity to read between the lines of this brief biography. There is obviously much more implied than appears on the surface. We learn with great satisfaction that Dr. Montessori is giving herself up to the study of the further development of her system, that she is making good progress towards a scheme for the years between six and nine, and that Mrs. Fisher thinks it is no violation of confidence to say that experiments with children between the ages "have been as astonishingly successful as her work with younger children." This is the bright side, but one is left wondering why it is that there are no Montessori schools now directly under the control of the inventor of the system, and whether she is suffering the usual penalties of the innovator. In any case if she wins a few more disciples of the calibre of Mrs. Fisher her difficulties should soon be smoothed away.

*Where Education Fails.* By Preston Weir.  
(1s. net. Ralph, Holland.)

In a review of an educational work the other day, the *Westminster Gazette* maintained that, next to preachers, teachers were the most long-winded exponents of their craft. Mr. Weir gives this the lie in a thoughtful little book of 114 pages of largish type. The limited space he allows himself probably accounts for the omission of references to what has been already written on the subjects he treats. The point where education fails, according to Mr. Weir, is in training to purposeful strenuous work. It is the venerable problem of the incidence of *interest*. Yet Mr. Weir writes as if he were entering a fresh field, instead of following in the footsteps of an innumerable host. His justification may be that he appeals not to the professional man who is worn out with discussions on this threadbare subject, but to the "plain man" who does not know that there is a problem regarding the place and function of interest.

In any case, readers should be warned of the danger of contrasting the interesting with the difficult, as Mr. Weir seems to do on page 50. The interesting must not be confounded with the pleasant. That Mr. Weir realizes this is shown elsewhere, when he argues that certain difficult subjects produce a more permanent interest than do the easy ones. He does not quite make out his case, but he is eminently fair in his statement of it. Indeed, he deserves the highest praise for the tone which marks the whole book. It has restraint, is free from mere eristic, and gives unmistakable evidence of a sincere desire to get at the truth for its own sake. Its author is evidently familiar with the working of the elementary school system, and makes a great point of the loss involved by the abolition of individual examination in the schools of this class. He maintains that the evils of the old system lay in the payment, not in the examinations, and that the present plan of mere inspection tends to flabbiness and inefficiency. "It is not the least exaggeration to say that, at the present time, the Inspectors, inspired, of course, from 'above,' *deliberately discourage* anything like painstaking accuracy." He is not pleased with the relation between the secondary schools and the training of young people to be teachers in the elementary schools. He is evidently in sympathy with the general tone of regret that marks recent references to the pupil-teacher system. He tells us that: "A few elementary children do still become elementary teachers, but only after passing through a secondary school, by which time they are probably quite unfitted for elementary work, and undesirous of pursuing it. The idea that secondary school influences are higher influences is an utter delusion; and even if it were true, it does not in the least follow that any plan of transfusion is practicable. Half the inefficiency of the elementary schools at this moment is due to the fact that the authorities have for the last few years been importing all the weaknesses of the secondary schools." Apart from the contrast between elementary and

secondary methods there is a rather general impression abroad that there is a tendency to "sloppiness" and "easygoingness" in all our modern schools. Mr. Weir's remedy is the reintroduction of "that reasonable proportion of patient drudgery which forms a necessary factor in all mental and moral training." There must always be drudgery, it is true, but our author's mistake lies in thinking that it must be introduced directly as drudgery. The true solution of the difficulty is so to direct interest that its incidence will lead the pupils not to passive enjoyment but to the desire to attain certain ends that can be reached only by drudgery, a drudgery that is faced because of what it leads to. What Mr. Weir really wants is greater emphasis on the element of *purpose* in the experience of the pupil under instruction.

*Plays for Pedagogues.* By F. H. Hayward.  
(1s. 6d. net. Ralph Holland.)

It is not often that a play can be said to be written from a sense of duty, but we have no difficulty in accepting Dr. Hayward's statement that he has written these two plays because he felt that he ought to. He feels that in England we want the same sort of artistic stimulus as is supplied in Germany by Otto Ernst in "Flachsmann als Erzieher." He admits that Mr. Granville Barker has made a cautious approach in his "Waste," but this is not direct enough. So with characteristic energy Dr. Hayward sets himself to the task. The first play, "Reform at the Board," cannot be said to be quite successful. Even the versatile Dr. Hayward cannot overcome the difficulties inherent in the position. To give individuality to six inspectors by mere description and the limited amount of speech that can be allowed to each in a short play, is all but impossible. Probably the play would be much more convincing if actually staged. But as it stands it seems to have the combined defects of "a novel with a purpose" and a play written by one with no technical knowledge of the stage. Dr. Hayward acknowledges that it is farcical, and perhaps there is no great harm in that. But the introduction of the *ingénue* Lucy and the tartar Mrs. Tacker does not improve the piece either artistically or as a mode of emphasizing the author's views. The educational side of the play is decidedly interesting for the teacher and the inspector. The second little play—a curtain raiser for the other—is really an excellent bit of fooling. The humours of a teachers' meeting under modern conditions are admirably set forth. The characterization is excellent so far as it goes, that is so far as characterization is possible in a curtain raiser. Like everything that Dr. Hayward writes, this booklet captures the reader's attention. Every public-spirited teacher should read it.

*The Teaching of Mathematics in the United Kingdom.* Being a Series of Papers prepared for the International Commission on the Teaching of Mathematics. Part I (pp. 508), 3s.; Part II. (pp. 358), 1s. 9d. (Wyman.)

These important volumes are published as Nos. 26 and 27 of the Board of Education Special Reports on Educational Subjects. The committee responsible for the collection of the papers apparently held before them the double purpose of illustrating, for the advantage of the foreign inquirer, the range and variety of mathematical teaching in this country and of gathering within a convenient compass, for domestic consumption, the criticisms of our own teachers upon the movements and tendencies of which they form part. It must be admitted that they have carried out both intentions effectively. They have produced a review of present mathematical teaching in England which no one who wishes to be informed upon the subject can neglect, and they have, in a liberal spirit not always exhibited in official publications, given the freest scope for the expression of the most varied and even contradictory opinions. A careless reader might suppose that our mathematical instruction must be in a bad condition when its doctors exhibit such flagrant differences. The less hasty inquirer will, however, see in the present ferment of opinion the best evidence that the subject is alive and progressing.

It is impossible to refer to each of the forty-three papers, which review the whole course of mathematical instruction from the Kindergarten to the University. Among those which deal with general rather than specific problems the reader will naturally turn with expectation to Mr. Fletcher's

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discussion of the position of mathematics in our secondary schools. The chief inspector laments the absence in this country of a clear "conception of school mathematics as a limited whole which should be studied in its entirety by all who complete a school course." He finds the curriculum defective in most of its branches, though he welcomes the recent proposals of the Mathematical Association with regard to algebra and numerical trigonometry. These reforms will, however, like all others, produce little effect until the qualifications of teachers are greatly improved, and, in particular, until their own mathematical education is more liberal and better adapted for professional purposes. It may be added that Dr. Nunn, in his paper on the training of mathematical teachers, coincides in this unfavourable view of the University pass courses and offers alternative detailed syllabuses of a more suitable character.

In connexion with the reform of the contents and treatment of the school curriculum, Mr. Godfrey's article on the algebra syllabus (followed immediately by Mr. Barnard's counter-manifesto) and Mr. C. S. Jackson's temperate paper on the calculus as a school subject, will probably attract most attention. The series of articles on practical mathematics in the public schools (prefaced by a benedictory paper from Prof. H. H. Turner) shows what headway has been made by a movement which has now reached the point of consolidating into bricks and mortar; while Mr. Mercer's account of the work done at Osborne and Dartmouth illustrates the same ideas at work in a region where their effects are most instructive to teachers as a whole because the circumstances make it possible to apply them with least qualification. The reader who is interested in these developments should not omit also to read Mr. Eggar's useful paper on the teaching of elementary mechanics.

It is almost unnecessary to say that the inevitable question of examinations looms large and is treated from a number of points of view by several well known and able writers, both within and without the Universities. The question of the position of mathematics in the girls' school is fresher, and is debated with great clearness and ability by Miss Burstall

and Miss Gwatkin, whose views seem rather sharply opposed. Miss Burstall believes that mathematics is a good training only for a small, though important, group of girls, and would be satisfied with "a very limited course of generalized arithmetic and elementary geometry" for those who do not go to college, and would not make mathematics compulsory in matriculation examinations even for those who do. Miss Gwatkin is not convinced that "the difference between an ordinary boy and girl is greater than the difference between two individual boys or two individual girls," and considers that Miss Burstall's proposals would be "disastrous, not only to mathematical education, but to that general education of which it is an integral part."

## GENERAL NOTICES.

### CLASSICS.

"The Loeb Library."—(1) *Cicero: Letters to Atticus*. Vol. I. With English Translation by E. O. Winstedt, M.A. (2) *Appian: Roman History*. Vol. I. With English Translation by Horace White, M.A., LL.D. (3) *Apollonius Rhodius: The Argonautica*. With English Translation by R. C. Seaton, M.A. (4) *Sophocles*. Vol. I. With English Translation by F. Storr, B.A. (5) *The Greek Bucolic Poets*. With English Translation by J. M. Edmonds. (5s. net each. Heinemann.)

(1) Probably few of the Loeb Library Texts will be more welcome than Cicero's Letters; we have the first volume of the Letters to Atticus, and the "Ad Familiares" are promised. Cicero's Letters are, of course, unique both for the interesting sidelight they throw on the history of the times and for their pictures of the social life of the period. But we cannot help asking whether a wise, though wide, selection from all Cicero's Letters would not have served the purposes of the Loeb Library as well as a complete edition: even the incomparable Mme de Sévigné is all the better for weeding out. Mr. Winstedt seems to have caught the right spirit in his translation, and has given us a very readable version. But surely the ideal translation of Cicero's Greek colloquialisms and idioms is the equivalent in French.

(2) Although Appian cannot compete with the best classical

historians either in accuracy or style, he is quite interesting reading, and his method as a historian is certainly novel. The Loeb Library edition, with Mr. White's translation, should certainly help to increase Appian's somewhat restricted circulation, and a new good translation is very welcome.

(3) "Apollonius Rhodius" certainly labours under disadvantages for the modern reader; the classical student shuns him as being an Alexandrine; an epic poem suggests too great length; and he is not particularly easy to read. But, as Mr. Seaton points out in his introduction, he deserves greater popularity, even if it be only for the sake of the love episode of Jason and Medea. Those lines in Book III are of great beauty and power, and "The Argonautica" is "perhaps the first poem still extant in which the expression of the Romantic spirit is developed with elaboration." Mr. Seaton's translation has the right Biblical ring about it, and would be pleasant reading even for those to whom the original is a closed book.

(4) Mr. Storr, in his preface to this volume, which contains "Oedipus the King," "Oedipus at Colonus," and "Antigone," openly acknowledges the difficulty of translating Sophocles, who has been called "the least translatable of the Greeks." But Mr. Storr's translation calls for no apology; it reads smoothly, without sacrificing any of its accuracy; blank verse flows easily from his pen, and his rhyming choruses, with their varied metres, should certainly be pleasing to all, save perhaps the scholar for whom Greek choruses really are untranslatable into English verse.

(5) This volume, containing the poems of Theocritus, Moschus, and Bion, is one in which we feel very glad to have the English translation side by side with the original. We may now be tempted to renew our efforts at Theocritus, and he certainly deserves that we should, for his freshness is a perpetual joy. In this edition Mr. Edmonds gives us a very useful introduction, brief résumés of each poem, and quite a pleasant translation, in which he has quite rightly allowed himself a certain freedom. The narrative is in prose, and the songs are in ballad measure.

*The Georgics of Virgil.* Translated into English Verse by A. S. Way, D.Lit. (2s. 6d. Macmillan.)

Mr. A. S. Way is so well known as a translator of the classics into English verse that one feels some diffidence in criticizing his latest publication. Doubtless it is a very difficult task to render the "Georgics" into English verse, but these English rhyming hexameters, with their frequently recurring anapaests, are not satisfactory. One thinks with regret of Mackail's fine translation of the "Georgics"; but if a verse translation is wanted, surely blank verse is the right English medium for hexameters.

#### RELIGION.

*A Catechism of Life.* By A. M. Buckton, author of "Eager Heart." (1s. net. Methuen.)

Miss Buckton's achievements in the past would lead us to expect success for her, even in the difficult task of compressing into catechetical form some teaching that shall satisfy a child's first inquiries about the mysteries of life. To parents and others doubtful of how to deal with such inquiries, the book should be a helpful and suggestive guide. The author's happy gift of language enables her to convey truth symbolically, with possibilities of new interpretation as the child develops. Her warning, however, should not be overlooked, that in a work of this kind, however much be supplied by the author, the success or failure is in the hands of those directly dealing with the child who learns. Some excellent hygienic hints are appended, and a bibliography.

*Christian Education of Women in the East.* (2s. net. Student Christian Movement.)

This is the record of a conference recently held among University women to consider the problem of the coming education of women in non-Christian countries, and the responsibility in the matter which rests on all educated Christian women, and especially teachers. The papers, read by distinguished workers and thinkers in the educational field, both at home and abroad, are singularly unanimous in their note of urgency. The Far East is coming into our world by strides, and it may be that in helping to adjust the lines along which its education moves, we may learn of it and see with clearer eyes the solution of our own problems. Here, for those that realize, is an inspiring field of work, and scope such as cannot be offered at home. Useful details are added as to conditions of work in the East, the results of the Conference, the names of those present, and a bibliography of recent works on Eastern problems.

*The Acts of the Apostles in the Revised Version.* With Notes and Introduction by Rev. A. S. Walpole, M.A. (1s. 6d. net. Oxford University Press.)

Mr. Walpole deserves the gratitude of all students for producing a textbook whose scholarly aim is so clearly realized. The arrangement is admirable, the commentary lucid and broad. Mr. Walpole has achieved, we think, a very excellent plan for referring from text to notes. The words requiring a background are printed in darker type, and the student may then look these up in an alphabetical index at the end. A few suggestive pictures are included.

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*A Spanish Grammar.* With Practical Introductory Lessons. By Alfred Coester, Ph.D. (5s. 6d. Ginn.)

Dr. Coester divides his grammar into two parts; the first consisting of a series of twenty-two lessons illustrating the chief characteristics of the language and enforced by ample exercises, and the second setting forth the accidence and syntax systematically. This arrangement he justifies on grounds of practical utility as demonstrated by experience with different types of pupils. It is not an unusual arrangement in fact, but it involves a good deal of repetition that seems quite unnecessary; and, in any case, we should think it advisable to work the two parts together. The explanations are lucid; the exercises impress the characteristics of the language; there is abundant material for oral work; and full vocabularies are appended. Any student that works honestly through the book will gain a good grip of Spanish in an easy and agreeable way.

#### FRENCH.

*Le Texte Expliqué.* Cours moyen. Edited by E. J. A. Groves. (Pp. 170. 2s. Blackie.)

This book contains one hundred and twenty extracts in prose and verse from French writers of the eighteenth and nineteenth centuries, arranged under titles such as "L'Enfant et la Famille," "Récits Historiques," "Différents Aspects de la Nature," "Sujets Abstracts et Littéraires." Each extract is followed by explanations of words and phrases in French, and notes on names. The moral is very emphatic. The history is mere odds and ends. Two passages hostile to the Germans are hardly in place here. Yet the general idea is useful.

*Extraits des Prosateurs du dix-neuvième siècle.* Edited by J. E. Mansion. (Pp. xvi, 298. 2s. 6d. Harrap.)

The text (240 pages) consists of well-chosen passages. The notes (58 pages) contain lives, criticism and explanations of the text in French—a good piece of work. A useful chronology of contemporary politics, inventions, and literature is prefixed.

*Molière en Récits.* Edited by M. L. Chapuzet and W. M. Daniels. (Pp. 222. 1s. 6d. Harrap.)

The "Récits" occupy, with illustrations, 154 pages. They give the story of "Le Bourgeois Gentilhomme," "Le Médecin malgré lui," "L'Avare," "Les Fourberies de Scapin," "Le Malade Imaginaire," "Les Précieuses Ridicules," "Les Femmes Savantes," "Tartuffe," "Le Misanthrope." Scenes for acting taken from the best-known scenes in "Le Bourgeois Gentilhomme," "L'Avare," "Scapin," "Les Femmes Savantes," "Le Malade Imaginaire," occupy twenty-two pages in rather small print. The vocabulary takes forty pages. The narration is well done, but the reviewer believes firmly that the right way to introduce Molière to young pupils is with the actual text simplified.

#### MUSIC.

*Aural Culture based upon Musical Appreciation.* By Stewart Macpherson and Ernest Read. Part I. (2s. 6d. net. London: Joseph Williams.)

This is indeed a valuable and delightful work, which will be welcomed alike by teacher and pupil. It is impossible in a short notice to do full justice to the book, but we may briefly say that the authors insist, and rightly, that ear-training should comprise not only pitch and time, but also rhythm and æsthetic perception; and that children should be taught music from the very outset, the technique of the subject being "extracted from the music, instead of being presented to the pupil baldly, *qua* technique, as something which is to lead to music—some day." The work is divided into twelve steps, each step consisting of two parts. The first deals with time and rhythm; the second with relationships of pitch. The songs and rhythmic exercises, specially written by Mr. Read, are charming. Subsequent parts, leading on to more advanced work, are in preparation.

## PUBLICATIONS RECEIVED.

#### EDUCATION.

*The Practice of Instruction: a Manual of Method General and Special.* Edited by John William Adamson, Professor of Education in the University of London. Second Edition, revised. National Society, 4s. 6d. net.

*Method in Teaching: a Textbook for Sunday-school Teachers.* By the Rev. A. R. Osborn, M.A., Dip. Ed. University of Melbourne. Frowde, 2s.

#### CLASSICS.

*Folia Poetica: Short Poems in Latin Verse.* By J. C. Wordsworth, Assistant Master, Crypt Grammar School, Gloucester. Heffer, 1s. net.

*Latin Extracts for Sight Translation, with Hints for Beginners.* By G. H. Ball, Head Master of King Edward's Grammar School, Camp Hill, Birmingham. Mills & Boon, 1s.

FRENCH.

- Intermediate French Reader. By L. J. Gardiner, M.A. Clive, 2s. 6d.
- Matriculation French Essays. By H. J. Chaytor, M.A., and W. G. Hartog, M.A. Clive, 1s. 6d.
- Mes Premiers Pas en Français. By M. L. Chapuzet and W. M. Daniels, M.A. Illustrated by E. S. Farmer. Harrap, 1s. 3d.; with illustrated Vocabulary, 1s. 6d.
- L'Homme à l'Oreille cassée. Par Edmond About. Edited by A. R. Florian. Rivingtons, 1s. 6d.

GERMAN.

- A Handbook of German Grammar. By Frank Adolph Bernstorff, Ph.D. Ginn, 3s. 6d.

ENGLISH.

- The Shakespeare Library. General Editor, Prof. Gollancz.—The Troublesome Reign of King John: being the original of Shakespeare's Life and Death of King John. Edited by F. J. Furnivall and John Munro. Chatto & Windus, 2s. 6d.
- Perse Playbooks.—No. 3: Plays and Poems by the Boys of the Perse School, Cambridge. With a Preface by W. H. D. Rouse and an Essay, "Playwrights or Playwriters," by H. Caldwell Cook. Heffer, 2s. net.
- The Industrial Primer. By Mary B. Grubb and Frances Lilian Taylor. The correlation of construction work with a continued story. Heath, 6d.
- A Book of Historical Poetry. 8d. A Book of Junior Poetry. 6d. Edward Arnold.
- Piers Plowman Histories. General Editor, Miss E. H. Spalding, M.A., Goldsmiths' College.—Junior Books for Children. The Junior Books I to V are now ready, ranging in price from 9d. to 1s. 8d. There are coloured illustrations with explanatory letterpress. The Senior Books are for students and teachers. Book I (5s.) is now ready. G. Philip.

MATHEMATICS.

- University of Calcutta Readership Lectures.—Matrices and Determinoids. By C. E. Cullis, Professor of Mathematics, Calcutta. Cambridge University Press, 21s. net.
- Principia Mathematica. By Alfred North Whitehead, Fellow and late Lecturer, Trinity College, and Bertrand Russell, Lecturer and late Fellow, Trinity College. Vol. III. Cambridge University Press, 21s. net.
- Elements of Descriptive Geometry. By George F. Blessing and Lewis A. Darling. Chapman & Hall, 6s. 6d. net.
- A School Algebra. By F. O. Lane, B.Sc., and J. A. C. Lane, M.A. Edward Arnold, 3s. 6d.
- Examples in Algebra. Taken from Part I of "A School Algebra." By H. S. Hall, M.A. With Answers. Macmillan, 2s.
- Cambridge Tracts in Mathematics and Mathematical Physics.—No. 1: Volume and Surface Integrals used in Physics. By J. G. Leathem, M.A. Second Edition, with two additional Sections. Cambridge University Press, 2s. 6d. net.
- The Entertainer's Library.—(1) Queer Tricks in Figures. (2) The Rapid Calculator. Francis Griffiths, 6d. each.

SCIENCE.

- Laboratory Textbook of Chemistry. By V. Seymour Bryant, M.A., Assistant Master at Wellington College. Part I. Churchill, 4s. net.
- A First Book of Electricity and Magnetism. By W. Perren Maycock, M.I.E.E. Fourth Edition, revised and considerably enlarged. Whittaker, 2s. 6d. net.
- A Textbook of Experimental Metallurgy and Assaying. By Alfred Roland Gower, F.C.S. Chapman & Hall, 3s. 6d. net.
- A Little about Rocks. By Annie Reid. Frowde, 6d. net.

MANUAL INSTRUCTION.

- Pitman's Handwork Series.—Clay Modelling for Infants. By F. H. Brown, A.R.C.A. Lond. Pitman, 2s. net.
- Machine Drawing and Construction. By A. E. Ingham. With many Diagrams and Illustrations. Routledge, 1s. 6d. net.

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MATHEMATICS.

12437. (S. Tebay, B.A.)—Find four square numbers such that the sum of every three of them shall be a square number.

Note on Question 12437.

By ARTEMAS MARTIN, LL.D.

The Solution of this Question by the Proposer, S. Tebay, published in the *Reprint*, Vol. LXVIII (1898), pp. 103, 104, is somewhat defective, and contains errors that ought to be corrected.

On p. 103, the numerator of  $r$  should be  $s^2 + 3$  instead of " $s^2 + 3$ "; the last three lines should be cancelled as they are superfluous.

On p. 104, second line,  $x$  and  $y$  should be interchanged; all after the ninth line, except the reference at bottom of the page, should be omitted, as it does not apply to Question 12437, but pertains to the simpler problem "To find three square numbers such that the sum of every two of them shall be a square number."

I submit the following complete solution of Mr. Tebay's.

Let  $x^2, y^2, z^2, u^2$  be the numbers; then

$$x^2 + y^2 + z^2 = \square, \quad y^2 + z^2 + u^2 = \square \dots\dots\dots(1, 2).$$

$$x^2 + z^2 + u^2 = \square, \quad x^2 + y^2 + u^2 = \square \dots\dots\dots(3, 4).$$

Assume  $x^2 + y^2 + z^2 = (x + y + z)^2$ ,  
then  $xy + xz + yz = 0 \dots\dots\dots(5).$

Now  $y^2 + z^2 + u^2 = (x + y + z)^2 - x^2 + u^2 = (2x + y + z)(y + z) + u^2$   
 $= [u + p(y + z)]^2$  suppose  $\dots\dots\dots(6),$

$$z^2 + x^2 + u^2 = (x + y + z)^2 - y^2 + u^2 = (2y + x + z)(x + z) + u^2$$

$$= [u + q(x + z)]^2$$
 suppose  $\dots\dots\dots(7),$

$$x^2 + y^2 + u^2 = (x + y + z)^2 - z^2 + u^2 = (2z + x + y)(x + y) + u^2$$

$$= [u + r(x + y)]^2$$
 suppose  $\dots\dots\dots(8).$

From (5), (6), (7), and (8), we get by expansion and reduction

$$2x - (p^2 - 1)(y + z) = 2pu \dots\dots\dots(9),$$

$$2y - (q^2 - 1)(x + z) = 2qu \dots\dots\dots(10),$$

$$2z - (r^2 - 1)(x + y) = 2ru \dots\dots\dots(11).$$

Put  $x - (p^2 - 1)(y + z) = 0 \dots\dots\dots(12),$

$$y - (q^2 - 1)(x + z) = 0 \dots\dots\dots(13),$$

$$z - (r^2 - 1)(x + y) = 0 \dots\dots\dots(14);$$

and we get, from (9), (10), and (11),

$$x = 2pu, \quad y = 2qu, \quad z = 2ru \dots\dots\dots(15, 16, 17).$$

In (12), (13), and (14), put

$$p^2 - 1 = P, \quad q^2 - 1 = Q, \quad r^2 - 1 = R;$$

and we have  $x = Py + Pz, \quad y = Qz + Qx, \quad z = Rx + Ry. (18, 19, 20).$

Eliminating  $z$  from (18) and (19) by (20),

$$x = PRx + PRy + Py, \quad y = QRy + QRx + Qx \dots (21, 22).$$

From (21) and (22) we find

$$\frac{x}{y} = \frac{P(1+R)}{1-PR} = \frac{1-QR}{Q(1+R)},$$

which gives  $1 - PQ - PR - QR - 2PQR = 0 \dots\dots\dots(23).$

Restoring the values of  $P, Q, R$ , and reducing,

$$p^2q^2 + p^2r^2 + q^2r^2 - 2p^2q^2r^2 = 0 \dots\dots\dots(24).$$

The condition (5) gives, with (15), (16), and (17),

$$pq + pr + qr = 0 \dots\dots\dots(25).$$

Subtracting (24) from square of (25), we get

$$p + q + r + pqr = 0 \dots\dots\dots(26).$$

From (25) and (26) we have

$$r = -\frac{pq}{p+q} = -\frac{p+q}{pq+1} \dots\dots\dots(27);$$

therefore  $q = \frac{p[1 + \sqrt{4p^2 - 3}]}{2(p^2 - 1)} \dots\dots\dots(28).$

Put  $4p^2 - 3 = \square = (2p - m/n)^2 \dots\dots\dots(29),$

and we get  $p = \frac{m^2 + 3n^2}{4mn}.$

Putting  $2p - m/n$  for  $\sqrt{4p^2 - 3}$  in (28), we have

$$q = \frac{p[1 \pm (2p - m/n)]}{2(p+1)(p-1)} \dots\dots\dots(30).$$

Using the lower sign,

$$q = \frac{p(1 - 2p + m/n)}{2(p+1)(p-1)} = \frac{p[(m+n)/n - 2p]}{2(p+1)(p-1)} \dots\dots\dots(31).$$

Substituting in (31) the value of  $p$  found above,

$$q = \frac{m^2 + 3n^2}{(m+n)(m-3n)}.$$

Substituting the values of  $p$  and  $q$  in (27),

$$r = \frac{m^2 + 3n^2}{(m-n)(m+3n)}$$

Substituting the values of  $p, q,$  and  $r$  in (15), (16), (17),

$$x = \frac{(m^2 + 3n^2)u}{2mn}, \quad y = \frac{2(m^2 + 3n^2)u}{(m+n)(m-3n)}, \quad z = \frac{2(m^2 + 3n^2)u}{(m-n)(m+3n)}$$

neglecting the negative signs because the square of a negative quantity is positive.

We now have for the roots of the required squares,

$$\begin{aligned} x &= (m^2 - n^2)(m^2 + 3n^2)(m^2 - 9n^2), \\ y &= 4mn(m-n)(m+3n)(m^2 + 3n^2), \\ z &= 4mn(m+n)(m-3n)(m^2 + 3n^2), \end{aligned}$$

if we take  $u = 2mn(m^2 - n^2)(m^2 - 9n^2)$ .

The above formulæ are equivalent to the values given, without the method of obtaining them, in Euler's *Commentationes Arithmeticae Collectae*, Vol. I, page 472.

Let  $m = 2, n = 1$ ; and we find, neglecting the negative signs,  $x = 105, y = 280, z = 168, u = 60$ , which are the smallest numbers known satisfying the conditions of the problem.

$$\begin{aligned} x^2 + y^2 + z^2 &= (105)^2 + (280)^2 + (168)^2 = (343)^2, \\ x^2 + y^2 + u^2 &= (105)^2 + (280)^2 + (60)^2 = (305)^2, \\ x^2 + z^2 + u^2 &= (105)^2 + (168)^2 + (60)^2 = (207)^2, \\ y^2 + z^2 + u^2 &= (280)^2 + (168)^2 + (60)^2 = (332)^2. \end{aligned}$$

Take  $m = 1, n = 2$ , and we get

$$x = 1365, \quad y = 728, \quad z = 1560, \quad u = 420.$$

Many other sets of values for  $x, y, z,$  and  $u$  can be found by taking different numbers for  $m$  and  $n$ .

17409. (E. G. HOGG, M.A.)—If a straight line  $L$  cutting the circle  $ABC$  at a distance  $p$  from its centre be isogonally transformed into a conic  $S$ , the eccentricity of  $S$  is given by

$$e^2 = 2k/(p+k).$$

If a straight line  $L'$  be drawn through the pole of  $L$  and parallel to  $L$ , and  $e'$  be the eccentricity of the ellipse  $S'$ , which is the isogonal transformation of  $L'$ , then

$$e^2 + e'^2 = 2,$$

and the axes of the conic  $S$  are parallel to those of  $S'$ .

*Solution by the PROPOSER.*

Since  $L$  cuts the circle  $ABC$ , its isogonal transformation will be a hyperbola; if  $\phi$  be the asymptotic angle, then  $\sec \frac{1}{2}\phi = e$ ; also  $\phi$  is the angle at which  $L$  cuts the circle  $ABC$ ; therefore

$$p = k \cos \phi = k(2/e^2 - 1),$$

whence

$$e^2 = 2k/(p+k).$$

Let  $p'$  be the distance of  $L'$  from the centre of the circle  $ABC$ . Let  $\psi$  be the angle between the equi-conjugate diameters of  $S'$ , then in terms of the invariants  $\Theta, \Theta'$ ,

$$\cos^2 \psi = (\Theta'^2 - 4\Theta)/\Theta'^2.$$

If  $S' = 2l\beta\gamma + 2m\gamma\alpha + 2n\alpha\beta$ ,

then  $\Theta' = -2(l \cos A + m \cos B + n \cos C)$

$$\Theta = -l^2 \sin^2 A - m^2 \sin^2 B - n^2 \sin^2 C + 2mn \sin B \sin C + 2nl \sin C \sin A + 2lm \sin A \sin B,$$

whence  $\cos^2 \psi = \Omega/(l \cos A + m \cos B + n \cos C)^2$ ,

where  $\Omega = l^2 + m^2 + n^2 - 2mn \cos A - 2nl \cos B - 2lm \cos C$ .

Also  $p'^2 = [k^2(l \cos A + m \cos B + n \cos C)^2]/\Omega$ ;

therefore  $p'^2 \cos^2 \psi = k^2$ .

Also  $pp' = k^2$  and  $p = k \cos \phi$ ;

therefore  $p \cos \psi = k/p' = p/k = \cos \phi$ .

If  $a, b$  be the semi-axes of the ellipse,  $\tan \frac{1}{2}\psi = b/a$ ; therefore

$$e'^2 = 1 - b^2/a^2 = 1 - \tan^2 \frac{1}{2}\psi = 1 - \tan^2 \frac{1}{2}\phi = 2 - \sec^2 \frac{1}{2}\phi = 2 - e^2;$$

therefore  $e'^2 + e^2 = 2$ .

Since  $L$  and  $L'$  are parallel, their isogonal transformations will meet in four conyclic points; the chords of the circle joining these points will be equally inclined to the axes of each conic, which axes will therefore be parallel in pairs.

17470. (Professor JAN DE VRIES.)—Find the condition that the circum-centre of a triangle may lie on the in-circle.

*Solutions (I) by the PROPOSER, F. MAYOR, and C. M. ROSS, B.A.; (II) by FREDERICK PHILLIPS, F.C.P., B.Sc. (Lond.), F.C.S., and H. WILLIAMS, B.Sc., F.C.P.*

(I) If  $r, R$  be the radii of the inscribed and circumscribed circles,  $\delta$  the distance between their centres, then (Casey, *Sequel to Euclid*, 1886, p. 74)

$$\delta^2 = R^2 - 2Rr.$$

If  $\delta = r,$

$$R^2 - 2Rr - r^2 = 0;$$

hence  $R = (\sqrt{2} + 1)r.$

Since  $R = abc : 4\Delta, r = \Delta : s,$  the condition may be substituted by

$$abc = 4(\sqrt{2} + 1)(s-a)(s-b)(s-c).$$

If  $c = b,$  we get  $a^2 - 2ab + (2\sqrt{2} - 2)b^2 = 0$ ;

hence  $a = b\sqrt{2}$  or  $a = (2 - \sqrt{2})b.$

In the first case the triangle is isosceles and rectangular; the circum-centre coincides with the point of contact of the in-circle with the hypotenuse.

In the second case, the circum-centre is the intersection of the in-centre with the bisector of the vertex. Indeed, from

$$(R+r) : b = 2r : a \quad \text{and} \quad R = (\sqrt{2} + 1)r,$$

we get  $a = (2 - \sqrt{2})b.$

(II) The distance between the circum-centre and the in-centre is  $\sqrt{R^2 - 2Rr}$ . Therefore

$$\sqrt{R^2 - 2Rr} = r^2, \quad \text{giving} \quad R = (\sqrt{2} + 1)r.$$

Now  $r = 4R \sin \frac{1}{2}A \sin \frac{1}{2}B \sin \frac{1}{2}C$ ;

and the condition becomes

$$\cos A + \cos B + \cos C = \sqrt{2} \dots \dots \dots (1).$$

It is obvious that the triangles cannot be obtuse, as the circum-centre then lies outside the triangle. The limits of the angles are best obtained from an actual drawing as shown.

Diameter of circum-circle

$$= \sqrt{2} + 1;$$

diameter of in-circle = 1 unit;

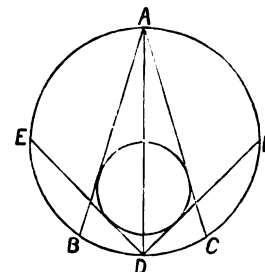
smallest angle is  $\angle BAC = 34^\circ$  approx.;

largest angle =  $90^\circ = \angle EDF.$

Condition (1) is satisfied by an infinite number of groups of angles.

*Examples.*—

- $45^\circ, \quad 45^\circ, \quad 90^\circ;$
- $34^\circ, \quad 73^\circ, \quad 73^\circ;$
- $36^\circ 10', \quad 60^\circ, \quad 83^\circ 50'.$



17182. (M. T. NARANIENGAR, M.A.)—AD is a diameter of the circum-circle of a triangle ABC. If BD meets the bisector of the angle A in E, show that DE is equal to the tangent from D to the circle touching AB, AC and the circum-circle.

*Solutions (I) by W. F. BEARD, M.A.; (II) by B. C. WALLIS, B.Sc., F.C.P.*

(I) Let  $S$  be the centre of the circle touching  $AC, AB,$  and the circle  $ABC$  at  $Y, Z, X.$  It is easy to prove that  $YZ$  goes through the in-centre  $I.$

Let  $CD$  meet  $AE$  at  $F.$  Join  $EZ, FY, BI.$   $BZIE$  are on a circle, because the angles at  $B, I$  are right angles; therefore

$$\angle IEZ = \angle IBZ = \frac{1}{2}B,$$

also  $\angle ZSA = 90^\circ - \frac{1}{2}A$ ;

therefore

$$\angle SZE = \frac{1}{2}C.$$

Similarly,

$$\angle SFY = \frac{1}{2}C,$$

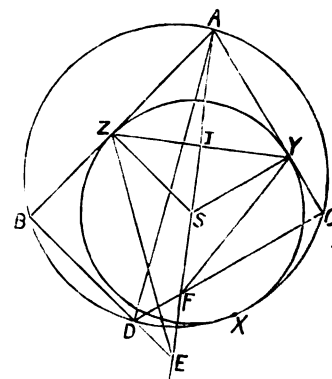
and  $\angle SYF = \frac{1}{2}B.$

Thus the triangles  $ESZ, YSF$  are similar; therefore

$$SE.SF = SY.SZ = SY^2,$$

and  $DE = DF,$  being equally inclined to  $AE$ ; therefore the circle, centre  $D,$  through  $E, F$  cuts the circle  $XYZ$  orthogonally; therefore  $DE =$  tangent from  $D$  to the circle  $XYZ.$

*Note.*—Several interesting properties of this figure have occurred to me in solving this problem. I do not know if any of them are new.





(i) EZ, FY meet at the point in which DX cuts the circle XYZ. Let EZ, FY meet at P; then  $\angle YPZ = 90^\circ - \frac{1}{2}A$ ; therefore P lies on the circle XYZ. Also

$$\angle ZXP = \angle ZYP = 90^\circ - \frac{1}{2}C = \angle ZXD.$$

(ii) The triangles ESZ, YSF, BIC, BZI, IYC are similar, and  $BZ \cdot CY = IY^2 = IZ^2$ .

(iii) If AF meets the arc BDC at Q, and QD meets the tangent at X in G, then  $GE = GX$  and  $\angle DEG = 90^\circ$ .

(II) Let  $R = OA$ , and  $r =$  radius of other circle, centre K.

$$OK^2 = (R-r)^2 + (r-R \cos C)^2 + (r \cot \frac{1}{2}A - R \sin C),$$

whence  $r/2R$

$$= (\cos C + \sin C \cot \frac{1}{2}A - 1) \tan^2 \frac{1}{2}A.$$

$$DK^2 = (r - 2R \cos C)^2 + (r \cot \frac{1}{2}A - 2R \sin C)^2,$$

$$DK^2 - r^2 = 4R^2 + r^2 \cot^2 \frac{1}{2}A - 4Rr (\cos C + \cot \frac{1}{2}A \sin C)$$

$$= 4R^2 - 2Rr (\cos C + \sin C \cot \frac{1}{2}A + 1)$$

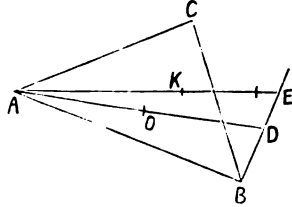
$$= 4R^2 [1 + \tan^2 \frac{1}{2}A - (\cos C + \sin C \cot \frac{1}{2}A)^2 \tan^2 \frac{1}{2}A],$$

$$DE^2 = (2R \sin C \tan \frac{1}{2}A - 2R \cos C)^2$$

$$= 4R^2 [1 + \tan^2 \frac{1}{2}A - (\cos C + \sin C \cot \frac{1}{2}A)^2 \tan^2 \frac{1}{2}A],$$

whence  $DE^2 = DK^2 - r^2,$

whence  $DE =$  length of tangent to circle centre K.



17171. (Lt.-Col. ALLAN CUNNINGHAM, R.E.)—Show that, if  $N_q = x^q - y^q$ ; then  $N_3$  and  $N_7$  can be expressed in the form

$$N = Q^2 + 1$$

for certain values of  $x, y$ . Give examples.

Solution by the PROPOSER.

Let  $N_q = (x^q - y^q) \div (x - y)$ . Every  $N_q$  can be expressed algebraically in form  $N_q = t^2 + qx\eta u^2$ , when  $q =$  a prime  $= 4k + 3$ . Hence every such  $N = t^2 + (q\xi\eta)u^2$ , when  $x = \xi^2, y = q\eta^2$ . Hence also  $N_q = t^2 + (q\xi\eta)u^2$ , when  $\xi^2 - q\eta^2 = x - y = 1$ .

i. When  $q = 3,$

$$N_3 = (x^3 - y^3) \div (x - y) = (x - y)^2 + 3xy. 1^2.$$

Taking  $x = \xi^2, y = 3\eta^2$ , and  $\xi^2 - 3\eta^2 = x - y = 1$ , gives

$$N_3 = x^3 - y^3 = 1^2 + (3\xi\eta)^2 = 1^2 + Q^2,$$

as required.

ii. When  $q = 7,$

$$N_7 = (x^7 - y^7) \div (x - y) = (x - y)^6 + 7xy(x^2 - xy + y^2).$$

Taking  $x = \xi^2, y = 7\eta^2$ , and  $\xi^2 - 7\eta^2 = x - y = 1$ , gives

$$N_7 = x^7 - y^7 = 1^2 + (7\xi\eta)^2(xy + 1)^2 = 1^2 + Q^2,$$

as required.

Every solution  $(\xi, \eta)$  of the two Pellian equations  $\xi^2 - 3\eta^2 = 1, \xi^2 - 7\eta^2 = 1$  give numbers  $N_3$  and  $N_7$  in form  $(1 + Q^2)$  as required.

Ex.—The table below gives several (successive) solutions of the two Pellian equations with the corresponding values of  $x, y, Q$  which go to form  $N_q$ .

$q = 3$ $\xi^2 - 3\eta^2 = 1$	$\xi, \eta$	2, 1	7, 4	26, 15	97, 56	362, 209
	$x, y$	4, 3	49, 48	676, 675	9409, 9408	131044, 131043
	$Q$	6	84	1170	16296	226794
$q = 7$ $\xi^2 - 7\eta^2 = 1$	$\xi, \eta$	8, 3	127, 48			
	$x, y$	64, 63	16129, 16128			
	$Q$	677544	11100203906736			

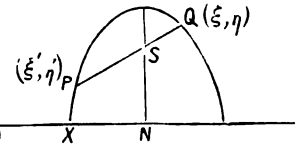
17167. (Professor J. C. SWAMINARAYAN, M.A.)—Determine a point X on a horizontal axis Ox from which a particle can be projected with the least velocity so as to pass through two given points  $(\xi, \eta)$  and  $(\xi', \eta')$  in the same vertical plane as Ox, and show that

$$OX = \{(\xi + \xi')\rho + (\eta - \eta')(\xi - \xi') - (\xi - \xi') \sqrt{[(\rho + \eta + \eta')^2 - 4\eta\eta']}/2\rho,$$

where  $\rho = \{[(\xi - \xi')^2 + (\eta - \eta')^2]\}^{1/2}.$

Solution by the PROPOSER and T. WORRALL, M.Sc.

The path of the particle must be such that the focus must lie in the line joining the two given points



$$PQ = \{(\xi - \xi')^2 + (\eta - \eta')^2\}^{1/2} = \rho,$$

$$SP + SQ = \rho, \quad SP - SQ = \eta - \eta',$$

$$SP = \frac{1}{2}(\rho + \eta - \eta'), \quad SQ = \frac{1}{2}(\rho - \eta + \eta');$$

latus rectum  $= (4SP \cdot SQ)/(SP + SQ) = [\rho^2 - (\eta - \eta')^2]/\rho = (\xi - \xi')^2/\rho,$

$$ON = \{[\xi'(\rho - \eta + \eta') + \xi(\rho + \eta - \eta')]/2\rho$$

$$= [(\xi + \xi')\rho + (\eta - \eta')(\xi - \xi')]/2\rho,$$

$$SN = [(\eta + \eta')\rho + (\eta - \eta')^2]/2\rho,$$

$$AN = SN + AS = [2(\eta + \eta')\rho + 2(\eta - \eta')^2 + (\xi - \xi')^2]/4\rho$$

$$= [\rho^2 + 2\rho(\eta + \eta') + (\eta + \eta')^2 - 4\eta\eta']/4\rho;$$

therefore  $AN = [(\rho + \eta + \eta')^2 - 4\eta\eta']/4\rho,$

$$XN = \sqrt{(4AS \cdot AN)} = \sqrt{\{(\xi - \xi')^2 [(\rho + \eta + \eta')^2 - 4\eta\eta']/4\rho^2\}}$$

$$= (\xi - \xi') \sqrt{[(\rho + \eta + \eta')^2 - 4\eta\eta']}/2\rho;$$

therefore

$$OX = ON - XN$$

$$= \{(\xi + \xi')\rho + (\eta - \eta')(\xi - \xi') - (\xi - \xi') \sqrt{[(\rho + \eta + \eta')^2 - 4\eta\eta']}\}/2\rho.$$

17489. (C. M. ROSS, B.A.)—Show that the value of the circulant

$$\begin{vmatrix} 1 & x & x^2 & \dots & x^{n-1} \\ x^{n-1} & 1 & x & \dots & x^{n-2} \\ x^{n-2} & x^{n-1} & 1 & \dots & x^{n-3} \\ \dots & \dots & \dots & \dots & \dots \\ x & x^2 & x^3 & \dots & 1 \end{vmatrix} \text{ is } (-1)^{n-1} (x^n - 1)^{n-1}.$$

Solutions (I) by HENRY RIDDELL, M.E., and C. E. WRIGHT;

(II) by the PROPOSER.

(I) This result seems to be evident on inspection. Subtracting  $x$  times the last column from the first, we have determinant

$$\begin{vmatrix} (1-x^n) & x & x^2 & \dots & x^{n-1} \\ 0 & 1 & x & \dots & x^{n-2} \\ 0 & x^{n-1} & 1 & \dots & x^{n-3} \\ 0 & x^{n-2} & x^{n-1} & \dots & x^{n-4} \\ \dots & \dots & \dots & \dots & \dots \\ 0 & x^2 & x^3 & \dots & 1 \end{vmatrix}$$

Reducing by writing in the form of the product of  $(1 - x^n)$  by the new determinant, we see that the operation can be continued  $(n - 1)$  times in all using on each occasion the next higher power of  $x$  as the multiplier for the last column, with an ultimate value  $(1 - x^n)^{n-1}$ . [Rest in Reprint.]

QUESTIONS FOR SOLUTION.

17508. (A. W. H. THOMPSON.)—In the steady irrotational motion of an incompressible inviscid fluid contained in an infinitely long circular cylinder, which is moving with constant velocity  $U$  perpendicular to its length; show that the following small disturbance of the velocity distribution is possible, namely,

$$u = -A \sum_1^{\infty} (-)^n J_n \left( \frac{\lambda}{U} \right) r^n \sin n\theta,$$

$$v = A \sum_1^{\infty} \left\{ e^{\lambda r \cos \theta} U - J_0 \left( \frac{\lambda}{U} \right) - \sum_1^{\infty} (-)^n J_n \left( \frac{\lambda}{U} \right) r^n \cos n\theta \right\},$$

where  $u$  is the velocity component parallel to the direction of  $U$ ,  $v$  the component perpendicular to it,  $r, \theta$  are polar co-ordinates with the centre of cylinder as origin.  $A$  is a small constant,  $\lambda$  is a constant. Show that if the small initial disturbance be such that  $\lambda$  is positive, the steady motion is stable; if negative, unstable.

17509. (Professor E. J. NANSON.)—Find the primitive of

$$y = 2xp + kp^2.$$

17510. (E. G. HOGG, M.A.)—Discuss the formation of quadratic expressions of the types

(i)  $(p - 1)px^2 - 2p(p + 1)x + (p + 1)(p + 2),$

(ii)  $2q^2y^2 - (2q + 1)^2y + 2(q + 1)^2,$

whose factors are of the form

- (i)  $2[rx - (r + 1)][sx - (s + 1)]$ ,
- (ii)  $[uy - (u + 1)][vy - (v + 1)]$ .

Examples  $1680.1681x^2 - 2.1681.1682x + 1682.1683$   
 $= 2(492x - 493)(2870x - 2871)$   
 $2.97512y^2 - (97512 + 97513)^2 y + 2.97513^2$   
 $= (57121y - 57122)(332928y - 332929)$ .

**17511.** (J. HAMMOND, M.A.)—If  $\Sigma f(k/n) = F(n)$  or  $\Phi(n)$ , according as  $\Sigma$  embraces all positive integral values of  $k$  from 1 to  $n$ , or only such of them as are prime to  $n$ ; prove that  $\Sigma \Phi(n) = F(n)$ , which reduces to the familiar formula  $\Sigma \phi(d) = n$  in the special case of  $f(k/n) = \text{const.}$

**17512.** (C. M. ROSS, B.A.)—If  $a_1, a_2, \dots, a_n$  are the roots of the equation  $x^n + p_1x^{n-1} + p_2x^{n-2} + \dots + p_n = 0$ , find the equation whose roots are  $a_1^2/(a_2 + a_3 + \dots + a_n), a_2^2/(a_1 + a_3 + \dots + a_n), \dots, a_n^2/(a_1 + a_2 + \dots + a_{n-1})$ .

**17513.** (JAMES BLAIKIE, M.A.)—If  $F(n) = 1/n + \frac{1}{2}n^3 + \frac{1}{3}n^5 + \frac{1}{4}n^7 + \dots$ , prove that  $F(5) = F(9) + F(11) = F(13) + F(15) + F(17) = F(17) + F(19) + F(21) + F(23)$ ; and that  $F(7) = F(13) + F(15) = F(19) + F(21) + F(23) = F(25) + F(27) + F(29) + F(31)$ .

**17514.** (Professor J. C. SWAMINARAYAN, M.A.)—If  $(x_1/y_1), (x_2/y_2), (x_3/y_3)$  are the three distinct values of  $(xy)$  which satisfy the equations  $ax + hy + g = x(gx + fy + c)$  and  $hx + by + f = y(gx + fy + c)$ , show that  $x_1x_2 + y_1y_2 = x_1x_3 + y_1y_3 = x_2x_3 + y_2y_3 = -1$ .

**17515.** (Professor NEUBERG.)—Soit SABC un tétraèdre quelconque. Un plan parallèle à la face ABC rencontre les arêtes SA, SB, SC aux points A', B', C' qui se projettent en A'', B'', C'' sur le plan ABC. Trouver (1) le lieu du centre de gravité du prisme A'B'C'A''B''C''; (2) les surfaces engendrées par les droites qui joignent un sommet du prisme au milieu de l'arête opposée.

**17516.** (R. TATA, M.A.)—The locus of points from which three normals can be drawn to a tricusp such that one of them is equally inclined to the other two is a pair of lines through the origin or two straight lines, one of which is parallel to the  $x$  axis, and the other equally inclined to the axes of co-ordinates.

**17517.** (Professor K. J. SANJANA, M.A.)—The centre of curvature at any point P of a parabola may be simply found thus:—draw the tangent and normal (PT and PG) at P to meet the axis, and TM parallel to PG to meet the ordinate of P in M; draw MO parallel to the axis to meet the normal: then O is the centre of curvature.

**17518.** (W. F. BEARD, M.A.)—PSP' is a focal chord of an ellipse, and PN, PM are drawn perpendicular to the axis and directrix. Prove that MN bisects PP'.

**17519.** (Professor J. C. SWAMINARAYAN, M.A.)—ABC is the triangle of reference and the areal co-ordinates of the points A', B', C', are  $(l_1m_1n_1), (l_2m_2n_2)$  and  $(l_3m_3n_3)$  respectively. Show that the area of the triangle formed by the straight lines AA', BB', CC' is equal to

$$\frac{\Delta(l_2m_3n_1 - l_3m_1n_2)^2}{(l_2l_3 + l_2m_3 + l_3n_2)(m_3m_1 + m_3n_1 + m_1l_3)(n_1n_2 + n_1l_2 + n_2m_1)}$$

where  $\Delta$  stands for the area of  $\Delta ABC$ . Also show that the area of the triangle formed by the intersections of  $(BC, B'C'), (CA, C'A'),$  and  $(AB, A'B')$  is equal to

$$\frac{\Delta'(l_2m_3n_1 - l_3m_1n_2)}{(l_2 - l_3)(m_3 - m_1)(n_1 - n_2)}$$

where  $\Delta'$  stands for the area of  $\Delta A'B'C'$ . Hence deduce the important proposition that the corresponding sides of two triangles in perspective intersect in collinear points and its converse.

**17520.** (R. F. DAVIS, M.A.)—If O is the circum-centre and H the orthocentre of a given triangle ABC, and AH, BH, CH intersect the circum-circle again in U, V, W, prove that the parallels through U, V, W to OA, OB, OC respectively meet in a point P; and that if OH be produced to H', so that OH = HH', then PH' = OH<sup>2</sup>/R.

**17521.** (H. D. DRURY, M.A.)—P is the orthocentre of a triangle ABC. PA, PB, PC are produced to A', B', C' respectively, taking AA' = r<sub>1</sub>, BB' = r<sub>2</sub>, CC' = r<sub>3</sub>, where r<sub>1</sub>, r<sub>2</sub>, r<sub>3</sub> are the radii of the three escribed circles; show that the sides of the triangle A'B'C'

are perpendicular respectively to the bisectors of the angles of the triangle ABC.

**17522.** (W. N. BAILEY.)—ABC is a triangle, and Ap<sub>1</sub>p<sub>2</sub>p<sub>3</sub>... is a broken line, such that p<sub>1</sub>, p<sub>2</sub>, p<sub>3</sub>, p<sub>4</sub>, ..., p<sub>n</sub>, ... are the middle points of BC, CA, Ap<sub>1</sub>, p<sub>1</sub>p<sub>2</sub>, ..., p<sub>n-3</sub>p<sub>n-2</sub>, ... Show that the limiting position of p<sub>n</sub> when n approaches infinity is the point Q whose trilinear co-ordinates are  $(4\Delta/a, 2\Delta/b, 4\Delta/c)$ . By commencing at B and C two other points R and P are obtained. Show that (1) AP, BQ, CR concur at the common centroid of the triangles ABC, PQR; (2) AQ, AR trisect BC; (3) the join of P to the middle point of AB is concurrent with AQ and BC; (4) BR, CQ each pass through the middle point of AD, where D is the point of intersection of AP, BC; (5) PQR is similar to ABC and of one-fifth its dimensions; (6) the points of intersection of AQ, AR with BC; BR, BP with CA; CP, CQ with AB, lie on a conic whose centre is the common centroid of ABC, PQR, and such that AP, BC; BQ, CA; CR, AB; are parallel to pairs of conjugate diameters; (7) AQ, AR, BR, BP, CP, CQ envelop a conic.

**17523.** (C. E. YOUNGMAN, M.A.)—Tangents at A, B, C to a circle (O) intersect at D, E, F on an equal circle (H); prove that the symmedian point of ABC lies on (H), and the Lemoine line of DEF touches (O).

**17524.** (A. E. JONES.)—Determine  $\theta$  from the following equation  $79 = \frac{8.45287}{\sin(40^\circ - \theta)} + \frac{6}{\sin \theta}$ .

A neat solution is wanted.

**17525.** (F. MAYOR.)—Prove that

$$\begin{aligned} & \sin 2\alpha \sin \alpha \cos \alpha \\ & \sin 2\beta \sin \beta \cos \beta \\ & \sin 2\gamma \sin \gamma \cos \gamma \\ & = 8 \sin \frac{1}{2}(\beta - \gamma) \sin \frac{1}{2}(\gamma - \alpha) \sin \frac{1}{2}(\alpha - \beta) \Sigma \sin(\beta + \gamma). \end{aligned}$$

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**18114.** (H. J. WOODALL, A.R.C.S.)—Required the factors of  $c^6 - 2c^4 + c^3 - 5c^2 + 2c + 1, c^5 + 3c^7 + 4c^6 + 5c^5 + 9c^4 + 0 - 24c^2 - 30c - 6, c^{10} - 6c^9 + 12c^8 - 16c^7 + 23c^6 - 10c^5 + 11c^4 + 0 + 4c^2 + 0 + 1$ .

**18189.** (Professor WATSON.)—Find the average area of all right-angled triangles having a given hypotenuse.

**18146.** (D. BIDDLE.)—Five insurance companies issue £10,000 worth of policies within the same week, on ordinary lives having the same expectation, at the same premium per £100. The first issues a single policy, the second two of £5,000 each, the third ten of £1,000 each, the fourth twenty of £500 each, and the fifth a hundred of £100 each. Show in terms of  $n$ , that is, the number of policies covered by the given sum, the variation in risk borne by the several companies.

**18179.** (Col. CLARKE, C.B., F.R.S.)—Inscribe a square in a given quadrilateral. Also if the inscribed figure, instead of being a square, is only a rectangle, find the envelopes of its sides.

**18229.** (Professor ANTHONY.)—A movable finite wire carrying a current of electricity is perpendicular to and on one side of an infinite wire also carrying a current. Investigate the motion of the movable wire.

**18365.** (H. J. WOODALL, A.R.C.S.)—Expand  $(b+1)^b$  in descending powers of  $b$ , and give the general term.

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## The Educational Times.

### "UNITED WE STAND . . ."

THE urgent need of union and co-operation among the bodies representing teachers in secondary schools grows constantly greater. The reasons for this are written large. Proposals have been made that the State should officially recognize its concern with and its duty towards every educational institution in the land—that there should, in short, be evolved a national system of education. It appears to be inherent in all classes to press for legislation for other classes, whilst tacitly assuming that one's own class is to remain untouched. But a system of education can only be called national when it covers the nation. Elementary and secondary schools, technical institutes and Universities, must all be included, and no single institution belonging to these categories can be left out. We are dealing here especially with secondary education, and we wish to make it clear that no scheme can fulfil Lord Haldane's aspiration that does not include the great public boarding schools both for boys and girls, as well as kindergarten and all private schools of every sort.

It is the interest of all of us to press for this larger view. At present the secondary schools officially known to the Board of Education and aided by grants of public money form but a very small proportion of the institutions claiming to give secondary education. The Board deals with less than a thousand secondary schools; there are many, though no one knows how many, thousands outside the organization. No logical defence can be found for a position in which the State helps to pay the school bills of some fathers and takes no concern for the rest. There is no justice in the attitude which says to some parents: We will educate your children in secondary schools and we will see that the education in those schools is efficient; while taking no thought for the children brought up in other schools. It is not reasonable that the benefits of inspection should be limited to one section of the population when all sections alike pay the taxes that provide the inspection. These obvious truths are becoming realized, and changes are on the horizon.

These changes will be in the direction of further control on the part of the State. There are some who have raised the bugbear of official interference. Whatever truth there may be in this fear as things stand, it is obvious that the danger of undue control will vanish when all schools are united. It is conceivable that an unwise Government Department or Local Authority might exercise a harmful influence upon a small group of schools. No such influence need be feared on the secondary schools as a whole. Winchester and Bedales and Wycombe Abbey will not submit to cramping regulations, and public no less than educational opinion will support them. It is essential for freedom that the national scheme should be carried out completely and no school omitted. There is strength in union: as disorganized units we fall.

In all human institutions allowance must be made for growth. An educational system, as some speaker said the other day, is like a cathedral. During the centuries of cathedral building we do not find that one builder pulled down the work of his predecessor and started afresh; each builder added and extended. So it must be with bodies of secondary teachers. It is too late in the day to wipe the slate clean and to form an association that shall include all teachers in secondary schools. We have no desire for such a procedure; but we do wish to see, and it is essential for the continuance of the tradition of secondary education that we should see, a very real union between the existing bodies of secondary teachers. We are quite prepared to admit that all education is one, and that there should be an association representing the interests of all teachers in all sorts of educational institutions. Indeed, in the Teachers' Registration Council we come near to the formation of such a body. This Council stands for education in England and Wales from the professional side. But the Registration Council is formed of four defined sections; it is with the section dealing with secondary schools that we are here concerned. The bodies sending representatives to this section are the Head Masters' Conference, the Associations of Head Masters, Head Mistresses, Assistant Masters, Assistant Mistresses, Preparatory Schools and Private Schools, the Teachers' Guild, the College of Preceptors, and the

Froebel Society. These represent secondary schools, and it is these that must unite to voice the desires of secondary schools and to maintain their traditions.

A beginning has been made in the Federal Council of Secondary Associations. The time has come for the establishment of a closer federation, able to take action in the name of the associations with greater celerity. The sectional associations will remain strong; indeed, we hope they may gain in strength until they cover the whole field. The strength of the Federal Council depends upon the strength of the sectional bodies. We secondary teachers have a point of view which the nation needs to understand and appreciate. Secondary education is on its trial. To no great extent has it gained public confidence. To the well-to-do classes secondary education is often a matter of indifference; to large bodies of people it is only the preserves of snobbery. Stated baldly, the position is this: either the public schools will remain in their splendid aloofness, the private schools be gradually crushed out, and secondary education come to mean in the eyes of the Local Authorities two or three years of technical finish to the elementary school course; or else we are going to have a national system of secondary education springing out of, and in close connexion with, the elementary school, and leading on to Universities or technical colleges, and preserving all the best traditions of secondary education: freedom both for the teachers and the taught. We want State support, but we do not want, and we need not have, State control exercised in such a way as to stifle initiative and to make of the teacher a machine. Secondary education differs in its essence from primary: the one deals with the child and the other with the adolescent.

If we are convinced that our liberties are threatened, and that there is a very real danger lest the country may take a wrong view of secondary education at this important crisis, when legislation is imminent, we may be certain that if we combine we can prevent the danger, and ensure to secondary education a free and honourable future. A strong federation of associations of secondary teachers that shall stand to the Government and the nation as representing secondary education is the first essential. The next essential is a press organ that shall voice the policy of the Federation, and express the aims and aspirations of secondary teachers.

## NOTES.

THE deputation representing private schools which waited upon Sir Lewis Selby-Bigge in March, and of which we gave a full report in our April number, found itself at the outset confronted with a difficulty. Questions were raised as to the number of schools, their equipment and aims, and the number of pupils. These questions the deputation was unable to answer. Yet an answer must be found. No legislation can take place in reference to an unknown quantity; and that is precisely what private

schools are at the present moment. We all know that private schools are to be found in every part of the country. We know that the eight or nine hundred schools of which the Board of Education have official cognizance can provide for only a small proportion of the pupils receiving a secondary education in this country. But this knowledge is vague, and therefore ineffective. The claim is made, and rightly made, that private schools should receive due recognition. To gain this recognition, they must come out from their retirement, and show themselves in their full force.

THE Act of 1902\* states that the Local Authorities, in exercising their powers for the provision of secondary education, "shall have regard to any existing supply of efficient schools"; and it is argued that this implies a duty laid upon the Authorities to find out by inquiry what efficient schools may exist in the area. When the Act was introduced some Authorities made an attempt to survey the existing provision; but they found such a heterogeneous mass of institutions that, without establishing a costly system of inspection—which at the time they were not prepared to do—they were unable to discriminate. It must be remembered that a large number of private schools are providing education for young children whose parents would naturally send them to the public elementary schools if no private schools existed. Schools of this character cannot be called secondary. In the confusion that existed most of the Local Authorities quietly proceeded with the provision of county or municipal secondary schools. And the private schools themselves, so far as we know, made little organized effort in the localities to assert themselves.

THERE are others who would throw this duty of making an inquiry about private schools upon the Board of Education. As long ago as 1897 Mr. Sadler issued a list of secondary (including private) schools. The list was incomplete, and was but a beginning. We believe the Board decided to let the matter drop, on account of the impossibility of discriminating between secondary and elementary private schools. Now the Board want the information, and ask for it. It is most likely that the Board will undertake the inspection of private secondary schools; but they prefer to do this after request from the schools concerned. The group of schools known as the schools preparatory to the public schools have, at the suggestion of the Head Masters' Conference, been showing a disposition to invite inspection. Though these schools are not secondary according to the Board's definition of secondary education, yet it is recognized that they are closely connected with the public schools and are, in the social sense, entirely secondary. The Board will need more Inspectors, and then can only carry out the work gradually. It will be many years before they could make an effective survey of all private schools.

*Statistics of  
Private Schools.*

IN the meantime the necessity for information is urgent. At its last meeting the Council of the College of Preceptors, at the suggestion of the Private Schools Association, resolved to make this much needed inquiry, and to make it once. The urgency of the matter is so great that arguments are hardly needed in proof; yet there are some proprietors of private schools who carry individualism to such an extent as to resent all inquiries for statistical information. To any one who follows the trend of educational opinion it is clear that before long the State will undertake the duty of guaranteeing (so far as this is possible) that every person who conducts a school shall be qualified to do so. This action may take the form of extending (in relation to secondary education) the provision of public county and municipal schools until all private schools are crushed out of existence by competition with institutions supported by public funds. From the administrative point of view this is the simplest plan. The action of the College in making this inquiry will come in time to prevent such a course of action.

THE inquiry undertaken by the College must be incomplete at first; but we believe the result will be to show such an enormous proportion of pupils being educated in private schools that the folly of attempting to sweep them away would be at once apparent. Suppose, as is quite likely, that the inquiry discloses the fact that there are ten times as many private secondary schools as there are public, and that these educate five times as many children; then it is clear that no politician will propose that either the rates or the taxes shall be called upon to provide a corresponding number of State-aided schools. And, if private schools will show their willingness to give evidence of their efficiency, no one will propose to interfere with those that are efficient. The most warm-hearted supporter of freedom in educational administration cannot honestly wish for the retention of schools that, from one circumstance or another, are unable to show a satisfactory equipment.

THE form of the inquiry has not yet, so far as we know, been drawn out by the Committee that is dealing with the matter. But we may indicate briefly the sort of information that is needed: the name of the school, the area from which it draws pupils, the number and qualifications of staff, the number and ages of pupils, whether boys or girls, especially the leaving age, and the general and specific aim of the school. We hope that all members of the College will do their best to help in getting these statistics. Lord Haldane, in his article in the *Nation*, setting forth what is meant by a national scheme of education, used this significant phrase: speaking of those who provide education, he said "be they Local Authorities or be they individuals." We urge careful attention

to these words, for they indicate a suspicion in Lord Haldane's mind that it will not be possible for the State system to cover the whole field. This suspicion may be turned into a certainty when the promised statistics are disclosed.

IN a letter read at the Dinner of the University of London Graduates' Association, which was held last month at the Criterion Restaurant, Lord Avebury supported the view of Sir William Collins and agreed that nothing must be done to weaken the external side of the University. The speeches at the dinner revealed a firm attitude of opposition to any proposals that might have for their object the gradual elimination of the external student. Much that the Commissioners have said in reference to the influence of University life is quite sound, and the report is a valuable exposition of what a University may be; but they advance no arguments to induce us to believe in the wisdom of abolishing the existing liberty of the external student to get his education where and how he likes. Sir James Yoxall thought the report might almost be described as a conspiracy to prevent the uprising of those who were without "antecedents" and who possessed only mental capacity and the power of hard work; and, referring to lectures, he added: "The value of the spoken word depends upon the speaker."

WE all possess an ideal higher than the human race has at present attained. As this is so it follows that human instruments are not likely to be in all respects perfect. Examination is an instrument for detecting and estimating ability. Sometimes the user of the instrument fails to make it effect its avowed purpose. More often the instrument is blamed because it does not at the same time estimate half-a-dozen moral qualities. "Examinations are out of fashion," said Sir William Collins at the London Graduates' dinner; but he went on to ask what it was proposed to put in their place. The Commissioners are not satisfied with examinations as a test for graduation: they want to insist that the student shall come under the influence of University teaching. But, even so, the final test would be an examination. Those who would abolish examinations have not yet conceived of an instrument to take their place, and it seems to us quite clear that we shall continue to have examinations and continue to attach to them the same great importance that we do at present. The instrument is the right one, and by continued improvement we shall succeed in adapting it more and more completely to its purpose.

IN the course of a paper on "Education and Social Sympathy," read at the Annual Conference of the Parents' National Educational Union, held last month at the Caxton Hall, Mr. J. St. G. Heath pointed out that much

of the social education of children comes from the conversation which they hear at home. For example, at the breakfast table papa reads out a newspaper paragraph about some politician, and mamma exclaims, "That man!" In such a way there is unconsciously raised a mental barrier which it is very difficult to surmount in later years. The first point to realize in educating to a proper sense of social sympathy is that people whose views are divergent from one's own may be actuated by as sincere a conviction as that upon which our own opinions are based. Lord Beauchamp, who was in the chair, said that the public schools failed to teach social sympathy. It certainly needs a very definite mental effort to get into the point of view of different social classes brought up in different environments.

At the same Conference the Head Master of Harrow referred to the difficulties in connexion with the teaching of the Bible in secondary schools. In his opinion, the difficulties were in no way concerned with divergent views or with the "higher criticism." To teach the Bible effectively it is necessary to be a student of the Bible. Mr. Ford thought that any man who was a serious student of the Bible could teach it effectively, whatever his personal views might be; but the fact was that many masters who had made no special study of this book were called upon to teach it. This view seems to us quite sound. It is one more indication of the necessity of special preparation for teaching. Time was when a University graduate was expected to teach almost any school subject. One subject after another has been placed in the hands of specialists, and it seems reasonable that religious instruction also should be given by those masters who have specially studied the subject.

Among the nominations for membership of the College of Preceptors laid before the last meeting of the Council occurred the name of Mr. J. F. P. Rawlinson, who is one of the members of Parliament for the University of Cambridge. Mr. Rawlinson has taken a very great interest in the matter of pensions, and his advocacy has been a source of great strength. To schoolmasters and schoolmistresses membership of the College offers solid advantages. It is an important thing to have at one's back a well established corporation with power to help in case of need. But the adhesion of Mr. Rawlinson is of wider significance, and indicates that politically the College is recognized as a force in educational matters, and that in the forthcoming Education Bill, in which Mr. Rawlinson is bound to take a considerable part, the views of the College as regards secondary education will be sought. On the same day were nominated Mr. Fred Charles, who, while a member of the Assistant Masters' Association, was so closely connected with the efforts to gain salary scales and pensions, and Mr. Frank Roscoe, the Secretary to the Teachers' Registration Council.

In the June issue of the *Educational Times* for the year 1853 there is an article dealing fully with the efforts of the Graduates of London University to bring about administrative reform in the University. With the alteration of names the article might almost be reprinted as applicable to the position to-day. The constitution is said to be wrong, and to be in urgent need of reform. Reference is also made in the article to the want of University Buildings. "It is indeed strange" says the writer, "that after so many years the large and growing University has no house to call its own, but is still cramped up in borrowed apartments." Sixty years ago! Truly reforms in England require time for their fulfilment. In the same number the Council make tentative proposals for the inspection of private schools, proposals that cause dismay in the correspondence column. The editor of the day allays suspicion by pointing out that the proposed inspection is purely voluntary.

MR. PEASE at Bradford declined to outline his promised Education Bill, but said he would leave the press to make what guesses it liked. Mr. Sadler took up the challenge, and said that while the initial letters of Mr. Pease's acrostic spelt co-ordination, the finals must surely be contribution. Lord Haldane has recognized the necessity of "contribution," and to that end has started his campaign to arouse enthusiasm, realizing that the nation will not be prepared to pay the contribution until it is convinced of the value of education. Money is the base of the whole question. Administrative reforms, co-ordination, further provision cannot be attained unless large sums in the form of grants are forthcoming. Education does not pay for itself, and each year sees parents and students still less inclined for payment. If the rumour that "there is no money in the Bill" is correct, then we may for the present give up any hope of reform, and we must devote our energies to persuading the nation of the need of further subsidies.

MR. PEASE in the address at Bradford, to which we have referred in the Note above, made an important statement of his views in reference to the Cockerton Judgment.

It will not be forgotten that by the judgment given in this case the authorities for elementary education were forbidden to apply money from the rates to the support of higher education. Briefly, the conditions at the time were these: the larger school boards were building and supporting from the rates schools that in all but name and tradition were secondary. The secondary schools with very limited exchequer grants were in danger of being snuffed out in the competition. The action of Mr. Cockerton, the Government auditor, in surcharging the money not spent strictly within the Elementary Education Acts, may be justified as a temporary measure to meet a special difficulty. But the line then drawn between

elementary and higher education was unfortunate, and now that both grades of education are in the hands of the same authority there is no need for its retention, and it is positively harmful that, while expenditure on elementary education is practically unlimited, that on higher education should be carefully restricted.

THE Prime Minister, in answer to a question about the Divinity degrees at Oxford, said that he greatly deplored the decision of Convocation; but he did not propose to appoint a Royal Commission for the purpose of inquiry. By an overwhelming majority in each case the proposed changes were refused. The first proposal was that examiners in the school of theology need not be in priest's orders; the second that candidates for the degree of B.D. or D.D. likewise need not be in priest's orders. From the *Oxford Magazine*, we learn that the *non placets*, "so far from resting content with their crushing victory of April 29, and claiming a retention of the present state of affairs, are showing a sincere desire to arrive at a treaty of peace which shall remove any existing grievances by liberal concessions." The line of concession, according to the same authority, would lead to the establishment of some sort of new degree open to theological candidates who have not taken the orders of the Church of England. Two round-table conferences between the opposing parties have already been held.

WE cannot but feel that there must exist at Bristol very real grievances to have provoked the outbursts of Dr. Geraldine Hodgson (who, by the way, is a contributor to this number) and of Prof. Gerothwohl. The sympathies of a professional paper naturally go with the professional and against the administrative side when the two are opposed. In the mass of conflicting evidence it is difficult to discover what the grievances precisely are. In answer to questions in the House, Mr. Pease said that he was informed by the Advisory Committee, presided over by Sir William McCormick, that the educational work of the University was efficiently performed, and that therefore he was justified in continuing the grants. The Vice-Chancellor of Bristol University, Mr. Isambard Owen, has sent us a full statement in answer to all the charges that have been made; and he expresses his perfect willingness to court inquiry. The reply appears to be quite adequate, and it is possible that the friction has occurred unavoidably during the passing of the University College into a University.

WE have received the first Report of the Secondary, Technical, and University Teachers' Insurance Society, and we cordially congratulate the Committee of Management on the very marked success that has resulted from their labours. In the State Section of the Society there are nearly ten thousand members, and the numbers are said

to be growing steadily. It is most satisfactory to note that a Society founded by teachers for teachers should have met with such great success. It may remove the reproach, if it still exists, that teachers are not men and women of business. Mr. C. J. Mills, A.F.I., has been appointed Secretary, with Miss Clare Pybus as Assistant Secretary, and a staff of seven clerks. The present offices are at 35 John Street, W.C., but arrangements are being made to secure larger premises. The Report, signed by Miss Busk, states that all loans have been repaid, and that there are funds in hand to meet all possible claims and administrative expenses. The proportion of claims to the number of members is lower than the usually accepted estimate for the country as a whole.

## SUMMARY OF THE MONTH.

THE Council of the University of Manchester has established a second Professorship of Latin in addition to that held by Prof. R. S. Conway. The province of the new chair will be the Latin literature and inscriptions of the Roman Empire, including the records of the Roman dominion in Britain. It is the first Professorship of this subject—which has been largely developed by recent research—established in any University, and no other British University yet possesses a second chair of Latin. The classical staff of the University will now include four professors and three assistant lecturers in Greek and Latin, and one independent lecturer in classical archæology. Ancient history has long been the subject of a separate chair. There has been a steady growth in the number of classical students in the University for many years past, especially of those engaged in advanced and post-graduate work.

THE Church of England (says the Bishop of Birmingham in the *Diocesan Magazine*) is conscious that she has sometimes taken too narrow a view of educational responsibility, and she is ready now to allow the State to guide her as to the whole system of national instruction. She rejoices to feel that the State is prepared to give equality of educational opportunity to every child in the land, for the Church knows well how often a promising boy or girl has been stunted in growth of body, mind, and spirit by imperfect or mistaken training. She knows that Church and State have both suffered from this fact. But the Church feels her grave and constant responsibility towards the children of her own adherents, and her duty towards those pious ancestors who founded her schools for the training of her young in the principles of the Church. She recognizes the changed conditions, and she promises readily to secure in her own schools facilities for the children of nonconforming parents to be instructed in the religion which is theirs, expecting, however, that her own children's interests shall be safeguarded, and the faith of their parents allowed room in all schools of the country.

WRITING of the urgent necessity for united action on the part of secondary teachers, "C. E. R." in the *Westminster Gazette* says:

Without drawing lines so hard and fast that they would stifle healthy individual action and thought, it is surely possible to evolve some order out of this chaos. The elementary-school teachers already have their National Union, the scope and influence of which is increasing yearly. Until those of the secondary schools possess some such organization to collect and represent their united opinion, it is difficult to see how their just grievances are to be redressed. At the same time, the utmost care should be exercised in guiding the movement. Above all, no feeling of antagonism should be allowed to creep in towards the Heads of schools, whose hearty co-operation and support

is essential to the scheme's success. They have, indeed, every inducement to support it, for such measures as the establishment of a register and the obtaining of better conditions would guarantee a supply of efficient masters and mistresses, and it would be a thousand pities if a scheme so well conceived should be wrecked by the display of a misplaced bitterness among the rank and file. It will be interesting to watch the progress of the movement so energetically begun by Mr. T. E. Page and his colleagues a year ago.

IN the course of an article in the *Morning Post* Prof. Gilbert Murray, who is "in favour of a certain amount of compulsory Greek," says:—

More than half the trouble comes from snobbishness. Oxford and Cambridge ought to be the Universities of the best brains; people insist on regarding them as the Universities of the rich. Other Universities are not "smart," and people will not do justice to them. Until we have a much freer system of University education, this reproach will remain. Oxford and Cambridge have, in literary subjects at least, the greatest prestige, and the people who can get their share of that prestige by paying naturally do so. The attack on Greek at Oxford and Cambridge is made mostly in the interest of two classes. First, of the clever poor man, who has been at an inadequate school, but craves for the highest University teaching he can get; secondly, of the unintellectual public-school boy, who looks on Oxford and Cambridge as his natural playgrounds. Each wants the entrance or the whole standard modified to suit him. Now, the first of these claimants must be treated with consideration and helped in every way. We want to have him, and we are flattered if he prefers us to the many "modern" Universities which lie open to him. Even the second must be considered to some degree, until the time when we can persuade him that some other University is really better fun. But for neither the one nor the other are we justified in marring our best courses of study.

THE London County Council is faced with a strange dilemma. London boys are getting so good that the Council cannot find enough bad boys to send to an agency which was established many years ago to place them out on farms in Wales. Once the Council could easily get a hundred a year, but now it is a struggle to get forty bad boys. Yet the agency has still to be maintained. The improved behaviour of the London youth recently resulted in the closure of the Feltham Industrial School, and so the supply of bad boys is getting very scarce. The law is such that good boys cannot be sent out into the world by means of such agencies as that which the Council has established in Wales, and so there are good vacancies on the best-class farms in Wales which cannot be filled. To keep the agency going, however, the Council proposed to allow outside industrial schools to make use of it. London has not enough bad boys to give employment to the various old-time agencies started for their welfare. Some day perhaps the Authorities will admit that something ought to be done for good boys, but meanwhile the after-care is devoted exclusively to bad boys. Virtue is still expected to be its own reward.—*Manchester Guardian*.

THE eugenist should be welcomed in the religious training of the young, since he could show how vigorously science corroborated the true principles of child-training, but the Christian education could hardly be expected to join in that welcome to biology unless it came as an addendum to something deeper and more personal. The eugenist and the Christian were so near together that there should be no difficulty about co-operation between them, and to a Christian all questions connected with sex must be approached with a reverence as on sacred ground. There was no subject in which a young boy demanded reverence more earnestly than in matters of sex, and the Christian could not say that his religion was not concerned with bodily health and the health of the next generation. The Divine example warranted us in believing that we were intended to beautify, refresh, and cheer the lives of others in this world, and not only to prepare them for the next. In so far as we believed the eugenic principle to be true we should plant it in young minds for its own sake, and not primarily because its out-

come would be beneficial to humanity.—From a lecture by Canon Lyttelton to the Eugenics Society.

SIR ALFRED HOPKINSON (Vice-Chancellor of the University), speaking at a meeting of the Manchester Education Committee, said that there was a great danger in these days that we should be too much led by educational theorists. It was of the utmost importance to remember that it was not possible economically for everybody to go up the ladder from beginning to end. The question of further financial assistance was one of urgent necessity, and if that assistance was given great progress could be made apart altogether from any big schemes that were in the air. The question of dealing with the physical condition of the children was, in his opinion, the foremost of the day in the educational world, but to do that work thoroughly without financial help would be to put the last straw on the rate-payers' back. Until that work was done, however, they could not produce the results which ought to be obtained from general educational effort.

THE following anecdote relating to Mr. A. E. Zimmern's "The Greek Commonwealth" is taken from the *Oxford Magazine*:—

Perhaps the best criticism to be made of this book is to quote a story about it told to the reviewer by a well known Oxford tutor. He had staying with him an old pupil, who had taken his degree in the ordinary way, had been a useful member of his college, and was now a still more useful colonial administrator. During his career at Oxford the man had never shown any interest in the intellectual side of the University; but, happening to take up Mr. Zimmern's book casually, he read it through from end to end, and then asked his old tutor where he could get any more books about the Greeks that were at all like it. He had studied Greek for ten years, but had never found before that the Greeks were real flesh and blood. If "The Greek Commonwealth" can often produce an effect like this—and we believe that it could—this result alone would fully justify its existence. "We have not done with the Greeks yet," as the editor of "Hellenica" wrote thirty years and more ago; the present generation is likely to learn the lessons of "Hellenica" more readily and more thoroughly because Mr. Zimmern will give them an introduction.

THE program of the Second Guildhall School Conference (organized by the National Food Reform Association), on June 30 and July 1, will cover a wide field. The opening session will be devoted to a discussion of papers, which will be printed and circulated in advance, on the working of the English and Scottish Acts governing the provision of meals for necessitous school-children. At the second, the educational aspect of the problem, the meals of country school-children, and the relation of school and home will be considered. The morning of July 1 will be taken up with a discussion of the teaching in public elementary schools of personal hygiene, food values, catering, and cookery, while the concluding session will be devoted to the consideration of diet, cookery, and hygiene in day and residential institutions, both public and philanthropic, for children and adolescents, including open-air and special schools, reformatories, industrial schools, and Poor Law institutions. Among the organizations represented on the Committee are the National Union of Teachers, Medical Officers of Schools Association, London Teachers' Association, Infirmary Medical Superintendents' Association, Teachers' Guild of Great Britain and Ireland, National Federation of Women Teachers, Association of Teachers of Domestic Subjects, British Medical Association, National Federation of Class Teachers, and British Dental Association. Full particulars will be sent to anyone forwarding a stamped addressed envelope to the Secretary, National Food Reform Association, 178 St. Stephen's House, Westminster.

PRACTICALLY all the County Councils and County Borough Councils were represented at an important conference,



organized jointly by the County Councils Association and the Association of Municipal Corporations, and held at the Guildhall last month, to protest, in the words of the resolution which was passed, "against the continued delay on the part of Parliament to provide a just and adequate contribution by the Imperial Exchequer towards the cost of the various national services which are administered by Local Authorities." The resolution went on to declare that the Authorities could not continue the efficient discharge of their duties without such adequate contribution, and it pointed out that the consequent discontent throughout the country was a serious injury to local government.—*Education*.

"THE other large increase is Education. The money then (fifty years ago) voted was £1,200,000, and it is now £19,200,000, an increase of £18,000,000. Then there was no money voted out of the local rates for education; now £16,600,000 is voted by the localities themselves. Then the nation was spending 8d. per head upon the education of its children, now the Imperial Grants alone come to 8s. 5d. per head, and the total of the Imperial and local grants comes to 15s. per head of the population. And, although there may be much to criticize in the expenditure, although there may be extravagance in some directions and we might spend less in some ways—although I am perfectly certain we could profitably spend more in others—still, on the whole, taking it through and through, this is an expenditure which fertilizes and enriches. Therefore I do not think there is anything to apologize for in either of these two (Post Office and Education) increases."—Mr. Lloyd George on the Education Estimates.

PROF. KARL PEARSON, in a letter to the *Times* dealing with Mr. Asquith's view that the absence of direct political representation of women had caused no disadvantage to them, says:—

There are many such cases, but as he asks for one such concrete example, may I refer him to the position of women students at the Universities of Oxford and Cambridge? At Cambridge for more than thirty years women have been admitted to the Degree examinations of the University, but have been refused the adequate recognition of graduation. During the years that have rolled by since women were admitted to these Universities all the Universities of Great Britain and the majority of Continental Universities have recognized the claims of women to graduation. These claims are not merely sentimental; whether it be reasonable or not, the degree has a professional and commercial value, and many women educated at Cambridge have afterwards to seek for degrees elsewhere, and prolong an academic career, which is often a serious handicap economically and from the standpoint of examination strain. Does Mr. Asquith imagine that, if women had been duly represented in the House of Commons, it would have been possible for him to support the wholly selfish attitude of the male authorities of our older Universities by the answer he made to a question in the House on Monday night?

THE party of French schoolboys who visited London at Whitsuntide seem to have been quite pleased. Before departing, says the *Times*, some of the boys gave their opinions on their experience in London. All of them were loud in praise of the splendid time they had had, which, they said, far exceeded their expectations. But even in the height of their enjoyment they had not lost the use of their critical faculties. They liked English food generally, but none of them could bear mint sauce. One of the lads said they now regarded mint sauce, about which they knew nothing until they came to this country, in very much the same way that English people thought of the snails which French people sometimes ate. Another lad said he had always been told that the English were a cold and joyless people, but this, in his opinion was quite untrue, for Londoners seemed to enjoy life in quite as great a degree as did the Parisians. The visit to the Zoo was voted to have been perhaps the most enjoyable feature of the visit.

## INTELLECTUAL ENTHUSIASM.

At the monthly meeting of members at the College of Preceptors on May 21, the Master of Trinity, Dr. Montagu Butler, read a paper on "Intellectual Enthusiasm." The lecture hall was well filled, and Dr. Butler was greeted with great cordiality when he was introduced by the Dean, Mr. W. G. Rushbrooke, who took the chair. The paper, Dr. Butler explained, had been read to the students of the University College, Aberystwyth, in 1898. He quoted Adam Sedgwick, Ruskin, Wordsworth, and other writers in support of his theme that the only way to success in any branch of study was to love it for its own sake and not for what it might bring. The great glory of a University, he said, was reverence for knowledge, and the greatest happiness for the greatest number of students was intellectual enthusiasm, the capacity for which was the highest gift that man or woman could receive.

With some seriousness and, at the same time, with compelling humour, he warned his listeners of rivals that might turn the student from his course. Is there not, he asked, a danger lest enthusiasm for amusements should compete with enthusiasm for knowledge? The spirit of criticism carried to excess is another danger. The third and most serious danger he thought to be the intellectual infidelity that brings loss of faith in the higher things of the mind, the gradual self-decay that damps the fire of enthusiasm. Dr. Butler is himself an object lesson in the success of the message that he gave. His faith in the highest things of the mind, his intellectual enthusiasm, are alike undimmed, and no one could listen to his address without feeling some stirring of mental and spiritual fires.

## SYLLABUS DIFFICULTIES.\*

By GERALDINE E. HODGSON, D.Litt.,  
Lecturer in Education in the University of Bristol.

A DISTINGUISHED person, who had just read the syllabus put forth by the Cambridge Syndicate for the Training of Teachers, laid it down and asked, not perhaps without superciliousness, "Is this ha'penny journalism?" Possibly it was one of those smart criticisms which hurt the smiter more than the smitten. But I, who chanced to hear it, and whose common paths lie among those who are rather opponents of, or doubters about, than friends of secondary training, felt that the wretched shred of justification latent in the wording of that syllabus was highly regrettable. It is not an easy matter, however, to make a syllabus for an examination for a Teachers' Diploma.

1. First, there are the difficulties arising out of the duration of the course. Intending teachers are not, as a rule, members of the plutocracy. Of that, on other grounds, we may be profoundly glad, but it accentuates the force of the proverb, "Time is money." The ostensible length of the course is a year, but often it is only a University year—i.e. October to June. Even so, some tribute to the festivals of Christmas and Easter is commonly paid; and out of these poor few months must also be taken that considerable portion of time dedicated to practical work in schools and due preparation for it.

There has been a suggestion not only of an M.A., but of a B.A. course in education. The latter is a palpable absurdity: every teacher must have a subject or subjects to teach to his pupils. Naturally they will be those whereby he acquired his B.A. degree. The objection to an M.A. in education lies in the fact that most of us prefer to have our higher degree in that to which—with pardonable, if exaggerated, satisfaction—we refer as "our subject." Expense seems to rule out the possibility of a two-year training course; so nine months it is, and nine months, I sadly fear, it will remain.

2. A different, but not less serious, difficulty in arranging the syllabus arises from the inadequacy, in the case of many

\* Read to the Teachers' Training Association, April 19, 1913.

students, of their previous training. "Arts" students may stumble through somehow—a very odd "how" it is sometimes. But the rub comes with the "ordinary B.Sc." If anyone in the whole world might profit by a humanistic course, it is the *ordinary* B.Sc. of our Provincial Universities. I do not wish to belittle that amiable and often able person, but, in an abundance of cases, it is a crude thing. Not only is the historical knowledge of such a one often exiguous in the extreme, his (or her) philosophical attainments are pretty certainly nil. And that is not the worst of the case. Such a person is as much wanting in humanistic *form* as in humanistic *matter*. It is a fact of my own personal observation that a science student who would fulminate over the folly of omitting any of the "facts" of a physical problem, will, quite lightheartedly, quote part of a statement from a literary or historical author, careless or defiant of the fact that the omitted part of the sentence contains an important amplification or qualification. A student I once brought to book for this very thing said blithely, "Oh! well, it is *all words*—there was not anything *real* in any of it, so I thought I might as well leave off there." The nature of "reality," the different kinds of "reality," had apparently been matters outside the scope of her speculation and study, if they were not altogether beyond her grasp. Another, when an essay was returned, not perhaps with extravagant compliments, said to me wearily, "I do not see the use of anything you can't put into a formula. Why should there be essays?" She was a B.Sc. of two Universities, one being London.

I am not finding fault with individuals. An "Arts" student confronted suddenly with a purely scientific course might cut as sorry a figure. I say "might" "without prejudice." I cannot speak certainly, for it is an experiment I have not tried; the other I have, alas! My object is not cheap sarcasm at the expense of those who cannot retaliate, but first aid to the wounded. These scientific students, into whose sores I have often tried to pour the oil and wine of philosophy, may not only fail in their examination, but they suffer loss besides, because they are the very people who, more than anyone, need a wisely planned course in philosophy and history. Am I a wild Utopian if I suggest alternative courses—one for arts, one for science students?

3. Lastly, there is the difficulty which the second difficulty has introduced to our notice—that of actual choice of subjects for this nine months' course. Apart from the fact that every syllabus known to me, and notably those of Cambridge and London, is intolerably vague, they are also, for the time allowed, grossly overloaded. It is impossible, in so brief a course, for anyone, to mention one single item only, who has not considerable acquaintance with general history to study properly (cram it anyone may) the History of Education from the Renaissance to the present time. And this leaves unattacked the folly, taken so lightly for granted by the Cambridge syllabus, that it is a profitable task to "begin at the Renaissance" if you have neglected classical and mediæval learning.

Obviously, I cannot say, here and now, what should be said about the ideal curriculum. I will therefore ask the meeting to let me offer it just one suggestion, and it is no more than a suggestion in vaguest outline. The exact details of such a scheme cannot be worked out at the tail-end of a paper already severely restricted as to time; nor can they be given till the History of Education is better worked out, more departmentally apportioned than it is at present.

If the course is to be cut down rigidly to the months October to June, how would it be to confine the students entirely to the History of Education? I have more than my doubts about the value of snippets of psychology, ethics (and perhaps even metaphysics), hastily dished up in a nine months' course. But these matters can be dealt with in the History of Education and in their actual pedagogic setting. If we had a definite "school" of men and women who knew their "subject," say, as Stubbs and Freeman knew Constitutional History, or Maitland the History of Canon Law, then the work could be shared up and even done. It would be possible to take an effective glance at the whole, study given authors, and provide some ethical, logical, psychological, and methodical training. For instance, ethics could not be excluded from Plato's and Aristotle's handling of education. The value and method of classical learning could be set forth by a lecturer

who took for his subject a course beginning perhaps with the Irish scholars of the seventeenth century, passing on through the Scholastics and the Renaissance, and ending (shall we say?) with J. S. Mill and Matthew Arnold; while even among the pedagogues of the past there have been some who recognized the value and understood the methods of dealing with modern languages.

If we would have the sociological side of education dwelt on, we should not forget Mulcaster, More, Mill, and McDougall. The psychology of the subject might begin with Plato, and would find many an exponent like Comenius, who hardly knew its name, and would not omit Herbart and William James. The exponents of "method" would have a rich harvest-field whence to glean their handfuls: among the sheaf-binders might be reckoned Guarino, Colet, Erasmus, Rabelais, Montaigne, Locke, Fénelon, Mme de Maintenon, and a multitude beside.

This is the merest adumbration of a forlorn hope, which, if crystallized in practice, would have the useful result of raising the History of Education to the rank of an academic subject of undisputed position.

I cannot conclude without expressing my conviction that a systematized and subdivided treatment of one comprehensive subject is preferable to a mad dash at several, when you have, at the most, but nine months for the exercise of your activity.

## BOY SCOUT MOVEMENT.

### CO-OPERATION WITH EDUCATION AUTHORITIES.

[From the *Morning Post*.]

THE President of the Board of Education, who was accompanied by Sir L. A. Selby-Bigge (Permanent Secretary) and Mr. E. K. Chambers, received a deputation last month from the Boy Scouts Association. The deputation consisted of Lieutenant-General Sir R. Baden-Powell, Earl Grey, Mr. Ernest Young, and Mr. Walker.

Sir R. Baden-Powell called attention to the character of the Association he represented, an organization which included 15,000 workers and 170,000 boys in the United Kingdom. He referred to the aim of the Association, to give ambition to the boy to learn for himself to develop his character, to teach handicraft, to instil in him a practical sense of duty to others in the State, and, fourthly, to develop his physical side. Sir Robert explained that he was not asking for special privileges for the Association, but that, as their endeavour was to carry on outside the school voluntary training complementary to that within the school, they ought to be in touch and in accord with the Board of Education. He called attention to experiments in the nature of continuation schools specially held for Boy Scouts, and to the effect upon the instruction given in Scout classes of proposals which had been put forward in connexion with compulsory continuation classes.

Lord Grey said he attached the greatest importance to a close and whole-hearted co-operation between the Scout movement and the Education Authorities. His experience led him to believe that the effect of the Scout training on the character of the rising generation was very great indeed, and its value could hardly be over-estimated. He was one of those who approached the Scout movement from the standpoint of the co-operator. If he were asked who was the best citizen he would say the best citizen is the best educated man, and the best educated man is the man who is most saturated with the co-operative idea. The beauty of rendering help was the basis of the Scout movement. Now that Sir Robert Baden-Powell had come asking for a close co-operation between the Education Authorities and the Scout movement, he felt sure that Mr. Pease had every desire to give him all the help possible.

Mr. Young made some further remarks from the point of view of the schools.

Mr. Pease, in the course of his reply, said: There are a great number of things which are being taught to our children in schools to a much larger extent than is appreciated outside. The physical drill system which we are now teaching in our schools is the best in the world, and it is practically a compulsory subject. Then, of course, we have a system of gardening which has been established, a subject in which I know Lord Grey has taken a great interest all his life. Then we have natural history lessons of various kinds, and so I might go on, all in the nature of less book-work and more real interest and of a real educational character, which is stimulating the initiative of a boy and doing exactly similar work to that to which you are devoted. We are very anxious here that no militarism should be associated with our elementary schools. First of all, we do not think that popular opinion is in favour of more militarism being introduced into our

elementary schools out of public funds. But there are a certain number of parents who do fear that the Boy Scout movement will be associated with a military movement, and I think there is some little justification for that kind of feeling. Only two days ago there appeared in the *Morning Post* an account of Viscount Hill opening a Boy Scout exhibition at Greenwich. He said that "the more he studied the Boy Scout movement the more he was convinced it could not be separated from one of the greatest problems before the country, that of national defence. He firmly believed that if the movement had been in existence years ago there would not have been the difficulty existing to-day in securing a sufficient number of men to join the colours. He believed the Boy Scouts would come to be the foundation of our national Army." Of course, that frightens a great number of people. I only read that as some justification for the feeling some people have that it is merely a military move in order to secure compulsory service all over the country. From the educational point of view we are all working for exactly the one end, and we appreciate and value more than I can express in words the work that you are doing, which is keeping the boys out of blind alley employment when they leave school, and is directing them to the use of education in their younger days. In connexion with continuation schools, this is a subject as to which Local Authorities would resent a good deal what they might call undue interference on our part with the work which they are doing, and, whilst I will do everything I can to bring the Boy Scout movement and the Local Education Authorities together, I do feel that, the more you get into touch with the Local Education Authorities themselves and the Education Committees, the better will you be working for those common ends which you and I have at heart. Therefore it is more in the direction of working with the Local Education Authorities than working with us. But what we wish to try to secure is that there should be certain schemes put forward by the Local Education Authorities which will enable them to work with outside organizations such as yours, and we think that in these schemes one of the things we can help you in most is to see that provision is made for including what we may call club work or Boy Scout movement work in connexion with these schemes. That is probably the direction in which we can help you most, because I do not think that would be resented by the Local Education Authorities. Suggestions are not resented, but anything like dictation often is. We wish to work with the Education Authorities and we wish to work with you, and I can assure you that in carrying out your wishes I think we are working to the same ends, and we will do our best to co-operate with you. If I may summarize what is in my mind, it is to accept as our text the excellent words of Lord Grey, that our education must be saturated with a sense of civic duty. That ought to be our motto in teaching the boys of the country. I can assure you that we will give our best consideration to your aims and methods, and to your possible utility and the way in which we can aid one another in the work which we have before us.

## THE COLLEGE OF PRECEPTORS.

### MEETING OF THE COUNCIL.

A MEETING of the Council took place at the College, Bloomsbury Square, W.C., on Saturday, May 17. Present: Prof. John Adams, Vice-President, in the chair; Dr. Armitage Smith, Mr. Bain, Mr. Barlet, Rev. J. O. Bevan, Rev. J. B. Blomfield, Mr. Butler, Miss Crookshank, Miss Dawes, Mr. Eagles, Mrs. Felkin, Rev. R. Lee, Mr. Longsdon, Mr. Millar Inglis, Mr. Pendlebury, Miss Punnett, Mr. Ritchie, Mr. Rule, Mr. Rushbrooke, Dr. Sibly, Mr. Starbuck, Mr. Storr, Mr. Thornton, Mr. Wagstaff, Mr. White, and Mr. Wilson.

The Secretary reported that the entries for the approaching Newfoundland examination were as follows:—Associateship, 94; Intermediate, 727; Preliminary, 1,219; Primary, 1,307.

He reported that, in accordance with the order of the Council, copies of the College Calendar for 1913-14 had been sent free of charge to all life members and subscribing members of the College.

It was resolved that the cordial thanks of the Council be conveyed to the Very Rev. Dr. Montagu Butler, Master of Trinity College, Cambridge, for his kindness in consenting to read a paper at the evening meeting of the members of the College on May 21.

At the request of the Private Schools Association, it was resolved that, in view of impending legislation, an endeavour be made to obtain accurate information with regard to the resources and work of private schools. The conduct of the inquiry was entrusted to the Educational Committee, who were empowered to invite the co-operation of members of the Private Schools Association.

It was referred to the House Committee to consider the effect on the College property of a proposed underground railway for the service of the Post Office, which, according to the plans, is to pass under the main building of the College.

On the recommendation of the Finance Committee, grants amounting to £15 were made from the Benevolent Fund of the College, and the House Committee was authorized to arrange for lectures by distinguished lecturers on subjects of general interest at Members' Meetings during the session October 1913 to March 1914.

Diplomas were granted to the following candidates, who had satisfied all the prescribed conditions:—

Licentiate—John Ellis Jones, Lilian Kirkby;  
Associateship—Fred Dean, John James Stevenage.

Prof. John Adams was appointed to deliver the Autumn course of lectures to teachers.

Mr. Vincent was appointed an additional member of the House Committee.

Mrs. Felkin and Mr. Millar Inglis were appointed additional representatives of the College on the League of the Empire.

The following persons were elected members of the College:

Miss S. A. Brown, A.C.P., 70 Breakspears Road, Brockley, S.E.  
Mr. H. G. Mayo, M.A. Camb., B.Sc. Lond., L.C.P., Eaton Lodge, Eaton Road, Norwich.  
Mr. Ll. M. Penn, M.A. Oxf., 27 Clock House Road, Beckenham.  
Mr. W. H. Pick, B.Sc. Lond., L.C.P., 141 Mare Street, Hackney, N.E.  
Miss N. Sturmev, A.C.P., Cypress Cottage, Ridge, Wareham, Dorset.

The following books had been presented to the Library since the last meeting of the Council:—

By A. & C. BLACK.—Black's English History from Original Sources (1715-1815), and Junior Regional Geography (The British Empire).  
By BLACKIE & SON.—Blackie's Elementary Regional Geographies (America, and Africa and Australia); Rambles among our Industries (Coal and the Miner, Cotton and the Spinner, and Silk and the Silk Worker); The Rambler Travel Books (Europe); Darling's Elementary Workshop Drawing; Dyer's Education and Industrial Training of Boys and Girls; Fielding's Aimard's Les Contrebandiers; Hunter's Translation of De Vuyst's Woman's Place in Rural Economy; Krueger's Deutsche Stunden; Metcalf's Specimens of Scottish Literature; Owen's Brief History of Greece and Rome.  
By HACHETTE & Co.—Ceppi's De Maupassant's Trois Contes.  
By MACMILLAN & Co.—Fortune's Laurie's Mémoires d'un Collégien, and Word- and Phrase-book to the same.  
By METHUEN & Co.—Sutton's Growth of Modern Britain; Turner's Romance of British History; Wilnot-Buxton's Pageant of British History.  
By MILLS & BOON.—Ball's Latin Extracts for Sight Translation.  
By the OXFORD UNIVERSITY PRESS.—Arnold's The Scholar-Gipsy and Thyrsis; Cruse's English Composition; Curme's Grillparzer's Libussa; Holbrook's De Balzac's Gobseck; Osborn's Method in Teaching; Parr's Carlyle's Sartor Resartus; Prehn's Guide to German Vocabulary; Shakespeare's Julius Caesar, with Plutarch's Life of Julius Caesar in North's Translation; Sturrock's First Principles of Hygiene; Thomas's Plautus' Aulularia.  
By RIVINGTONS.—Borchardt's Junior Practical Arithmetic; Florian's Contes Choisis; Florian's About's L'Homme à l'Oreille Cassée; Massard's Mérimée's Colomba, and Quatre Contes par Mérimée; Robinson's Story of England, Part IV; Given and Bewsher's Junior British History.  
By the UNIVERSITY TUTORIAL PRESS.—Barlow's Electricity and Magnetism; Barraclough's Preliminary Arithmetic; Bartlett's Exercises in Logic; Bausor's Preliminary Chemistry, and Senior Volumetric Analysis; Briggs and Stewart's Qualitative Analysis; Gardiner's Intermediate French Reader; Hartog's Classified French Unseen, and Classified Passages for translation into French.

## CORRESPONDENCE.

### STATISTICS OF PRIVATE SCHOOLS.

To the Editor of "The Educational Times."

SIR,—Your present issue will contain an intimation that the Council of the College at its last meeting decided to take steps to obtain statistics relating to the private schools of this country. Various memories were stirred in my mind by the proposal, but, as the time of the Council was limited and as the proposal appeared to command general assent, I did not trouble the members with any speech on the subject. However, I would ask permission to make a few remarks in your pages.

I was one of the first to join the Private Schools Association and to advocate the organization and consolidation of private-school teachers. It was becoming obvious, even thirty or thirty-five years ago, that they would eventually be called upon to formulate their claims to recognition and fair dealing. An effort was made by the Association to obtain trustworthy figures wherewith to approach the Secondary Education Commission in the nineties, but these were gathered only inferentially. When I became President I consulted many members

on this subject, especially Mr. J. Stewart. Ultimately we two formulated a scheme whereby steps should be taken to perfect and publish a complete record, aiming at recouping ourselves, in part, by the sale of the publication.

The failure of my eyesight in 1896 put an end to the project (strange to say, this very day is the seventeenth anniversary). I was completely laid aside for some months, and since that time have been compelled to leave London and curtail my activities. Further, I was led to sever my connexion with the Private Schools Association from causes I need not recapitulate.

I mention these particulars in order to justify the statement that, in my poor judgment, the step projected by the Council is long overdue. The shadow of public interference and public expenditure in competing schools is intensifying year by year. In Wales private schools have been practically extinguished by rate-aided schools; in England they are definitely menaced. If they can be shown to furnish a real and valuable element in our system a distinct effort to preserve them should be made by the public as well as by all educational bodies. Above others, our College of Preceptors should come forward, mindful of its origin and of the support it has received from private schools. It is admitted that the Private Schools Association, with its limited membership and resources, is unequal to the task. 'Tis true, 'tis pity, but I will not enter into the reasons. However, we are assured they have expressed the desire to co-operate. The new Registration Council—now under the roof of the College—might also be called upon to help in furnishing any particulars that come in its way. It is useless to call upon the Government to undertake the task.

Further, may I say that I am under the impression that the promoters of the scheme do not realize the difficulties and expense necessarily involved? There is but little precise information already available. Is the number of private schools in England 5,000 or 10,000? Is the number of scholars therein a quarter of a million, or more than twice as many? No one can say with certainty.

Various other questions require to be settled before the inquiry is started. What is a private school? What range of education is included? Is the inquiry to extend to the Three Kingdoms? Is help to be placed solely on census returns, existing lists (always partial and incomplete), on local associations, or county directories? (Manifestly, these records would not furnish all the requisite details.) What steps are to be taken to obtain information where individuals are negligent or unwilling to furnish it? (The inquiry could not be made *coercive*, and the persons one particularly wanted to get at would be the very ones to hold back.) What elements are to be asked for? (This is most important, relating, as it ought, to premises, staff, and their qualifications, pupils, curriculum, fees, public examinations, and accommodation in neighbouring schools.) How is it proposed to check, to tabulate, to publish, to keep up to date the proposed Register or List? Is the College staff equal to the work, or will it be necessary to appoint an expert to devote thereto his exclusive attention?

If all this be done, it will mean the expenditure alike of skill, time, and money. As to the latter, a sum of three, or even four, figures would be required for its full and adequate performance! If the work be imperfectly accomplished, it will be largely useless—the money might as well be thrown away. The truest economy will prove to be found in adequate expenditure, but can the College afford to face this issue?

By some persons it is suggested that the proposed list should be restricted to *efficient* private schools. But who is to determine the criteria? No, let all the facts be put forward and placed before the public eye. One would fain hope that under the pressure of educated public opinion the list would clarify itself in time. Nevertheless, I sorrowfully admit the chances are that the Board of Education will ultimately interfere. My experience of public bodies has been unfortunate. They appear to combine the maximum of interference and trouble with the minimum of advantage. The present Administration has acted most unfairly and injuriously, in certain directions, with regard to endowed secondary schools, and—to say the least—it will not be a day of unmixed blessing when they impose their yoke on the necks of private-school teachers.

This much, however, may be said. If any injustice be wrought, it will be largely due to those teachers themselves, whose apathy and mutual jealousy have led to their failure adequately to organize and show a bold front. Unfortunately in these days, strength and number alone are suffered to count. Every government is on the look-out for votes. It disregards the claims, however just, of weak minorities. The experience of the Private Schools Association during the last quarter of a century—amongst that of many other bodies—may be cited to illustrate this statement. I am, Sir, faithfully yours,

J. O. BEVAN, M.A., F.S.A.

(Member of Council of the College of Preceptors).

Chillenden Rectory, Canterbury.

May 19, 1913.

#### THE NATIONAL HOME-READING UNION.

To the Editor of "The Educational Times."

DEAR SIR,—I should be grateful if you could kindly allow me a brief space in your columns to draw the attention of your readers to the fact that the National Home-Reading Union can now supply copies of its Young People's Book List for next session, which opens in October? As the school year under so many Education Authorities begins about this time, many teachers will now be considering plans of work and sending in "requisitions" for books, &c., to their Authorities. In this connexion, some of your readers may like to consider the question of forming "reading circles" in their schools and, with this in view, to apply to me for copies of the Book List to which I have referred.

Briefly, the Union's chief aim in relation to schools is to assist teachers in creating and fostering amongst their scholars a genuine love of good and healthy books and in training them to read with understanding and appreciation. The methods by which the Union seeks to achieve its aim are simple. It is suggested (as approved by the Board of Education) that in the upper standards of elementary schools the ordinary reading classes should be formed into "reading circles" affiliated to this Union. This may be done by the payment of the teacher's fee of 1s. 6d. per annum, all the members of the class being recognized thereby as members of the Union, and entitled to certain privileges. The fee entitles: (1) to the Book List, which the Union publishes annually, suited to children of various ages and needs (the books recommended range from 1d. upwards); (2) the monthly magazine which is issued, containing articles of an interesting and suggestive nature upon the books recommended; a "Club Corner," with competitions, &c.

The Union recommends that teachers should select two books from the List for their scholars, that the books should be taken home to read, and then talked over and enjoyed by teachers and scholars at the circle meetings, so that they gain a fuller and deeper meaning and interest. The Union, further, holds it to be important that, when possible, reading circles should be continued in the evening schools, either in direct connexion with regular evening classes (such circles are fully recognized by the Board of Education for grant purposes) or under ladies and gentlemen who are ready to give their voluntary services as leaders of "home circles."

An increasing number of teachers are finding it a very helpful stimulus to their scholars, and also a help to themselves, for their reading classes to be affiliated to the Union, while a growing number of Education Authorities are encouraging the formation of these circles by undertaking to pay the small fee (1s. 6d. per annum) and provide the books. In London there are now over twelve hundred reading circles of this kind in elementary day and evening schools, while a considerable number are also at work in many other parts of the country.

I shall be very glad to give further information to any of your readers who may care to write to me.—Yours faithfully,

A. M. READ, Secretary.

12 York Street, Adelphi, W.C.

#### CHERWELL HALL.

To the Editor of "The Educational Times."

SIR,—Some few weeks ago notices appeared in the Press referring to a course of training proposed to be given at Cherwell Hall, Oxford, to women teachers preparing for work in preparatory schools or in the lower forms of secondary schools. May I ask your kind permission to correct these notices on two points?

1. The course of training contemplated at Cherwell Hall is solely a domestic arrangement. Cherwell Hall has in the past occasionally admitted a limited number of students who, although not qualified to compete for the diploma of a University, can profit by systematic training. A certificate will be given to such of these as shall have completed not less than a year's course of residence and training at the Hall, and shall have satisfied the authorities as to their fitness.

Such a certificate could not enter into competition with the diploma or certificate awarded by any academic body.

2. I greatly regret that some of the notices referred to have contained inaccurate statements about the examination for teachers held by the Cambridge Teachers' Training Syndicate. No person unconnected with the Syndicate is warranted in speaking on behalf of that body: but I am permitted to call attention to the following provisions contained in the published regulations of the Syndicate. Besides those who have graduated or obtained the equivalent of graduation in some University of the United Kingdom, persons are admissible to the examinations of the Syndicate who have passed the Intermediate, or an equivalent, Examination in Arts or Science in some University of the United Kingdom, or who have obtained a certificate, with Honours in at least one group, in the Higher Local Examination of Cambridge or Oxford. Persons are also admissible who have passed an examination which can be shown to be at least of the standard of the above mentioned examinations, and special leave may be accorded to persons who have not qualified by means of examinations, but have had, in the opinion of the Syndicate, adequate experience in teaching, and can furnish proof of having received a good education.

May I at the same time be allowed to express my strong sense of the gratitude that is due to the Cambridge Syndicate for the services rendered by them to the training of teachers, especially of women teachers, in such institutions as that with which I have the honour to be connected?—I am, your obedient servant,

W. W. JACKSON,  
Chairman of the Council of  
Cherwell Hall Training College.

Exeter College, Oxford,  
April 1913.

### BIBLICAL STUDY.

To the Editor of "The Educational Times."

SIR,—May we call the attention of your readers to the eleventh Vacation Term for Biblical Study, which will be held this year at Cambridge from July 26 to August 16? The object of the term is to give to students of the Bible who feel the need of more scientific and intelligent study a special opportunity of becoming acquainted with the results of modern Biblical scholarship and of receiving systematic instruction on academic lines. The scheme is on a Christian basis, and lecturers are invited without respect to their denomination.

The idea which has been chosen this year for illustration by the entire series of lectures is that of the Mission of the Church to the World. The inaugural lecture will be given by Dr. Murray, the Master of Selwyn College. The following courses of four lectures have been promised:—First week: "The Political History of the Kingdom of Judah from Hezekiah to the Beginning of the Exile," by L. W. King, Esq., of King's College, Cambridge, and the British Museum, and "The Religious of the Roman Empire in the First Century," by the Rev. H. F. Stewart, St. John's College, Cambridge. Second week: "The Book of Jeremiah," by Dr. Kennett, Regius Professor of Hebrew at Cambridge, and "St. Paul's Conception of a Universal Church," by Rev. A. E. J. Rawlinson, of Keble College, Oxford. Third week: "The Deuteronomic Movement," by Rev. D. C. Simpson, St. Edmund Hall, Oxford, and "Acts xiii to xxviii," by H. St. J. Thackeray, Esq., King's College, Cambridge.

Single lectures have been promised by the Bishop of Ely, Prof. Swete, Dr. Anderson Scott, Dr. Murray, Miss E. E. Constance Jones, and Mr. W. M. Calder. Hebrew and Greek Testament readings will be held throughout the three weeks. The total cost to students, including lecture tickets, will not exceed £2 a week.—We are, Sir, yours faithfully,

MARY BENSON, President of Executive Committee.  
(Miss) M. J. FULLER, Secretary.

39 Frances Road, Windsor.

### CHILDREN AND HOLIDAYS.

To the Editor of "The Educational Times."

SIR,—The holiday at Whitsun is a pleasant foretaste of the longer holiday in the summer. We venture to appeal, through the hospitality of your columns, to those who are able to afford a Whitsun holiday out of town, and to ask them to remember that the children of their poorer brethren are in urgent need of holidays away from London. It has been estimated that nearly 500,000 children in the elementary schools never sleep a night away from London throughout the year. Their only chance of spending a fortnight away from the narrow courts and smoky, stuffy streets of this great city is during their summer holidays, and by means of a Society like the Children's Country Holidays Fund.

Those of your readers who are fond of children cannot fail to realize the value to them of a fortnight's fresh air in pleasant, homely surroundings. Apart altogether from the physical benefit derived, the effect on the children's imagination is incalculable. A whole new

world is opened to them, and their minds, prematurely developed in elder things, starved in childlike things, are able to expand and develop sanely and broadly.

Last year this Fund was able to make 46,402 London children happier by giving them a holiday. This year, to our deep regret, we fear that the numbers may have to be curtailed. Owing to an increase of 12½ per cent. on the rates charged by the railway companies for fares, an additional expenditure of over £1,000 was incurred. To meet this new charge on our resources more funds are required, and unless these are forthcoming fewer children will be sent this year. If any of your readers would like to help in averting this bitter disappointment to the children, will they kindly send donations to the Earl of Arran, Hon. Treasurer C.C.H.F., 18 Buckingham Street, Strand, W.C., by whom all contributions will be gratefully acknowledged? Every £1 given ensures a fortnight's country holiday for two children.—On behalf of the Executive Committee, yours faithfully,

ALFRED LYTTELTON,

W. F. D. SMITH,

Trustees of the Children's Country Holidays Fund.  
18 Buckingham Street, Strand, W.C.

### FRENCH UNIVERSITY WORK IN ENGLAND.

To the Editor of "The Educational Times."

DEAR SIR,—May I call your attention to the enclosed prospectus of the work about to be started by the French Institute of London, under the patronage of the French Minister of Public Instruction, of the French Embassy in London, as well as some of the leading men on the Board of Education, County Council, and the London University?

The University of Lille, which, from its geographical position and the economic and industrial interests it has in common with England, is peculiarly suited for the enterprise it has now undertaken. The work of the Institute, with its literary and artistic departments (hitherto existing under the title of "l'Université des Lettres Françaises") and its three new departments for the study of French life and culture, language, institutions, commerce, and economics, will be carried on by professors of the highest standing from French Universities. It in no wise enters into competition with already established schools and other centres of French teaching, but offers courses of study of an advanced nature in the widely varying branches of literature, advanced grammar and philology, the study of French social, economic, and industrial life and institutions, as well as a thoroughly practical course in business and commerce.

There will be a department for the special benefit of English teachers of French, in which will be treated (a) advanced grammatical, phonetic, and philological studies; (b) French literature, especially modern and contemporary literature, with readings, explanatory commentary and analysis; the subjects will be treated by *Professeurs agrégés des lettres* of the French Universities; (c) French political, economic, and social institutions, without some knowledge of which it is impossible really to understand French literature and art. Lectures will be given by a *Docteur en Droit*, and will deal with French public life in general, the organization of the Constitution, judicial and legal administration, as well as with the differences between English and French social life and the laws pertaining to person and property. The economic condition of the French social classes—the French University system, the learned Societies and the French Press, as represented by the chief periodicals and daily papers—these and kindred subjects of equal interest and importance, will all have a place in the educational scheme of the Institute.

Diplomas and certificates will be awarded to students wishing to take the examinations in the second and third departments. In the hope that the work of the Institute will not only arouse your interest, but receive your hearty support, I am, yours truly,

Marble Arch House, W.

ALBERT SCHATZ.

### CURRENT EVENTS.

At the dinner of the University of London Graduates' Association Sir William Collins said that the King was the only man who had the right of describing himself as an honorary graduate of the University of London.

At Eton College this Half there are 1,006 boys.

The death is announced of Sir Edward Hay Currie, who was closely connected for many years with the People's Palace, and instrumental in founding the Seafeld Technical College in Hampshire.

In Congregation of Oxford University the preamble of a statute establishing a diploma suitable for persons intending to pursue a business career has been adopted by 35 votes to 26.



THE next combined examination at Cambridge for fifty-six entrance scholarships and a large number of exhibitions at Pembroke, Gonville and Caius, Jesus, Christ's, St. John's, and Emmanuel Colleges will begin at 9 a.m. on Tuesday, December 2. Forms of application for admission may be obtained from the Masters of the several Colleges.

SIR HARRY R. REICHEL, Principal of University College, Bangor, has become a member of the Duty and Discipline Movement. There are now over two thousand members of this alliance against indiscipline and slackness.

"THE Life and Work of John Smith," humble schoolmaster and simple saint, who was a deep influence in the Harrow of forty years ago, has been written by E. D. Rendall and the Rev. G. H. Rendall, and is to be published at once by Messrs. Smith, Elder.

THE death took place on May 9, at the age of sixty-nine, of Mr. Richard William Hinton, of Cranhurst Road, Cricklewood, formerly Head Master of the Haberdashers' School.

THE music wing of St. Paul's Girl's School, which is now nearly completed, will be opened on July 1. The Rev. Edmund S. Palmer, Master of the Mercers' Company, who are the trustees of the school, will preside at the opening ceremony, and an address will be delivered by Sir Alexander Mackenzie, Principal of the Royal Academy of Music.

THE Teachers' Guild has sent us the thirtieth annual issue of "Holiday Resorts." This is a thoroughly reliable and sound publication, containing, in addition to numerous addresses, much valuable information for travellers.

THE current issue of the University College Guild of Graduates' *Bulletin*, which has just been published, includes amongst its contents a new summary of the Report of the Royal Commission and a report of the Guild's discussion on the Matriculation examination. Among those who contributed to this discussion were the Head Master of Mill Hill School (the Rev. Dr. McClure) and the Chairman of the Matriculation Board (Sir Edward Busk).

THE Board of Education has just published a Table of Summer Courses in England, for the information of Education Authorities, teachers, and students. The Table gives particulars of twenty-seven courses, including three Summer Schools of Geography, seven courses dealing chiefly with Educational Handwork, elementary Science and Kindergarten work, one course in Child Study and the teaching of young children, one on the Direct Method of teaching Latin, six courses in various branches of Agriculture and Horticulture, and nine general courses dealing with several subjects. The Table, of which this is the first issue, can be obtained either direct from Messrs. Wyman, Fetter Lane, E.C., or through any bookseller, price 1d.

MR. E. W. DANN, B.A., F.R.G.S., of King Edward VI School, Stourbridge (formerly of Felsted School), has been appointed Head Master of King Edward VI Grammar School, Saffron Walden.

MESSRS. HARRAP announce a book that seems likely to prove of interest—"Educational Ideals and a Valiant Woman," a contribution to the educational problem by "M. F." "The 'Valiant Woman' is a teacher, who early came into the life of the author. She was plain of dress and of features, but noble in intellect and magnanimous in spirit. She made her work concrete and vital, so that it was attractive to her pupils."

CAN PLANTS SEE?—The final conclusion at which we arrive is therefore that, although plants may not perceive (as we understand the word) the images which can be formed so perfectly in their epidermal cells, nevertheless they have a contrivance that enables them to distinguish light from darkness and to respond thereto. It is not suggested that plants feel in the same way that animals do; all that we can say is that internal activities of the plant are so closely bound up with external stimuli that the plant is constrained to move in a given direction until there is harmony or equilibrium between the two. The more we study the activities of plants in relation to the external world, the more clearly does it appear that the stimulation of the living substance of the plant which results in its response to external forces is certainly on a lower plane, but probably only different in degree and not in kind from the stimulation of the much more highly organized nervous tissues in animals.—From "The Perception of Light in Plants," by Harold Wager, in the *Cornhill Magazine* for May.

MESSRS. A. & C. BLACK are about to add "Guy Mannering" to their School Edition of Scott. Hitherto "Guy Mannering" has not been adopted as a subject of study in schools, but the ever increasing attention to English literature in schools has not been able to overlook this example of Scott's genius, and the work has been issued in response to several requests. The introduction and notes are by J. H. Boardman.

THE Jaques-Dalcroze College, Hellerau, bei Dresden, has arranged a short Course to correspond with the English summer holidays. It will commence at 9 a.m. on Monday, August 4, and will last four weeks; its members will have the option of continuing work a further two or three weeks. A School of Eurhythmics, with a qualified staff, and under the visiting direction of Prof. Emile Jaques-Dalcroze, will be opened in London at the end of September. A provisional prospectus will be ready shortly, and may be obtained from Mr. P. B. Ingham, Merchant Taylors School, E.C.

THE Historical Medical Museum, organized by Mr. Henry S. Wellcome, which is to be opened in London towards the end of this month, will include some objects of exceptional historical medical interest.

MR. W. H. WINCH, who resigned his post as inspector to the London County Council in order to take up special Psychological Research work, has been reappointed as a district inspector at a salary of £525 rising to £600.

It has been definitely decided that the Prince of Wales shall remain at Magdalen College, Oxford, for a second year. It is understood that this has given much satisfaction to the Prince himself.

THE DUKE OF NORTHUMBERLAND has been installed as Chancellor of Durham University, in succession to the late Dean Kitchin.

THE thirty-ninth Annual Conference of the Head Mistresses' Association will be held this year by kind invitation of the Principal, Miss Faithfull, at the Ladies' College, Cheltenham, on Friday and Saturday, June 13 and 14. The President, Miss Douglas, Head Mistress of the Godolphin School, Salisbury, will preside.

THE Governors of the Stationers' Company's School, Hornsey, have appointed Mr. John Huck, M.A., as Head Master.

THE Education Committee of Bristol have adopted a report of a Sub-Committee stating that there is serious interference with the attendance of children at school in consequence of kinematograph entertainments being open during school hours, and that it would be well in granting licences for the Justices to stipulate that children of school age should not be admitted to kinematograph shows during school hours, and that at evening entertainments children under ten should not be admitted unless accompanied by adults.

DR. McCLURE, addressing the University College (London) Guild of Graduates, said that "the educational awakening of modern England had owed not a little to the matriculation examination of the University of London."

IN the little volume entitled "The Tragedy of Education" which Messrs. Constable will be publishing shortly, Mr. Holmes discusses the defects in present-day educational methods, and the means by which these defects may be remedied, and also gives an interesting account of the work done by Mme Montessori, whose system is attracting so much attention at the present day.

THE object of the "Artist's Sketch-Book Series," to which Messrs. A. & C. Black are about to add a volume on Glasgow, by John Nisbet, is to supply the tourist of artistic sympathies with a collection of views that will be more welcome than the conventional set of photographic reproductions. The volumes have no letterpress, and both in binding and general appearance are a faithful replica of an artist's sketch-book.

SIR ALFRED HOPKINSON, K.C., Vice-Chancellor of the Victoria University of Manchester, has tendered his resignation of that office to a meeting of the Court held last month.

THE Cambridge University Press will shortly issue "Steps towards Education Reform"—some practical suggestions for an improvement of our national system by Mr. C. W. Bailey, M.A., the Head Master of the Holt Secondary School, Liverpool.



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## SIR PHILIP MAGNUS ON THE REPORT OF THE ROYAL COMMISSIONERS ON THE UNIVERSITY OF LONDON.

### SPEECH AT PRESENTATION DAY, MAY 7.

WHEN I addressed you a year ago I stated that on the next occasion when I should have the honour of speaking to you from this platform, I might have to refer to the proposed alterations in the constitution of our University. Within the last week or two the final Report of the Royal Commissioners has been published, and no one can have read it carefully, as I have done, without arriving at the conclusion that the Commissioners have discharged their arduous duty with singular ability, that they have patiently considered the somewhat conflicting evidence submitted to them, and have produced a work which, whether we agree with their conclusions or not, is full of valuable suggestions on University education generally, to which I doubt if there is anyone who would be prepared to take strong exception.

The questions, however, which the members of this University will have seriously to consider are whether the proposed changes can be adapted to our present requirements and to the conditions of higher education in London—whether, if every recommendation were adopted, the higher education would be more accessible to all classes of the community; whether the standard of teaching would be generally and permanently raised; and whether the London University Degree, which has a distinct value of its own, would be more highly esteemed than it is at present. These are questions which will demand thoughtful attention.

The history of our University has been one of repeated efforts to improve its organization by altering its constitution, and I freely confess that its present scheme of government might be improved. Happily, however, throughout its history, extending now over about eighty years, there has been a never-failing supply of education of the highest grade in every branch of learning; and among the thousands of

students who have profited by it there are many who have occupied in the past positions of eminence in this country and in our dominions overseas, and who have recognized with gratitude that they have owed to their connexion with the London University their love of learning and much of the success and reputation that they have enjoyed.

When, therefore, the Commissioners tell us that "the whole organization of the University is fundamentally defective," we cannot help feeling some hesitation in accepting their conclusions, and when we consider the drastic remedies for our suggested defects which our new doctors prescribe, we are somehow reminded of the epitaph which an unfortunate patient, who had consulted too many medical advisers, directed to be inscribed upon his tombstone—"I was well, I wanted to be better, and here I am."

I think no one will join issue with me when I say that, whilst every University needs some form of government, any University may be impeded in its work if its organization is unnecessarily complicated, demanding the too frequent attendance of its teachers at meetings of Committees and of Boards. The higher education flourishes best where the machinery of government is simple. It flourished in Athens, in Alexandria, in Bologna, in Paris, and, notwithstanding all that has been said to the contrary, it has flourished and still flourishes in London. Where distinguished teachers gather together, where you find students eager to learn, where you have appropriate buildings and equipment, and funds available to help gifted but needy scholars, there you have University education.

Those who began the work of reorganizing our University made a serious mistake, from which we have never wholly recovered, in preventing University College from receiving a University Charter, and all those who have since attempted to remodel our University have, in one way or another, added to the consequences of that initial error.

But what is worse and more to the point is that, in each successive period, when our constitution has been changed, our reformers have looked upon their work, if not as perfect, certainly as permanent. They have believed that the foundations which they laid were securely laid and that the superstructure they proposed to erect, if not complete, was adequate. The previous Commissioners explained the cause of the delay in the issue of their Report by reference to the necessity of "setting the University upon a firm and permanent basis," and although that basis was somewhat modified before being finally accepted, those who fashioned it in its present form pronounced it good, and Viscount Haldane, who, I believe, was one of those, said that our University, if reorganized on the scheme then proposed, would be, in his belief, "the greatest institution of its kind in the whole world."

And now, when the University has stood upon that basis for little more than a decade, our most recent advisers tell us that their predecessors built on sand, and erected a structure "fundamentally defective." I refer to this profound divergence of view among men of great educational experience, carefully selected as University builders, in order that we, who have done our best to develop our University under the conditions that have been imposed upon us, may not accept too hastily and without full examination—if I may use that much abused term in connexion with University education—the scheme in all its complicated details which Viscount Haldane and his colleagues have submitted to us.

Here, on this occasion, I cannot say with how much of the Commissioners' Report I agree, from how much I dissent; but I have felt it a duty to utter this word of caution lest the perusal of the admirable essays on University ideals which preface their conclusions should induce us too readily to adopt their recommendations.

There is one, and only one, criticism of the Commissioners' Report to which I think it right to refer on this occasion. It is repeatedly pointed out in the pages of the Report that the external and internal sides of the University are dominated by incompatible ideals. I venture to think that this statement is unfair to both sides.

The graduates elected by Convocation to serve on the Senate are as genuinely desirous as the members of the Academic Council that nothing shall be wanting to make the University a teaching University in the best and fullest meaning of the term. They recognize that the highest form of University education is that which students who devote their whole day to instruction and research are enabled to receive from University professors, and that the examinations they are required to pass should, as far as possible and under proper safeguards, be based on that instruction. But they also recognize what experience abundantly confirms, that there are thousands of students who, for one reason or another, cannot obtain that kind of education which is ideally the best, and they rightly regard it as their duty to watch over the interests of these less fortunate students, who generally belong to the poorer classes, and to take care that, in accordance with the traditions of the University, some other road to the higher education and to a University degree may be kept open to them. To say that the graduates of this University, holding these views, set up examinations rather than education as their "ideal" is to misrepresent them, and shows that the Commissioners have incorrectly interpreted their views. There is nothing necessarily incompatible between the ideals of the two sides of the University: they are supplemental, and the majority of the members of the former Commission concurred in this conclusion.

Our University is and must remain unique, for the conditions of the higher education in London are different from those in any other city; and we cannot hope to attain to the perfect ideal suggested in the Commissioners' Report by the endeavour to reconstruct it according to a German or any other model. Personally, there is nothing to which I take greater exception than the endeavour so frequently made to Germanize our educational system.

But when I see the vast number of eager students who come here annually to receive the reward of their diligence and progress in the search after knowledge; when I review the long list of eminent teachers under whom so many of them have studied; when, too, I recall the contributions to the advancement of science and learning which proceed from our research departments, and the names of the distinguished men and women, now living, who look with pride and satisfaction to this University as their Alma Mater, I must own I fail to recognize our University in the fundamentally defective institution described in the pages of the Report. Still, it is due to those who have devoted so much time and patience to the preparation of that Report that we should consider it free from prejudice or bias, with an earnest and real desire to profit by it, and to accept such of its proposals as make for the wider and more efficient training of our citizens and are at the same time compatible with the best traditions of our University.

Among its many recommendations, there is one in which every member of the University will concur, and that is that the University shall have for its headquarters permanent buildings, adequate in extent and conveniently situated for the work it has to do, bearing its name and under its own control. Here we are on common ground; and during the past session, the Senate, after a careful inquiry into all available sites, have, they believe, succeeded in finding one in the district suggested by the Commissioners on which such buildings as they have indicated might be erected.

May I venture to express the hope that the Commissioners will assist the Senate in obtaining from the Treasury and from other sources the necessary funds to secure such a site and to erect thereon the buildings which are equally essential and equally urgently needed for our purposes, whatever form the constitution of our University may finally assume? It would indeed be lamentable if the delay that must inevitably occur before the Commissioners' recommendations could be even partially adopted, should deprive the University of that financial aid without which it cannot develop or even continue the great educational work which the Principal's report has clearly shown is now being carried on in the Colleges and Schools which are more or less closely associated with our University.

There are many other matters in the Commissioners'

Report to which I would like to be able to refer. Other opportunities will no doubt be afforded to me. But I cannot resume my seat without congratulating the University on its many-sided progress during the past session, and our successful students on the rewards they have obtained.

### UNIVERSITY OF BRISTOL.

EXTRACTS FROM A STATEMENT BY THE VICE-CHANCELLOR, SIR ISAMBARD OWEN.

#### TO THE MEMBERS OF THE UNIVERSITY COURT.

IN view of the allegations that have been of late made against our University in various newspapers, and repeated in Parliament, I have, at the invitation of Council, drawn up the following statement of facts about the administration of the University. Ostensibly directed against the Council, these attacks are just as much upon members of the teaching staff.

#### THE CONSTITUTION OF THE UNIVERSITY.

The Charter and Statutes of the University are on the same lines as the Charters and Statutes of other municipal Universities, and the powers given to the different University bodies under them contain nothing unusual.

It has been made an allegation against the University that its ordinances require an "ordinary" degree to be voted by Council, and not, as in other municipal Universities, by Senate. The practice laid down by the Bristol ordinances is that which is prescribed by Charter in the case of the University of Wales, the "Court" of that University being the Council. A similar principle is embodied in the statutes of the remodelled University of Durham. It has been suggested that the Council of the Bristol University is thus enabled to exercise some unusual and undesirable control over the standard of the degrees. The act of Council in the matter is, of course, purely formal. It is empowered to grant a degree only to a candidate who has been certified by the Vice-Chancellor as having fulfilled all the conditions—i.e. of study and examination—which are prescribed for the degree by the ordinances and regulations of the University. Such a candidate has a legal right to his degree. The ground of the Bristol practice was broadly put by a writer in the Educational Supplement of the *Times* of February 4: "It is notorious that in some modern Universities, where the Senate decides the degree, members of the Senate have intervened in favour of candidates personally known to them whose work was not regarded as satisfactory by the examiners. The intention of the procedure adopted at Bristol is, it would seem, to avoid such occurrences; to maintain, not to lower, the standard of the degree."

#### PERSONNEL OF THE COUNCIL.

The University Council, which has been persistently described as a "purely lay" or "non-academic" body, is really one of the most academic of all the municipal University Councils. Of its thirty-two members, excluding the Chancellor, twenty are University graduates, and many of them scholars of distinction. Eleven of the twenty are members of the academic Staff of the University, nine being members of Senate. In every meeting of Council since the commencement University graduates have preponderated. In the forty-four meetings held up to the end of the Spring term of 1913 the average attendance of graduates was fourteen out of a total average attendance of twenty-two, giving an average graduate majority of six.

#### HABITUAL INTERFERENCE OF COUNCIL WITH ACADEMIC MATTERS, AND OVERRIDING OF SENATE IN RESPECT OF THEM.

This allegation has no foundation whatever. Except in the one instance of the appointment of a Professor of English in 1910 (*vide infra*), no member of the Teaching Staff has ever been appointed contrary to a recommendation of Senate. Every recommendation Senate has made as to academic ordinances or regulations has been adopted as pro-

posed, and Council has never on any occasion interfered with Senate in its executive academic duties, although entitled by Charter and Statute to do so if it wishes.

#### TENURE OF PROFESSORSHIPS.\*

An alleged insecurity of Professorial Chairs has played a large part in the attacks made on the University. It has been asserted that Council has the right of dismissing professors at three months' notice; it has been hinted that this is something peculiar to Bristol, and that certain remarks which the Advisory Committee of the Board of Education made last year with regard to the tenure of Professorships were specially directed against this University. The whole of this is without foundation. The tenure of professorships was fixed in 1910, when the permanent professoriate was first established. A new appointment to a Chair needs confirmation at the end of the first two years. Subject to this proviso, every professor appointed by Council has permanent tenure of his Chair up to the age of sixty-five, and cannot be deprived of it except by a definite procedure (borrowed from the University of Manchester) involving the right of appeal to the University Court.

As these conditions are not at present matter of statute or ordinance, but of standing order only, they are assured to every professor individually by a formal agreement under the University seal. The agreements with the existing professors were all executed and issued in 1911. The legend of a "furtive and hasty" issue of agreements in the present year, which played a prominent part in these attacks during March, I have already twice contradicted in the Press.

The security given to a Professor in Bristol is not only greater than the Advisory Committee demanded, but far greater than that still existing in some other English Universities receiving Government grants. In one, if not in two, of these a professor can be dismissed at three months' notice, and in another at six months' notice.

Senate, in a formal resolution published last February, declared that "every professor appointed by Council of the University has ample security of tenure up to the age of sixty-five."

The proviso of confirmation at the end of the first two years was held by Council to be desirable as long as the smallness of some of the stipends should continue to involve the University in the possibility of having to appoint untried men.

I know of no ground for the statement that has been made that this proviso deters good candidates from applying for Chairs in the University. No really good man would, in my opinion, be likely to be deterred by it.

#### PROF. COWL.

The case of Prof. Cowl has played a prominent part in the attacks made upon the University, at least as far as the Parliamentary phase of them is concerned. It is described as the case of the "dismissal" of a professor, and has been quoted as an illustration of the alleged insecurity of professorial tenure at Bristol; but Prof. Cowl was never a member of the permanent professoriate of the University, which was not constituted till 1910, and the matter has nothing to do with the present tenure of Chairs.

Prof. Cowl had been Professor of English Language and Literature in University College, Bristol, from the year 1905; his office, like all other teaching offices in the College, being terminable at three months' notice.

The College was dissolved by Act of Parliament in 1909, its property, liabilities, and current business being thereupon vested in the University of Bristol.

The University was a new foundation, not a continuation of the College under another name, and in taking over the College was under no pledge whatever as regarded its exist-

\* Here and elsewhere, what is said about Professorships does not necessarily apply to the existing Professors in the Faculty of Engineering, who hold office under a specific agreement scheduled to the Charter.

ing teaching staff, except the following, which occurs as a clause in the Act:—"All professors and other members of, and persons attached to or associated with, the teaching staff of the College, and all salaried or paid officers and servants of the College, shall hold as nearly as practicable the same offices and places in the University as they held in the College immediately before the passing of this Act and upon the same terms and conditions, *unless and until the Council of the University shall otherwise decide.*"

This limited pledge was carried out. The professors, lecturers, and readers of the College became, subject as before to three months' notice, professors, lecturers, and readers of the University during its initial year (1909-10), in which the internal organization of the University was being settled. In the course of 1910 the University established its permanent professoriate, giving professors appointed upon it security of tenure as above mentioned, and assigning specific endowments in support of the Chairs. More than one question arose in the course of the formation of the permanent professoriate, but Council finally decided to transfer all the Chairs that had existed in the College to the new establishment, except that of English Language and Literature. It was resolved to bring this Chair to an end, the requisite three months' notice being given, and to establish a new Chair of English, for which it was open to Prof. Cowl to become a candidate. He became a candidate, and his application was carefully considered, but another candidate was selected by Council by a three-fourths majority of votes.

Senate had reported in favour of Prof. Cowl. without stating the grounds of its recommendation. It has since become known, through Prof. Cowl himself, that in giving this advice Senate had disregarded the recommendations of its own advisory committee on appointments in the Faculty of Arts.

Council was further advised by a competent committee of its own body, whose report was unanimous.

In taking the action it did, Council throughout exercised only the discretion committed to it by the Act of Parliament and the Charter of the University. The theory of Prof. Cowl and his friends appears to be that anyone who did not support his candidature must have been actuated by personal motives—a theory I need not attempt to discuss.

Throughout the proceedings it had been recognized that, in the event of Prof. Cowl not being appointed, some form of solatium should, under the circumstances, be offered him. Immediately upon the election of the professor, therefore, Council appointed a committee to consider what form such solatium should take, and, on its recommendation and that of Senate, awarded him a Research Professorship, without obligation of residence or tuition, for two years at £400 a year. The stipend of this office, which he accepted, was not paid, as has been suggested, out of any public grant, or out of any part of the revenue of the University, but out of capital, as being an obligation of the University College, whose liabilities the University had taken over.

#### HONORARY DEGREES.

Our University's inaugural ceremony of last October was a very special and, indeed, a unique occasion; it was practically the first public celebration of the foundation of the University, the culmination of nearly forty years of civic educational effort.

The list of candidates presented to the Chancellor upon the occasion was a long one, because it was desired to make it representative. It was designed to represent the forces that had built up the University and the two Colleges upon which it was based, as well as the educational, religious, and philanthropic life of Bristol and its neighbourhood, and the distinctions which Bristolians had won elsewhere. A few distinguished visitors from outside, such as the Vice-Chancellors of other Universities, were also included.

The suggestion that Bristol made an innovation by awarding honorary degrees in some cases for merit other than purely academic or to persons who were not previously University graduates can hardly be taken seriously. Both

these practices are customary, particularly where services to education are concerned.

In drawing such a representative list it was inevitable that some of the representative persons to be included would be found on the University Council itself. Two members of the present Council were therefore included who were already honorary graduates of other Universities; two others were invited to receive the same degree which they already possessed in their own Universities; and two who were not University graduates were awarded the honorary M.A. The remainder of the fifteen honorary degrees said to be held by present members of Council are those which have been conferred as official compliments upon the Chancellor, the Pro-Chancellors, and the Vice-Chancellor, who are *ex-officio* members, and upon the ex-Vice-Chancellor and the Heads of two colleges connected with the University, who are elective members. . . .

As regards the actual composition of the inaugural list, of which some extraordinary misrepresentations appeared in the Press last winter, I said in the *Morning Post* of January 20 (and the statement was never controverted) that it appeared to me to be composed of much the same elements as similar lists elsewhere. It was, indeed, mainly academic and educational, and 30 per cent. of the men included in it had already been similarly complimented by other Universities.

### OXFORD CONFERENCE ON SCRIPTURE TEACHING IN SECONDARY SCHOOLS.

[FROM A CORRESPONDENT.]

CANON SCOTT HOLLAND, in his opening address, said that the solution for the treatment of the Old Testament was to be found from the first in the history of the Church in the New Testament. Here were to be found at once the formulæ of growth, development, and progress, with which we were now so familiar. A revelation that was progressive and not final at any given stage was Stephen's explanation of Old Testament history, his answer to the charge of superseding the Law and the Temple. In the Old Testament they saw God at work, step by step, each stage leading to the next, until at last they came to the final consummation which gave unity and purpose to the whole—namely to Christ Himself.

Dr. Headlam, late Principal of King's College, London, gave an address on "Some Hints on the Choice of Books in Religious Teaching." A full statement of his view will be found in the April number of the *Church Quarterly Review*.

Canon Morley Stevenson, Principal of Warrington Training College, spoke on the subject of a "School Bible," now being prepared, in which the matter was to be arranged by subjects, the old chapter and verse arrangement being done away with. Much that was unnecessary for the young could be missed and greater clearness gained, extracts from the Prophets being inserted in their chronological place, and so on.

Mr. H. Cradock-Watson, Head Master of Merchant Taylors School, Crosby, introduced the subject of "The Teaching of the Miraculous in the School Lesson." He said they stood there as teachers of the Christian faith, but they could not shut their eyes to the fact that the possibility of the miraculous was widely denied and the historical evidence for the miracles of Christianity seriously called in question. Sooner or later the boy had to face this position, and they must prepare him for it, so that when the time came he might not be carried off his feet or lose his religious equilibrium. On one thing they could be agreed: if their teaching was to have any moral or spiritual value it must be absolutely sincere. Coercion was no remedy. They could not compel belief by a reference to an infallible Church or even an infallible Book. At this stage they wanted to encourage discussion and not to stifle it. The critical habit was forming. It had to be trained in the right direction. Let it be granted



at once in their teaching that there was a possibility of error in their records as in all human documents, that to discredit one miracle was not to discredit all, just as, on the other hand, belief in the miraculous did not necessarily involve a belief in all miracles recorded. They did not want a "flabby" credulity which accepted all it received, to succumb later only too easily to the first breath of vain doctrine and unbelief. They must "inoculate with criticism to avoid the disease of scepticism." The miracles of the Gospel were unique phenomena, but they were the manifestations of a unique personality.

## LEAGUE OF THE EMPIRE.

[COMMUNICATED.]

THE steady growth of the League of the Empire since it was founded in 1901 has necessitated a removal to more commodious offices. The Committee have been able to acquire a large house at No. 28 Buckingham Gate, Westminster, which will in future be not only the recognized head-quarters of the League, but, through the generosity of Sir Robert Lucas-Tooth, Bart., a Vice-President of the League, will also provide excellent club accommodation for members of the League, whether resident in England or visiting this country.

Since the inauguration of the League of the Empire much valuable work has been done in furthering imperial co-operation and a close association between the Educational Authorities and all interested in the work of education throughout the Empire has been effected. The progress of the League towards its great ideal is shown by the remarkable success of its work as disclosed in its various reports. The usefulness of its many conferences is recognized by the Overseas Governments, some of its publications are standard textbooks on the history of the Empire, and such schemes as the migration of teachers for the purpose of study, the organization of exhibitions, and the establishment of the St. Helena lace industry afford further illustrations of the varied activities of the League. The sections into which this vast organization is divided are characterized by very vigorous growth. The Correspondence Branch, for example, numbers twenty-six thousand members, and other interesting branches are proportionately strong. Encouraged by the great success of the Imperial Conference of Teachers' Associations convened by the League last year, and attended by over six hundred delegates and members fully representing each country of the Empire, the League will now be able to carry out as far as their means will allow the practical suggestions and methods of co-operation then adopted, and to continue the valuable work of the many sections and branches.

## REVIEWS.

*Experimental Psychology and Pedagogy.* By R. Schulze.  
Translated by Rudolph Pintner. (15s. net. Allen.)

The great value of this book for teachers and students is that it takes nothing for granted in the way of special preparation for the experimental study of psychology and pedagogy. Most of the German literature on this subject is apparently written for those who have at least some acquaintance with the instruments and methods used, but Mr. Schulze wisely begins at the beginning, and describes carefully the bases and methods, and above all, the apparatus used. Sometimes the reader may be inclined to be a little impatient with the detailed descriptions of laboratory machinery, and to wish that the author would give more attention to their use than to their construction. Of many of the complicated pieces of apparatus described it is impossible to give a correct idea apart from actual inspection in a laboratory: but next to such an inspection the elaborate descriptions and illustrations here supplied give the best conception of their essential qualities. The book is indeed wonderfully well illustrated. The various graphic methods of recording the results of investigations are used lavishly and intelligently, while the photographic reproductions of pupils and their

work adds to the usefulness of the whole. Among so many accurate illustrations it is curious to come across the same bit of unfair play that we noted in reviewing another psychological textbook lately. On page 96 the Muller-Lyer illusion is illustrated by a drawing in which the lower line is not only apparently, but really, longer than the upper. This makes the illusion more striking no doubt, but the student who cares to apply actual measurements will be inclined to scoff.

With regard to the subject-matter of the book, the first impression it produces on the reader is a profound discouragement. The ordinary practical and fairly successful teacher is made to feel that he is a mere tyro in his profession. He is forced to realize the enormous number of things he does not know. Comfort comes, however, in the reflection that Mr. Schulze does not know them either. Not that our author pretends to know, for his attitude is eminently correct. His offence is that he demonstrates how much there is yet to learn. The book bristles with unanswered questions. It would be well to discover this, it would be a thankful task to investigate that, we are still waiting for results upon the other thing. Mr. Schulze does not over-estimate the results already obtained, but he does lay stress on the importance of realizing our present state of ignorance, and on the service that his subject has done in mapping out clearly the things that it is important to learn.

The brass instrument element in the book will have a tendency to alienate many teachers whose temperament and training give them a humanistic bias, but even such teachers will find much in the book to attract them. Particularly when dealing with the feelings, the author shows an appreciation of the human elements that is very reassuring. It is true that when he deals with the holy of holies in the temple of psychology—the will—he appears to find a place even here for his instruments. But even if it be true that "these experiments show that the simple process of volition can be changed by systematic influence so that it takes either a muscular or sensorial form," there is still left a sphere in which human personality is free. Wundt himself, we are told, has proved that at certain stages experimental investigation must call a halt, and leave the higher complicated psychological processes to be dealt with in another way. A curious instance of the more or less unconscious conflict between the scientific and the philosophic spirit in dealing with psychological problems is to be found in the use in the text of the terms "assimilation" and "apperception." Our author begins by using the term "assimilation" in the sense in which Prof. James accepted it as a simpler equivalent for the somewhat pedantic term "apperception." But in the following chapter we find that "apperception" becomes the usual word. It is not clear whether Mr. Schulze wishes to limit assimilation to the more mechanical aspect and to use the word "apperception" for higher mental processes. In any case the chapter on "Apperceptive Combinations" is one of the most interesting in the book and full of suggestion for the practical teacher.

It will be remembered that in his recently published textbook Prof. Titchener prophesied that the newer books on psychology would be as full of formulæ as our present textbooks in physics. Mr. Schulze has gone far to justify the prophecy. Next to Dr. William Brown's recent book on "Mental Measurement" no book on psychology has more formulæ than the present. But Mr. Schulze has the saving grace of explaining his formulæ. The first chapter is made up of a luminous account of the methods of manipulating quantitative psychology, which no intelligent reader can fail to understand, though he may wonder what is meant precisely by "raised to the square root" on page 24. The second chapter on "The Measurement of Sensation" supplies many illustrations of the application of the formulæ introduced in the first, and thereafter the reader is in a position to face the mathematical manipulations of the rest of the book. At the end, however, there is again a mathematical chapter, "Psychical Correlations," in which the recent developments in this direction are skilfully treated. On page 347 it would appear as if Mr. Schulze thinks that Prof. Spearman is an American. The appearance of the article on "General Intelligence" in the *American Journal of Psychology* probably misled Mr. Schulze, but the translator might have made the necessary correction.

In the English literature on the subject this work fills a place between that of the translation of Claparède's "Psychologie de l'Enfant et Pédagogie Expérimentale" and Dr. Rusk's recently published "Introduction to Experimental Education." It brings the psychological part more up to date than Claparède, and goes more thoroughly into the psychological aspect than Dr. Rusk, though the latter makes up for this by the more extended pedagogical application.

The work of the translator is well done. The English reads easily, though occasionally there are peculiar phrases: "If I were at the dentist" (page 144), "It has little sense" (page 247), "So fastened so" (page 78). The persistent use of "exposure" for what is usually called "exposure" has, perhaps, a literal justification, but it irritates some readers. The translator has wisely taken the liberty of occasionally modifying an illustration so as to make it intelligible to English readers.

*Studies in Foreign Education.* By Cloudeley Brereton.  
(5s. net. Harrap.)

This book of 362 pages of close print is made up entirely of articles that have already appeared in various magazines and official reports. More than half the book is taken up with the comparison between French and English secondary schools that recently appeared in Vol. 24 of "Special Reports on Educational Subjects" published by the Board of Education. It has been extensively and very favourably reviewed. It has had the advantage of being revised and brought up to date since it was originally written some ten years ago. The same cannot be said of some of the other contributions in the book, where the latest statistics appear to be for the year 1897-8. Many of the articles, however, do not depend for their value on the date at which they were written. A man with the profound knowledge of Mr. Cloudeley Brereton cannot write without producing something of real value to all readers. But while the book is a storehouse of facts of first-rate importance it is something much more. For it embodies the results of the personal investigations of a man of uncommon insight. The points of view suggested and the underlying meanings brought to light are a very present help to those who have to deal with the dangerous business of generalizing from data supplied. Apart from the brilliant "Comparison" the articles that best exemplify Mr. Brereton's width of view and depth of insight are "The True Inwardness of Moral Instruction in France," "Toward France or Germany," and "A Bird's-eye View of American Education."

*Life and Work of Pestalozzi.* By J. A. Green.  
(4s. 6d. University Tutorial Press.)

It is getting customary for professors of education to become each identified more or less closely with some of the distinguished educators of the past. Pestalozzi seems to have fallen to the lot of Prof. Green. The present work is an expansion of his "Pestalozzi's Educational Ideas" which appeared in 1905. In the meantime Prof. Green had published with E. Arnold "The Educational Writings of Pestalozzi," the purpose of which was to provide the student with a sufficient body of the Master's writings translated into English. That book and the present are complementary to each other. It is not often that a commentator on an educational author has the advantage of having prepared a text as well. The present book falls into three parts. The first is purely biographical and covers 115 pages. The second is expository and accounts for 170 pages. The remainder of the 384 pages is devoted to documentary matters, additional translations, and what not.

Without finding fault with Prof. Green's predecessors it may be quite firmly stated that we in England are now in a better position for dealing with Pestalozzi as a man and as an educational force than we were before this book and its predecessor appeared. It is sometimes said that each generation demands a fresh translation of every foreign classic, since each generation brings its own special point of view. There is no one better qualified than Prof. Green to grasp the new spirit and to present the essentials of Pestalozzi's thought in such a form as best to meet the demands of that new spirit. The fact of translating so much of the text of his author has necessarily put Prof. Green in such a position as to make it

very difficult for him to generalize wildly, even were he less cautious and self-critical than we all know him to be. No one can read these two complementary books without realizing that the public is here presented with an intelligent, sympathetic, and true picture of Pestalozzi and his times, and also with the material for testing the estimates set forth by his editor and commentator. Some of us are doubtful as to the value of biography in the study of the history of education, but Prof. Green has forestalled criticism, first, by keeping the biographical part within reasonable limits, and secondly, by using biographical facts in illustration of the development of educational principles. This book puts it in the power of every English reader to make an intimate first-hand acquaintance with Pestalozzi's work. The book is well got up and is provided with two useful indexes.

*The Commedia dell'Arte.* A Study in Italian Popular Comedy.  
By Winifred Smith, Ph.D. (8s. 6d. net. Frowde.)

This volume, apparently a post-graduate research essay, is issued in the series of "Columbia University Studies in English and Comparative Literature," published in New York by the Columbia University Press, and in England on their behalf by Mr. Henry Frowde of the Oxford University Press. The subject—interesting and for comparative purposes important as it is—has hitherto received no adequate treatment in English; so that Miss Smith's study is very welcome as outlining the matter and giving it a certain consistency. The "Commedia dell'Arte" rather eludes strict definition: it may be said to be an improvised dialogue on the framework of an outline plot, interwoven with set speeches, spoken by masked clowns—a farcical amusement, full of quips and acrobatic tricks, and having no higher purpose than to evoke laughter. Miss Smith properly rejects various old theories of the origin of the performance. She refuses to derive it from the Roman Mime, or from the Mystery Plays, or from the popular medieval farces. She decides that it is a composite of popular and literary elements, and works out this view in two very careful chapters, supplementing them with typical examples of scenarios of comedies, pastorals and extravaganzas, and tragedies, dating in the sixteenth and seventeenth centuries. The remaining chapters very interestingly trace the influence of the improvised plays upon the drama in foreign countries during those two centuries, especially upon the comedies of Molière and upon the Elizabethan and Jacobean drama in England. Much useful matter on the subject is indicated in appendixes, relating chiefly to the relations between English and Italian drama in the sixteenth, seventeenth, and eighteenth centuries; and there is a full bibliography. The treatment is well-informed and judicious. The style is rather heavy, with distinctive transatlantic characteristics. At the same time the essay forms a valuable introduction to a curious and little explored aspect of dramatic development.

*On the Foundation and Technic of Arithmetic.* By George Bruce Halsted, A.B. and A.M. Princeton, Ph.D. Johns Hopkins, F.R.A.S. (1 dol.)

The day is past, we may assume, when anyone would dare to suggest seriously that he who appears to be lacking in capacity for aught else is nevertheless quite capable of taking up and pursuing successfully the profession of teaching. Can it as yet be asserted with equal confidence that the task of giving instruction in arithmetic is never assigned to those possessed of a merely superficial knowledge of the subject? It is good to meet with a work like Prof. Halsted's in which an error as grave as that implied is strongly deprecated, and where the principle is enunciated that the teacher of arithmetic must be conversant with the essential qualities of number, with the fundamental basis and the growth of our number system, with the laws that govern our processes of calculation and our methods of numerical representation—in brief, with the broad outlines of what has been evolved in the course of many centuries. The author of the small volume here considered gives an excellent survey of the subject in some of its varied aspects. He does not suggest that there is any benefit in burdening the minds of junior pupils by introducing into the classroom at a very early stage elaborate discussions of the theory of arithmetic; it is the practice which is the essential at the commencement, but it behoves the teacher to provide the work with an interesting environ-

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ment and to ensure that the methods employed shall combine to form a firm groundwork of knowledge. There is little or no real educational value in instruction unless it tends to create vivid and accurate impressions, unless it leads to the formation of right conceptions. Prof. Halsted seeks to establish the great principle that nothing shall be taught which will have to be contradicted at a later period in the pupil's education. Every stone laid in building up the educational structure must perform two functions—namely, that of adding to the strength and partial completeness of what already exists, and that of suggesting the possibility of further growth. All who desire to make a serious study of the art and science of arithmetic, whether with a view to the personal possession of a knowledge of the subject or with the object of qualifying as teachers of it, will derive valuable aid from a careful consideration of the present work. In some parts of the treatise the reader—perhaps more particularly the non-American student—may find it difficult to grasp the full sense of a passage without distinct and repeated effort; the language and style conduce to that effect. On the other hand, much of the text carries the mind forward quite free from conscious strain, and produces nothing but a sense of enjoyment of the intensely interesting subject-matter. The historical allusions that are interwoven with the theory throughout the volume add greatly to its value and attractive character.

### *British History from the Earliest Times to the Present Day.*

With a History of the Overseas Dominions. By L. Cecil Smith, M.A., Modern History Master at St. Paul's School, assisted by R. L. Given, M.A., Assistant Master at Colet Court, and F. W. Bewshe, B.A., St. Paul's School. (In Two Parts, 2s. 6d. and 3s. 6d. Rivingtons.)

The first volume brings the history down to 1485. Mr. Smith's object has been "to produce a textbook which shall be both clear and sound." It is clear, certainly, so far as the inevitable compression allows it to be so; but in point

of soundness it needs some revision. John still "signs" Magna Charta (pages 78 and 80); and we do not think much of the argument to show that "it is not true to say that the great Charter was 'the foundation of English liberties.'" If "many people believe that one of the main causes of our success in producing Imperial administrators is the system of education which trains character by teaching men and boys to live a 'corporate' life"—which is partly true—it is too shallow a belief for repetition. If Bruce "most treacherously murdered" Comyn, one would like to know the evidence; and it is not easy to see how it is a tribute to Edward I's "sense of justice" that he did not support the claim of Hastings to the Scottish crown—he could not make an utter fool of himself. If Mr. Smith would read Sir John Strachey's book, he would take a different view of Hastings and the Rohillas. In an otherwise good account of the origin of the Indian Mutiny, he says "a report was set abroad that the new cartridges were greased with the fat of the ox . . . and of the pig": is it not time to acknowledge frankly that the report was true, and to drop the suggestion that it was false? And what can be said to such an astounding statement as that "the history of South Africa for the last half-century consists chiefly of efforts to undo the mischief caused by a mistaken policy of anti-imperialism"? Mr. Smith needs to inquire more particularly into the inner history of this miserable business. With some serious revision the book will serve its purpose very well. The Appendix on English Literature is too scrappy to be of substantial use; those on the machinery of government and the Navy may stand, and so also perhaps that on architecture. But the statement that "the Law Officers and Judges of the High Court are summoned to the House of Lords each session, and decide questions that come to the House in its capacity of a Court of Appeal," will startle the Temple and Lincoln's Inn; the matter is put more accurately on a subsequent page, where, however, the business of the Privy Council is inadequately explained.

## GENERAL NOTICES.

## CLASSICS.

"The Loeb Library Edition."—(1) *Euripides, Vol. III*, with English Translation by A. S. Way. (2) *Lucian, Vol. I*, with English Translation by A. M. Harmon. (3) *Catullus, Tibullus, Pervigilium Veneris*, with English Translations by F. Warre Cornish, J. P. Postgate, and J. W. Mackail. (5s. net. Heinemann.)

(1) The third volume of the "Loeb Library Edition" of Euripides contains the "Bacchae," "Hercules Furens," "Heraclidae," "Phoenissae," and "Supplikes." There is no need in these columns to comment further on Mr. Way's translation of Euripides, as he has here maintained the high standard which he set in the two preceding volumes; and we need only record our pleasure in placing another of these delightful volumes on our shelves.

(2) Mr. Harmon has set himself a heavy task in undertaking the translation of Lucian for the Loeb Library, as it will run into eight volumes when complete. Here again we may be inclined to question the utility of a complete translation of Lucian—especially as Mr. Harmon includes one or two pieces of doubtful authenticity—but the Loeb Library is nothing if it is not thorough. But Lucian is certainly not read as much as he deserves to be, either on the score of his satiric powers or of the excellence of his Greek, and we are grateful to Mr. Harmon for the pleasant, chatty translation he has given us.

(3) The poems of Catullus and Tibullus, and the "Pervigilium Veneris" make up an excellent volume of lighter Latin verse. With the two former we are most of us already familiar, and the translations of Mr. Warre Cornish and Prof. Postgate call for no special comment. In the "Pervigilium Veneris" Prof. Mackail has rearranged the text, which is notoriously confused, very freely, making the refrain recur regularly after every fourth line, and has given us a simple straightforward prose translation. It is interesting to compare it with Sir A. Quiller Couch's recent verse translation, which, though probably less scholarly, certainly reproduces better the poetical qualities of the original; but Prof. Mackail is surely right in making the refrain recur regularly. The "Pervigilium" is certainly an interesting poem, if only for the sake of its early whisper of Romanticism.

"Dent's Latin Readers."—*Roma Aeterna*. Edited by Frank Granger, D.Lit. (1s. 4d.)

This book consists chiefly of extracts for unseen or prepared translation on the Latin, and all the extracts have some bearing on the "Eternal City." The majority of the pieces are taken from Latin authors, such as Livy and Tacitus, there are three passages from the Vulgate (with due warning against late Latin constructions), and one or two verse pieces; the remainder is composed by Mr. Granger. They should make quite interesting reading for pupils in their third or fourth year, and it is a sound idea to combine a certain historical interest with the study of the language. The book is provided with vocabularies.

*Selections from Ovid*. Edited by A. C. B. Brown, M.A. (1s. 6d. Clarendon Press.)

Mr. Brown's selections from the "Metamorphoses," the "Fasti," and the "Amores" will be welcomed by Third and Fourth Form Masters who recognize that for pupils who are not very advanced it is distinctly preferable to have a book of well chosen extracts, not too hard and of interest, rather than attempt a whole book of the "Aeneid," or the "Satires," or whatever it may be. Mr. Brown's "Selections" are quite well chosen—and Ovid is really the most interesting of the poets for boys—and there are the necessary notes and vocabulary.

*Thucydides' Histories, Book II*. Edited by T. R. Mills. With a General Introduction by H. Stuart Jones. (3s. 6d. Clarendon Press.)

There is, of course, no call for comment on the text of this book of Thucydides. Mr. Stuart Jones's general introduction on the life and writings of Thucydides is full of interest, and Mr. Mills has confined himself chiefly to grammatical comment in his notes. It should prove quite a sound school textbook.

*Plauti Aulularia*. Edited by E. J. Thomas. (4s. 6d. Clarendon Press.)

The "Aulularia" will always be of especial interest as the precursor of Molière's "L'Avare" and other later plays, and Mr. Thomas has produced an excellent edition, with a pretty full introduction and copious notes. The only objection to it is that it is perhaps rather expensive for school use.

*Latin Extracts for Sight Translation, with Hints for Beginners*. By G. H. Ball, M.A. (1s. Mills & Boon.)

Collections of really easy passages for unseen translation are always welcome to classical masters, and Mr. Ball has published quite a useful little book. His hints to beginners as to how to set

about translating, what to look for, what to avoid, &c., are quite sound, but only such as any classical master of common sense is bound to instil daily and hourly into the mind of the average pupil.

*The Year's Work in Classical Studies, 1912*. Edited for the Journals Board of the Classical Association by Leonard Whibley, M.A. (2s. 6d. John Murray.)

This record of all the work accomplished in classical studies for the year should be of great interest to many students: the range is so wide—from the latest Greek and Italian Excavations, through Sculpture, Numismatics, Mythology and History, to Comparative Philology and Philosophy—that all who have any interest in classical studies must surely find some attractive chapter. The record is not confined to English work, but deals with all the recent European and American discoveries and theories, and the names of the authors of the different chapters are a further guarantee of the interest of the book.

## EDUCATION.

*McDougall's Organized Games*. By Leo England. (2s. 6d. net. McDougall's Educational Co.)

This book would be found useful in every elementary school and is worthy of a place in the Training College Library. It is handy and well got up, the directions are clear and comprehensible. It describes some 65 good games in addition to swimming and morris dancing. It is well illustrated by photographs and diagrams, good advice is given in the introduction; there are useful practical hints on organization, and an article on breathing where advice is given which is sounder than the reasons which support it. An especially good feature is the large proportion of games for which no expensive apparatus is required. Several of these have been tested and found acceptable to and easily played by children.

*Thomas Ruddle of Shebbear*. By G. P. Dymond. (1s. net. London: Henry Hooks.)

The sub-title, "A North Devon Arnold," explains the sort of book that we have here. It is the pious work of "an old Shebbear boy," and is naturally written at the address of other old Shebbear boys. The book consists of a brief life and a series of letters and appreciations. It is not of much general interest, and has too much the air of a set of testimonials. But all who have any connexion with the school will read it with zest, and those of us who have no such connexion will rejoice that still another schoolmaster has been found worthy of public recognition for the work he has done.

*Hand and Eye Training; or, Education through Work*. By H. Holman. (3s. Pitman.)

This is a revised and enlarged edition of a work that appeared some seven years ago. The author's well known interest in and mastery of the kind of educational problems here dealt with are a sufficient guarantee that the reader will greatly benefit by reading the volume. From the nature of the subject, attention has to be directed mainly to modern and indeed quite recent authors. Mr. Holman makes a very happy combination of the ancient and the modern authorities in his text, and in this new edition has brought up to date all the references to present-day developments.

## MATHEMATICS.

*Higher Algebra for Colleges and Secondary Schools*. By Charles Davison, Sc.D., Mathematical Master at King Edward's School, Birmingham. (Pp. vi, 320. 6s. Cambridge University Press.)

This is a continuation of the author's "Algebra for Secondary Schools," and carries the subject, from the binomial theorem onwards, through the work usually read in a University college and in the upper classes of secondary schools. It is divided into five parts—an introduction, followed by sections devoted successively to series; inequalities, approximations, and limits; theory of equations and determinants; continued fractions and theory of numbers. The subjects considered under these headings are those fixed by the Cambridge tradition, and the treatment, though lucid and entirely sound, does not exhibit many novel features. The chief merits are a wise restriction of the bookwork to essentials, the skilful use of concrete examples as an introduction to theory, and a simplicity and directness in the arrangement of the arguments which will be of great advantage to students who are called upon to reproduce them in examinations. The chapter in the introductory section upon the complex number may be commended as particularly good. The problems at the ends of the chapters are drawn from scholarship and tripos papers and similar familiar sources. The author has, however, supplemented these exercises by a collection of "subjects for essays." Each "subject" is a question, or group of connected questions, which will demand from the student about an hour's continuous thinking and writing. The idea is a happy one, and is likely to prove very fruitful.

*Memoranda Mathematica: a Synopsis of Facts, Formulae, and Methods in Elementary Mathematics*. By W. P. Workman, M.A., B.Sc. (Pp. iv, 272, 28. 5s. net. Clarendon Press.)

This book is intended by its author "not to replace existing text-

(Continued on page 252.)



# MR. JOHN MURRAY



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books, but to be a companion to them all, useful for revision and handy for reference." It is more than a summary of results, though, of course, much less than a systematic exposition of the branches of mathematics which it includes in its range. Roughly speaking, it contains just those leading points in the development of each subject upon which a good teacher would touch in a final revision, together with his "tips" for dealing with characteristic technical difficulties and the supplementary notes which he would be apt to make his pupils enter on the fly-leaves of their textbooks. While all these are bound to be useful to the student, the last will often be of considerable interest and value to the teacher. "Elementary mathematics" is interpreted to include the work usually read for mathematical scholarships and during the first year of an Honours course in the University. It is from the broader point of view unfortunate that, by setting this limitation to his work, Mr. Workman has excluded the elementary parts of the integral calculus from its purview. In this subject his method would have been at least as useful to teacher and student as in any of those which he has treated. By careful paragraphing, suitable variations in type, clear and suggestive figures, and a good index, the author has done all that could be done to facilitate the use of the work. It is unnecessary to add that the Oxford University printers have carried out his intentions admirably. Mr. W. E. Paterson's Five-Figure Tables are bound up with the book, and will certainly add to its usefulness.

*An Introduction to Mathematical Physics.* By R. A. Houston, M.A., Ph.D., D.Sc. Pp. 199. (6s. net. Longmans.)

This book contains the substance of the author's lectures to junior honours students in the University of Glasgow. It presupposes a knowledge of the calculus and of elementary physics, and is intended as an introduction to the standard treatises on attraction, hydrodynamics, Fourier series, wave motion, electromagnetic theory, and thermodynamics. Some rigorists may look askance at a book which offers such miscellaneous fare, but the reviewer, informed by his experience both as a student and as a teacher of an advanced Sixth Form, is prepared to give it a cordial welcome. For lack of so discreet and skilful a guide as Dr. Houston, many a student has floundered helplessly in the difficulties which bar the approach to the classical investigations of mathematical physics. Moreover, although the author's exposition is quite remarkably simple and lucid, he holds up a high ideal of mathematical thinking. If the student never pursued mathematical physics beyond the limits adopted in these pages, he would have gained a real insight into the methods of the great masters and a real appreciation of their cardinal ideas.

*Les Anaglyphes Géométriques.* Par H. Vuibert. Pp. 32. (Paris: Librairie Vuibert.)

Visitors to the exhibition of apparatus held in connexion with the recent International Congress of Mathematics at Cambridge displayed great interest in M. Vuibert's beautiful device for producing stereographic representations of solid figures. In its essence the method is simple enough, and has already been exploited by the vendor of penny Christmas toys. Two perspective diagrams of the solid are printed in *plano*—one in green ink, the other in red. The figures are viewed through a pair of "spectacles," in which the eye-openings are filled respectively with red and green gelatine. The double-plane figure is at once transformed into a solid. The stereographic illusion is wonderfully vivid, and M. Vuibert has shown, by his admirable illustrations, that it can be used to excellent effect in the teaching of solid geometry, physical optics, &c. The brochure (which includes an explanation of the method of constructing the stereograms) may be warmly commended to teachers of mathematics and physics.

### HISTORY.

*From Pole to Pole.* By Sven Hedin. (7s. 6d. net. Macmillan.)

This is a translation of Dr. Sven Hedin's "Från Pol till Pol," "abridged and edited for the use of English-speaking young people." Part I relates fourteen journeys in the East—the Caucasus, Persia, Turkestan, India (and Tibet), China, and Japan. Part II traverses Africa and North and South America, with expeditions across Australia, and to the North and South Polar regions. Young folk will follow the Eastern routes with great interest, listening to Dr. Hedin's descriptions of men and things and enjoying his anecdotes of singular happenings; but probably they will prefer the second part, with its vivid stories of Livingstone, Gordon, and Stanley, the discovery of the new world, the mighty developments of the United States and Canada, the old Inca empire, and the Polar explorations. There are forty illustrations and twenty-six maps. It is ungrateful to remark on occasional slips; but, though Juan Fernandez was no doubt the island of Alexander Selkirk, it was certainly not the island of Robinson Crusoe.

"Welsh 'County' Series."—*Tir Iarill* ("the Earl's Land"). By Frederic Evans, A.C.P. (2s. net. Cardiff: Educational Publishing Company.)

"Tir Iarill," or The Earl's Land, includes the parishes or districts of Llangynwyd, Bettws, Kenfig, and Margam, in Mid-Glamorgan,

an area of some ninety square miles, and the Earl is the Earl of Gloucester, who came into possession as a result of the Norman conquest of the country. Mr. Evans describes the geological formation, and the industrial activities (mainly in grazing and sheep-rearing, coal and iron). He traces the history of the district from prehistoric times, through the British and Roman periods, downwards, including a special description of the lordship and castle, and the ecclesiastical developments down to the triumph of Nonconformity. The Bardic "Chair of Tir Iarill" is duly commemorated: "this society was a very ancient one, being the direct development of the Institute of the Round Table as established by King Arthur." Then there are the romance, the customs, and the folk-lore of the locality. The treatment is full and clear, and quite suitable for "introducing the serious and scientific study of local history into the schools of Tir Iarill," though we should suppose it would be still more suitable for after-school reading. There is an astonishing amount of historical and social interest in the district. The illustrations are numerous and helpful, and the volume is well printed and produced.

### GEOGRAPHY.

Dr. Fleure and Mr. W. E. Whitehouse have just published in a small pamphlet—which can be obtained for 7d. from the Registrar, U.C.W., Aberystwyth—*Some Suggestions for Investigations in Human Geography in Britain*. It describes in an admirable way the scope of the work, and analyses carefully the various aspects of it. The methods of study suggested are sound, and would be very helpful to a beginner, and there is a very complete list of points worthy of special attention. There is also a useful, though incomplete and rather prejudiced, bibliography. It is a pity that—where we seem to have a happy combination of the experience of an elder man with the enthusiasm of a younger man—that a publication obviously inspired by the Oxford School of Geography should ignore or minimize the work of geographers in other Universities. For instance, the "human note" is certainly not treated at Cambridge less competently than at Oxford, but Prof. Herbertson's little "Man and his Work" is specially recommended for "general study" (!), while Dr. Haddon's much more important "Study of Man" is completely ignored. And this is not the only instance of the kind.

### FRENCH.

*L'Invasion.* By Erckmann-Chatrian. Edited by A. Wilson-Green. (Pp. x, 344. 3s. Cambridge University Press.)

A few pages on Erckmann-Chatrian are followed by 205 pages of text, 66 of notes, and 72 of vocabulary. Why should the English here be printed in inverted commas? The notes are an example of the happy influence of the Direct Method. Many explanations of words and phrases are given in French; they are marked by a certain freshness due to personal experience of the literature, history, language, and ways of the country. There are misprints on page 55 (*avec* omitted), on page 58 ("Innsbrück" for "Innsbruck") on page 107 (*un garde française*). The editor might reconsider the following notes: page 2, *loit en équerre* (note is not clear); page 32, *la campagne* (in the text it means "campaign," the note illustrates the charms of the country); page 38, *hache à fendre* (why not "object" like *une cueiller à soupe*, there quoted?); page 99, *qui vite*; page 107, *la sentinelle*; page 160, *que faire?* (the uses of the infinitive in questions, commands, and narration should be treated together).

*Six Contes.* By René Bazin. Edited by G. H. Clarke. (Pp. 141. 2s. Oxford University Press.)

The stories, taken from "Souvenirs d'Enfant" and "Contes de Bonne Perrette," are "La Jument Bleue," "La Corneille à Bec rouge," "La Boîte aux Lettres," "Le Rat," "Le Grenadier de la belle Neuvième," "Le Quatrième Pauvre," in all 96 pages of text. We congratulate the Press on its enterprise in publishing these excellent stories for school use. The questions and Direct Method exercises (20 pages) deal with the subject-matter and grammar thoroughly well. The notes in French explain historical and geographical references, and a few obscurities in the French. The vocabulary (23 pages) is judiciously limited, but we can hardly suppose that the editor omitted *virole*, *gaffe*, and *théorie* on purpose.

*Lettres de mon Moulin.* By A. Daudet. Edited by H. C. Bradby and E. V. Rieu. (Pp. 112. 2s. 6d. Clarendon Press.)

Introduction, 8 pages; text, 84; notes, 27. The notes (the work apparently of two editors) are hardly the production of competent historians—see the notes on *l'empereur d'Allemagne* (page 21), Dauphin (page 51), Chartreuses (page 72); or competent French scholars—see the notes on *à la belle étoile* (page 4), *de drôles d'yeux* (page 20), "this is quite idiomatic," *il vous souvient* (page 43). Of what value are the labels "ethic dative," "historic infinitive," without explanations?

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(Continued on page 254.)



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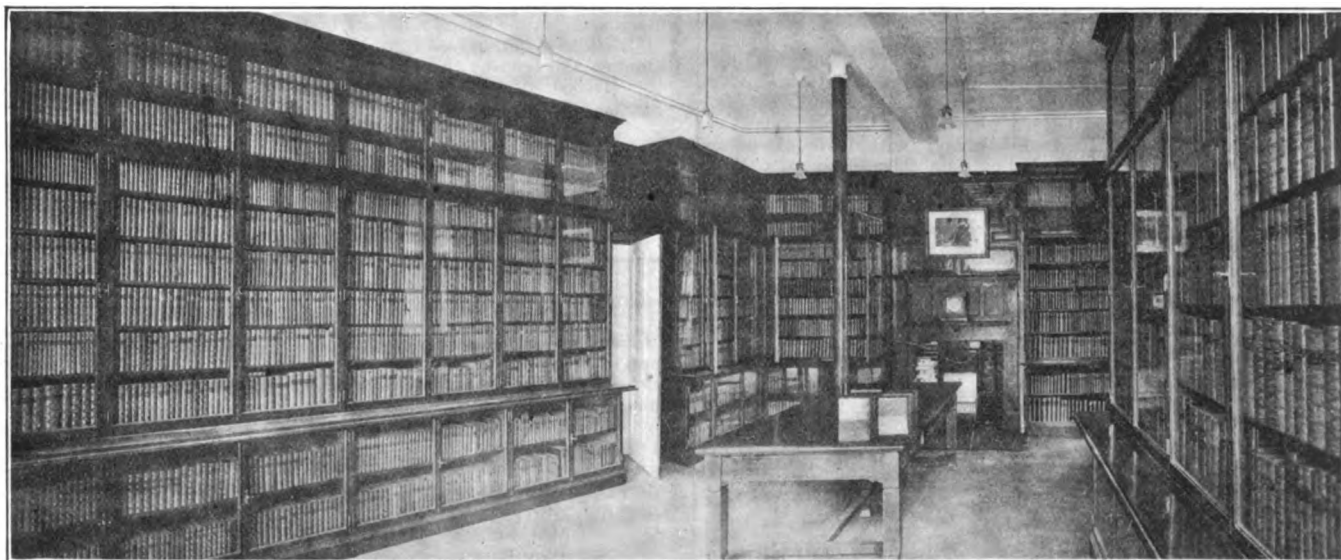
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- (1) To write on one side only of the paper.
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16966. (M. T. NARANIENGAR, M.A.)—Given the centre of gravity, the centre and radius of the circum-circle, find the locus of the symmedian point.

Solution by R. F. DAVIS, M.A.

Employing Mr. Ramaswami Aiyar's classic theorem for the pair of isogonal conjugates G, K, we have  $OG \cdot OK = 2R \cdot \omega$ , where  $\omega$  is the middle point of GK. If along GH, NG be taken equal to GN, this becomes  $OG \cdot OK = R \cdot GK$ , or  $OK : GK$  is constant, and the locus of K is a circle. [Compare Vol. XIX, p. 80, and XX, p. 43.]

17489. (C. M. ROSS, B.A.)—Show that the value of the circulant

$$\begin{vmatrix} 1 & x & x^2 & \dots & x^{n-1} \\ x^{n-1} & 1 & x & \dots & x^{n-2} \\ x^{n-2} & x^{n-1} & 1 & \dots & x^{n-3} \\ \dots & \dots & \dots & \dots & \dots \\ x & x^2 & x^3 & \dots & 1 \end{vmatrix} \text{ is } (-1)^{n-1} (x^n - 1)^{n-1}.$$

Additional Solution by Professor E. J. NANSON and A. M. NESBITT, M.A.

If  $x = \omega$ , where  $\omega$  is any  $n$ -th root of unity, the determinant has all its rows proportional, and is therefore divisible by  $(x - \omega)^{n-1}$ . Thus the determinant has  $(x^n - 1)^{n-1}$  for a factor, and, being of order  $n(n-1)$  in  $x$ , it can have no other factor involving  $x$ . Since the leading term is 1, it follows that the value of the determinant is  $(1 - x^n)^{n-1}$ .

17506. (W. F. BEARD, M.A.)—If  $A + B + C = 180^\circ$ , prove  $\sin^2 A [\cos^2 B + \cos^2 C - 2 \cos A \cos B \cos C] = \cos^4 B + \cos^4 C - 2 \cos^2 B \cos^2 C \cos 2A$ .

Solutions (I) by C. W. ADAMS; (II) by Major C. H. CHEPMELL.

(I)  $\cos^2 B + \cos^2 C = -\cos B \cos(A + C) - \cos C \cos(A + B)$   
 $= \sin^2 A - 2 \cos A \cos B \cos C$ ;  
 therefore  $\sin^2 A = \cos^2 B + \cos^2 C + 2 \cos A \cos B \cos C$ ;  
 therefore  $\sin^2 A (\cos^2 B + \cos^2 C - 2 \cos A \cos B \cos C)$   
 $= \cos^4 B + \cos^4 C + 2 \cos^2 B \cos^2 C (1 - 2 \cos^2 A)$   
 $= \cos^4 B + \cos^4 C - 2 \cos^2 B \cos^2 C \cos 2A$ .

(II)  $\sin(B + C) \sin(B - C) = \frac{1}{2} (\cos 2C - \cos 2B) = \cos^2 C - \cos^2 B$ ,  
 $\sin^2 A \times \sin^2(B - C) = (\cos^2 C - \cos^2 B)^2$ ,  
 $\sin^2 A [\sin^2 B \cos^2 C + \cos^2 B \sin^2 C - 2 \cos B \cos C \sin B \sin C]$   
 $= (\cos^2 C - \cos^2 B)^2$ ,  
 and  $\sin^2 B \cos^2 C + \cos^2 B \sin^2 C = \cos^2 B + \cos^2 C - 2 \cos^2 B \cos^2 C$ .  
 Therefore  
 $\sin^2 A [\cos^2 B + \cos^2 C - 2 \cos B \cos C (\cos B \cos C + \sin B \sin C)]$   
 $= (\cos^2 C - \cos^2 B)^2$ ;  
 $\sin^2 A [\cos^2 B + \cos^2 C - 2 \cos B \cos C (\cos A + 2 \cos B \cos C)]$   
 $= (\cos^2 C - \cos^2 B)^2$ ;  
 $\sin^2 A (\cos^2 B + \cos^2 C - 2 \cos A \cos B \cos C)$   
 $= \cos^4 C + \cos^4 B - 2 \cos^2 C \cos^2 B + 4 \cos^2 B \cos^2 C \cdot \sin^2 A$   
 $= \cos^4 B + \cos^4 C - 2 \cos^2 C \cos^2 B + 2 \cos^2 C \cos^2 B (1 - \cos 2A)$   
 $= \cos^4 B + \cos^4 C - 2 \cos^2 C \cos^2 B \cdot \cos 2A$ .

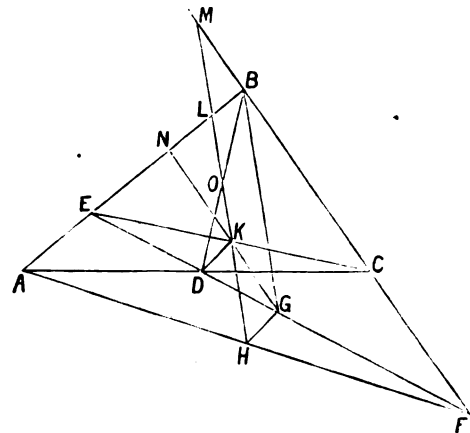
[Rest in Reprint.]

16106. (W. F. BEARD, M.A.)—ABC is a triangle; through D the middle point of AC any straight line is drawn meeting AB, BC at E, F; EF, AF, CE are bisected at G, H, K; HK meets AB, BC at L, M. Prove HK is parallel to BG and equal to LM.

Solutions (I) by HENRY RIDDELL, M.E.; M. T. NARANIENGAR, M.A.; and R. J. WHITAKER; (II) by CONSTANCE I. MARKS, B.A. (Lond.).

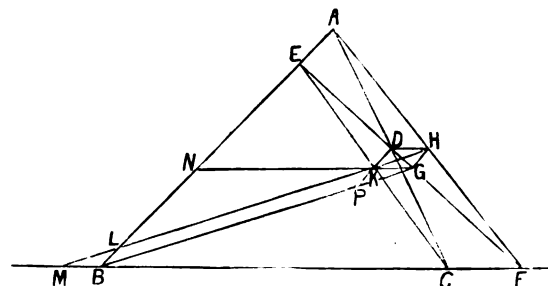
(I) HG is parallel to AE, and is equal to  $\frac{1}{2}AE$ ; DK is parallel to AE, and is equal to  $\frac{1}{2}AE$ . Therefore DK is equal and parallel to

HG. BD, a diagonal of the quadrilateral EBCD, is bisected at O, since H, K are middle points of the remaining diagonals. Then,



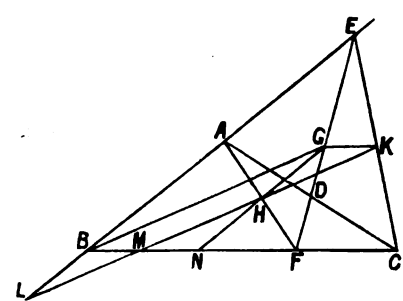
since DK is parallel to LB and  $BO = OD$ , we have  $LB = DK = HG$ ; and therefore LBGH is a parallelogram. Also, since the triangle LMB is similar to HKG and  $HG = LB$ , then  $HK = LM$ .

(II) Produce GK to N in AB, and DK to P in BG. Because D, H, G, K are the mid-points of AC, AF, EF, and CE, therefore DK and HG are each parallel to AB and equal to  $\frac{1}{2}AE$ ; therefore DK and HG are equal and parallel to each other; therefore DHKG is a parallelogram, and we have DK parallel to AB. It follows that DP is parallel to AB. Also GN, bisecting EC and parallel to BC, bisects EB.



Now, from the similar triangles GDK, GEN,  
 $DK : EN = GK : GN$ .  
 Similarly,  $KP : BN = GK : GN$ ;  
 whence DK and KP are equal, since N bisects EB.  
 It follows that  $KP = GH$  and is parallel to it.  
 Therefore HK is parallel to PG, that is, BG.  
 Again, triangles KGH, MBL have their sides respectively parallel. Therefore they are similar.  
 But GH, BL, opposite equal angles, are equal.  
 Therefore the triangles are congruent, and  $HK = LM$ .

The PROPOSER and Mr. JAMES BLAIKIE, M.A., solve thus:  
 Because  $AH = HF$ , and HML is a transversal of the triangle ABF; therefore  
 $BM : BL = MF : AL$ .  
 Similarly,  
 $BM : BL = MC : EL$ .  
 Therefore  
 $BM : BL = CF : EA$   
 $= BF : BE$   
 (because  $AD = DC$  and EDF is a transversal of the triangle ABC)  
 $= BN : NG$  (because  $BN = \frac{1}{2}BF$  and  $NG = \frac{1}{2}BE$ ).  
 Also  $\angle BNG = \angle LBM$  (because NG is parallel to BE).  
 Therefore the triangles LBM, GNB are similar.  
 Therefore  $\angle BML = \angle NGB$ .  
 Therefore LMHK is parallel to BG.



(Continued on page 260.)



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Again, GH is parallel to AE; therefore LBGH is a parallelogram. Therefore GH = BL and is parallel to BL.

Similarly, GK = BM and is parallel to BM. Therefore HK = LM.

*Note by the PROPOSER.*

The first part of this Question may be proved more shortly as follows:—

Describe a parabola to touch EF at G and to touch AB, AC. Because AD = DC, therefore AC also touches this parabola. Therefore HK, the line through the mid-points of the diagonals of the quadrilateral formed by the four lines, is parallel to the axis, and therefore is parallel to BG.

**17494.** (J. J. BARNVILLE, B.A.)—(1) Reduce  $(x^4 - x^3 + 5x^2 + 2x + 4)^2 - 5(x + 2)^2(x^2 - x)^2$  to the form  $A^2 - 3B^2$ . (2) Express  $(x^2 - x)^2 + (x - 2)^2$  in the form  $A^2 + 3B^2$  in three ways.

*Solution by the PROPOSER.*

(1) The given expression  
 $= (x^{10} + 152x^8 - 32)(x^2 + 2x - 2)$   
 $= (x^4 - x^3 + 4x^2 - 10x + 28)^2 - 3(x^3 - 2x^2 + 6x - 16)^2$ .

(2) From the identity  
 $4\Sigma(a^2 - bc) = (a + b - 2c)^2 + 3(a - b)^2 = (b + c - 2a)^2 + 3(b - c)^2 = \&c.,$   
 we get

$$\begin{aligned} (x^6 - 4x^3 + 8)/(x^2 + 2x + 2) &= (x^3 - x - 1)^2 + 3(x - 1)^2 \\ &= (\frac{1}{2}x^2 + x - 2)^2 + 3(\frac{1}{2}x^2 - x)^2 \\ &= (\frac{1}{2}x^2 - 2x + 1)^2 + 3(\frac{1}{2}x^2 - 1)^2. \end{aligned}$$

Similarly, by making  $a = x^6 + x^3 + 1$ ,  $b = x^3 + x^2$ , and  $c = x^4 + x$ , we get three solutions of

$$(x^{14} + x^7 + 1)/(x^2 + x + 1) = A^2 + 3B^2.$$

Lt.-Col. ALLAN CUNNINGHAM, R.E., solves part (2) as follows:—

It is easy to see one of the required forms, viz.:—  
 $N = (x^2 - x)^2 + (x - 2)^2 = (x^2 - x - 1)^2 + 3(x - 1)^2$ .

Now, if N be expressible in more than one way in the form  $A^2 + 3B^2$ , with A, B rational functions of x, it would follow that N must be composite. But, writing  $x = 3, 5, 7, 9$  gives prime values for N, so that N cannot be expressed as a product of rational algebraic factors.

Assuming  $N = \{\frac{1}{2}(x^2 + \alpha x + 2)\}^2 + 3\{\frac{1}{2}(x^2 + \beta x + 2)\}^2$ , this requires  $\alpha + 3\beta = -4$ ,  $\alpha^2 + 3\beta^2 = -8$ , whence  $\alpha = -1 \pm 3i$ ,  $\beta = -1 \pm i$ , where  $i^2 = -1$ .

These give the other two forms required,  $(A^2 + 3B^2)$ .

**17164.** (R. F. DAVIS, M.A.)—ABC is an isosceles triangle having the sides AB, AC equal. From a point Q in the base BC produced the perpendicular QN is let fall upon AB, intersecting AC in P. Prove that, if  $BQ^2 = 4AP \cdot AC$ , then  $CP = PN$ .

*Additional Solution by J. STORR-BEST, B.A.*

Complete the parallelogram PDBR.

The triangles BNQ, AEP, and AFC are similar, having each a right angle and an angle of the three  $\angle B = \angle C = \angle APE$ ; therefore

$$BQ/BN = AP/PE = AC/FC.$$

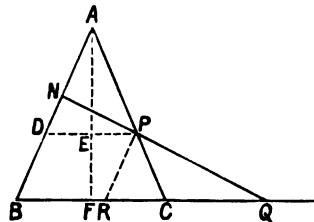
Now  $BQ^2 = 4AP \cdot AC$ ; therefore

$$BN^2 = 4PE \cdot FC = PD \cdot BC = BR \cdot BC.$$

Therefore BN is tangential to a circle RNC.

The centre of this circle is therefore on NQ.

But RPC is isosceles, being similar to triangle BAC; therefore P is the centre (RC being a chord); therefore  $PN = PC$ .



**17875.** (Communicated by A. M. NESBITT, M.A.)—Two conics S, S' are such that one of the cross ratios of the pencil formed by joining the four intersections to a point on S is equal to an imaginary cube root of -1. Find the relation between the invariants.

*Solution by C. E. WRIGHT.*

Let the conics be

$$S \equiv fyx + gzx + hxy = 0, \quad S' \equiv f'yz + g'zx + h'xy = 0.$$

The invariants are  $\Delta = 2fgh$ ,  $\Theta = 2(fgh' + ghf' + hfg')$ ,

$$\Theta' = 2(f'g'h + g'h'f + h'f'g), \quad \Delta' = 2f'g'h'.$$

Three intersections are the fundamental points. Let the fourth lie on  $x = \lambda y$ .

Then  $y/z = -(f + g\lambda)/h = -(f' + g'\lambda)/h'$ ;

therefore  $\lambda = (fh' - f'h)/(g'h - gh')$ .

Estimate the cross ratio at point  $x = y = 0$ .

Tangent to S at this point is  $fy + gx = 0$ ;

therefore the lines are  $x = 0$ ,  $y = 0$ ,  $x = \lambda y$ ,  $x = -fy/g$ .

One cross ratio is

$$(fh' - f'h)/(g'h - gh') \div (-f/g) = [g(fh' - f'h)]/[f(gh' - g'h)] = \sigma.$$

Let  $ghf' = \alpha$ ,  $hfg' = \beta$ ,  $fgh' = \gamma$ ,  $\sigma = (\gamma - \alpha)/(\gamma - \beta)$ ,

and  $[(\gamma - \alpha)/(\gamma - \beta)]^2 - [(\gamma - \alpha)/(\gamma - \beta)] + 1 = 0$ ,

whence  $(\Sigma\alpha)^2 - 3\Sigma\alpha\beta = 0$ ,

which at once reduces to  $\Theta^2 - 3\Delta\Theta' = 0$ .

The following is due to the PROPOSER:—

Take  $\frac{1}{2}S = yz + zx + xy = 0$ ,  $\frac{1}{2}S' = ayz + bzx + cxy = 0$ ;

coordinates of D (fourth intersection) are

$$[1/(b - c), 1/(c - a), 1/(a - b)],$$

and the rays of the pencil A(ABCD), AA being tangent to S, have for equations  $y + z = 0$ ,  $z = 0$ ,  $y = 0$ ,  $y(c - a) = z(a - b)$ .

The ordinary form for a cross ratio  $[(n - l)(m - k)]/[(n - m)(l - k)]$  reduces to  $k/n$ , since  $l$  is infinite and  $m$  zero, i.e., it is  $(a - c)/(a - b)$ .

If this is  $-\omega$ , we get  $a(1 + \omega) = b\omega + c$  or  $a\omega^2 + b\omega + c = 0$ ,

whence  $\Sigma a^2 = \Sigma bc$ .

Since  $\Delta = 2$ ,  $\Theta = 2\Sigma a$ ,  $\Theta' = 2\Sigma bc$ , we see that  $\Theta^2 = 3\Delta\Theta'$ .

**17882.** (D. BIDDLE.)—Prove (1) that

$$\sum_{n=1}^{n-2r} \frac{1}{2n(2n-1)} = \sum_{n=x+1}^{n-2r} \frac{1}{n};$$

(2) that consequently, when  $n = 2^r$ ,  $\sum_{n=1}^{n-2r} \frac{1}{n}$  may be written as follows:

$$1 + \frac{1}{2}(r) + \frac{1}{12}(r-1) + (\frac{1}{30} + \frac{1}{15})(r-2) + (\frac{1}{50} + \frac{1}{15} + \frac{1}{10} + \frac{1}{15})(r-3) + \dots$$

Now,  $\frac{1}{12} \times 6144 = \frac{1}{30} + \frac{1}{15}$ ; this, by 5538, =  $\frac{1}{50} + \frac{1}{15} + \frac{1}{10} + \frac{1}{15}$ ; this, by 5254, = the factor of  $(r-4)$ , and so on. It would be interesting to find the law of decrease in these (approximate) factors.

It would be better still to find  $\sum_{n=1}^{n-2r} \frac{1}{2n(2n-1)}$ ; and to the lower powers of 2, as representing  $n$ .

*Solution by W. N. BAILEY.*

$$\begin{aligned} (1) \quad \sum_{n=1}^{n-2r} \frac{1}{2n(2n-1)} &= \left(1 - \frac{1}{2}\right) + \left(\frac{1}{3} - \frac{1}{4}\right) + \dots + \left(\frac{1}{2x-1} - \frac{1}{2x}\right) \\ &= 1 + \frac{1}{2} + \frac{1}{3} + \dots + \frac{1}{2x-1} + \frac{1}{2x} - 2\left(\frac{1}{2} + \frac{1}{4} + \dots + \frac{1}{2x}\right) \\ &= \left(1 + \frac{1}{2} + \frac{1}{3} + \dots + \frac{1}{x}\right) + \left(\frac{1}{x+1} + \frac{1}{x+2} + \dots + \frac{1}{2x}\right) \\ &\quad - \left(1 + \frac{1}{2} + \dots + \frac{1}{x}\right) = \sum_{n=x+1}^{n-2r} \frac{1}{n}. \end{aligned}$$

(2) Let  $x = 2^{r-1}$ ; therefore

$$\sum_{n=2^{r-1}+1}^{n-2r} \frac{1}{n} = \frac{1}{1.2} + \frac{1}{3.4} + \frac{1}{5.6} + \dots + \frac{1}{(2-1)2^r}.$$

Let  $r = 1, 2, 3, \dots, r$ , in succession; therefore

$$\begin{aligned} \sum_{n=1}^{n-2r} \frac{1}{n} &= 1 + \left(\frac{1}{1.2}\right) + \left(\frac{1}{1.2} + \frac{1}{3.4}\right) + \left(\frac{1}{1.2} + \frac{1}{3.4} + \frac{1}{5.6} + \frac{1}{7.8}\right) \\ &\quad + \dots + \left(\frac{1}{1.2} + \frac{1}{3.4} + \frac{1}{5.6} + \dots + \frac{1}{(2^r-1)2^r}\right) \end{aligned}$$

(Continued on page 262.)

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17348. (Professor K. J. SANJANA, M.A.)—Prove that

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and  $\int_0^{1\pi} \log \sin \theta \log (\cos \theta - \cos 3\theta) d\theta = \frac{1}{2}\pi (\log 2)^2 + \frac{1}{18}\pi^2.$

Solution by Professor T. L. CSADA, and others.

$$A = \int_0^{1\pi} \log \sin \theta \log (\sin \theta + \sin 3\theta) d\theta = \int_0^{1\pi} \log \sin \theta \log (4 \sin \theta \cos^2 \theta) d\theta = 2 \log 2 \int_0^{1\pi} \log \sin \theta d\theta + \int_0^{1\pi} (\log \sin \theta)^2 d\theta + 2 \int_0^{1\pi} \log \sin \theta \log \cos \theta d\theta = 2 \log 2 \left(-\frac{1}{2}\pi \log 2\right) + \int_0^{1\pi} (\log \sin \theta)^2 d\theta + 2 \int_0^{1\pi} \log \sin \theta \log \cos \theta d\theta = -\pi (\log 2)^2 + I + 2I';$$

$$B = \int_0^{1\pi} \log \sin \theta \log (\cos \theta - \cos 3\theta) d\theta = \int_0^{1\pi} \log \sin \theta \log (4 \cos \theta \sin^2 \theta) d\theta = 2 \log 2 \int_0^{1\pi} \log \sin \theta d\theta + \int_0^{1\pi} \log \sin \theta \log \cos \theta d\theta + 2 \int_0^{1\pi} (\log \sin \theta)^2 d\theta = -\pi (\log 2)^2 + (I + 2I') + I - I'.$$

But (Question 16673)  $I + 2I' = 3\pi (\log 2)^2/2,$

and  $I + I' = \frac{1}{18}\pi^2;$

therefore  $A = \frac{1}{2}\pi (\log 2)^2, B = \frac{1}{2}\pi (\log 2)^2 + \frac{1}{18}\pi^2.$

17489. (Professor J. C. SWAMINARAYAN, M.A.)—If

$$x = \sin \frac{1}{2}(\beta - \gamma) \operatorname{cosec} \frac{1}{2}(\gamma - \alpha) \operatorname{cosec} \frac{1}{2}(\alpha - \beta),$$

$$y = \sin \frac{1}{2}(\gamma - \alpha) \operatorname{cosec} \frac{1}{2}(\alpha - \beta) \operatorname{cosec} \frac{1}{2}(\beta - \gamma),$$

and  $z = \sin \frac{1}{2}(\alpha - \beta) \operatorname{cosec} \frac{1}{2}(\beta - \gamma) \operatorname{cosec} \frac{1}{2}(\gamma - \alpha),$

show that  $2yz \cos(\beta + \gamma) + 2zx \cos(\gamma + \alpha) + 2xy \cos(\alpha + \beta) = x^2 \cos 2\alpha + y^2 \cos 2\beta + z^2 \cos 2\gamma$

Solutions (I) by Professor E. J. NANSON; (II) by R. F. DAVIS, M.A.

(I) From the given values of  $x, y, z$  we have

$$x : y : z = \sin^2 \frac{1}{2}(\beta - \gamma) : \sin^2 \frac{1}{2}(\gamma - \alpha) : \sin^2 \frac{1}{2}(\alpha - \beta);$$

whence it follows that

$$\sqrt{x} \operatorname{cis} \frac{1}{2}\alpha + \sqrt{y} \operatorname{cis} \frac{1}{2}\beta + \sqrt{z} \operatorname{cis} \frac{1}{2}\gamma = 0.$$

Hence, if  $\xi = x \operatorname{cis} \alpha, \&c.,$  we have

$$\sqrt{\xi} + \sqrt{\eta} + \sqrt{\zeta} = 0;$$

whence

$$\xi^2 + \eta^2 + \zeta^2 = 2\eta\xi + 2\xi\zeta + 2\zeta\eta.$$

By equating the real parts in this equation, the result stated in the Question is obtained.

(II) As in Milne's *Companion* (Chapter XII, 6), write  $a, b, c$  for  $\cos \alpha + i \sin \alpha, \cos \beta + i \sin \beta, \cos \gamma + i \sin \gamma$  respectively. Then it will be found that

$$(b-c)/(c-a)(a-b) = 2i \cdot x e^{-i\alpha}.$$

Hence

$$\sqrt{(x e^{-i\alpha})} + \dots + \dots = 0;$$

then rationalize this, and equate real part to zero.

QUESTIONS FOR SOLUTION.

Erratum:—In Question 17513 (*v. Educational Times* for May, 1913).

For " $\frac{1}{3}n^3, \frac{1}{5}n^5, \frac{1}{7}n^7$ " read " $\frac{1}{3n^3}, \frac{1}{5n^5}, \frac{1}{7n^7}$ ".

17526. (Professor K. J. SANJANA, M.A.)—Suffixes denoting differentiations with regard to  $x$ , show how to solve the equation

$$3y_2^2(3y_2^2 - 2y_1 y_3) = (1 + y_1^2)(4y_3^2 - 3y_2 y_4);$$

and find the curves represented.

17527. (F. E. RELTON, B.A., B.Sc.)—Evaluate

$$\int_0^{1\pi} \tan^{-1}(n \tan \theta) d\theta.$$

17528. (Professor NEUBERG.)—Résoudre l'équation

$$\begin{vmatrix} x & x & x & a & a & a \\ a & x & x & x & a & a \\ a & a & x & x & x & a \\ a & a & a & x & x & x \\ x & a & a & a & x & x \\ x & x & a & a & a & x \end{vmatrix} = 0.$$

17529. (C. M. ROSS, B.A.)—If  $f(x, y, a)$  denote the sum of the infinite series  $\frac{1}{1-x} + \frac{y}{1-ax} + \frac{y^2}{1-a^2x} + \frac{y^3}{1-a^3x} + \dots,$

prove that  $f(x, y, a) = \frac{1-xy}{(1-x)(1-y)} + axy f(ax, ay, a),$

where  $y < 1.$

17530. (Professor H. LANGHORNE ORCHARD, M.A., B.Sc.)—Sum to  $n$  terms the series  $\frac{1}{2} + \frac{1}{2^2} + \frac{1}{3^2} + \frac{1}{4^2} + \dots$

17531. (W. E. H. BERWICK.)—Each of the numbers between 60044 and 60076 is divisible by a prime factor which does not exceed 19. Show that there is no sequence of more than 33 consecutive numbers enjoying this property. Determine the length, and give a numerical example, of the longest sequence of consecutive numbers, each divisible by a prime less than 50.

17532. (J. HAMMOND, M.A.)—Give a general solution for each of the arithmetical functional equations

$$\phi(xy) = \phi(x)\phi(y) \text{ and } \psi(xy) = \psi(x) + \psi(y) \dots (1, 2),$$

supposing  $x$  prime to  $y$  in both.

17533. (N. SANKARA AIYAR, M.A.)—Solve in positive integers

$$x^2 - uv = y^2, \quad u^2 + xy = v^2.$$

17534. (S. C. BRADFORD, B.Sc.)—Six ladies and six gentlemen meet together on six evenings to play bridge, forming three tables. The formation of each table remains the same during the same evening. To find an arrangement so that each lady plays with and against each gentleman and against every other lady, and similarly for the gentlemen.

17535. (Professor E. J. NANSON.)—Trace the curves

$$a^2(x^2 - ay) = (y^2 - ax)^2; \quad a^2(x^2 - ay)^2 = (y^2 - ax)^3.$$

17536. (A. M. NESBITT, M.A.)—Two conics  $S$  and  $S'$  cut in  $A, B, C, D.$  If the tangents to  $S$  at  $A, B$  cut in a point lying on  $S',$  so also do those at  $C, D;$  and  $S, S'$  are connected by the invariant relation  $e^3 + 8\Delta^2\Delta' = 4\Delta e e'.$

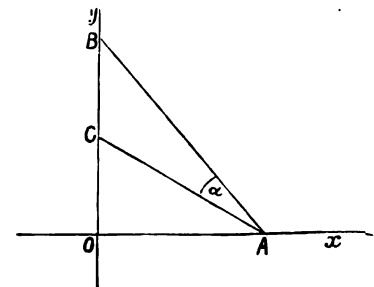
17537. (C. V. L. LYCETT.)— $PP'$  is a chord of a parabola. The tangents at  $P$  and  $P'$  meet in  $T.$  Prove, geometrically, that the centre of the circle which passes through  $T$  and touches  $PP'$  at  $P$  lies on the directrix.

17538. (C. E. YOUNGMAN, M.A.)—Four points on a parabola lie also on a circle, two of them on the same diameter; then the other two and the centre of the circle determine a circle which touches the parabola.

17539. (W. F. BEARD, M.A.)— $ABC$  is a triangle;  $AD, BE, CF$  its altitudes.  $D', E', F'$  are points in  $BC, CA, AB$  such that  $BD' = CD, CE' = AE, AF' = BF.$  Prove, geometrically, that the triangles  $D'E'F', DEF$  are equal in area.

17540. (F. GLANVILLE TAYLOR.)— $H$  is the orthocentre,  $O$  the circum-centre of  $ABC.$   $H'$  is such that  $O$  is the mid-point of  $HH';$   $AH', BH', CH'$  meet  $BC, CA, AB$  respectively in  $K, L, M.$  Show that the perpendiculars through  $O$  to the sides of  $ABC$  respectively pass through the mid-points of the sides of  $KLM.$

17541. (Professor J. C. SWAMINARAYAN, M.A.)—A circle  $B$  lies wholly within a circle  $A.$  From a given point on the circle  $A,$  draw a straight line such that the rectangle contained by the parts of the line intercepted by both the circles may be equal to a given square.



17542. (The late Professor COCHEZ.)—Un angle  $\alpha$  tourne autour d'un point fixe  $A.$  Lieu du centre du cercle inscrit au triangle  $ABC.$

(Continued on page 263.)

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17543. (F. MAYOR.)—Prove that, if  $\alpha, \beta, \gamma, \delta$  be all different,

$$\Sigma \frac{\cos 2\alpha}{\sin \frac{\alpha-\beta}{2} \sin \frac{\alpha-\gamma}{2} \sin \frac{\alpha-\delta}{2}} = 8 \sin \frac{\alpha+\beta+\gamma+\delta}{2}$$

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12840. (Rev. D. THOMAS, M.A.)—If  $\alpha, \beta, \gamma$  be the vectors from A, B, C, having a common origin at the circum-centre of ABC, and if  $la + m\beta + n\gamma$  be the vector joining any two points P, Q, prove that

$$PQ^2 = R^2(l+m+n)^2 - (a^2mn + b^2nl + c^2lm).$$

[Example.—OI<sup>2</sup> = R<sup>2</sup> - 2Rr.]

12901. (ARTEMAS MARTIN, LL.D.)—There are  $a$  men whose statements are true in proportion of  $m$  to  $n$ , and  $b$  men whose veracities are unknown. A certain statement is known to have been affirmed by some one of these men. Find the probability that the statement is true.

12961. (ARTEMAS MARTIN, LL.D.)—A catenary is revolved about its axis. If the solid thus formed be cut by a plane making a given angle with its axis, find the equation to the curve bounding the section.

13027. (H. STEWART.)—A vertical wall at a place in north latitude  $\lambda$  has a north azimuth  $\alpha$ . Prove that, when the sun's north declination is  $\delta$ , the time during which the sun is on the southern side of the wall

$$= 2 \cos^{-1} (\tan \delta \cos \lambda \sin \alpha) / (1 - \sin^2 \alpha \cos^2 \lambda)^{\frac{1}{2}}$$

14483. (Professor S. STROM, M.A.)—Obtain the current function for the motion along OX, in an infinite liquid under no forces, of the cylinder whose right section is

$$\{(x+a)^2 + y^2\} \{(x-b)^2 + y^2\} = m(a+b)^2(x^2 + y^2),$$

where  $m > 1$ . [If  $m = 1$ , we have the case of two orthogonal circles.]

14505. (ANON.)—A small ring P of mass  $m$  is acted on by gravity, and by a force  $\mu PA$  towards a fixed point A. It is placed on a circular wire, radius  $a$ , angle of friction  $\frac{1}{2}\pi$ , at rest in a vertical plane, with its centre C vertically below A. If AC =  $c$  and  $(\mu c - mg) \sqrt{3} = \mu a$ ,

find the limits between which equilibrium may exist. If the wire be slowly rotated in its plane around its centre, what will happen to the small ring when released from rest, distinguishing the different portions of the ring according to the effect produced? [Trinity College, 1895.]

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### THE LONDON MATHEMATICAL SOCIETY.

Thursday, May 8, 1913.—Prof. A. E. H. Love, President, in the chair.

Mr. H. E. J. Curzon was admitted a member of the Society.

The following papers were communicated:—

"On some Properties of Groups whose Orders are Powers of Primes": Prof. W. Burnside.

"The Green's Function for the Equation  $\nabla^2 u + k^2 u = 0$ ": Prof. H. S. Carslaw.

"The usual Convergence of a Class of Trigonometrical Series": Prof. W. H. Young.

(1) "Factorial Moments in Terms of Sums or Differences"; (2) "Fitting of Polynomials by the Method of Least Squares": Mr. W. F. Sheppard.

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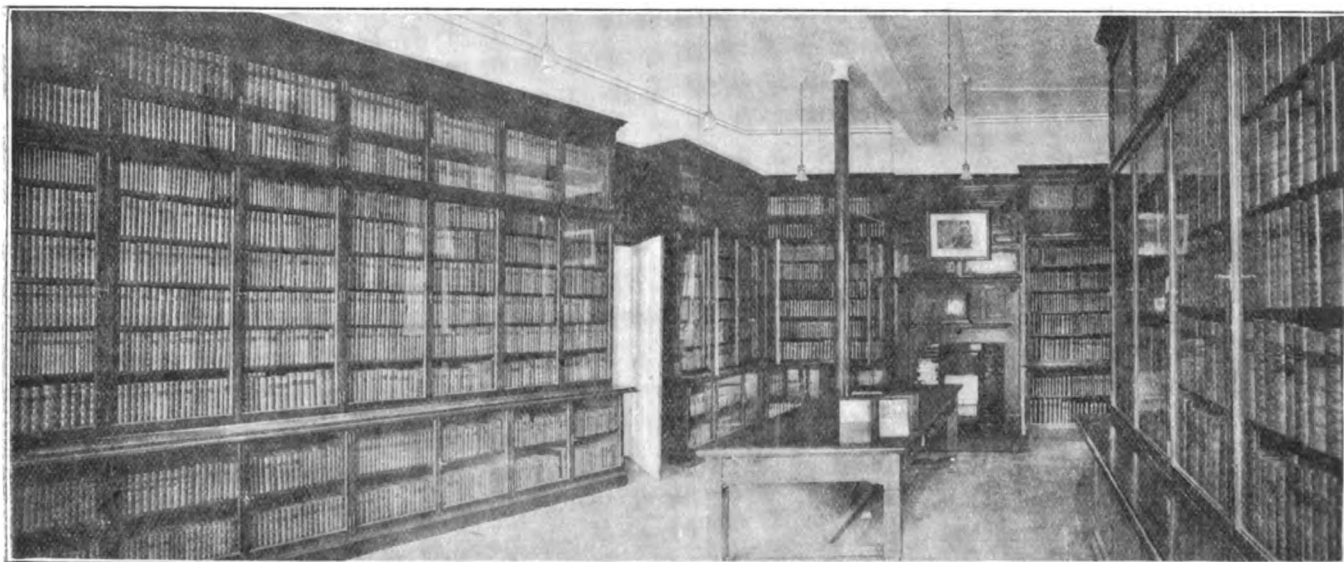
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## The Educational Times.

### IMPORTANT ANNOUNCEMENT.

We publish in this number two articles, dealing with the educational crisis, from the pen of Mr. R. F. Cholmeley, Head Master of Owen's School, Islington, and one of the Hon. Secretaries of the Incorporated Association of Head Masters. Mr. Cholmeley writes in a spirit of broad sympathy with all grades of education. These articles are part of a series of which we hope to give the remainder in subsequent numbers. They are sure to prove of immense importance at the present juncture, and we invite the careful attention of our readers to them.

### THE FIRST FIGHTING LINE.

A GOOD teacher can do his work, if needs be, under a hedge or in the market place. A poor teacher will not be made efficient by the most hygienic classroom. Of the many influences that go to mould the character of the child, the teacher is by far the most important of those that can be controlled by the school authorities. Suitable buildings, carefully planned conditions of work, are necessary; but they are unavailing without the teacher. This is obvious. Yet the recent history of education in this country has taught us that Local Education Authorities are prone to consider their duty done when they have erected magnificent buildings. They do not seem yet to have realized fully that useful results from their expenditure depend upon the personality of the teacher.

We are promised a new Education Bill, organizing and co-ordinating all grades of education. It has been clear from the first that the success of any proposals that the Government may make will be in proportion to the amount of money that the Exchequer will raise. It has been rumoured that the Bill "has no money behind it"; and an attempt has been made on this account to belittle the whole matter. We are able to state that this rumour is wrong. Money will be forthcoming. The amount will depend upon how far parliamentary opinion and public opinion can be brought to realize the importance of the

question. In these columns we do not need to urge that the question is vital. Few schools, if any, are carried on with the fees alone that parents pay for tuition. Education has become a national function and the nation must pay. It is generally admitted that the rate-payer has done all he can; the additional funds required must come from the tax-payer.

We must assume here that the nation is convinced of the need and is willing to pay. Then the question arises: In what directions shall the payment be made? Briefly, our contention is that the State shall undertake to pay teachers' salaries. The proposal sounds revolutionary, but there is much to recommend it, and no other plan carries like advantages. Tentatively, the plan has been foreshadowed. Some years ago the Board of Education made increased grants to secondary schools for the express purpose of providing a fund for increasing the salaries of the teaching staff. The system in England that the localities should raise part of the money and that they should be aided by State grants has been universally accepted, and there is no wish to depart from it. Under the scheme we have put forward the localities would still raise money and they would spend it upon just those matters that the locality takes a pride in seeing—buildings, equipment, and maintenance. Here is scope enough for all their educational enthusiasm up to and far beyond the limit of the twopenny rate. Freed from the burden of the salary fund, the localities would devote their energies and their purse to the physical care of the children. Gymnasia and swimming-baths would be built, open-air schools put up, playing-fields provided, and clinics organized.

One objection only the Local Authorities would be inclined to raise. They would ask: If the State pays the teachers, who is to appoint them, and who is to be their master? In this respect, matters would remain just as they are. The Local Authorities would continue to appoint and dismiss the teachers in the schools under their control. The only difference would be that the salary fund would come entirely from the State, instead of being partly raised from the rates. Scales of salaries

would be introduced for all schools, varying according to the grade and the geographical position of the school. The staff assigned to each school would be decided after considerations of the circumstances in each case. When these preliminaries were settled, the State would pay to the Local Authority the amount of the salary bill.

From the point of view of the schools, the gain would be enormous. The present system of grant-making is inelastic. Several times already Mr. Pease has intimated his dislike to it and his intention to change it. A small school needs, proportionately, a larger grant than a big school. At present this is just what the small school does not get (except in very rare and special cases). The smaller schools are rendered less efficient than they should be by want of money. It is a difficult matter to persuade a Local Authority that, where the age range is the same, a school with 40 pupils needs as large a staff as a school with 100, if the children of the area are to have equal opportunities with those attending larger schools. A national system of education would not consider it just that a pupil should be handicapped owing to the fact of residing in a thinly populated area. This proposal, that the State shall pay all salaries, will ensure equal treatment to all schools alike.

And how does the teacher stand to gain or lose under this scheme? He will gain. He will not become a Civil Servant; and we believe few teachers desire this. But he will become absolutely secure of twelve months' pay for a year's work; he will have in every case a definite scale, and will know what his prospects are and how great is his maximum. He will know what other scales in schools of other grades are open to him. In the matter of pensions the position will be enormously simplified. When the State pays all teachers, it can arrange without difficulty the collection of premiums and the payment of pensions. But perhaps a caution is necessary. Salaries, we are all agreed, must be raised. But they will never be magnificent: all the history of Government service indicates this. Security, dignity, and a modest competence: these are what State payments would mean.

So far, we have spoken of the secondary schools that are in receipt of State grants. These, as Mr. Pease is fond of repeating, number about a thousand, while he estimates that some thirteen or fourteen thousand schools under private control are also in existence. Well, out of this vast number some will disappear, from the national point of view without a regret, though one may be permitted to sympathize with cases of individual hardship. Others easily meet their expenses from fees paid for boarding. The remainder would be able to make out a strong case for support from the Local Education Authority, whose purse would not then be so tightly bound. A day school in private hands, shown to be efficient as far as concerns its educational work, and aiding in the supply of education in the locality, could hardly fail to get a grant from the Local Authority.

And the cost? It has been roughly estimated that the additional grant from the Exchequer would need to amount to about six millions in order to pay exist-

ing salaries. Elementary schools as well as secondary are, of course, included in this estimate. But salaries would increase and the number of teachers would increase. The salary fund, including pensions, would have to be elastic. It might amount to double what the nation pays at the moment. The nation can afford it. All life is a fight for existence. Our Navy, our Army have been, and still are, necessary. But the greatest need, on the provision of which depends our future as a nation, is that our children should have the best conditions of education—moral, physical, and intellectual—which we can give them, and, in the provision of this education, the teacher, his character, his personality, his influence is the greatest factor.

## NOTES.

AMONG the Birthday Honours we are pleased to see that the King has bestowed a knight-hood upon Dr. McClure, Head Master of Mill Hill School. We may take it that there has been, in part, a desire to pay a compliment to the teaching profession and to endorse the view which is rapidly spreading that the training given in school is a matter of vital importance to the future of the nation. But Sir John McClure is himself so distinguished a man that his claims to public recognition need no extraneous support. He is a graduate of three Universities—Manchester, Cambridge, and London. He is a barrister of the Inner Temple. He has been a Professor of Astronomy and is a Doctor of Music. He is a member of the Senate of London University, and up to the end of last year he was one of the Hon. Secretaries of the Incorporated Association of Head Masters. In scholastic matters no man has done more useful work for his generation, and we offer our cordial congratulations upon the honour that has been paid to him.

MORE than two hundred members attended the thirtieth Annual Conference of the Incorporated Association of Head Mistresses, which was held last month at Cheltenham.

A resolution was carried making it possible for retired head mistresses to retain their membership, but without the right to a vote. Miss Mowbray presented the report of the Overseas Committee, which has been established in order to maintain a closer connexion between the schools in England and those in the Dominions oversea. Miss Gadesden reported on the progress that had been made by the Teachers' Registration Council. She said that, at present, the Council was engaged in laying down the lines of the administrative machinery and in exchanging views between the four sections of which the Council was composed. The proceedings were, of course, confidential; but it was permissible to say that encouraging progress had been made. She thought the Register would enable

teachers to speak not only as servants of the community, but as honoured and trusted servants.

THE President of the Head Mistresses' Association, Miss Douglas, of the Godolphin School, Salisbury, laid special stress in her Presidential Address upon the need for quiet in school life. If character is to grow strong, persistent, and patient, she said, and if children are to develop freely, naturally, and richly, schools must secure a peaceful atmosphere and let their pupils learn that in quietness and confidence shall be their strength. So many interests are aroused, not only in the widening life of the school itself, but in the still wider life outside, that girls are in danger of over-strain, and of dissipating their energies instead of learning control. "Being," said Miss Douglas, "is more than doing." Nothing can be done well if the strain on the nervous system is too severe. There can be no doubt that life to-day is extraordinarily full and varied. It is hard for schools to remain apart from the many interests that are daily obtruded. But freshness and vigour are the qualities that teachers need. These imply quiet and control.

As the proposals for an alternative scheme for the training of teachers in secondary schools, which were laid before the Conference and the Association of Head Masters some months ago, are still regarded as confidential, we can give no details. The reporters left the Conference hall at Cheltenham during the discussion, and on their return the following announcement was made to them: "That the Association of Head Mistresses, while not agreeing with every detail of the confidential scheme of training communicated to it by the Board of Education, and stipulating, further, that girls' schools should be regarded as eligible for participation in the grant proposed to be made by the Board of Education, welcomes the scheme as providing an alternative course of training to that given at training colleges. This Association further resolves that the schemes placed before it to-day be sent to the Board of Education as alternatives, each of which is advanced by certain groups of head mistresses, members of the Association."

IN announcing that Prince Henry will go to Eton next term, the King paid a handsome tribute to the value of a public-school education. "We are glad to think," said His Majesty, "that the high traditions of Eton are upheld by each succeeding generation, and we feel assured that you [he was addressing the boys of the school] who now claim the privilege of carrying on those traditions, will do your best both during your life here, and later when you fulfil your duties as citizens of our great Empire, to maintain the honour of Eton untarnished." "Eton," he went on to say, "claims a long line of illustrious names, men who have played a great part in the administration of our affairs,

both in this country and in the Dominions. I fully believe that they would be the first to acknowledge the debt they owe to their training here, both in the classrooms and in the playing fields." It is stated that no special arrangements will be made for Prince Henry, but that he will live the ordinary life of the school.

IF Prince Henry is to have the advantages of being a schoolboy at Eton, unrestricted by the official ceremonial that is connected with the life of Courts, he is but following the wise precedent that has been laid down in the case of the Prince of Wales at Oxford. According to Dr. Warren, President of Magdalen, the Prince has preferred to take his stand on merit and not on privilege. "He has preferred to be distinguished by no gold tuft or silken gown, but to find, so to speak, in his College cap the cap of democratic liberty." "We have seen him," continues Dr. Warren, in his Crewian Oration to the University, "now hurrying to a lecture, now running along the towpath, cheering his College boats; now steering his bicycle or, as his own chauffeur, guiding his motor through our streets; now on the fields or links, propelling the ball with foot or club, now again wearing arms and acting the soldier; but as a tiro, not a tyrant—in one word, pursuing his studies, his games, his enjoyments, like the rest of our young fellows."

NO one has had a greater influence than Canon Barnett, whose death was announced last month, in breaking down class barriers and helping the "poor" and the "rich" to come to a sympathetic understanding of one another. His memory will be cherished by many in all classes of society. It is some thirty years ago that he was a familiar figure at Oxford, whither he came from time to time to talk to undergraduates and to put before them the opportunities they might take of widening their own knowledge of life and helping their fellow-men by living in one of the less-favoured quarters of a large city. Toynbee Hall was the result, the forerunner of many a "settlement." Toynbee Hall stands for a deliberate attempt to equalize the accidents of birth. Its influence on social life has been great. For some years past the Canon had retired from active work in connexion with Whitechapel, and he was fortunate in finding helpers to carry on his mission. Indeed, one of his powers was that he could stimulate others to work. He will be sincerely mourned.

THE main topic of discussion at the Annual Conference of the Association of Education Committees was, quite naturally, the urgent need for increased Exchequer grants for purposes of education. For years the burden of the localities has been growing. Every year education becomes more costly, partly owing to the activity of the locality and partly owing to fresh duties laid upon the locality by Parliament. The education rate rises, but

the Government grant grows smaller in proportion to the whole of the expenditure. It is useless to argue that the money, whether in the form of rates or of taxes, eventually comes from the same pockets. There is a difference, and rate-payers have for the present in many areas reached the limit of their resources. So far the Local Authorities have been put off with vague promises. The latest statement is from Mr. Lloyd George, and he goes no farther than to say that it is the definite intention of the Government to lay before Parliament proposals whereby the burden of the localities may be reduced. The only feasible proposal is the one contained in our leading article for this month.

WHATEVER dearth of teachers there may be in some districts, the London County Council has no difficulty in filling vacancies in its schools. Five hundred teachers in elementary schools have just been appointed, and for these vacancies there were 1,643 applicants. Of the 500 appointed 264 were trained in London, the others coming from colleges outside the L.C.C. area. It would seem, however, that there is some difficulty in securing sufficient men teachers, for the Education Committee has agreed to sanction as an experiment in one district the appointment of women to teach the lowest class in boys' departments. Educationally, we believe the proposal to be sound, but it was not passed without opposition. It brings into sharper contrast the difference in the salary scales for men and women. If women are doing the same work, with the same number of boys, under the same conditions as men, their claim for equal salaries becomes more obvious. And if men do not support this claim for equitable treatment, they may find themselves gradually ousted from yet another occupation on the ground that the work can be done cheaper by women.

Mr. PEASE made somewhat vaguely, in opening new buildings at Cherwell Hall, an announcement which may prove of the greatest importance. But before we can decide upon its importance, we must know more about the scheme. He is reported in the *Times* as saying: "A grant would now be given which would enable substitutes to be found for the temporary vacancies of those who, whilst engaged in teaching in girls' secondary schools, found it an advantage to be trained further in the work of teaching." Mr. Pease has frequently pointed out, and very wisely so, how greatly secondary education suffers from the want of training of a large number of teachers. In girls' schools the proportion of untrained teachers is not so large, we believe, as in boys' schools. We would like to know whether money would be found to enable all untrained teachers, men as well as women, to take a training course of three months, or whether the proposed aid will be limited to certain selected schools. We believe a generous expenditure in this way would have very valuable results.

## SUMMARY OF THE MONTH.

THE annual prize distribution of the North London Collegiate School was held on Wednesday, June 11, at 3.30 p.m., in the Clothworkers' Hall of the School. The Bishop of London presented the prizes, and on the platform also were Mr. Latham, K.C. (Chairman of the Governors), Mr. Edward Barnes, Miss Lawford (of the Camden School for Girls), the Rev. B. Saunders Lloyd, Miss Young (Head Mistress of the Aske's Haberdashers' School, Hatcham), the Rev. Septimus Buss, Mr. Hurlstone Jones (Head Master of the Boys' Secondary School, Hildrop Road, N.), Mrs. W. K. Hill, Mrs. Miall Smith, Mrs. Leon, Dr. Walmsley, and Mrs. Heberden, and Miss Mullins. The Head Mistress, Mrs. Bryant, D.Sc., Litt.D., in her report on the year's work, dwelt not only on the academic distinction gained by present and past pupils, but emphasized the importance to the schoolgirl of development on the physical and social sides as well as the intellectual. After presenting the prizes, the Bishop gave a most inspiring address to the girls, which, for all its seriousness, contained delightfully humorous stories. In exhorting them all to a life of service, optimism was his dominant note, an optimism which saw good everywhere, even in the "submerged tenth." A vote of thanks was proposed by Mr. Latham, K.C., and seconded by Mr. Croal Thomson. In the course of the afternoon the girls sang a charming selection of songs, under the direction of Mrs. L. Manson.

THE King Edward VII British-German Foundation, instituted by Sir Ernest Cassel, decided last year to employ a portion of its surplus funds in assisting a limited number of young men of British nationality to prosecute special studies in Germany after the completion of their studies at one of the British Universities. The successful candidates are:—Mr. G. C. T. Giles, King's College, Cambridge—research work in Classical History. Mr. F. H. Smith, B.A., Pembroke College, Cambridge—Chemical Research. Mr. R. S. Wishart, M.A., B.Sc., Edinburgh University—Chemical Research. Mr. A. Cowe, Edinburgh University—Neurology and Gynecology. Mr. R. T. Clark, M.A., Balliol College, Oxford, and Glasgow University—the higher branches of Journalism. Mr. G. Humphrey, B.A., All Souls College, Oxford, and London University—Statistics and Economics. Mr. S. G. Barker, Imperial College of Science and Technology, London University—Scientific research in Vapour Pressures. The studentships are for one year and of the value of £175, and a condition of their tenure is continuous residence in Germany for this period.

A MEMORIAL, very influentially signed, has been forwarded to Viscount Haldane, Chancellor of the University of Bristol. The Memorial deals with the circumstances under which Prof. Cowl was removed from his Chair in 1910. We quote the concluding paragraph:

The question is whether the Council of Bristol University, if it acted within its legal powers, has not gravely misused them in this instance, and injured, without good cause, a ripe and excellent scholar; and whether the fullest reparation is not due, of such a kind as would satisfy all true friends of the University. The case is of no mere local interest. Any example of injustice is of concern to the whole academic community and to the public, as well as to the State, which renders financial assistance to the Universities. It is unnecessary to represent to your Lordship the need that security of tenure in academic appointments should not be tampered with. We therefore respectfully beg you, as the Chancellor of Bristol University, and as one of the chief architects of the modern Universities in England, fully to investigate the case of Prof. Cowl, and to use your great influence to see that, if injustice has been done, it shall be redressed.

MR. CHARLES DUNCAN, on June 9, asked the President of the Board of Education the age, the qualifications, the schools and colleges at which educated, and the previous experience, if any, of Mr. R. J. M'Alpine, recently appointed, without undergoing a competitive examination, to the post of Junior Examiner in the Board of Education at a commencing salary of £250 a year; whether before making this appointment he carefully considered the question of promoting one of the seven hundred clerks in his department to the vacancy; and,

if not, whether it is to be understood that no one either of the 595 clerks in receipt of £250 a year or less, or of the 105 in receipt of more than £250 a year is capable of performing the duties of a Junior Examiner? Mr. Pease: Mr. R. J. M'Alpine is thirty years of age. He was educated at Granby Street Board School and Brae Street Organized Science School, Liverpool. In 1897 he became pupil-teacher in the Ashfield Street Council School, Liverpool. During his five years of pupil-teachership he continued his education at the Clarence Street Pupil Teachers' College, Liverpool. In 1902 he entered the Day Training College at Liverpool, and after completing the two years' course obtained the Board's certificate. In 1905 he graduated with first class honours in history at Liverpool University. He was afterwards given a Research Fellowship and a University Fellowship at Liverpool. In 1907 he was appointed Assistant Inspector of Elementary Schools under the Liverpool Education Authority, a post which he held until his appointment to the Board in 1913. In regard to the second and third parts of the question, I must refer the hon. member to replies which I gave to similar questions on the 3rd and 12th February last, copies of which I am sending him.

THE discussion at the Colwyn Bay conference, organized by the Central Welsh Board, centred mainly round the subject "The Organization of Secondary Education." Lord Sheffield and Principal Griffiths emphasized the dangers of over-organization, the former showing, by quotations from the Secondary School Regulations of the Board of Education, how seriously the freedom of the schools in their choice of subjects was curtailed by that body. This is a matter of great importance and deserves the careful and sympathetic consideration of the Board. In the course of the discussion on the general question of organization it became clear that the problem which was uppermost in the minds of those present was another matter in which the policy of the Board of Education in Wales was called in question—namely, the policy of encouraging the establishment of higher elementary schools in areas which are already adequately served by intermediate or secondary schools. The requirements of boys and girls who need a type of instruction of a more advanced and practical character than that afforded in the higher standards of elementary schools should undoubtedly receive the best consideration of Local Education Authorities. The best and most economical alternative which presents itself in the more thinly populated and non-industrial areas is that the boys and girls referred to should be specially provided for in the lower forms of the intermediate or secondary schools which are already available. In the more populous and industrial areas, if there exists a considerable demand for skilled workers with a working knowledge of practical mathematics, elementary science, hand sketching, and scale drawing, and similar subjects, there is much to be said in favour of the establishment of higher elementary schools; but even in those districts the greatest care and vigilance should be exercised and proper safeguards instituted to prevent those schools from competing unfairly with the secondary schools which already exist. Wales is in the main a country of villages and small towns, and it is everywhere fully supplied with secondary schools. The number of places in Wales, therefore, where the establishment of higher elementary schools might be defensible is very small.—*Times*.

Most educationists in Wales will learn with satisfaction of the decision, now long deferred, of the University of Wales to follow the lead of most of the modern Universities by sanctioning the inclusion of geography as an optional subject for the matriculation examination. The teaching of this subject in the intermediate or secondary schools of Wales has made very substantial progress in recent years, and the University, in coming to its present decision, has probably been influenced in no small measure by that consideration. Principal Griffiths was therefore fully justified in claiming this result as a signal instance of the good which may be expected to accrue from a closer co-operation between the schools and the University colleges. In yet another respect the conditions which govern the matriculation examination of the University were made more elastic at the last meeting of the University Court.

In this examination "compulsory Latin" still holds its sway as regards the ordinary student. The only exceptions hitherto permitted have been to the effect that candidates for a degree in science or in music were allowed to offer "advanced German" in lieu of Latin, and that candidates for a degree in applied science were allowed to substitute for that language "additional mathematics, together with either French or German." The Senate recommended, and the Court last month resolved, that as the subject described as "advanced German" had proved to be more than equal in difficulty to Latin, a new syllabus should be adopted designed to represent a year's school work subsequent to attaining the ordinary matriculation standard in the subject; also that, as a further alternative, French and German (taken together) should be accepted as a substitute for Latin in the cases of candidates proposing to take a degree in science. These decisions are interesting as indicating how gradually the University of Wales, as compared with some modern Universities, is prepared to accept substitutes for Latin.—*Times*.

SPEECH DAY was celebrated at Shrewsbury School on June 12. The Head Master (the Rev. C. A. Alington) read a list of distinctions gained by Old Salopians during the year, and went on to make a vigorous defence of public schools. Personally, he said, he was a thick-and-thin supporter of the public schools of England as they stood to-day. He would be a fool if he suggested that everybody could learn Greek, but he maintained that, if any language was to be studied for other than purely utilitarian reasons, that language ought unquestionably to be Greek. With regard to the popular superstition that any reform of public schools began and ended with Dr. Arnold, he maintained that there was no institution in the country, with the possible exception of the Church of England, which had changed so largely or so beneficially in the last thirty years as the public schools of England. It had been truly said that the value of what a public school taught was that which remained when everything else they had learned had been forgotten.

MR. LEOPOLD KATSCHER discusses in *Knowledge* for June the interesting theories that have been advanced to explain why we are right-handed. At first, it has been contended, men used both arms indifferently, and those who when fighting pushed the right side forward had the advantage of shielding their hearts, and so lived to produce descendants who inherited their tendencies. Be this as it may, there is no doubt that the two sides of the brain have different functions, and right- or left-handedness is by no means restricted to the arms alone. One investigator was very often able to recognize left-handedness by the examination of the left eye. The centre of speech is on the left side of the brain of a right-handed person, and on the right side of that of a left-handed person. Children show unmistakable evidence of two speech centres, though one atrophies owing to the preference given to one hand. Nevertheless experiments show that it can be successfully resuscitated.—*Westminster Gazette*.

IN presenting the fifth annual report of the Secondary Schools Association the committee are glad to be able to refer to some of the services which the Association has continued to render to secondary schools in different parts of the country. The membership of the Association has been maintained. The governing bodies of 163 schools are now represented on the Association as compared with 161 in the previous year, whilst the number of individual members is now 24. The aims of the Association as registered at the inaugural meeting in 1908 were as follows: (1) to promote interchange of experience among governors of secondary schools; (2) to furnish information and give advice to members of governing bodies and others as to the regulations and decisions of the Board of Education and of Local Education Authorities, and as to questions arising on the schemes of the Board for secondary schools and on other matters; (3) to communicate with the Board of Education, Local Authorities, and other bodies in the interests of secondary education; (4) to obtain such alterations in the regulations of the Board and Local Authorities and in schemes for secondary schools

as may be desirable; (5) to initiate Parliamentary action if necessary.

DR. MOTT, in the second of his lectures on "Nature and Nurture in Mental Development," given under the auspices of the Chadwick Trust, dealt with the "Inborn Potentiality of the Brain of the Child." He first explained the broad principles of human heredity and what the microscope had taught concerning the material basis of dual inheritance from the male and female germs. He then considered the possibility of chronic saturation of the blood with poisons in successive generations, causing pathological mutations and mental degeneracy appearing in previously sound stocks, illustrating the same by pedigrees. Then he discussed the influence of the social heritage built up by man through his acquirement of speech and the creative use of the hand, enabling him to perpetuate his thoughts, feelings, and ideals, and what man would be if deprived of this social heritage and left with only the animal instincts and emotions necessary for the preservation of the individual and the species. The next subject discussed was the mental potentialities of the child born of sound stocks, of partially sound stocks, and of unsound stocks. He illustrated the same by numerous pedigrees of great men, of lunatics, suicides, epileptics, and feeble-minded degenerates. The relation of genius to insanity was considered, and he showed by a number of remarkable instances that in many cases no indication existed in the family history, to show how or why genius cropped up except it be chance by a happy and harmonious combination of well-suited germ plasms. Great men, he observed frequently, owed their genius and character to their mothers. Finally, he showed the pedigree illustrating the extinction of the Spanish succession after 350 years and what it teaches regarding transmission of the neuropathic taint and the inborn potentialities of the child's brain. Particulars of future lectures may be obtained from the Secretary, Mrs. Aubrey Richardson, at the offices of the Trust, 8 Dartmouth-street, Westminster.

### THE MONTESSORI METHOD OF EDUCATION.\*

By Dr. JANE WALKER.

I AM quite prepared for a good deal of criticism in my hardihood in choosing such a subject upon which to talk to such an audience. I can hear it said all round, "She is not a teacher, and education is not her subject," and, in the ordinary sense of the terms, those statements are of course true.

My claims to speak on Dr. Montessori's method are twofold. (1) I was sufficiently interested in it to go to Rome early in this year to see what she was doing, and to make her acquaintance. And (2) I am hoping to establish a large open-air school and sanatorium for children, where I intend that Montessori methods shall be followed as far as possible.

The master principle of the Montessori system is self-education, and I have therefore had the two sentences which seem to me to put that most emphatically written up where you can all see them while our talk goes on. (1) The function of education is to foster growth. (2) All growth must come from a voluntary action of the child himself. That is, the business of growing must be done by the growing child and not handed over to a teacher or to anyone else. Hence it follows that the teacher must, as far as possible, efface herself, she must cease to occupy the centre of the stage, she must annihilate herself, she must be in a state of masterly inactivity towards the children, ready to give guidance and stimulus as they are required by the children. She must see that he provides himself with suitable materials, but she must leave him free to exercise his own faculties. In other words, the orthodox method of the teacher making the children do certain lessons, whether they attend to them or not, or wish to do them or not, gives place to "a regime of free-

dom for the child, in which his love of rational activity, his desire to do things for himself, his joy of overcoming difficulties, shall be met and ministered to by judicious and sympathetic guidance on the part of his teacher." I am here quoting from Mr. Holmes's excellent pamphlet on the Montessori system, published by the Board of Education. price 2d., a few copies of which are on the table for disposal.

Now the experiment called the Montessori system has been going on in Rome for some years, and is hardly there, as far as infants are concerned, in an experimental stage. To those of you who are not familiar with the literature of the movement—for that is really the way to speak of it—the term Montessori system must be muddling enough. Indeed, I know how confused people must be from the questions asked me about it, and the remarks people make when they think they understand it. "Oh, I know," one very intelligent woman said to me, "that's the system where they have no rewards and punishments." Another said, after I had told her a little about it, "It seems to me we shall have no need of teachers, only caretakers."

Now to begin at the beginning: Signorina Maria Montessori is a woman doctor. She was the first woman to qualify at the University of Rome. She was appointed Assistant Physician in the Clinic of Psychiatry, and she took a special interest in the care of the feeble-minded. Some lectures she gave led to the formation of the Scuola Ortofrenica (mind-straightening school) for feeble-minded children, of which institution she was directrice for more than two years, 1898 to 1900. The results she achieved there are so marvellous that they almost border on the miraculous. These feeble-minded children (she calls them idiots) were taught to read and write with such success that they passed the same examinations that ordinary intelligent children of the same age passed.

How did she do it? Here are her own words: "The boys from the asylums had been able to compete with the normal children only because they had been taught in a different way. They had been helped in their psychic development, and the normal children had, instead, been suffocated, held back. I found myself thinking that if some day the special education which had developed these idiot children in such a marvellous fashion could be applied to the development of normal children, the 'miracle' of which my friends talked would no longer be possible. The abyss between the inferior mentality of the idiot and that of the normal brain can never be bridged if the normal child has reached his full development. While everyone was admiring the progress of my idiots, I was searching for the reasons which could keep the happy healthy children of the common schools on so low a plane that they could be equalled in tests of intelligence by my unfortunate pupils."

Dottoressa Montessori worked her way to the idea of self-education by way of practical teaching, and later psychological research, for, she argued, there must be something wrong, for her little idiots to come up to normal children, in the way the normal children were taught.

Now as to what she does. During my visit to Rome, besides having a most interesting conversation with the Dottoressa herself, I had the privilege of being present through a whole morning's session at the infants' school attached to the Convent of the Missionary Franciscan Nuns in the Via Giusti. First of all, she trains the bodily senses, beginning with that of touch. This is, of course, the first sense to be developed, and it is the first to be dulled if uncultivated. She does this by making the children pass their hands over smooth and rough paper, and so learn the meaning of those two words. The rough paper is sand or emery paper, and is cut into the various forms of letters, geometrical shapes, &c. The children make these letters and so learn to write. They also have frames with holes in them into which cylinders of different sizes fit. In the same way they learn to measure length and weight by flat pieces of wood of different weights, and by long coloured poles, alternately red and blue, which are also used for counting. They are trained in colour by means of reels of silk of different shades of the same colour.

\* Read at a meeting of teachers and others interested in education at Dewsbury, on April 12, 1913.



Thus black ranges to white, dark red to palest red, and so on—eight shades to each colour.

One of the most interesting things to see is the training of the hearing by means of the game of Silence. The word "Silenzio" is written on the blackboard. In an instant every child is absolutely quiet and still. They then cover their eyes for a time—say a minute—after which the teacher calls them each by name so softly that only the greatest attention can hear her, and when their names are called they each go up to her with the utmost quietness and gentleness. Then the word "Silenzio" is rubbed out and the children go on as before.

Then they are taught to use their limbs with ease and grace, with a great deal of success, as I can testify from my own observation. They have really comfortable chairs, easily moved, small low tables that also move so that the child can learn to command his movements so as not to let fall or push over tables and chairs, and make a noise. There are also small rugs on the floor, so that if a child is tired of sitting up or wishes to work lying down on his face, or indeed in any position he is inclined for, he may do so. They also learn to use their fingers to tie and untie strings, fasten and unfasten buttons, both with their fingers and with a button-hook; and they learn to wash themselves. One child who had been employing herself for over an hour matching colours got up and went to the small table where the basin and jug of water were, and lifted the jug, poured some water into the basin, and proceeded to wash her hands and to scrub her nails with a nailbrush. This she did most thoroughly—in fact, I do not remember ever having seen anyone do so much hard scrubbing, except a surgeon before a major operation. She then dried her hands, poured the water into the pail under the table, and took it into the garden, and from where I was standing I could see her pour it carefully over the grass. She then wiped out the basin and put the jug back and the pail underneath the table, folded the towels, and came and sat down at some other work. Later two of the children got up and prepared a table for their own mid-day meal, and when they had finished they cleared away, laid the tables for the other children, and gave them their meal, washing up and putting away everything when all had finished. There was no child there of more than five years old.

The children may be said to be learning to read and write from the first minute they enter school, by touch, by colouring all the various insets, by means of the frames into which they fit, and they go on till one fine day they can write without having ever written before.

Dottoressa Montessori tells us in a very graphic way how her little pupils suddenly discovered that they were able to write: "One beautiful December day when the sun shone and the air was like spring, I went up on the roof with the children. They were playing freely about, and a number of them gathered about me. I was sitting near a chimney, and said to a little five-year-old boy who sat beside me, 'Draw me a picture of this chimney,' giving him as I spoke a piece of chalk. He got down obediently and made a rough sketch of the chimney on the tiles which formed the floor of this roof terrace. As is my custom with little children, I encouraged him, praising his work. The child looked at me, smiled, remained for a moment as if on the point of bursting into some joyous act, and then cried out, 'I can write! I can write!' and, kneeling down again, he wrote on the pavement the word 'hand.' Then, full of enthusiasm, he wrote also 'chimney,' 'roof.' As he wrote he continued to cry out, 'I can write! I know how to write!' His cries of joy brought the other children, who formed a circle about him, looking down at his work in stupefied amazement. Two or three of them said to me, trembling with excitement, 'Give me the chalk. I can write too.' And indeed they began to write various words: 'mama,' 'hand,' 'John,' 'chimney,' 'Ada.'

"Not one of them had ever taken chalk or any other instrument in hand for the purpose of writing. It was the first time that they had ever written, and they traced an entire word, as a child, when speaking for the first time,

speaks the entire word. The first word spoken by a baby causes the mother ineffable joy. The child has chosen perhaps the word 'mother,' seeming to render thus a tribute to maternity. The first word written by my little ones aroused within themselves an indescribable emotion of joy. Not being able to adjust in their minds the connexion between the preparation and the act, they were possessed by the illusion that, having now grown to the proper size they knew how to write. In other words, writing seemed to them only one among the many gifts of Nature.

"They believe that, as they grow bigger and stronger, there will come some beautiful day when they *shall know how to write*. And, indeed, this is what it is in reality. The child who speaks, first prepares himself unconsciously, perfecting the psycho-muscular mechanism which leads to the articulation of the word. In the case of writing, the child does almost the same thing, but the direct pedagogical help and the possibility of preparing the movements for writing in an almost material way, causes the ability to write to develop much more rapidly and more perfectly than the ability to speak correctly.

"In spite of the ease with which this is accomplished the preparation is not partial but complete. The child possesses *all* the movements necessary for writing. And written language develops not gradually, but in an explosive way—that is, the child can write *any word*. Such was our first experience in the development of the written language in our children. Those first days we were a prey to deep emotions. It seemed as if we walked in a dream, and as if we assisted at some miraculous achievement."

Now, so far, as you will have noticed, the Montessori system has been applied only to infants—*i.e.* children up to seven. When I was in Rome, Dr. Montessori was experimenting with older children, but her experiments had to be stopped temporarily owing to the influx of immense numbers of teachers and others who were anxious to learn all about the method. Organizing a large class for teaching purposes is not at all in Mme Montessori's line, and she is receiving very efficient help from Miss Tasker, who is the English Representative of the Montessori Society in Rome. She had been sent out to learn the whole method herself, in such a way as to teach it to teachers on her return. She will remain there for a year and so will not be available for teaching purposes till the end of this summer.

It is my opinion, which I am gratified to find is shared by Mr. Holmes, that this method is as applicable to older children as to infants. Those of you who have not read his book on "What is and What might be" should read the second half—*i.e.*, "What might be." It gives an account of an established school for older children which has the same principles at work as those of the Montessori method.

Now you will be wanting to ask many questions. I shall have finished almost directly, and you can hurl them and your criticisms at me, and I will do my best to deal with them, but there is one question a large number of you will be asking, and probably answering for yourselves.

"How does the Montessori method differ from the Kindergarten at its best? It seems to me they are almost one and the same." Well, our sentences behind me put that briefly, and I have endeavoured to impress it on you by having the very important words printed in red—*voluntary* and *himself*. In the Kindergarten the child is perpetually being induced by the teacher to do this or that, to learn this or that; on the Montessori plan, he attaches himself to whatever exercise he feels is the best suited to his requirements. Some children can go on longer at the same thing without fatigue—they ought to be allowed to do so, and on the Montessori plan they are. Then we must remember Froebel worked a hundred years ago, and Mme Montessori works now in a modern world oppressed with modern problems.

"But where does *discipline* come in?" I hear someone say. In the first place, what do we mean by *discipline*? We mean "the capacity for self-control." And if we honestly and quietly think about it, we have been mistaking *compulsion* for *discipline*. "Go and see what Baby is doing,

and tell it that it mustn't," has been far too often our way of thinking and acting about children. Children are by nature good, not bad, and I agree with Mrs. Fisher when she says that, of every 1,000 cases of "naughtiness," 999 are due to something else than a bad impulse. "Give a young one that is acting bad something to eat and put him to bed. Half the time he's tired or starved, and don't know what ails him." Then, from the point of view of grown-ups, what do we mean by a good child? Isn't it something that does not interfere with our comfort and convenience? And isn't a bad one just one that irritates and annoys us because he *does* interfere with our own comfort and convenience?

To sum up, Dr. Monte-sori's method and her system of education have come to stay. They contain an eternal truth, and they are part of the great democratic movement going on all over the world. Just as the old days when the ivy clinging to the oak tree symbolized the woman depending for everything on her husband, or other male relative, are now things of the past, and woman is working out her own salvation in many and various ways, some no doubt crude and unsuited to modern methods, but still surely making for the same goal, so it is with children. The aim of this real educational revolution is the self-dependence of the child.

### UNIVERSITY OF LONDON GRADUATES' ASSOCIATION.

THE University of London Graduates' Association have forwarded to Lady Avebury an expression of their sincere sympathy and respectful regret on the occasion of the death of Lord Avebury. They deplore his loss to Science and the world of letters, and recall with gratitude that his last public expression (in a letter to Sir William Collins of which a copy is appended), eloquently voiced the objects of the Association in desiring to keep all the degrees and distinctions awarded by the University of London open to all comers on terms of equality and impartiality.

48 Grosvenor Street, W., May 5, 1913.

DEAR SIR WILLIAM.—I cannot resist saying with how much interest and general agreement I have read your remarks in the *Morning Post* on the University of London.

I was born with the University. My father was first Vice-Chancellor, so that as a boy I heard many a discussion on the new University. My father remained on the Senate till his death in 1865, when I was appointed by the Crown to succeed him, and occupied a seat till the reconstitution in 1900. During that time I was eight years Vice-Chancellor, and twenty years a representative in Parliament. I was a member of the Public School Commission of 1869, of the Duke of Devonshire's Science Commission of 1874, and of Lord Cross's Education Commission. You will see, therefore, that my life has been saturated with the problems of higher education, and especially in connexion with the University of London.

About the middle of last century application was made to the Government of the day to grant facilities by which professional men who devoted to study part of their leisure hours, but could not devote time to residence at a University, might, if they acquired a sufficient proficiency, obtain the advantages of a University degree. Such men are the salt of the earth. The Government of the day thought their application was reasonable, and asked the University of London to assume the responsibility; this the Senate undertook and have ever since carried out. Hence the reproach too often thrown at the University that it was "only an examining Board." It was no doubt a most useful and successful "examining Board," but to speak of it as *only* an "examining Board" is to ignore one important side of its useful work.

When I was nominated on the Senate, it was appointed partly by the Crown and partly by Convocation. Mr. Grote was Vice-Chancellor, and it comprised amongst others the Duke of Devonshire, Lord Macaulay, Sir George Cornwall Lewis, Lord Derby, Sir John LeFevre, Thirlwall the Bishop of St. David's, Lord Overstone, Mr. Lowe, Mr. Goschen, Sir James Paget, Sir George Jessel, and other great men. I am old, and my opinion is worth little, but I know that I am expressing that of these great authorities on the two points which specially I wish to urge. In the first place, I sincerely hope with you that nothing will be done to weaken the "external" side of the University. I do not understand that the Government proposes to withdraw from private students the right of obtaining, if they pass

the necessary examinations, a University degree, and as long as this right continues surely there is no body better qualified than the Senate of the University of London to undertake the responsibility of the examinations.

The second point on which the Senate felt strongly in my day was that every University degree should denote a good grounding in (first) mathematics, (second) science, (third) classics, and (fourthly) some modern language. Our Matriculation examination was framed with this view, and secured a certain amount of science and modern languages teaching in the schools connected with the University. I am afraid that at present there is some tendency to specialize too early. These, of course, are only two of many subjects dealt with in the report.

With the most cordial good wishes for the prosperity of the University of London in which I shall always feel so intense an interest, which has done, is doing, and I doubt not in the future will do, so much for the higher education of our countrymen, I am, yours truly,  
Sir W. J. Collins. (Signed) AVEBURY.

### OLD PUPILS.

AND so for a little while we were quiet and watched the cloud argosies slip their moorings on the quays of El Dorado and sweep eastward, galleon after galleon. Then we, too, followed in their wake and swept down, the little car dancing and humming, into the delectable valley where old friends waited to greet me. For here was that school where most I learned what little craft I have in teaching; and learned to like and respect my colleagues and seniors and to be proud of my calling for their sake. I came back to that happy school through a golden evening and heard kind remembered voices welcoming me.

I met an old pupil there also. It was hardly nine years since I was teaching him. After dinner we sat and recalled one by one his form-mates at that time. It was a delightful evening. He told me that many members of that form which I had taught were achieving distinction, and one or two notoriety. But always I noticed his mind and voice returned upon one name in particular—Helmthwaite-Lee. This young gentleman was now, it seemed, in his third year at New College, Oxford, and, to believe my narrator, Coplestone, he was a true demi-god. Chiefly he was distinguished as an intellectual leader, a keen and trenchant debater, a forger of epigram and paradox. The rank of Cabinet Minister was predicted for him. He might even aspire to the presidency of the Oxford Union. Anyhow Coplestone and another old schoolmate had done their best, canvassing all the Oxford clubs in his favour. And I nestled cosier in my armchair and reflected how entirely pleasant was this evening. And all through our talk like finger-posts on a romantic road recurred the name of Helmthwaite-Lee.

It was midnight before we rose to go to bed. I myself dawdled in my dressing-room for a long time reviewing this golden day, and most earnestly did I wish to be able to remember the features of Helmthwaite-Lee. The name itself was familiar enough. Masters who have to write weekly orders, reports, absentee lists, and so forth have a bitter memory of such interminable appellations. But I could not recall much more about him. I seemed to picture him as virtuous, insignificant—in fact, almost self-effacing. But how pleasant to think of an old pupil now become so distinguished! And there were others also, I would have you know. There was Walkley, for instance, a rising poet whom I remembered in aspect like unto a half-baked dumpling, tearfully recalcitrant at Latin Elegiacs, but mute and uncomplaining when Johnston, hulking brute, had with a water-pistol instilled a good half pint of ink down his back between collar and cuticle. I should not mention the episode (of which, naturally, I only became aware in conversation this same evening with Coplestone) were it not that Johnston himself was becoming known as a bit of a *littérateur*: some spoke of him in the same sentence as Harold Begbie (or is it Begbie?). Johnston had always been a favourite of mine. He had attracted my notice by a masterly compari-

son between Ezra and Nehemiah. "Being worried," he had written, "by the wickedness of the Jews, Ezra tore his hair, but Nehemiah tore theirs instead, which was more sensible, I think."

Then there was Aster—Gasbag Aster—now standing in the Conservative interest for South-east—shire. But I grow garrulous. Of course I was not, in this dawdling mood, imagining that my influence had been the main motive force in the development of all these youths. Still, without conceit, I fancied I might justly claim to have helped things on and I looked forward to possible meetings with these leaders of new movements. All this was strengthening and consoling. For when I looked back on my work with this particular form of which Coplestone and Helthwaite-Lee had been members, I could not recall that it was specially inspiring. On the contrary I thought that particular set of boys unimpressionable. They seemed good and dull boys. I had not dreamed any of them would achieve distinction. I said to myself, I will remember all this next time I am tempted to grumble at the stupidity or ingratitude of pupils.

Well, I continued, now being tuned to a high pitch of moralization—well, so it is with us schoolmasters. We sow and tend early and late, but must pass on before the blossom is out to reward us with perfume and colour. But it is vouchsafed to us to return from time to time and for a moment to catch a glimpse of what we have sown. Late-blooming, I said, is all our garden; and we must work our work in faith and patience.

I fear to bore you if I should tell in detail how I spent next morning revisiting friends and places, but it was all quite delightful. No doubt some part of the pleasure depended upon the thought, "If I had to come back and take up my work where I dropped it, with my added experience, what a brilliant job I should make of it!"

In the afternoon we were sitting down to tea and joyfully observing all the ritual appropriate to the most sacred of all meals when I became aware of a new presence in the room. The buzz of conversation suddenly rose a semitone or so in pitch and there was a tingle of excitement in the atmosphere of the room. Who was this newcomer who had produced this effect? I lifted my eyes from my task of dissecting a plum cake and beheld a gleaming youth. So walk Olympian victors. He moved among us drab ones a conqueror clad in purple and gold. "Oh, now this is nice," you might hear one lady say; and one of the masters, "Good! Splendid! Where have you turned up from?" And there were little pleased inarticulate gurglings and gratified noises to swell the chorus of welcome. And he smiled upon them all and stood waiting for a cup of tea with an air of modesty which deceived no one, not even himself. Conceive a dragon-fly pretending modesty, an Alexander deprecating himself!

As I looked upon his features I seemed to imagine them familiar. This imagination I strove to quell as purely blasphemous, but unashamed it recurred persistently. As I was fighting against it my hostess said: "Oh, Mr. D—, you surely remember Helthwaite-Lee?"

Helthwaite-Lee—I might have guessed it! And with genuine gladness and interest I made ready to grasp him by the hand. He glanced down at me along his finely chiselled nose, and then the "ruby portals of his speech" opened. And said he, clipping his syllables for very wantonness: "Oh yes—er—the man who taught me all the subjects I have since given up."

\* \* \*

And all the way home next day, across a hundred miles of England, the dun clouds dragged their tails across reeking uplands. But though I had lost Helthwaite-Lee, I chuckled not discontentedly. And, lest you should in your facile way brand me a cynic, let me hint this, that the real hero of this story is Coplestone and that I have not told you all he said or in what tones he said it.

F. R. G. D.

## THE NEED FOR MASTERS.

OF the various problems which educational administrators have to face perhaps the most urgent is that of securing the right stamp of teacher. As regards the elementary schools the Board of Education has for some years been warning us that the supply of qualified teachers is steadily diminishing, and the Local Authorities are now devising special measures to remedy the deficiency. But in the secondary schools for boys the position is not less serious. Every year all but the most favoured schools find it more difficult to obtain efficient masters, although the recent changes in our system of secondary education have emphasized the need for better men in larger numbers. I propose to illustrate the seriousness of the position by considering the case of the large class of secondary schools for boys which earn grants from the Board of Education.

These schools are of various types, but roughly speaking they provide for the education of the sons of professional or business men who are not sufficiently wealthy, or who do not desire, to send their boys to public schools. They are also attended by a large number of boys from working-class homes, who are thus enabled to enter professional, commercial, and industrial callings. Leaving the private schools out of account we may say that this group of secondary schools is training the middle and upper middle strata of our democracy. They are educating the majority of our writers and teachers, engineers, and architects, heads of business houses and officials and important members of industrial firms. The boys who go out from them will be largely responsible for both the ideals and the practical efficiency of the coming generation. Hence, in order that these schools may be able to do their work effectively, they must be officered by masters who are both men of liberal culture and possessed of technical skill in teaching. In both respects there is at present room for much improvement.

In the best schools, indeed, the masters are men of culture and refinement, and at the same time stimulating and effective teachers. But the weaker schools are obliged to fill their staffs with men of an inferior stamp. No one who is acquainted with the staffs of our smaller grammar schools or our municipal secondary schools will deny that many of their masters would do excellent work in other spheres, but that they cannot be said to exercise a refining influence or to inspire wide intellectual interests. As regards professional skill a great advance has recently taken place; it has, however, affected mainly the abler and best educated men. The Board of Education in their last Report state that "only a small portion of those who teach in secondary schools have made any attempt to qualify themselves for their work by professional training," and that a large number of teachers are employed who are seriously deficient in professional skill. The Report states also that far more serious than lack of training in the vast mass of teachers is their evident lack of scholarship.

There is, therefore, urgent need to raise the standard of culture, knowledge, and professional skill demanded of their masters by many schools, and this need is rendered all the greater by the new conditions which have resulted from the spread of secondary education during the last ten years. Since the passing of the Education Act of 1902 a rapidly increasing number of children have passed from the elementary into the secondary schools. In 1911-12 there were 91,986 such children in grant-earning secondary schools, being 60·9 per cent. of the total number of pupils in these schools. The admission of so large a proportion of elementary-school children has necessarily laid upon the secondary schools a very difficult task. They have been compelled to face the problem of how to inspire their boys with habits of thought and action which in the majority of cases were foreign to their earlier school experience. For various reasons the ideals and methods of the normal primary school differ from those of the typical secondary school. The difficulty of adapting the secondary-school curriculum to the

case of boys who come to it between twelve and thirteen knowing no foreign languages or science, is an outward sign of this difference of method and tradition.

Even more important is the strangeness of the general atmosphere and corporate life of the secondary school to most of the boys from primary schools. It is not a question of class distinction in any offensive sense, but of the difference between two systems of educational ideals. We need not even ask whether the secondary school's methods and ideals are superior or inferior to those of the primary school. Each type of school has its own part to play. But it is essential to recognize the fact that under present conditions the secondary schools can fulfil their proper function only if they retain their characteristic atmosphere and traditions.

Whether this difference between the two classes of schools ought to continue is another question which cannot be here discussed. As things are it exists and must be acknowledged; indeed the main justification for the labour and money which have been expended in opening the secondary schools to fresh classes of the community is the benefit which comes to the children from this change into a new school atmosphere. Here, as in so many other cases, the school has in its special sphere to face the same problems as those which call for solution in the wider fields of national life. In the school, as in the world outside, the rights formerly confined to the comparatively few are now claimed by a larger number, and in both places the question is whether the new claimants can assimilate the traditions which alone can make them worthy of their new position. These traditions will not be identical with those of the educated classes in the past, but they will embody in a wider form the political wisdom and ability to work for the common good which have been one main cause of England's greatness. It has been the function of the secondary schools to hand on these national traditions, and, imperfect as their work has been, they have never been wholly unfaithful to their trust. They have now to essay the harder task of imparting what is best in their traditional ideals to large numbers of boys to whom the traditions are comparatively unfamiliar.

But if this work is to be accomplished there is need of masters who are so thoroughly possessed by true secondary-school ideals that they can modify the form of their ideals without sacrificing any of their substance. If most of the boys in a secondary school come to it from schools with a different atmosphere, its masters must, for instance, be such real gentlemen that snobbery is for them impossible. Moreover masters such as these must be found in increasing numbers. The rapid growth in the number of secondary schools, which has been one result of the democratic movement, is likely to continue, and the demand for additional masters will therefore grow more and more insistent.

Unfortunately, just when more numerous and more efficient masters are especially required, the supply has seriously diminished. As is well known, the proportion of men from Oxford and Cambridge entering the teaching profession is steadily becoming smaller. Most head masters find it exceedingly difficult, if not impossible, to get the kind of man they want. Hence many schools are staffed with men who have themselves been educated at inferior schools, and are neither by disposition nor training fitted for the delicate task of inspiring a heterogeneous body of boys with secondary-school ideals. There is at present no sign of any decided improvement in this respect; indeed the difficulty of finding the right men seems to be growing more acute.

It is true, indeed, that the proportion of graduates among the masters in State-aided schools shows a welcome increase. In 1908 there were on the average in Council secondary schools for boys 8.0 graduates and 5.5 non-graduates, and in 1910-11 the figures were 8.4 graduates and 4.5 non-graduates, while in foundation schools the average number of graduates grew from 5.4 in 1908-9 to 6.0 in 1910-11. But a study of the "Schoolmasters Yearbook" leads to the conclusion that this increase is due to the larger number of graduates from the newer Universities. Now it would be absurd to maintain that men from Oxford and Cambridge are

all of the right type, and that men from Manchester and Birmingham are all inefficient. Any such assertion would show gross ignorance of the facts. Still, on the whole, the average Oxford or Cambridge man is more likely to be fitted for the particular work required than are the men from the newer Universities, and the increased proportion of the latter class is an indication of the frequent employment of an unsuitable type of master. Again, the number of men in secondary schools whose only previous teaching experience had been in primary schools shows a tendency to increase. It grew from 855 in 1908-9 to 912 in 1910-11. In the same way the number of masters who had been trained for elementary and not for secondary-school teaching increased from 1,309 in 1908-9 to 1,400 in 1910-11. While some of these men are doubtless excellent masters, the figures taken as a whole point to the same conclusion—namely, that many masters do not possess the most suitable form of experience for their special work.

The fact is that we shall never get an adequate supply of the right kind of masters until we pay them better. In 1910-11 the average salary for an assistant master in a State-aided secondary school was £168 a year. The contrast between the demands rightly made by the community upon these masters and the payment granted for their services is so glaring that it seems almost a mockery to talk of educational reform until this inconsistency has been remedied.

H. BOMPAS SMITH.

## CORRESPONDENCE.

### THE SECONDARY, TECHNICAL, AND UNIVERSITY TEACHERS' INSURANCE SOCIETY.

*To the Editor of "The Educational Times."*

DEAR SIR,—It will be of interest to many of your readers to know that the offices of the Secondary, Technical, and University Teachers' Insurance Society have been removed from 35 John Street to larger and more convenient premises at 10 Mecklenburgh Square, W.C.

This step has been rendered imperative by the continued progress of the Society—a progress far exceeding all anticipation.

May I take this opportunity of calling the attention of members of the College of Preceptors to the unique facilities offered in the Dividend Section for insurance against sickness and accident, and to remind them that one guinea contribution per annum secures a benefit of half a guinea per week in times of incapacity; that proportional rates will secure benefits up to three guineas per week; that, should no claim be made, most of the money is returned; and that membership may begin at any time.

Full particulars and application forms may be obtained from the Secretary.—Yours faithfully,

ERNEST TIDSWELL,  
(Hon. Secretary, S.T.U.T.I.S.)

### THE WORKERS' EDUCATIONAL ASSOCIATION.

*To the Editor of "The Educational Times."*

SIR,—It is well known that it is difficult to secure financial aid for educational work unless the immediate appeal is for the construction or equipment of some large central building or college; but the wide and varied activities of the Workers' Educational Association lead us to believe that, although it does not desire to erect or equip any such central building, it will not fail to meet with the financial support which is necessary not only for the extension of its activities, but for their maintenance.

The Association is at work in some two hundred towns and villages in the British Isles, and has commenced work in Australia. It has, at a low estimate, fifty thousand working men and women under direct educational influence, and has given rise to the system of University Tutorial Classes in which nearly five thousand working men and women have pursued courses of a University character for a period of three years.

The educational work of the Association has met with high appre-

ciation in many quarters. It has been commended by successive Education Ministers in the House of Commons, and appreciation of it has been expressed by the Labour and Front Opposition Benches. The Board of Education has frequently called attention to the work of the Association in its Annual Reports. The Royal Commissioners on University Education in London stated that they "have been greatly impressed by the remarkable progress already made in arranging classes of a University standard for working men and women."

Perhaps the most pressing, though by no means the only, need for this appeal is to be found in the demands which are being made upon the Association by dwellers in villages. This work, for many reasons, is more costly to maintain than that in the towns, and the Association finds great difficulty in meeting the needs even of the twenty villages in which it has already worked with success. Much help is also needed for our Central Library, which supplies books to students unable to obtain them otherwise. It must be remembered that the work of the Association is carried on mainly by the self-sacrificing efforts of working men and women after their day's labour. In addition to the paid secretaries, there are some three hundred secretaries at work who willingly give their services and such money as they are able. We are now asking for money from many who perhaps may not be able to give actual service.

The Association has done its work for ten years upon a minimum of funds. Last year the income of the National Association was £2,378. The grants paid by the Board of Education are of necessity absorbed in the actual expenses of the classes, which are always greater than the grants. The fees paid to teachers by the Association itself are very small, and much voluntary work is done.

The Association is unsectarian and non-party in politics. It enjoys the support of many prominent leaders in English thought and action. At the same time it has been built up by working people and is controlled by them in co-operation with some of our best scholars.

Information can be obtained, either in person or by letter, from the General Secretary at 14 Red Lion Square, Holborn, W.C. Subscriptions and donations should be sent to the same address. The Bankers of the Association are the National Provincial Bank of England (St. Martin-le-Grand Branch).

W. A. APPLETON, Secretary, General Federation of Trade Unions.

C. W. BOWERMAN, Secretary to the Parliamentary Committee of the Trade Union Congress.

THOS. BURT.

SYDNEY BUXTON, President of the Board of Trade.

J. R. CLYNES.

ALFRED DALE, Vice-Chancellor of the University of Liverpool.

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M. E. SADLER, Vice-Chancellor of the University of Leeds.

D. J. SHACKLETON.

EDW. WINTON.

W. TEMPLE, *President*.

ALBERT MANSBRIDGE, *General Secretary*.

14 Red Lion Square, Holborn, W.C.

#### THE FUTURE CAREERS OF PUBLIC-SCHOOL BOYS.

*To The Editor of "The Educational Times."*

DEAR SIR,—Dr. Gray, in his recently published and widely reviewed book on "The Public Schools and the Empire," criticizes parents and public-schools masters for not giving more earnest attention to the choice of a profession by their sons and pupils and concludes his criticism by stating that "wherever the fault lies, the fact remains that there is at present within the circle of secondary education no official organization which concerns itself with the careers of boys after leaving school." As one who has devoted many years to studying the conditions of all forms of career for educated boys at home and abroad, I heartily welcome Dr. Gray's testimony to the individual and Imperial importance of the problem. At the same time I should like to ask for a short space in your columns to point out that Dr. Gray is either ignorant of or has forgotten the immense amount of work in this direction accomplished by this Association.

Although technically not an official organization, there is no reason

why it should not one day become so, and its quasi-official character may be judged by the fact that its scholastic members number no less than three hundred and fifty head masters and house masters, including the heads of Harrow, Winchester, Marlborough, Charterhouse, Clifton, Haileybury, Uppingham, Repton, Cheltenham, Shrewsbury, Sedbergh, Sherborne, Malvern, Oundle, and Bradford (Dr. Gray's old school), besides numerous house masters at these schools and at Eton, Rugby, Wellington, and others, all of whom would, I believe, testify to its utility and efficiency. It is only just to these gentlemen to state that most of them take a considerable interest in the future careers of their pupils, and the association is, on their recommendation, being increasingly consulted by parents and guardians anxious to decide upon the best careers for their sons and wards, in view of their individual temperament, capacity, limitations, and financial circumstances. My extensive experience has naturally led me to form certain views as to the types of personality and kind of education required for the various vocations open to educated boys, but I cannot trespass further upon your space to go into this interesting aspect of the question.—Yours, &c.,

The Future Career Association, HENRY C. DEVINE, Director.  
39 Victoria Street, Westminster, S.W.

#### THE COLLEGE OF PRECEPTORS.

##### MEETING OF THE COUNCIL.

A MEETING of the Council took place at the College, Bloomsbury Square, W.C., on June 25. Present: Mr. Charles, Vice-President, in the chair; Mr. Bain, Rev. J. O. Bevan, Mr. Brown, Miss Dawes, Mr. Eagles, Mrs. Felkin, Mr. Hawe, Miss Jebb, Rev. R. Lee, Mr. Longsdon, Mr. Millar Inglis, Mr. Rushbrooke, Rev. C. J. Smith, Mr. Somerville, Mr. Starbuck, Mr. Thornton, Rev. J. Twentyman, Mr. Vincent, and Mr. Wilson.

The Secretary reported that the total number of entries for the Midsummer Certificate and Lower Forms examinations was 3,797, viz., 2,891 for the Certificate examination and 906 for the Lower Forms examination.

He reported that the General Medical Council had decided to continue to recognize the Medical Preliminary examination, under modified conditions, after the close of this year.

The Diploma of Associate was granted to Philip Haskins Hughes, who had satisfied the prescribed conditions.

On the recommendation of the Finance Committee, a grant of £5 was made from the Benevolent Fund, and the Finance Committee were empowered to make certain further grants, subject to the receipt of satisfactory information with regard to the circumstances of the applicants.

The House Committee reported the steps they had taken to protect the interests of the College in view of the projected construction of an underground railway for the service of the Post Office.

A report was presented by the Assistant Masters' Section of the College. The report stated that Mr. W. E. Boyce had been elected Chairman and Mr. Thomas Beach Honorary Secretary of the Section, and that the Committee were engaged in considering a number of matters of special interest to assistant masters. The report was adopted.

Mr. S. Maxwell, M.A., was elected a member of the Council. Mrs. Felkin and Mr. Longsdon were appointed the representatives of the College on the Committee of the Conference Week of Educational Associations.

The following persons were elected members of the College:—

Rev. W. H. Branfoot, M.A. Oxford, Enford Vicarage, Pewsey, Wilts.

Mr. Fred Charles, B.A. Lond., 22 Park Crescent, Church End, Finchley, N.

Mr. M. I. Hemstead, B.A. Lond., Craufurd College, Maidenhead.

Miss M. G. Law, A.C.P., 30 Foster Road, Chiswick, W.

Mr. J. F. P. Rawlinson, J.L.M. Camb., K.C., M.P., 5 Crown Office Row, Temple, E.C.

Mr. W. Robinson, B.Sc. Liverpool, L.C.P., St. Mary's College, Harlow, Essex.

Mr. F. Roscoe, M.A. Oxford, 15 Winterstoke Gardens, Mill Hill, N.W.

Mr. E. W. Stone, A.C.P., 69 Ellerton Road, Surbiton.

The following books had been presented to the Library since the last meeting of the Council:—

By the AUTHOR.—Bevan's St. Paul in the Light of To-day; Exposition of the Collects, Epistles, and Gospels; The Scientific Basis of Religion; Wooing and Wedding; Wood and Wedded and A'; Our English Bible; the History of its Development; The Invasion of England by a Hostile Fleet.

By G. BELL & SONS, LTD.—Guest's Social History of England.  
By BLACKIE & SON, LTD.—Ancien and Magee's Cours de Français; Bell's Balzac's Le Requisitionnaire; Levett's Europe since Napoleon; Oswald's Aus Bismarck's Familienbriefen.

By W. B. CLIVE.—London Matriculation Dictionary, June 1913; Collins's Shakespeare's Henry IV, Part I.

By HACHETTE & Co.—Weekley's Beaumarchais' Le Barbier de Séville.

By J. MURRAY—Proceedings of the Classical Association, January 1913.

By the OXFORD UNIVERSITY PRESS.—Poems of Action; Selected Poems of Lord Byron; English Poems of John Milton; Selected Poems of Shelley; Andrew's Præceptor; Balston's Sheridan's The Rivals; Chute's Atlas Notes; Draper's Galland's L'Histoire des deux Frères du Barbier; Hardy's Introduction to Plant Geography; Herbertson's Clarendon Continental Geography (Asia, Africa and Australia, America); Howarth's Commercial Geography of the World; Longfellow's Hiawatha; Newbigin's Animal Geography, and Elementary Geography of Scotland; Plaisted's Handwork in Early Education; Robeson's Précis Writing; Smith and Soutar's Book of Ballads.  
Calendar of the University of the Cape of Good Hope.  
Calendar of the University of Toronto.

#### PRACTICAL EXAMINATION FOR CERTIFICATES OF ABILITY TO TEACH.

The following is a list of the successful candidates at the Examination held in May 1913:—

##### Class I.

Berggren, G. H. J. A.

##### Class II.

Fox, L. J. F.  
Griffiths, L.

Nunn, C. S.  
Washington, J. H.

### CURRENT EVENTS.

MR. W. N. BAILEY and Mr. C. V. L. Lycett, who are placed in Class I of Part I of the Mathematical Tripos, are regular contributors to our mathematical columns.

A REPORT of the Conference on Scripture Teaching in Secondary Schools, recently held at Oxford, with the Head Master of Harrow in the chair, will be issued shortly in volume form by the Cambridge University Press. Mr. Cradock-Watson, Head Master of Merchant Taylors School, Crosby, is the editor.

THE London School of Economics and Political Science announce two scholarships for open competition in December next, of the value of one hundred guineas a year for two years. One is the gift of Mrs. Bernard Shaw, and is open to women only. The other is the gift of the Constance Hutchinson Trustees.

SEVENTEEN associations have already signified their intention of taking part in the Conference Week organized by the Teachers' Guild and other bodies. The number of meetings to be arranged for causes the "week" to extend from January 1 to 10 of next year. The meetings will again be at the University of London.

UNDER the title of "Audacia" Sir James Yoxall writes a sketch of the eternal feminine in her modern guise in the June number of *Cornhill*. Sir James expresses sympathy for her aspirations, but scolds her rather severely for her methods.

A CELEBRATION in honour of George Borrow will be held at Norwich on July 5.

IN spite of friendly pressure from the Council of Manchester University, Sir Alfred Hopkinson remains firm in his intention to resign the Vice-Chancellorship; but he retains the honorary post of Christie Professor of Law as a token that he is still associated with the University and its friends in the city of Manchester.

THE University of London Press, Ltd., will publish in the autumn "The Poems of Sir Thomas Wyatt," edited by A. K. Forwell, M.A., from the MSS. with variants, commentary, and facsimile reproductions.

MR. W. MELVILLE WILLS has presented to Bristol Grammar School 12½ acres of land near the school to be maintained in perpetuity as playing fields. He proposes also to give a pavilion. The school was founded in 1532, and in recent years has received many benefactions from the late Lord Winterstoke and other members of the Wills family, as well as from other citizens, notably Mr. Fenwick Richards.

SIR SIDNEY LEE has been appointed by the Senate of the Univer-

sity of London to the Chair of English Language and Literature, tenable at the East London College.

THE Council of Manchester University has appointed Mr. William Blair Anderson, Professor of Latin in Queen's University, Kingston, Canada, to the newly instituted chair of Imperial Latin.

AN appeal is being made for a further sum of £50,000 to complete the Home Science and Economics Department of King's College for Women, London.

THE City of Leeds Training College was formally opened last month. The residential portion consists of eight hostels, five for women and three for men. Each hostel accommodates sixty students and all are full. The College authorities are attempting to create the atmosphere of a residential college at Oxford or Cambridge.

THE new buildings of Bedford College for Women, London, are to be opened by the Queen on the 4th of this month.

It is now rumoured that the vacant space on the south side of the Thames, not far from the new County Hall, is to be considered as a possible site for the University of London.

SPEAKING on religion in education, Mr. Balfour said that "division between religious and secular training was fundamentally erroneous. It implied a dualism of object, a divided object, which he was convinced no thinking man, whatever his views were, could really approve."

WE take from the *A.M.A.* some particulars of a school in England which demonstrate the fact that a small school requires a relatively large grant from public funds. The particulars were supplied to applicants for the head mastership. Head Master's salary £100 per annum. House rent free, rates and taxes. Colyton boys pay £1 per term. Boys from outside the parish 30s. per term. About fourteen boys. All boys pay 5s. towards assistant master's salary. Three free scholars per annum from elementary school. Stationery fee 2s. 6d. per term. Games fee 2s. per term, field provided by the fcoffees. Boys provide own books. Fcoffees provide £9 per annum for assistant master. Boys in school last term forty. Saturdays whole holiday.

THE only woman Wrangler in the recently issued Mathematical Tripos was Miss Lorna Mary Swain, daughter of Mr. Edward Swain, solicitor, of Finchley. She was born at Hampstead in March, 1891. She was at the South Hampstead High School, where she gained the Trust Scholarship. She also gained an open scholarship at the Royal Holloway College, and the Mary Ewart Scholarship at Newnham College. Her private tutor was Mr. G. Birtwistle.

IN the article entitled "Syllabus Difficulties" published in our June number the phrase "Irish scholars of the seventeenth century" should read: "Irish scholars of the *seventh* century."

THE QUEEN having expressed a desire to see some decorated wood articles which had been submitted by students of the Regent Street Polytechnic School of Art for the national competition held this year by the Board of Education, a selection of the works from this school was sent to Buckingham Palace and was inspected by Her Majesty. The Governors of the Polytechnic were subsequently informed by the Board of Education that the Queen was greatly interested in the work, and considered it beautifully executed, being most original and artistic in design, and that Her Majesty would be glad to purchase four of the articles if they were for sale. A request was then made by the Governors of the Polytechnic that they might be permitted to present to the Queen these four articles as a souvenir of Her Majesty's visit to the Polytechnic last year. The Governors have now been informed that the Queen will be graciously pleased to accept their offer of these works.

MESSRS W. HEFFER & SONS, of Cambridge, have in the Press and will publish early in September a volume entitled "Cours Français de l'école Perse" (Degré Élémentaire), Séries, Verbes, Ré citations et Chansons. En transcription phonétique et en orthographe usuelle. Par L. C. von Glehn, M.A., et L. Chouville, B. ès L., Professeurs à l'école Perse, et Mlle Rose Wells. The book is a summary of the elementary stage at the Perse School, containing all the essential language forms which are taught and practised in that stage, chiefly as series of actions with questions and answers; and easy dialogues, songs, and nursery rhymes. The pupil is carried through the phonetic stage into that of nomic spelling; all the matter in phonetic transcript is also given in nomic spelling. Typical songs and nursery rhymes are appended as well as a table illustrating tense formation, and tables of verb conjugations and irregular verbs.



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*THE A.M.A. CIRCULAR.*—"It is impossible in a short notice such as this to give anything like an adequate idea of the manifold interest of this book to the teacher of mathematics or science. Each should get a copy and judge for himself; he will never regret the outlay."

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## COLLEGE OF PRECEPTORS EXAMINATIONS, MIDSUMMER AND CHRISTMAS, 1914.

### ENGLISH.

	s.	d.
Shakespeare's <i>Tempest</i> . K. DRIGHTON. ( <i>Junior and Senior</i> )	1	9
— <i>Tempest</i> . Eversley Edition. With Notes. ( <i>Junior and Senior</i> )	1	0
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OF all reforms which the average Englishman is from time to time invited to contemplate, the reform of education is the most distasteful. It repels him for two very intelligible reasons; it involves the admission that he has himself been imperfectly educated, and it is obviously going to cost a great deal of money. Yet, until the average Englishman can be induced not merely to tolerate the prospect of educational reform, but to take an active interest in it, to believe it necessary, and to insist upon it, at least with the same kind of insistence as that which enables Governments to deal freely with other questions upon which the progress and the safety of the nation depend, there will be no driving force behind the Government's policy, and the energy of reformers will be frittered away in irrelevant controversies and dissipated in the mists of compromise. Is it possible to make the active, forcible part of this nation see that a thorough reform of our educational system is not merely conceivable, but practicable; not merely desirable, but essential: that if we are to remain a great nation—great among great nations—this is the one thing that we must do, and do quickly? I am certain that it is possible; but it is possible only on two conditions—that the magnitude of the task that lies before us be faced, and that the successive steps in the accomplishment of that task be demonstrated and understood. We must see

that nothing less is required than the organization of a national system, and we must make up our minds to the first step.

What that first step must be can hardly be doubted. Six millions of children are on the books of our elementary schools; less than two hundred thousand pupils are educated in the secondary schools recognized by the Board of Education. In London, where much admirable work is being done in trade schools and central schools for education beyond the elementary stage, there are still many thousands of children who never get a moment's education after their fourteenth birthday; the Lancashire weaver sends his children into the mill as half-timers at twelve, to work there from half-past five in the morning till noon, after which the teacher may do what he can for weary limbs and brains; and the Workers' Educational Association pick up their education at thirty, when, strange to say, they have forgotten all they learnt, and, still stranger, they have yet ability to learn and enthusiasm for learning. These facts, and facts like these, are dangerous to the very existence of the nation. They are more dangerous than inferior armaments, more deadly than civil strife; for they mean that the intellectual and spiritual growth is stunted and withered, and that if we do not attend to them we must soon become that most inefficient and defenceless of things—an uneducated democracy.

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*Then we must organize our secondary education; and we must do it now.* We have been told that so often, since Matthew Arnold first pleaded for it, that we have got into the way of thinking somehow that we must have done it by this time; whereas in truth, except in two or three places in England, we have not even begun to think what it means. What it does mean before everything else is money; and since it is of no use to offer a man even the most complete and admirable institutions unless there is some chance that he may be willing to pay for them, it is of the first importance that in pleading for secondary education we should make it quite clear that secondary education properly organized is going to cost a great deal of money and that the money can be found. Education is not an article that can be got cheap; or if it is got cheap it must, like every other kind of sweated goods, be got nasty. Public opinion is apt to be horribly misguided in this matter for several reasons, of which two may be mentioned as more prevalent and more misleading than the rest. We do not know what secondary education costs, because it has grown up higgledy-piggledy out of the scattered work of endowed foundations which imposed no fee until their popularity enabled them to attract paying pupils, and then imposed fees which probably never met the cost of education, and certainly have long ceased to do so; we do not know what the main element in the cost of it is, because a variety of reasons have obscured the main fact, *the price that must be paid for the services of a competent body of teachers.* In elementary education that fact has been faced—not adequately, but still, it has been faced, because it has not been obscured by irrelevant considerations such as the prospect of Church preferment or of profitable boarding-houses. If we still underpay the elementary teacher, we do it under no illusion that whether we underpay him or not he *will* get a living somehow; if we shirk our responsibilities towards him, at least we know that we are responsible. In secondary education there is no such clear issue—or rather there has not been hitherto, for to-day there is a very clear issue, and unless it is understood and met in the only way in which it can be met, the first step to a national system will not be taken. We have got to have a national service of secondary teachers; and we have to get it in the only possible way—by paying for it.

#### HOW IS THAT TO BE MET? RATES V. TAXES.

Leaving for a moment the question what exactly is meant by a national service of teachers, let us turn to what is for many of us the most practical and urgent question of all:

How is it to be paid for? I have said that money is wanted. Much money is wanted. It was said recently, by one who knew what he was talking about, that a Government which calculated to reform English education at a cost of five or six millions would be fortunate if its calculations proved adequate. Suppose for the sake of argument that six millions is the sum which would give us what is essential; how can it be found? How can any large sum of money be found for education? The answer to this question depends upon two considerations. The first was picturesquely expressed by Lord Crewe in addressing the members of the Eighty Club, when he said, "The Englishman pays his taxes in sorrow, but his rates in anger." We cannot expect an adequate sum of money to be provided by increasing rates. The difference between rates and taxes is not a merely sentimental difference; and, anyhow, the thing that matters is that Englishmen as rate-payers will not stand and deliver; Englishmen as tax-payers will. The second consideration is that, if we are to have a truly national system, it is as a nation that we must pay for it, not merely as a congeries of districts. It is of the very essence of the problem that the financial question should be solved by using the resources of the nation as a whole—that the money for it should come out of the national income, that reform should not depend upon the willingness of two or three hundred separate Local Authorities to enrage the rate-payer simultaneously, but upon the readiness which the nation as a whole does display to shoulder its liabilities. The next step cannot be paid for out of the rates; it can and must be paid for out of taxes, because it is as a nation that we need it, and as a nation we can pay for it.

#### THE TEACHERS THE NATION'S CARE.

Educational efficiency depends upon two sorts of resources; it has, so to speak, its fixed and its circulating capital; it requires Things and Persons. The things, the material equipment, the schools, belong to the places in which they are: the persons, the teachers, belong to the nation, and ought to be the nation's care. We are far too apt to consider the personal side of education as though it concerned merely those who are now engaged in the work; but what we have to face to-day is not merely the discontent of the thousands of men and women who are told that the work they are doing is vital to the wellbeing of the nation, and in the same breath that it is not worth paying for, but the far more important fact that *we cannot find successors to them at the price.* By starving the teaching profession of to-day we are degrading the teaching profession of the future. If the nation wants a competent teaching profession, the nation must make it worth while for competent men and women to come into it. This is the work of the State, not merely because the State alone can supply the necessary funds, but because what is wanted is a general level of efficiency throughout the country, not a collection of planetary systems in which the most eager and ambitious teachers constantly gravitate towards a few well paid centres. "But," someone will say, "you want to make the teaching profession a branch of the Civil Service, and that will never do." Let us clear our minds of phrases. The teaching profession will not be made a branch of the Civil Service—whether that be a good thing or not—merely by being paid out of taxes. Nothing else need be changed in the relations between teachers and their present employers, except that their present employers may be able to look them in the face without shame. Those who appoint teachers may continue to appoint them: those who dismiss them may continue to dismiss them: those who criticize them may be undisturbed in that beneficent office. The one difference will be that no Local Authority or governing body will be able to plead in excuse for bad teaching that they cannot afford to attract good teachers. It may be objected that if we relieve Local Authorities of their responsibility for the payment of teachers, we shall at once rob them of much of their interest in the educational system and encourage them in extravagance. These fears are groundless. It would be the business of the Local Authority to prove that the State was getting

good value for its money; and that, one would think, would be a no less interesting and certainly a more cheerful business than the present melancholy struggle to persuade or hoodwink the rate-payer into seeing that any money at all is wanted for higher education.

#### THE SCHOOLS THE CARE OF THE LOCAL AUTHORITY.

Besides, if the State relieved the Local Authority of the burden of providing the personnel of education, the Local Authority would be free to attend to just the one part of the business which the rate-payer can see and understand—the provision of the Things that are wanted. The provision and maintenance and equipment of buildings do appeal to the rate-payer; he will even condone extravagance in this direction, for buildings are concrete evidence of the way in which his money has been spent; he can go and look at them and say, "I did this," and it gives him satisfaction. Indeed, the trouble at present is that it gives him too much satisfaction, compared with other things; and since what we need for efficiency is to develop and use the most effective tendency wherever we find it, it seems clear that this pride in visible material things, set up in specific places where they can be seen and admired and felt to be a possession, points as obviously to the entrusting of Local Authorities with the provision and maintenance of schools as their unimaginative neglect of human values points to the reservation of the interests of the teacher to the State. We shall all pay—or most of us will—in both cases; but though it would be too much to expect us to pay joyfully, even for the efficiency of the next generation, there will at least be a chance of our doing it with fortitude, or even, in exceptional cases, with a cheerful spirit.

### II.—ADMINISTRATION.

#### THE MEANING OF ORGANIZATION.

Organization means setting people to work, which involves knowledge of the sort of work that is wanted and of the sort of people who are wanted to do it; it is a process of putting square pegs into square holes and seeing that they fit. In this matter of secondary education, however, something more is wanted; we are dealing with a branch of education whose value is as yet imperfectly realized, and it is essential that in organizing it we should at the same time stimulate interest in it. A single competent office can organize anything up to a certain point; the one thing which it cannot do is to make people in general care very much how the thing is done. If it is the production of safety pins or saucepans, the general demand for saucepans and safety pins will ensure that there is a sufficient output; whatever other difficulties may be involved, there is no difficulty in getting people to use the commodity. But secondary education is a commodity that needs pushing; we have not merely to arrange for the supply, we have to be perpetually enlivening the demand. All that body of serious patriotic opinion, to which Lord Haldane appeals when he tells us that secondary education is the key to the position, has got to be somehow made part of the organization, if we are to have a real continuous driving force for our machinery.

#### WHY SECONDARY?

Let us ask ourselves for a moment what is meant by saying that secondary education is the key to the position; for the answer should help us to see just where we stand in this matter. Why secondary, rather than elementary, or University? The elementary teachers are rightly eager for reforms in the conditions of their work; the Universities are busy—at any rate with each other's deficiencies; has secondary education any such special claim? Those who doubt of the answer may be invited to be sure that they have understood the question perfectly. It is not a question whether there should be 995 or 1,000 secondary schools on the Grant List of the Board of Education, nor whether Latin is a more educational subject than German, nor whether there should be a Royal Commission on the Public Schools. The question is, *What are*

*we going to do with the children of the country while they are growing up?* Are we content that they should go into mills as half-timers at twelve years of age, or that they should become errand boys and office boys at fourteen; and if not, what are we going to do about it? Is there a more urgent question than this? Is there a more difficult question? Is there a question calling for more constructive and administrative ability of every sort for its solution? It would be easy to show from a different point of view that the problem of secondary education is more urgent than any other, because it includes all the others, because without it elementary education has no meaning and University education no root; but the essence of the problem lies in the nation's responsibility for the growing child, during the years when childhood is merging into adolescence and adolescence into youth.

#### A LIVING ADMINISTRATION.

Our first step needs, then, not only to be paid for, but to be planted firmly by means of a wise and a living administration. We must get into that administration—at each point where it can be brought in—all the ability and all the enthusiasm that can be brought to bear upon it. We have not only to provide resources and to construct machinery, but to create and encourage an enlightened public opinion. Mindful of this necessity, we have got to take a broad view of the meaning of administration, to find a place in it for every sort of effective, interested action. The enemy is not error but dullness; mistakes will be made, and the more lively is the interest taken in the work the more are mistakes to be expected; but to eliminate error at the cost of repelling interest is the most fatal error of all. We want in the administration of education as much business capacity as we can possibly induce to take part in it; but we want also, and above all, an understanding of the living principle of education, that it is concerned first and last and always with human lives. That is the elementary lesson which every teacher has to learn if there is to be any quickening spirit in his teaching; and it is the lesson which every educational administrator must learn if the management of education is to inspire as well as to control the movements for which it is responsible. The essence of all good administration is contained in two arts—the art of finding the right people to do things, and the art of letting them do those things in their own way within reasonable limits. It must be confessed that this conception implies an ideal that is singularly difficult to approach; it is so much easier, and requires so much less imagination, to construct a machine for keeping everyone in order and seeing that nobody gets a window mended without the sanction of the Local Authority. The temptation that besets every competent man to insist that everybody shall do things exactly as he would do them himself is a malignant enemy, not to be driven out without prayer and fasting.

#### THE SCHOOL, THE LOCALITY, AND THE NATION.

These points have been insisted upon because they belong to the spirit of the business, and unless we have some adequate conception of what the spirit of the business ought to be, all our arrangements will be futile, and the more careful they are the more futile and even demoralizing will they become. The right and effective way to deal with a dangerous tendency in human nature is to give it employment, but to limit its field of action. How are we to construct an administrative system that shall inspire while it controls, that shall take for its motto *Spiritus intus alit*, "The Spirit gives life," and justify the boast? We have at present in secondary education three controlling bodies—the Board of Education, the Local Authority, and the school governors, with interests which overlap, but are capable of being easily distinguished. Each has its own source of inspiration, the governing body in care for a particular school, the Local Authority in care for a particular district, the Board of Education in care for the interests of the nation as a whole.

### THREE STREAMS OF ENTHUSIASM.

It ought to be possible, by a wise delimitation of the functions of those three bodies, to direct upon the working out of an educational system three great streams of active and determined enthusiasm until the whole field blossoms "as the garden of the Lord." Is this an extravagant dream? There is enthusiasm among us—or at least a capacity for enthusiasm, if only someone could kindle the spark; schools do inspire patriotic ardour; men are proud of belonging to Manchester or Devon; national ideals do stir some hearts. Only give each of these ardours something to do that is worth doing; see that each has its responsibilities, within the bounds of which it is free to use all the energy that it can inspire—aye, and to misuse it, if it must, since there is no safeguard against mistakes so effective as the consciousness of an honourable trust.

### THE SCHOOL AND THE GOVERNING BODY.

An administration so ordered and so inspired would differ in some measure from that to which we are accustomed; but nowhere would the difference be greater or more valuable than in the position of what is now the weakest of the three elements in our system, the governing bodies of schools; and nowhere does success depend more vitally upon the arousing and setting to work of a fresh and enthusiastic spirit. It has been one of the most lamentable and in some ways the most unaccountable failures of our public schools that they have failed so largely in teaching public spirit; that the most fanatic devotion to the scenes of one's own education, which is common enough, has so seldom led to an imaginative desire to be of public use. The consequence is that an enormous quantity of public service which requires just the men who are capable of that kind of devotion, that kind of affectionate, loyal interest in an institution, is either not done at all or done in a thoroughly depressing manner; and that, among other things, education officers get into the way of thinking that governing bodies are an excrescence on the system, whereas they should be part of its very life. They must be part of its life, because they stand for one of the main facts upon which that life depends, the living character of each separate school. A school is not a mere item in the supply of education over a given area; to treat it as such is to cut off one of the chief sources of its influence; and this is true of all schools, whether secondary or elementary, and ought to be better understood than it is by Local Authorities. There is far too much light-hearted rearrangement of the population of elementary schools in large towns, by which the statistics are made to look neater, but the corporate pride, which schoolmasters and managers have laboured to build up and to make into an educational influence, is knocked all to pieces. Now it is of this corporate pride, which makes of the school a personality worthy of affection, that the governing body is the official representative and champion. That the governing body should have a great deal to do is not necessary—one thing it must do, which may have more effect upon the fortunes of a school than all that anybody else does, for it must choose the head master—the important thing is that it should be the official guardian of the spirit of the place, and that it should be clearly understood that this is a very serious and dignified charge, and requires for its fulfilment persons not merely interested in a general way in education, or careful of the rate-payers, but capable of thinking of a particular school and its tradition with something like hearty affection. Governing bodies of this sort will very likely be more difficult for Local Authorities to handle than advisory committees or special sub-committees of education committees with half-a-dozen schools to look after; and so they ought to be. Life is a more complicated thing than machinery.

### LOCAL AUTHORITIES AND SUPPLY OF SCHOOLS.

There is no fear that, under any reasonable delimitation of duties, the Local Authority will lose either in dignity or in effectiveness. Whatever criticism may be passed upon the

management of education by local bodies, it is certain that their responsibility for it—and, perhaps, in particular their responsibility in connexion with higher education—has been of very great value to education, and possibly of even greater value to the Local Authorities themselves. To be responsible for education is itself an education; and if the greatest municipalities sometimes blunder badly, even the least imaginative district council gets through this duty a glimmering of something that is not all squabbling about rates.

The principle that must underlie any delimitation of the work of administrative bodies is the principle that each should be allowed to concentrate upon the job which belongs to it. The job of the governing body is the stimulation and protection of the individual school; the job of the Local Authority is the supply of schools in sufficient numbers, and of the right kind, to meet the needs of the locality.

### CO-ORDINATION BY THE STATE.

The co-ordination of these separate activities, so as to secure a common policy in dealing with common problems, is the special function of the Central Authority. The plea for entrusting the interests of the teachers to the Board of Education rests upon this. The Board must remain the guardian of the general interest, of secondary as of elementary education considered as a national affair. The division of functions must be based upon the discrimination of interests; in the long run that means discovering what people can be induced to care for and setting them to work accordingly. But let us not forget that among "people" we must include children, since unless we make education interesting to children we weave ropes of sand. They also are persons—in the making, no doubt, but still persons, and persons to be reckoned with. Problems of administration and all other apparently dry and mechanical problems will cease to be dry and mechanical if we can, while working at them, keep in mind the central truth that all the energy and enthusiasm that can be brought to bear upon education have but one real aim—the *encouragement* of children.

### IS THERE LOSS OF INDIVIDUALITY UNDER GOVERNMENT CONTROL OF SCHOOLS?\*

THE question whether loss of individuality is a consequence of Government control may be understood in two ways. Twenty or thirty years ago the question might have been taken to mean whether any Government control of higher education, however light and skilful, was not injurious: whether such education should not be left entirely to voluntary influences; whether any education was really worth having that was of another kind.

But Government control may be of different kinds and degrees. It may be minute and complete, as in the case of State schools, where teachers become Civil Servants like clerks in a Government department; or it may be less minute, as in the case of communal schools and recognized private schools; or less minute again, as in the case of English University colleges or Danish Folkehøjskoler, where the control does not mean much more than ascertaining whether the State gets good value for the help given, and the possible withdrawal of the help in case of dissatisfaction.

If the term be here given *par excellence* to that control which is most minute and thorough, the question will then run as follows: Do schools, in the north of Europe, under such a control develop or cramp a teacher's individuality, make his work more effective or less effective?

It is almost impossible to isolate the various kinds of schools for separate observation, when all three are so intertwined.

\* Extracted, by permission, from the Scandinavia and Finland portion of the "Report of an Inquiry into the Conditions of Service of Teachers in English and Foreign Secondary Schools." (London: George Bell & Sons, 1910. 2s.) This report was issued by the Assistant Masters' Association and is now out of print.



so permeated with influences from one another that the final result in each case is such as none of them could have hoped to attain separately. This welding of schools of varying types and origin into one harmonious whole remains an accomplished fact, even though occasionally legislation be so hastily and unhappily devised, so governed by political rather than educational reasons, as to cause confusion and wrangling where before there was peace and ordered progress.

If now the question be asked in Copenhagen or in Christiania. "Is there any loss of individuality of teachers and schools under strict Government control?" it is not unlikely the answer may be, "I never heard of such loss." This was indeed the answer received a few days ago from Christiania. But if the answer is not to mislead it must be enlarged a little, and will then read thus: "I know of no such loss in a city like this, where private secondary schools are five times as numerous as public, where the Rektor of the State school and many of his staff have themselves been educated and have taught in private schools, and where for two generations some of the largest and most important gymnasia have been private schools."

If we then cross the border and seek an answer to the same question in Sweden, where the State school not long ago charged no fee and now charges a very low fee, and where therefore any private school for boys could hardly exist, we find stately buildings, an accomplished and trained staff, elaborate and well-thought-out regulations, coupled with an ingrained conservatism that keeps the schools, except at distant intervals, from adapting themselves to ever-changing conditions. So it was at any rate until 1904. It is hardly too much to say that it is a small group of private schools, good enough to deserve substantial support from the State, that have saved the situation. In an appendix to Bill No. 163 (1908) is a list of some twenty-six different experiments and researches arranged under the three headings of new forms of organization, new practical subjects for the higher school, and new methods of teaching old subjects—experiments that have been instituted by these ten or eleven schools.\* The 1908 Bill became law next year; and in the resolution to give increased support to these schools "stress is laid upon their importance as experiment schools, yet not in such a way that the institution of educational experiments is represented as an indispensable condition for receiving State help." It is enough if "through successful activity in the cause of education they find themselves able in an especial degree to promote general progress" (Riksdagens Skrifvelse, 1909, No. 249). The language is remarkable, for it recognizes that no amount of pecuniary reward can produce genius in school matters any more than in other directions, but that somewhere in the freedom of private schools, if not in nine schools yet in the tenth, such genius is most likely to appear. The Minister of Education further insists—and in so doing carries Parliament with him—that "a sum of money in the future, as in the past, should stand at His Majesty's disposal for the support of schools which are not supported by the commune, and just for that reason are likely" (through their greater freedom) "more than others to serve as experiment schools."

These two extreme instances, or rather groups of instances, seem to make it clear that whenever the State schools are plentifully leavened with the freer ideas and methods of good approved private schools, there need be no fear that individuality will be lost.

Of the communal or municipal secondary school it is not so easy to speak, for it has no such history behind it as the State school. But it has two great advantages over the State school. It is in much closer touch with the locality and the home than the State school is apt to be which has to look to the central Government for pay, promotion, and regulations. And it can also bring primary and secondary education into fitting relation with one another.

But it suffers also from two great defects. Only exceptionally is the head master allowed to have a preponderant voice in filling up the vacancies in his staff. And so long as this is the case, it is scarcely possible for him to get round him a like-minded band of helpers, who will zealously carry out and even anticipate his wishes. Whilst there are some schools in Denmark where the relations are as good as may be desired, there are perhaps more where the staff claim a position of semi-independence and owe their chief no particular allegiance. And sometimes the house is even divided against itself. The outer part is fair enough, the buildings and the salaries; it is the inner part, the harmony and unity of purpose and will, that is too often wanting.

The other deficiency is of a very different kind. The municipality as a provider of education seems unable to take as wide a view of the educational problem as the central Government. In such material concerns as the provision of water and gas it has a useful monopoly, and seems unable to understand that a like monopoly in the provision of education, where such varying needs have to be met, may not be wise. It fights for its own hand, and can scarcely be said to care for the good of education as a whole. However good the schools may be for which it is not directly responsible, however valuable the contribution they make in directions where it itself is weak, it stands to them in no relation of friendly co-ordinating helpfulness, but in one of competition and antagonism; and it competes with them not merely by the excellence of its own schools (a good and wholesome competition), but with all the money resources of the community. It makes its own instruction so cheap as to render all other instruction more and more impossible except for the children of wealthier parents; for it will not take the remedial measures that are necessary to make its own plans entirely good and wise. This is especially the case in the capitals and large cities where social democracy is strong. Social democracy is doing a noble work in succouring the helpless and the oppressed and in its steady advocacy of peace. But its educational policy is far from furnishing that measure of freedom in which individuality can develop and grow. This monopolizing tendency is so clearly marked and so widespread that nothing but the steady moderating influence of the central Government can be of any avail. When there are exceptions to this monopoly, it is due to the intervention of the State, which often promises a grant to a school on condition that the commune provides a contribution also. And in many cases the commune follows the State initiative; not infrequently it declines. And where it declines there are instances in Sweden (as we saw) and in Denmark where the State comes to the rescue and makes its own grant the larger. The State in Norway also does not make its grants to private training colleges\* or to private people's high schools dependent on grants from the Local Authority; nor does the State in Finland in its liberal support of recognized schools for boys and girls.

The third and largest factor in the public supply of higher education in all these countries, except Sweden, is the recognized private school. A private school may be the best or worst of schools; but recognition is a winnowing process that leaves little but grain behind. This third factor has one crying defect from which the other two are more free; and it has several striking merits in a much higher degree than they. It can come much closer to the home than the communal school; it has a greater expansive force and can penetrate to nooks and corners of the land to which neither State school nor municipal school can hope to come; and through its greater freedom (which is, after all, only a relative freedom) it possesses the lion's share of new plans, ideas, and methods which, after due trial, pass into general currency. It is neither private nor public, but a strong blend of both. It is public because it passes a public test and conducts its pupils by graded steps to the common goal to which the State schools are proceeding. It is private because it generally belongs to a private individual, who has the ap-

\* For a full list of these twenty-six experiments, see *Educational Times*, December 1909.

\* Board of Education's Special Reports, Vol. XVII, page 61.

pointment of his own staff and can make of his school an ordered effective unity, and is in the thousand and one details of school life tied down, much less than usual, to a prescribed routine. There is nothing yet quite like it in England. Its nearest analogue is not the private school as we know it, but the so-called "public school," which, being controlled neither by central nor Local Authority, should rather be called private than public.

If in these northern countries one asks for great personalities, like Arnold and Thring, whose activity has affected every corner of the country and is spoken of in distant lands, they are to be found in one form or another of private educational activity—in the great Gymnasia of Christiania, in the People's High Schools in Denmark, or the Sloyd Seminary at Nääs. But salaries are much too low. Even an Adjunkt with his long training gets no more than a foreman mechanic, and in private schools it is worse.

There are only two ways of bettering matters, by raising the fees and by an increased subvention from the State. If fees are raised the school is confined to the well-to-do—becomes a class school. It is the second way that Sweden, Finland, and (more slowly) Denmark are taking. Both economy and efficiency are thereby promoted. However liberal the grants to a good private school may be, they always fall below those to a public school; and, as we have seen, for such grants the schools make a rich return.

State schools, municipal schools, private schools—they all have striking faults and characteristic merits, faults that can be neutralized or minimized, merits that can be shared and transferred only by the fullest and most constant co-operation—a co-operation that may be found realized in no ordinary degree in the North of Europe. "Variety, set in a framework of national organization," says Prof. Sadler, "seems to me the right ideal and a practicable ideal. The State should aim at encouraging educational freedom, not at any restriction of it. It should recognize—and, when needful, aid—every kind of efficient and needed school."

#### ASSOCIATION OF ASSISTANT MISTRESSES.

THE annual Summer Meeting of the Association was held at Wycombe Abbey School, on Saturday, June 7. The President, Miss I. M. Drummond, of the North London Collegiate School, was in the chair.

Miss Drummond, in her short opening address dealing with the work of the Association during the present year, touched on such diverse questions as Registration, Pensions for teachers in Secondary Schools; the advantages and disadvantages of the "Mixed School" system as it affected the interests of the girl pupil; the possibility of the use of Labour Exchanges as registry offices for teachers; and the tendency in some of the Secondary Schools of the Municipal and County type to shorten school holidays. Since the January meeting the Information Sub-Committee had collected statistics from typical schools represented in the Association with regard to the length of school holidays. These had been tabulated under three heads: (1) County and Municipal; (2) Endowed; (3) Proprietary. In the first group the average length of holidays was found to be 12·1 weeks; in the second, 13·3 weeks; and in the third, 14·1 weeks.

A paper on some of the suggestions contained in the Report of the Consultative Committee on Examinations in Secondary Schools was then read by Miss Laurie, Ladies' College, Cheltenham, who dealt first with the multiplicity and overlapping of examinations that at present exist, and approved of the suggestion—supposing it could be satisfactorily carried out—to limit the external examinations taken in secondary schools to two: the first to be confined to pupils of an average age of sixteen who have not been less than three years in one or more efficient schools. The standard of this examination would be about that of the Matriculation for

Universities. On passing this, a certificate, known as the Secondary-school Certificate, would be awarded. The second examination would be taken at the age of eighteen, a more specialized curriculum being permitted; the certificate given would be called the Secondary-school Higher Certificate. The main difficulty would be to devise an examination which would, on the one hand, satisfy all the different types of secondary schools that now exist; and, on the other, maintain a certain recognized standard throughout the country. It was hardly possible to agree with the Report that "in the general results of the examination as a whole the risk of variations would be almost eliminated."

The combining of inspection with examination was next discussed. It was urged that the Board of Education *must* inspect, and the question then was: Who should examine? The suggestion of the Consultative Committee that an Examining Council should be established does not seem an altogether satisfactory solution. Dr. Keyne's opinion "that the best arrangement seemed to be for the Universities to examine and for the Board of Education to inspect," was more likely to offer a possible solution, and this need not prevent the much closer co-operation between the inspecting and examining bodies, the need of which is so rightly emphasized.

The co-operation of the teacher with the examiner was treated at length. With the two main recommendations of the Report, that there should be a school record, and that the teacher should be represented on the examining body, Miss Laurie entirely agreed. She was also glad to find that the sending up of questions by the teacher to the examiner was not advocated; for, among other reasons, her experience was that such a method made it more difficult to gauge accurately the knowledge of each individual.

The paper ended with the expression of a hope that Authorities would be careful not to increase the clerical work of teachers more than was absolutely necessary. It was essential that teachers should be fresh and not lose their power of inspiring through too great attention to details of organization.

No formal resolutions were put at the conclusion of Miss Laurie's paper, but the sense of the meeting was taken on certain points, and it was generally agreed that: (1) It is desirable to limit the public examinations taken in Secondary Schools to two; one to be taken at the age of sixteen, and the other at the age of eighteen. (2) There should be no special Examining Board established, but the Universities should continue to examine. (3) Teachers should co-operate with the examining bodies, either by themselves acting as examiners or by sitting on the Revising Board.

The meeting closed with a very cordial vote of thanks to Miss Whitelaw and her staff.

#### THE EDUCATION OF WILLIAM JOHN.

WILLIAM JOHN, the eldest of five, and the pride of his mother, was no mere boy in her eyes. Often has she told me of his rare intelligence—she had noticed it daily since about the third month of his career on earth—and until very recently she had regarded him as one of the very elect. But *that was* before the events which have so recently shaken her ideas of boys to their meanest beginnings.

Apart from her mistaken views concerning William John, she is intelligent and takes a keen interest in educational problems, though like all amateurs who dabble in that thorny complexity she has a chaos of ill-balanced and exaggerated conceptions which, during the time that they emerge into consciousness, hold sway to the exclusion of all else.

It was Tolstoy who set her feet on the wrong path. For she saw somewhere in his writings that freedom is of the essence of child development, and that only the unrestricted child can develop his personality to the highest degree, and so allow his mentors to diagnose his mental life aright. From that simple beginning grew the ultimate ruin of William

John and my temper, not to mention the four younger brothers. The boy gloried in his new-found liberty, and became a very dare-devil in developing the all-precious personality within him. I, as the next-door neighbour, sharing a plot of land with his father, was the chief sufferer, and my cat and windows, my plants and flowers, were in everlasting trouble. Remonstrance was of no avail: the woman was obsessed with her idea, and talked me down from behind it; and her sincere affection for the kiddies made me feel like a cad whenever I went with a fresh complaint. So I suffered—and waited.

Her scheme broke down in one particular, as it seemed to me. If the child's developing personality should prove evil, where was the remedy? (I used to hint at such a possibility in a very half-hearted way, though I was convinced that the thing had long since come to pass). But the mother would never admit the argument, and with the tact of a minister at question time would refuse to discuss a hypothetical case until the necessity should arise.

From her own point of view there was one drawback to the scheme—her husband. A man of business, prompt and methodical, he measured all life by rules and maxims, and had no respect for her idealistic philosophy. So there had to be some compromise during those few moments of the children's day that he was about, and during that period a deceitful restraint was placed upon them which contrasted but ill with the freedom that followed.

I am bound to admit, prejudiced as I am, that the theory proved to have something of good in it. William John *did* increase in initiative and resource. He could devise schemes in a few minutes that would have taken adults many months to beget, and his powers extended also to the practical difficulties that were raised daily. Yet this very development of William John implied the degradation of the younger fry—the more he took upon himself, the more servile did they become; there was no room for any rivalry in resource. So it was that they gradually became his very bond slaves, without any personality of their own, and a timidity in his presence that grew every day more flagrant. He ruled them without mercy, and they were fast losing all vestiges of that freedom which their mother believed they were sharing, but of which William John had seized the whole.

Of course the inevitable happened. William John succumbed to the temptation of all tyrants by attempting to win more power for himself. He raised the standard of revolt against his mother. His plan had all the simple daring and lack of foresight that characterize a boy's prank, for he saw only the immediate issues. He procured the key of the front room, sent his mother there on some pretence, and locked her in. Then he arranged his triumph. He ordered his satellites to serve him up the best meal they could produce: to ransack pantry and cupboard and bring all the stores they could find. Meat and pasties, fruit and custard, jam and cake—all were brought in to this new potentate, who regaled himself with the dangerous excess that marks boyhood's appetite. The others were kept busy the while, and were threatened with the penalty of speedy punishment when they showed any signs of slackness.

Orders were given and countermanded in a most arbitrary fashion. When William John was at length satisfied, the remains of the feast were returned to their place, and the youngsters were called off to the garden to await the tyrant's further pleasure. I had especial difficulty that afternoon in keeping my preserves unharmed, though I was unaware of the state of affairs indoors.

That evening brought the result that I long desired. William John released his mother before his father got back, but to all her entreaties he remained sullenly indifferent. It was one of the youngsters who brought about the climax. A careless word from him, and the father was soon keen on the scent of the guilty day. The rest was a matter of minutes, and William John was brought down to earth again with startling suddenness.

The subsequent results are all to my advantage, and I sincerely believe that William John himself is no loser. For I now enjoy peace in my garden, and the mother listens to my views concerning the education of children with greater deference than of yore: on occasions, indeed, she even tries to follow out my advice.

## REVIEWS.

*The Public Schools and the Empire.* By Herbert Branstons Gray. (6s. net. Williams & Norgate.)

The purpose of this handsome volume of 374 pages is to demonstrate the need for some form of external control over all stages of education in Great Britain. "Though no friend of State interference in general," the author is led to the conclusion that the interests of the Empire demand that the State should assume the direct control of secondary and University education in these islands, since the vested interests involved are so powerful that we cannot reasonably hope for reform from within. While England needs waking up in all departments, Dr. Gray thinks that nowhere is rousing so much needed as in education. He has very special claims to speak on such a subject. He was himself a pupil at a public school, had all the training that Oxford could give him, spent a lifetime as a public-school master, and has had special knowledge and experience of how the product of the public school fares in our Dominions beyond the Seas. Criticisms that might be regarded as in bad taste if they came from an external source may be justifiable when they come from within. It is not to be expected that the orthodox schoolmaster and University don will sit down calmly under the criticism here lavished upon them. But they must at least admit that it comes from one who knows the conditions of the problem.

The first four chapters deal with the general problem of the public school and the public discontent with it. Two chapters follow on Educational Ideals and the Public School System. The Educational Condition of the Public Schools during the last Fifty Years accounts for three chapters. The Boarding School type gets three chapters and the Day School one. Religion in Public Schools has a chapter to itself. Three chapters are devoted to the Universities, and the book closes with three constructive chapters under the title "Aedificatio de Novo." It is with the final three chapters that the ordinary English reader will have least sympathy, for we are here in the very midst of real educational theory. Dr. Gray does not make any substantive contribution to the sum of this theory, but he gives a sound exposition and makes many practical applications. It is little short of startling to find a schoolmaster with such a career behind him dealing respectfully with what most of his fellows regard with profound distrust. He wisely builds upon one of the best books on education published of late years—W. C. Bagley's "The Educative Process." The main value of the present work indeed consists in Dr. Gray's convincing argument in favour of ideas and initiative as opposed to our stolid English reliance upon established convention and ancient tradition. The appeal is not to the expert in education—to whom indeed the book has nothing new to offer—but to the intelligent layman and in particular to the conscientious parent. In this appeal we wish our author all success, as there is nothing more needful in education at the present moment than the formation of a sound public opinion on the subject.

It is because we recognize the importance of Dr. Gray's work that we have such genuine regret in being forced to find fault with his mode of presentation. His style will alienate many who are in sympathy with his argument. His pages are burdened with clichés, quotation marks, and classical tags. Almost every educational catchword is to be found here—in many cases repeated over and over again. In several places our author descends to a play upon words that will certainly not please readers who have a serious interest in the important matters under discussion. The foot-notes are too numerous and not always helpful. If the reader wishes to keep clearly before him the main line of argument he will be well advised to omit them altogether on a first reading. They may be read separately afterwards with some profit and a good deal of interest, for they have nearly all an intrinsic attraction. It is because we wish the book to be read that we prepare the reader lest he should not persevere in face of the discouragement he will meet. We wish the

book well and we hope that many parents and educational administrators will profit by Dr. Gray's experience and insight.

"The Cambridge History of English Literature."—Edited by A. W. Ward, Litt.D., P.B.A., Master of Peterhouse, and A. R. Waller, M.A., Peterhouse. Vol. IX. *From Steele and Addison to Pope and Swift*. (9s. net. Cambridge University Press.)

The modern interest of this great History is rapidly and decisively developing, now that Dryden is left behind and the germs of journalism and of the novel begin to shoot. There were journalists before Defoe, whose literary career is traced in the first chapter by Prof. Trent, of Columbia University, New York. From them Defoe borrowed freely both topics and ideas, but his vigorous mind soon expanded the field of interest and devised methods of greater practical efficiency. Abandoning the dialogue form and the partisan tone of his predecessors and immediate contemporaries, he adopted a straightforward style, cultivated moderation, and aimed at accuracy, his purpose (at first, at least) being to secure acquiescence rather than to strengthen prejudice. The extraordinary number and variety of his pamphlets and tracts, in spite of his other occupations, and in spite of imprisonment and the pillory, testify to his indefatigable industry and versatility, if also to his unscrupulousness. Dr. Trent's psychological analysis goes deeper than usual, and it is probably right: "Within the arena of journalism Defoe was a treacherous mercenary, who fought all comers with any weapon and stratagem he could command; outside that arena he was a pious, philanthropic, fairly accurate, and trustworthy man and citizen." "With all his faults, he was probably the most liberal and versatile writer of his age; with his comparative freedom from rancour, he seems a more humane figure than any of the more aristocratic men of letters that looked down on him, including Pope and Swift; though an Ishmael, he managed to secure comfort for his family and a partial amnesty for himself in his old age; and he wrote the most authentic and widely read classic of his generation"—"Robinson Crusoe." During the last decade of his life, Defoe, while still busy in journalism and pamphleteering, became primarily a writer of books, and especially of fiction—an evolution that Dr. Trent outlines with much discernment.

Mr. Harold Routh deals with Steele and Addison in a well informed and discriminating essay, though he cannot be said to have essentially advanced beyond the able analysis of the late Prof. Minto. Prof. Bently capably handles the difficult subject of Pope. He is no doubt right in deciding that Pope, "rather than having been the originator of a movement, represents its climax, as he carried to completion a work already begun": "with Pope, the classical spirit in English poetry reached its acme." He analyses firmly and felicitously the psychology of the man and the art of the poet. Mr. G. A. Aitken also has a thorny subject to handle in Swift, whose writings are specially connected with the character and the circumstances of the writer. He sketches Swift's career, and judiciously outlines and characterizes Swift's various works, but he fails in the probably hopeless effort to get at the heart of the mystery of the contradictions in Swift's life and writings. Physical and mental defect, early poverty and dependence, disappointment and embitterment, inordinate pride and arrogance; these, if largely true, are not new explanations nor do they always go to the root of the matter with entire conviction. Among the lesser prose writers, who are also treated by Mr. Aitken, we gladly welcome the special attention he devotes to Dr. Arbuthnot, who was so "lavish in the assistance which he gave to his friends, and took little trouble to preserve his work or to ensure its receiving recognition." The lesser verse writers are adequately summarized by Mr. Thomas Seccombe and Prof. Saintsbury. The historical and political writers, among whom the outstanding figures are, of course, Burnet and Bolingbroke, are most capably handled by Dr. A. W. Ward; and a chapter on *Memoir-Writers (1715-60)*, by Mr. Seccombe, may be regarded as a useful appendix. The *Writers of Burlesque and Translators* fall to the lively pen of Mr. Charles Whibley.

The philosophy of the period—the work of the Metaphysicians, the Deists, and the Moralists—is lucidly reviewed

and fairly estimated by Prof. Sorley. It was a fruitful period in English thought, and Locke's influence was felt throughout, more or less. The most prominent figure is, of course, Berkeley; but all the Moralists treated—Clarke, Shaftesbury, Hutcheson, and Butler—receive adequate individual consideration. Dr. Caroline Spurgeon, of Bedford College, writes a very fresh and suggestive chapter on William Law and the Mystics. "Undoubtedly," she says, "Law's 'Appeal,' if it was more widely known, would, in the twentieth century, win the response for which it has been long waiting." The Scholars and Antiquaries—and the most notable scholar is, of course, Bentley—are commemorated by Mr. James Duff Duff, of Trinity, and Mr. H. G. Aldis, of Peterhouse. Mr. T. F. Henderson displays the results of wide and detailed study in treating of Scottish Popular Poetry before Burns. The concluding article, devoted to Education, is from the pen of Prof. Adamson, and it is one of the very best in the volume, well informed and judiciously critical. "Incidentally, the story exhibits the dependence of education upon national life, and the mischief wrought in the body politic when education is permitted to develop in a partisan atmosphere."

*Non-Euclidean Geometry.* A Critical and Historical Study of its Development. By Roberto Bonola. Authorized English Translation, with additional Appendixes by H. S. Carslaw. (Pp. xii, 268. 2 vols. net. Chicago: The Open Court Publishing Co.)

Not so long ago it would have seemed a safe assertion that the celebrated researches of Gauss, Lobatchewsky, and Clifford in the recondite field of non-Euclidean geometry could have no practical importance for the teacher of mathematics in schools. At most they might be regarded as affording material for a popular lecture intended to show a school debating society that even mathematical science has its fairy tales. Recent discussions upon methods of teaching geometry to beginners have proved, however, that these apparently remote inquiries have a close bearing upon pedagogical questions, and we begin to see them quoted both by the critics and the defenders of the circulars of the Board of Education! It was, therefore, a happy thought of Prof. Carslaw to make available for English readers this treatise by the brilliant young Italian geometer whose untimely death a couple of years ago was a heavy loss to mathematical culture. The subject cannot be mastered without serious effort, but Bonola treated it in so clear and relatively non-technical a way that he has put a sound knowledge of its history and results within the reach of all who have received an elementary mathematical training. Many teachers who read the book will be in a position to appreciate, as they could not have appreciated before, the true significance of the perennial discussion about Euclid's doctrine of parallels. In addition, they will gain from the historical section several ideas for the direct improvement of (page 10) a proof of the angle-sum property of the triangle due their lessons on elementary geometry. For example, there is to the Arabian geometer Nasir-Eddin (c. 1250), which seems of great value not only on account of its simplicity, but also because it directs the pupil's attention so naturally to the assumptions about space which must underlie any proof of this fundamental theorem.

Prof. Carslaw's interest in, and expert familiarity with, non-Euclidean geometry are well known, and his own additions to Bonola's work add sensibly to its value.

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*Essentials of Early European History.* By Samuel Burnett Howe, A.M., Head of the Department of History in the Plainfield High School, Plainfield, New Jersey. (7s. 6d. net. Longmans.)

This is a very elaborate book, well furnished with maps and plans, charts and genealogical tables. It attempts to outline the history of the ancient Mediterranean world, Greece, Rome, the German kingdoms and the Empire and the Papacy, England down to the Stuarts, Colonial England, and France to the close of the reign of Louis XIV. The meagre summary really implies previous knowledge in much fuller detail, and then it is scarcely necessary. The student is indeed assisted by "reference readings," mainly in American books, and is guided by "Questions and Topics for further study." Assuming the plan of the work, we suppose it is about as well executed as could reasonably be expected. Of course a writer with such a wide subject is driven to reliance upon other writers, whom he may fail to understand, or who may in any case mislead him. Thus Mr. Howe makes John "sign" the Charter; he admits a stupid picture showing "Justinian dictating his law codes to his lawyers"; he picks up the absurd designation of Edward I as "the English Justinian," and makes the very misleading statement that Edward "as the Hammer of the Scots brought Scotland under his sway." Still, it is an attractive book, and may operate as a stimulus to readers. The maps and other illustrations are very welcome.

*A History of Europe.* By A. J. Grant, of King's College, Cambridge, Professor of History in Leeds University. (7s. 6d. net. Longmans.)

The reader of this work is not to expect a collection of dates and facts, or a treatment of European history merely from the British point of view. "If the history of Europe is worth study," says Prof. Grant, "it is because the subject has a unity in itself, apart from that which belongs to the life of any particular State. Its great service is to correct national egotism, to allow of unbiased comparisons between systems of life and government, and to emphasize the interdependence of the different elements of the commonwealth of Europe." This is the true historical standpoint. The difficulty lies in the adequate handling of such a mass of matter within the scope of a single manageable volume; and this difficulty Prof. Grant has ably surmounted by very deliberate selection of the essentially important points and by presenting these in a clear and fluent narrative. The volume is divided into three parts—the Classical World, the Middle Ages, and Modern Europe—well balanced throughout, and treated with competent knowledge and sound judgment. The references at the end of each chapter are most useful for further study. It is a masterly work. The numerous maps, coloured and uncoloured, with plans in the text, are of unusual excellence and value.

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*Grundzüge der Ethik.* By Else Wentcher. (1.25 Mark. Leipzig: Teubner.)

The author's purpose is to bring the laws of Psychology into their true relation to the recognized principles of Ethics. Complete success is not to be hoped for in a book of 116 pages. But within his limits he does excellent work. The treatment of the will is particularly good, and the final chapter on the ethical basis of Pedagogy is worthy the serious attention of all concerned with the training of teachers.

### LATIN.

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*Selections from Cicero.* By W. D. Lowe, M.A. (1s. 6d. Clarendon Press.)

Mr. Lowe's selections are not numerous, and very much simplified: they are taken from the Letters, one or two of the Treatises, and chiefly from the "Catiline" and "Verres." The notes are pretty full, and there are English exercises at the end. The book should be a useful one, and should help to make the name of Cicero less of a bugbear to the average boy.

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MATHEMATICS.

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- (1) To write on one side only of the paper.
- (2) To avoid putting more than one piece of work on a single sheet of paper.
- (3) To sign each separate piece of work.

A General Formula of Integration.

By F. TAVANI.

Let us consider the expression  $\int_C \left\{ \left( \frac{1}{z-x} - \frac{1}{z-y} \right) \right\} f(z) dz$  taken round a closed curve C containing the real points x and y, and such that  $\int f(z) dz$  be a holomorphic function all over the plane.

As the only poles of the function under the sign of integration are x and y, we have, for the principle of the *residus*, that

$$\int_C \left\{ \left( \frac{1}{z-x} - \frac{1}{z-y} \right) \right\} f(z) dz = \int_y^x f(z) dz = F(y) - F(x).$$

Let us suppose that the rayon of the curve C of integration becomes  $\infty$ : the first member of the above relation becomes zero because the condition  $\lim_{z \rightarrow \infty} \left\{ z \left( \frac{1}{z-x} - \frac{1}{z-y} \right) \right\} = 0$  is satisfied,\* and this condition still remains satisfied if we replace the variables x and y by the quantities (a-x) and (a-y), so that, as the rayon of the curve of integration becomes  $\infty$ , we obtain

$$F(a-x) = F(a-y) \text{ and } F(y) = F(x);$$

therefore  $F(x) \cdot F(a-x) = F(y) \cdot F(a-y)$ .

This relation is sufficient to determine the form of F. In fact, by putting  $a = x + y$  and introducing the hypothesis  $F(0) = 1$ , the last relation becomes  $F(x) \cdot F(y) = F(x+y)$ ;

therefore  $F'(x)/F(x) = F'(y)/F(y)$ .

Hence  $F'(x)/F(x) = \kappa$  and  $F'(y)/F(y) = \kappa$ .

Therefore  $F(x) = e^{\kappa x}$  and  $F(y) = e^{\kappa y}$ .

Thus the integration is done with a general method, independent from the use of any particular function, as it is necessary in the particular methods which, for the integration, presuppose the knowledge of the primitive functions.

17479. (Professor K. J. SANJANA, M.A.)—Denoting by H(n, -r) the sum of those homogeneous products of two dimensions of the n quantities  $x_1, x_2, x_3, \dots, x_r, \dots, x_n$ , which do not contain  $x_r$ , prove that the eliminant of the n + 1 equations

$$H(n, -1) = a_1^2, \quad H(n, -2) = a_2^2, \quad H(n, -3) = a_3^2, \quad \dots,$$

$$H(n, -n) = a_n^2, \text{ and } \sum x_r x_s = 0$$

is  $(n-2) \sum a_r^4 - 2 \sum a_r^2 a_s^2 = 0$ , r and s having different values from 1, 2, 3, ..., n.

Solution by C. M. ROSS, B.A.

The first n equations may be written

$$x_2^2 + x_3^2 + \dots + x_n^2 + x_2 x_3 + x_3 x_4 + \dots + x_n x_2 = a_1^2 \quad (1),$$

$$\text{and } x_1^2 + x_2^2 + \dots + x_n^2 + x_1 x_2 + x_2 x_3 + \dots + x_{n-1} x_1 = a_n^2 \quad (n).$$

Put  $M^2 = x_1^2 + x_2^2 + \dots + x_n^2$ ;

then  $M^2 = (x_1 + x_2 + \dots + x_n)^2 - 2 \sum x_r x_s$ ;

hence  $M = x_1 + x_2 + \dots + x_n$  [by equation (n + 1)].

Again, (1) may be written

$$M^2 - x_1^2 + \sum x_r x_s - x_1 [x_2 + x_3 + \dots + x_n] = a_1^2,$$

i.e.,  $M^2 - x_1 M = a_1^2$ .

Similarly,  $M^2 - x_2 M = a_2^2$ ,

and  $M^2 \dots x_n M = a_n^2$ .

Adding this last set of equations, we have

$$nM^2 - M(x_1 + x_2 + \dots + x_n) = \sum a_r^2;$$

therefore  $(n-1)M^2 = \sum a_r^2$  ..... (A).

\* Forsyth, *Theory of Functions of a Complex-Variable*. Ed. 1893, § 24, p. 36.

Also  $x_1^2 M^2 = (a_1^2 - M^2)^2$ ,  
 $\dots \dots \dots$   
 $x_n^2 M^2 = (a_n^2 - M^2)^2$ ;

therefore, by addition,  $M^4 = \sum a_r^4 - 2M^2 \sum a_r^2 + nM^4$ , since  $M^2 = \sum x_r^2$  ..... (B)

From (A) and (B) we have  $(n-1) \sum a_r^4 - \{ \sum a_r^2 \}^2 = 0$ ;

i.e.,  $(n-2) \sum a_r^4 - 2 \sum a_r^2 a_s^2 = 0$  is the required eliminant.

17424. (A. M. NESBITT, M.A.)—The curve

$$y^3 - x^3 + 3ax^2 - 3b^2y = 0$$

has a double point if  $b^3 = 2a^3$ . Trace it (1) with this relation holding true, (2) as  $b^3$  varies from 0 to a value greater than  $2a^3$ .

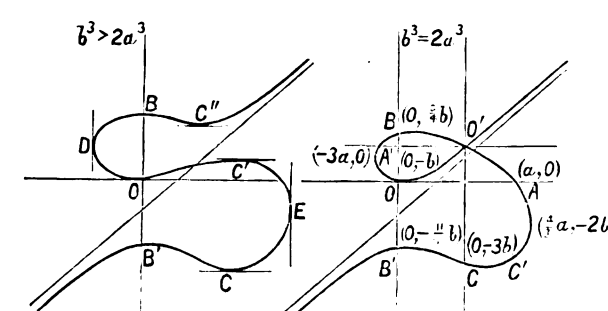
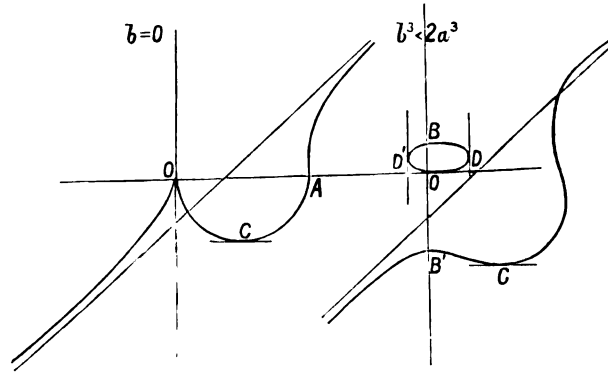
Solution by the PROPOSER, FREDERICK PHILLIPS, F.C.P., B.Sc., F.C.S., and W. N. BAILEY.

We have  $u_x = -3x(x-2a)$ ,  $u_y = 3(y^2 - b^2)$ , which has a double point at  $(2a, b)$  provided that  $b^3 = 2a^3$ , and not otherwise.

Case (1). Change origin to double point, we get  $y^3 - x^3 - 3ax^2 + 3by^2 = 0$ ,  $4b = 5a$  (q.p.).

Asymptote is  $y - x = a - b$ , which cuts curve at  $x = \frac{1}{3}a$ ,

$$u_x = -3x(x+2a), \quad u_y = 3y(y+2b),$$



tangents at origin  $5y \pm 4x = 0$ . Curve is parallel to x axis at  $x = -2a$ ; therefore  $y^3 + 3by^2 = 2b^3$ ; which yield  $y = -b$  or  $-b \pm b\sqrt{3}$  (say  $3b/4$  and  $-11b/4$ ). Curve is parallel to y axis at  $y = -2b$ ; therefore

$$x^3 + 3ax^2 = 8a^3.$$

This has one real root  $x = 4a/3$  (q.p.) Curve goes through  $(a-b)$ . Hence it is as depicted (Fig. 4).

When  $b^3 \neq 2a^3$ .

$$u_x = -3x(x-2a), \text{ which vanishes for } x = 0 \text{ and } x = 2a,$$

$$u_y = 3(y^2 - b^2) \text{ ,, ,, ,, } y = \pm b.$$

To find the abscissae of points when  $u_y = 0$ , we have

$$x^3 - 3ax^2 \pm 2b^3 = 0;$$

which has for the upper sign three real roots unless  $2a^3 < b^3$ ; for the lower sign only one real root.

Further, curve cuts asymptote  $y = x - a$  at

$$\frac{a(a^2 - 3b^2) - 2a^3}{3(a^2 - b^2)}, \quad \frac{-2a^3}{3(a^2 - b^2)}.$$

Hence y is negative when  $a > b$ , positive when  $a < b$ ; x is negative if  $b^2 < a^2 < 3b^2$ , positive otherwise. If  $a = b$  there is an inflexion at  $\infty$ . The line  $x = 2a$  cuts the curve in one real point if  $2a^3 > b^3$ ,



in two coincident points if  $2a^3 = b^3$ , and in three real points if  $2a^3 < b^3$ . The tangent at  $(3a, 0)$  lies always "to the West of North" ( $dy/dx = -3a^2/b^2$ ) except when  $b = 0$ ; and its slope towards the  $x$  axis increases with  $b$ .

**17154.** (C. H. HARDINGHAM.)—In any polygon there are two sides whose ratio is less than 2. In the quadrilateral this ratio is  $< 1.8392868$ , in the pentagon  $< 1.9275621$ , in the hexagon  $< 1.9659482$ , and in the heptagon  $< 1.9835829$ .

*Solution by the PROPOSER and W. J. ASHDOWN.*

Let 1 and  $r$  be the sides most nearly in a ratio of equality,  $r$  being  $> 1$ , and let the greater sides be

$$r^2 + \alpha, r^3 + \alpha r + \beta, \dots, r^m + \alpha r^{m-2} + \beta r^{m-3} + \dots$$

The smaller sides are  $< 1/r, 1/r^2, 1/r^3, \dots$

Hence as the greatest side is  $<$  the sum of the rest

$$r^m + \alpha r^{m-2} + \beta r^{m-3} + \dots$$

is  $< r^{m-1} + \alpha r^{m-3} + \beta r^{m-4} + \dots + r^{m-2} + \alpha r^{m-4} + \beta r^{m-5} + \dots$

$$+ \dots + r^3 + \alpha r + \beta + r^2 + \alpha + r + 1 + 1/r + 1/r^2 + 1/r^3 + \dots;$$

therefore  $r^m + \alpha(r^{m-2} - r^{m-3} - r^{m-4} - \dots - r - 1)$

$$+ \beta(r^{m-3} - r^{m-4} - \dots - r - 1) + \dots,$$

is  $< r^{m-1} + r^{m-2} + \dots + r^3 + r^2 + r + 1 + 1/r + \dots$

Now, if  $r$  is  $> 2$ , the coefficients of  $\alpha, \beta, \dots$  will all be positive, and therefore  $r^m < r^{m-1} + r^{m-2} + \dots + r + 1 + 1/r + \dots$ , which is impossible if  $r > 2$ ; therefore  $r < 2$ .

Again, if one of the coefficients of  $\alpha, \beta, \dots$  is negative, we can obtain from it the inequality above, which therefore holds in every case. Hence in a polygon of  $n + 1$  sides we have

$$r^n - r^{n-1} - r^{n-2} - r^{n-3} - \dots - r - 1$$

negative. For the quadrilateral, solving  $r^3 - r^2 - r - 1 = 0$ , we find

$$r < 1.83928675521 \dots$$

For the pentagon, solving  $r^4 - r^3 - r^2 - r - 1 = 0$ ,

$$r < 1.9275620 \dots$$

For the hexagon and heptagon,

$$r < 1.9659481846 \dots \text{ and } 1.983582843 \dots$$

**17481.** (C. E. YOUNGMAN, M.A.)—Normals meeting at  $N$  and tangents meeting at  $T$  are drawn at any two points on a tricusp; prove that the third normal from  $N$  is parallel to the third tangent from  $T$ .

*Solutions (I) by R. F. DAVIS, M.A.; (II) by Professor K. J. SANJANA, M.A., and T. P. TRIVEDI, M.A., LL.B.*

(I) Using circular co-ordinates with the centre of the tricusp as origin and a diameter through one of the cusps as the axis of reals, the co-ordinates of any point  $P$  are  $\frac{2}{3}(2t + 1/t^2)$  and  $\frac{2}{3}(2/t + t^2)$ .

The equation of the tangent at  $P$  is

$$t^3 - 3t^2\xi + 3t\xi_0 - 1 = 0,$$

and the equation of the normal at  $P$  is

$$t^3 - t^2\xi - t\xi_0 + 1 = 0.$$

Hence the tangents at  $t_1, t_2, t_3$  are concurrent if  $t_1 t_2 t_3 = 1$ ; while the normals at  $t_1, t_2, t_3$  are concurrent if  $t_1 t_2 t_3 = -1$ .

Therefore  $t_3 = -t_4$ , or the tangent at  $t_3$  is parallel to the normal at  $t_4$ .

(II) If  $3a =$  radius of the fixed circle, and  $-a$  the radius of the rolling circle, the equation of the tricusp is

$$x = a(2 \cos \theta + \cos 2\theta), \quad y = a(2 \sin \theta - \sin 2\theta);$$

therefore  $dy/dx = -\tan \frac{1}{2}\theta$ .

The tangent at any point  $\theta$  is seen to be

$$y \cos \frac{1}{2}\theta + x \sin \frac{1}{2}\theta = a \sin \frac{3}{2}\theta,$$

which may be written  $(y + xt)(1 + t^2) = at(3 - t^2)$ ,

where  $t = \tan \frac{1}{2}\theta$ . This shows that three tangents can be made to pass through any point. Arranging in powers of  $t$ , we get

$$t^3(x + a) + t^2 y + t(x - 3a) + y = 0.$$

If  $t_1, t_2$ , and  $t_3$  are the roots  $\Sigma t_i = t_1 t_2 t_3 = -y/(x + a)$ ;

therefore, if  $\theta_1, \theta_2$ , and  $\theta_3$  are the parametric angles,

$$\Sigma \tan \frac{1}{2}\theta_1 - \tan \frac{1}{2}\theta_1 \tan \frac{1}{2}\theta_2 \tan \frac{1}{2}\theta_3 = 0;$$

therefore  $\theta_1 + \theta_2 + \theta_3 = 2 \times 180^\circ$ .

Again, the equation of the normal is

$$y \sin \frac{1}{2}\theta - x \cos \frac{1}{2}\theta = -3a \cos \frac{3}{2}\theta,$$

which becomes, in terms of  $t$ ,

$$t^3 y - t^3(x + 9a) + ty + (3a - x) = 0;$$

therefore  $\Sigma t_i t_j = 1$ . Hence, as two points are the same as before, if  $\theta_1, \theta_2$ , and  $\theta_3$  be the roots,

$$\tan \frac{1}{2}\theta_1 \tan \frac{1}{2}\theta_2 + \tan \frac{1}{2}\theta_1 \tan \frac{1}{2}\theta_3 + \tan \frac{1}{2}\theta_2 \tan \frac{1}{2}\theta_3 = 1,$$

or  $\theta_1 + \theta_2 + \theta_3 = 2 \times 90^\circ = 180^\circ$ .

Hence  $\theta_3 - \theta_4 = 180^\circ$ ; therefore  $\tan \frac{1}{2}\theta_3 = -1/\tan \frac{1}{2}\theta_4$ ;

therefore the tangents at  $\theta_3$  and  $\theta_4$  are perpendicular, i.e., the tangent at  $\theta_3$  is parallel to the normal at  $\theta_4$ .

The PROPOSER adds a geometrical proof:—

On a circle  $VAB$ , with centre  $O$ , take arcs  $VA' = 2VA$  and  $VB' = 2VB$  in opposite directions to  $VA$  and  $VB$ ; then the chords  $AA'$  and  $BB'$  are tangents to a tricusp which has  $V$  for a vertex; let them meet at  $T$ . The angle between  $AA'$  and its original position (the tangent at  $V$ ) is  $VAA' - AA'V$ , i.e.,  $VA'A$  or  $\frac{1}{2}VOA$ ; thus the angular velocity of  $AA'$  is half that of  $OA$ .

Hence the angle

$$\angle ATB = \frac{1}{2}\angle AOB = \angle AB'B;$$

therefore  $AB' = AT$ , and also the circle  $ATB$  is equal to  $(O)$ ; therefore  $C'$ , the image of  $T$  in  $AB$ , lies on  $(O)$ , and  $AB' = AC'$ .

Let  $TC'$  cut  $(O)$  again at  $C$ ; then the angle

$$\angle B'BC' = 2\angle BTC = 2\angle B'CC';$$

therefore arc  $B'C' = 2BC$ , and  $VC' = 2VC$ ; therefore  $TCC'$  touches the tricusp. And, since  $AB$  is perpendicular to  $CC'$ , arc  $AC +$  arc  $BC' =$  semi-circumference; consequently  $VA + VB + VC =$  semi-circumference, and the condition for three concurrent tangents is that they shall together make  $90^\circ$  with the tangent at a vertex.  $T$  is the orthocentre of  $ABC$ .

The condition for normals is similar, because these tangents are themselves normals to another tricusp, having  $V$  for a cusp; and the proposition follows.

COR. The triangle made by any three tangents  $AA', BB', CC'$  is similar to  $ABC$ ; and, since  $ABC$  is inscribed in it, its circum-centre is the orthocentre of  $ABC$ .

**17428.** (W. F. BEARD, M.A.)—A circle on any focal chord of a parabola as diameter cuts the curve again in  $P, Q$ . Prove that  $PQ$  passes through a fixed point.

*Solution by the PROPOSER.*

Let  $P'SQ'$  be the focal chord.

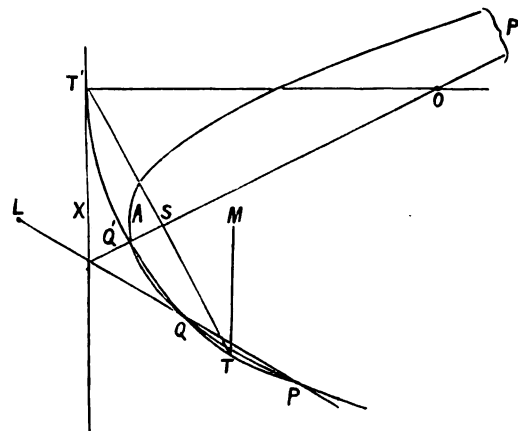
Let  $T', T$  be the poles of  $P'Q', PQ$ .

Draw  $TM$  perpendicular to the axis, and let  $PQ$  meet the axis at  $L$ .

Since  $P'Q'$  is a focal chord  $T'$  is on the directrix and

$$\angle P'T'Q' = 90^\circ;$$

therefore  $T'$  is on the circle on  $P'Q'$  as diameter.



Hence, by a recent problem,  $T$  is also on this circle,  $T'ST$  is a straight line, and  $ST = ST'$ ;

therefore  $SM = SX = 2AS$

But  $TM$  is clearly the polar of  $L$ ;

therefore  $AL = AM = 3AS$ .

Thus  $PQ$  goes through the fixed point  $L$ .

**17490.** (The late R. KNOWLES.)—Prove that the sum of a finite number of terms of the series

$$1 + (m+1)^2 x + (2m+1)^2 x^2 + \dots + (mr-m+1)^2 x^{r-1}$$

$$\text{is } [1 + (m^3 + 3m^2 + 3m - 3)x + (4m^3 - 6m + 3)x^2 + (m-1)^2 x^3 - (mr+1)^2 x^r + \{(3r^3 - 3r^2 - 3r - 1)m^3 + 3(3r^2 - 2r - 1)m^2 + 3(3r-1)m + 3\} x^{r+1} - \{(3r^3 - 6r^2 + 4)m^3 + 3r(3r-4)m^2 + 3(3r-2)m + 3\} x^{r+2} + (mr-m+1)^2 x^{r+3}] \div (1-x)^4,$$

$m$  being any positive integer.

*Solution by Rev. T. R. TERRY, M.A.*

If  $S = u_0 + u_1 x + u_2 x^2 + \dots + u_p x^p + \dots + u_{r-1} x^{r-1}$ , then, unless  $p = 0$  or  $r-1$ , we have coefficient of  $x^p$  in  $(1-x)S$  is  $u_p - u_{p-1}$ .

But, if  $u_p$  is a rational integral algebraic function of  $p$  of degree  $n$ , then  $u_p - u_{p-1}$  is of degree  $n-1$ .

Similarly, unless  $p = 0, 1, r-2$ , or  $r-1$ , the coefficient of  $x^p$  in  $(1-x)^2 S$  is of degree  $n-2$ .

In the Question,  $u_p$  is of the third degree; therefore  $(1-x)^4 S$  will only contain terms which are multiples of  $1, x, x^2$  and  $x^r, x^{r+1}, x^{r+2}, x^{r+3}$ .

In  $(1-x)^4 S$  the first term is 1; coefficient of  $x$  is  $u_1 - 4u_0$ ; coefficient of  $x^2$  is  $u_2 - 4u_1 + 6u_0$ ; coefficient of  $x^3$  is  $u_3 - 4u_2 + 6u_1 - 4u_0$ ; coefficient of  $x^r$  is  $-4u_{r-1} + 6u_{r-2} - 4u_{r-3} + u_{r-4} = -u_r + (u_r - 4u_{r-1} + 6u_{r-2} - 4u_{r-3} + u_{r-4}) = -u_r$ ;

coefficient of  $x^{r+1}$  is  $6u_{r-1} - 4u_{r-2} + u_{r-3} = -u_{r+1} + 4u_r$ ;

coefficient of  $x^{r+2}$  is  $-4u_{r-1} + u_{r-2}$ ;

coefficient of  $x^{r+3}$  is  $u_{r-1}$ ;

hence the results in the Question.

**17161.** (W. F. BEARD, M.A.)— $P$  is any point on the minimum ellipse circumscribed about a triangle  $ABC$ . Prove that the straight lines through  $A, B, C$  parallel to  $CP, AP, BP$  respectively meet at a point on the ellipse, and those through  $A, B, C$  parallel to  $BP, CP, AP$  meet at another such point.

*Solutions (I) by the PROPOSER and M. T. NARANIENGAR, M.A.; (II) by N. SANKARA AIYAR, B.A., and G. W. BORDER.*

(I) Project the ellipse orthogonally into a circle;  $ABC$  becomes an equilateral triangle.

Draw  $AQ$  parallel to  $CP$  to meet the circle  $ABC$  at  $Q$ . Join  $BQ, CQ$ .

Because  $AQ$  is parallel to  $CP$ , arc  $AP =$  arc  $CQ$ ;

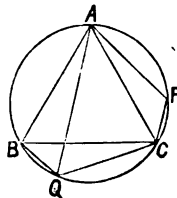
therefore arc  $PCQ =$  arc  $APC =$  arc  $AB$  (because  $AC = AB$ );

therefore  $BQ$  is parallel to  $AP$ , and similarly  $CQ$  is parallel to  $BP$ .

Thus the parallels from  $A, B, C$  to  $CP, AP, BP$  meet at a point  $Q$  on the circle.

Hence the same theorem follows for the ellipse.

*Note.*—If  $R$  is the third point on the ellipse,  $PQR$  is another maximum triangle inscribed in the ellipse and is equal in area to  $ABC$ .



[Rest in Reprint.]

**QUESTIONS FOR SOLUTION.**

*Erratum.*—In Question 17508 (A. W. H. THOMPSON) the equation for  $v$  should read:—

$$v = A \int e^{r \cos \theta} U - J_0 \left( \frac{r \lambda}{U} \right) - \sum_{n=1}^{\infty} (-)^n J_n \left( \frac{r \lambda}{U} \right) r^n \cos n \theta \Big\}.$$

**17544.** (N. W. McLACHLAN, B.Sc., A.M.I.E.E.)—A right elliptical cone weighs 5 lb. The ratio of the major axis to the minor axis is 3.57 : 1.39. A line, from the centre of the base to the circumference, at  $45^\circ$  to the major axis, makes an angle of  $\tan^{-1} \sqrt{2}$  with the line joining the circumferential point to the vertex. Find the major and minor axes and the height of the cone. 1 cubic inch of copper weighs 0.32 lb.

**17545.** (Communicated by N. SANKARA AIYAR, M.A.)—If  $x (du^2/dx^2) + du/dx - u = 0$ ,  $x (dv^2/dx^2) + dv/dx + v = 0$ , prove that the product  $uv$  satisfies the differential equation

$$x^2 (d^2 y/dx^2) + 5x (dy/dx) + 4 (d^2 y/dx^2) + 4y = 0.$$

Hence show that the product of the series

$$1 + x/1^2 + x^2/1^3 \cdot 2^2 + x^3/1^3 \cdot 2^2 \cdot 3^2, \dots, 1 - x/1^2 + x^2/1^2 \cdot 2^2 - x^3/1^2 \cdot 2^2 \cdot 3^2, \dots$$

is equal to  $1 - x^2/1^2 \cdot 2! + x^4/1^2 \cdot 2^2 \cdot 4! - x^6/1^2 \cdot 2^2 \cdot 3^2 \cdot 6! \dots$

(Joseph Edwards' *Differential Calculus*.)

**17546.** (C. M. ROSS, B.A.)—If the determinants

$$\begin{vmatrix} a_{11} & b_{12} & \dots & b_{1n} \\ b_{21} & a_{22} & \dots & b_{2n} \\ \dots & \dots & \dots & \dots \\ b_{n1} & b_{n2} & \dots & a_{nn} \end{vmatrix}$$

and

$$\begin{vmatrix} a_{nn} a_{11} - b_{1n}^2 & a_{nn} b_{12} - b_{1n} b_{2n} & \dots & a_{nn} b_{1(n-1)} - b_{1n} b_{(n-1)n} \\ a_{nn} b_{21} - b_{1n} b_{2n} & a_{nn} a_{22} - b_{2n}^2 & \dots & a_{nn} b_{1(n-1)} - b_{2n} b_{(n-1)n} \\ \dots & \dots & \dots & \dots \\ a_{nn} b_{1(n-1)} - b_{1n} b_{(n-1)n} & a_{nn} b_{2(n-1)} - b_{2n} b_{(n-1)n} & \dots & a_{nn} a_{(n-1)(n-1)} - b_{(n-1)n}^2 \end{vmatrix}$$

are denoted by  $\Delta$  and  $\Delta_1$ , prove that  $\Delta_1 = (a_{nn})^{n-2} \Delta$ , where  $b_{mi} = b_{im}$ .

**17547.** (Professor K. J. SANJANA, M.A. Proposer's Revision of Question 17099.)—(1) If  $R_n = 1 + \frac{1}{2} + \frac{1}{3} \dots + 1/n$ , examine the convergency of the series  $R_1 x + R_2 x^2 + R_3 x^3 + \dots$  ad inf.

(2) If  $S_n = 1 + \frac{1}{3} + \frac{1}{5} \dots + 1/(2n-1)$ , investigate the sum of  $s_1 - s_2 + s_3 - s_4 + \dots$  ad inf.

**17548.** (NORMAN ALLISTON.)—Prove that primes of the form  $6n-1$  have no cubic non-residues.

**17549.** (J. HAMMOND, M.A.)—Find  $n$  numbers such that the sum of their squares is a cube, and the sum of their cubes a square.

**17550.** (W. E. H. BERWICK.)—Assuming the expectation of life of a man  $m$  years old to be  $f(m)$  years, find the probability that a man whose present age is  $m$  years will outlive one whose present age is  $n$  years.

**17551.** (E. G. HOGG, M.A.)—Eliminate  $\lambda, \mu, \nu$  between the equations

$$\alpha : \beta : \gamma = \lambda^4 + \lambda^2 \mu \nu + \mu^2 \nu^2 : \mu^4 + \mu^2 \nu \lambda + \nu^2 \lambda^2 : \nu^4 + \nu^2 \lambda \mu + \lambda^2 \mu^2, \lambda + \mu + \nu = 0.$$

**17552.** (Professor E. J. NANSON.)—Prove that the mean value of the  $r$ -th powers of any number of positive quantities is not less than the mean value of their products  $r$  together, and hence obtain an inductive proof of the theorem of the arithmetic and geometric mean.

**17553.** (Professor NEUBERG.)—Une courbe  $\Delta$  est rapportée à deux axes rectangulaires  $Ox, Oy$ . On projette un point quelconque  $M$  de  $\Delta$  en  $P$  sur  $Ox$ , et le point  $P$  en  $Q$  sur la droite  $OM$ . Connaissant la tangente  $MT$  au point  $M$  de  $\Delta$ , trouver la tangente  $QT'$  en  $Q$  à la courbe  $\Delta'$  décrite par  $Q$ , et inversement.

**17554.** (C. E. YOUNGMAN, M.A.)—Tangents from  $T$  to a cuspidal cubic touch at  $P, Q, R$ , and the tangents from  $P, Q, R$  meet at  $T'$ ; then the conic  $PQRT'$  cuts the cubic again at the cusp and the inflexion.

**17555.** (A. M. NESBITT, M.A.)—Two conics  $S, S'$  are inscribed in the same quadrilateral, the points of contact of  $S'$  with its sides being  $A, B, C, D$ . Prove that if  $AB$  be a tangent to  $S$  so also will  $CD$  be, and that the invariant relation

$$\Theta^3 + 8\Delta^2 \Delta' = 4\Delta \Theta \Theta'$$

connects  $S$  and  $S'$ .

**17556.** (W. N. BAILEY.)—A chord  $PQ$  of a parabola is normal at  $P$ , and the circle on  $PQ$  as diameter meets the curve again at  $R$ . If the normal at  $R$  meets  $PQ$  at  $T$ , prove, geometrically, that the projections of  $TR$  and  $TQ$  on the axis are each equal to the latus rectum.

**17557.** (W. F. BEARD, M.A.)— $ABC$  is a triangle with orthocentre  $H$ ;  $P, Q, R$  are the mid-points of  $AH, BH, CH$ , and  $AX, BY, CZ$  are drawn perpendicular to any line through  $H$ . Prove that  $PX, QY, RZ$  meet at a point on the nine-point circle.

**17558.** (R. TATA. Suggested by Question 17488.)—The area of the triangle whose vertices are the centres of gravity of the triangles  $ADE, BKL, CMN$  is  $\frac{1}{4} \Delta, BCDE, CAKL, ABMN$  being the squares described externally on the sides of the triangle  $ABC$ .

**17559.** (Professor E. J. NANSON.)—Find the position of a point on a given circle when the ratio of its distance from a fixed diameter to its distance from a fixed point on the tangent at an extremity of that diameter is a maximum or minimum.

**17560.** (Professor J. C. SWAMINARAYAN, M.A.)—Show that, with the usual notation of a plane triangle, the determinant

$$\begin{vmatrix} b^2 f^2 & c^2 f^2 & 1 \\ (ch + af)^2 & c^2 g^2 & 1 \\ b^2 h^2 & (af + bg)^2 & 1 \end{vmatrix} = 2abc f (af + bg + ch) \times (gh + hf \cos C + fg \cos B - f^2 \cos A)$$

with two more symmetrical results.

**17561.** (R. F. DAVIS, M.A.)—If  $A, B, C$  are the angles of a triangle, determine  $L, M$  as symmetric functions, so that

$$L \sin A + M \cos A + \sin 3A = 0$$

with similar equations in BC; leading to the relation

$$\begin{vmatrix} \sin A & \cos A & \sin 3A \\ \sin B & \cos B & \sin 3B \\ \sin C & \cos C & \sin 3C \end{vmatrix} = 0.$$

OLD QUESTIONS AS YET UNSOLVED (IN OUR COLUMNS).

**14403.** (R. P. PARANJPYE, B.A.)—Investigate the form of the function  $f$  defined by the relation  $f(z + \omega) = \{Af(z) + B\} / \{Cf(z) + D\}$ , where  $A, B, C, D$  are any complex quantities whatever. Find how many "periods" like  $\omega$  there are, and what, if any, are the relations among them. Give at least one example of such a function when  $A, B, C, D$  are unrestricted. [N.B.—The above is an attempt to generalize many commonly occurring functions, e.g.: (1)  $f(z) = z$ ,  $C = 0, D = 1 = A, B = \omega$ . (2)  $f(z)$  = an ordinary elliptic function,  $C = 0, B = 0$ , and  $A = D$ . (3)  $f(z)$  = an elliptic function of the second kind, or *fonction à multiplicateurs constants*,  $C = 0, B = 0$ . (4) Not only the elliptic functions, but also some of the functions when the "period" is what is usually the semi-period: thus,  $\wp(u + \omega) - e_1 = \{(e_1 - e_2)(e_1 - e_3)\} / (\wp(u) - e_1)$ , where  $2\omega$  and  $2\omega'$  are the periods of  $\wp(u)$ ; again,  $\text{sn}(u + ik') = 1/k \text{sn } u$ . (5)  $f(z) = e^z$ ; here  $C = 0, B = 0, A = De^{\omega}$ , and so on.]

**14404.** (G. H. HARDY, B.A.)—Evaluate

$$\int_0^{\infty} \sin px \Theta(x) dx,$$

where  $\Theta$  is any one of the four functions

$$\frac{x - 2n\pi}{x^2 + \theta^2}, \quad \frac{x - (2n + 1)\pi}{x^2 + \theta^2}, \quad \frac{x - 2n\pi}{x^2 - \theta^2}, \quad \frac{x - (2n + 1)\pi}{x^2 - \theta^2};$$

the positive integer  $n$  being chosen in each case so that the numerator always lies between  $\pm\pi$ . Thus, e.g.,

$$\int_0^{\infty} \sin px \frac{x - (2n + 1)\pi}{x^2 + \theta^2} dx = \frac{\pi}{\theta} \sin h p\theta \log(1 + e^{-\theta}).$$

When the denominator is  $x^2 - \theta^2$ , the principal value is to be taken.

**14510.** (Professor MATHEWS, M.A., F.R.S.)—Suppose that the Jacobian transformation of the sixth order converts  $\kappa, K$  into  $\lambda, \mu K$  respectively; prove that

$$\text{sn} \frac{2K}{3} = \sqrt{\frac{3}{2}} \left\{ \sqrt{\frac{\mu}{1 + \kappa'}} + \sqrt{\frac{\lambda\mu}{1 - \kappa'}} \right\}.$$

**14539.** (Professor LANGHORNE ORCHARD, M.A., B.Sc.)—If  $r$  and  $n$  be any positive integers, show that the sum of the series

$$1^r + 2^r + 3^r + 4^r + \dots + n^r$$

is a fraction whereof the numerator is exactly divisible by  $n$  and the denominator is some integer independent of  $n$ .

**14550.** (Professor U. C. GHOSH.)—A ball projected from a focus of an immovable elliptic ring, which rests on a smooth horizontal table, along a line making an angle  $\theta$  with the major axis, will rebound from the ring after one impact with it along a line inclined to the major axis at an angle equal to

$$\tan^{-1} \frac{\sin \theta [e(1 - \epsilon) \cos \theta + \epsilon - e^2]}{e(\epsilon - 1) \cos^2 \theta - \epsilon(1 + e^2) \cos \theta + (\epsilon + 1)e};$$

$\epsilon$  being the coefficient of restitution. Determine for what values of  $\theta$  the ball will cross the major axis after having only one impact with the ring, and obtain the equation of the envelope of the lines of rebound of the ball after one impact with the ring.

**14581.** (D. BIDDLE.)—A given square has inscribed to it a random square and also a circle. Find the respective chances that a point taken at random in its area shall lie (1) within the inscribed square but outside the circle, (2) within the circle but outside the inscribed square.

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The Educational Times.

THE POLICY OF THE FEDERAL COUNCIL.

MR. CHARLES BATHURST, by means of a question to Mr. Pease in the House of Commons, has drawn the attention of members of Parliament to the proposal that the State grant for education should take the form of payment of teachers' salaries. Mr. Pease, in reply, was, of course, non-committal. We give the actual words in another column. The proposal has already been discussed in different parts of the country and seems likely to commend itself both to Local Authorities and to rate-payers. The Federal Council of Associations of Teachers in Secondary Schools, which may be taken as representative of the secondary branch of the teaching profession, has issued a Memorandum on the same subject. This Memorandum we have received permission to reprint, and it appears in full in this issue. We understand that it will be widely circulated, and we are confident that it will form the basis of the Education Bill that we expect next year. The document is of very great importance. It should be carefully read and kept for future reference.

The Memorandum covers the whole ground, and sets out in a clear and convincing way, first, the need for a national system of education, and, secondly, how that need may be met. Some of the points raised we dealt with in our leading article of last month. Here we wish to lay stress upon three matters only. In the first place, we wish to meet, as we believe we can meet, the objection that has been raised to the whole scheme on the ground that it differentiates unfairly between boys' and girls' schools, and that the latter would receive smaller grants than the former. It is quite true, so long as salaries of women teachers remain on a lower scale than those of men, that a grant based on salaries would be lower in girls' schools. In itself this is unreasonable. No one will find in these columns the suggestion that women do less good work than men or that they merit lower salaries. But we would ask women teachers and the authorities of

girls' schools to consider the following points. The fact that Exchequer grants for education are based upon salaries will form an excellent lever for the gradual raising of women's salaries to the level of those paid to men. Under the proposed scheme girls' schools will get a far higher grant than they are getting at present. If the proposed basis of grant is sound and for the general benefit of education, it would be unreasonable for one section to oppose it on personal grounds. These three arguments should remove all hesitation on the part of women teachers to welcome the scheme.

The second point is the question of the Civil Service. Whether it be a good thing or not that teachers should become members of the Civil Service is quite immaterial to the argument; for no proposal is contained in the Memorandum that would have the effect of making teachers into Civil Servants. The official relation of teachers to their employers would be in no way changed. School authorities would continue to appoint, pay, and dismiss their teachers as they do at present. The only difference that would exist is that the grant, instead of being based upon pupils, would be based upon staff.

The third point to which we desire to call attention is covered by Section 9 of the Memorandum. In this section it is recognized, as we have always maintained, that no system of education can be called national unless it includes all teaching institutions in the country. It follows that every school must be officially known—i.e., inspected by the Board of Education. This inspection must be without cost to the school, and Parliamentary powers must be given for the purpose. There is a widespread, but entirely ill-founded, fear of inspection, as if Inspectors merely come to find fault. We would press the opposite view, which is often left unconsidered—that inspection is a valuable encouragement and help and that no school ought to be deprived of its benefits. The Local Government Board inspects the home of every Poor-Law child, whether it be in a public workhouse or in a private cottage. Universal inspection, which means official knowledge and registration, is essential to a national scheme.

Schools in receipt of a State grant are already inspected—that is to say, the parents are assured that the schools are efficient. It is not reasonable that parents who send their children to private schools should be without this assurance. Neither is it reasonable that the State should recognize class distinctions and pay money in aid of some parents, while leaving to others the full charges of education. At present the Local Authorities, when asked to help private schools, reply very naturally that they have no official knowledge of such schools. When inspection is universal, this difficulty will be removed. When the Local Authorities have cognizance of the private schools within their area, and when the scope and aim of such schools have been decided by the Board of Education, it will be quite simple to recognize them as contributing to the supply of education in the district. The scheme implies, of course, that there must be categories of schools and that the Board must decide upon the numbers and qualifications of the staff and upon salary scales. Some private schools will need financial aid, others will not; but all alike will be officially recognized, and will have the resultant status. Those that want help will claim it and, we feel confident, will, with the approval of the Board of Education, receive it from the Local Authorities.

## NOTES.

**Mr. Pease's Bill.** THE one-clause Bill that Mr. Pease introduced last week is designed to give immediate relief to Local Education Authorities. The sum of £50,000 is set aside for school medical service, and a further sum of £100,000 for loan building charges. The Bill removes the prohibition contained in the Act of 1870 which prevents Exchequer grants for building purposes. Mr. Pease took the opportunity of outlining the proposals of the Government for a wider Bill to be introduced next year. He said nothing of teachers' salaries as a basis of grants; but there is plenty of time yet to convince him of the wisdom of this view. He said little about secondary education, except that private schools will continue to be recognized as a part of the educational system and that they will be inspected. It does not seem likely that the Bill will be pressed forward. Its introduction served merely to give Mr. Pease an opportunity of outlining the Government proposals.

**The Professional View.** WE are able to give our readers this month two more articles in the series by Mr. R. F. Cholmeley that we are publishing. They will repay careful study. Mr. Cholmeley writes in his own name, and is responsible for the views expressed; but we cannot doubt that he expresses views that are widely held by teachers, and views that will be still more widely held when these convincing articles have been read. We are also able to publish

a Memorandum of the utmost importance that has been issued by the Federal Council of Associations of Teachers in Secondary Schools. This Memorandum contains the reasoned opinions of the seven Associations represented on the Council. It will be sent to the members of Lord Haldane's Committee that is preparing the forthcoming Education Bill, and will be widely circulated amongst members of Parliament and members of Education Committees. The argument is so clear and convincing that the Memorandum is sure to have great influence. Our readers will do well to keep this copy of *The Educational Times*, as discussion for the next twelve months will largely centre round this Memorandum.

**The Royal Garden Party.** SOCIAL recognition has a distinct value. The nation honours those whom it thinks worthy of honour. It is a mistake to suppose that the nation only honours millionaires and generals. We may all be snobs at heart; but snobbishness is not the whole of our nature. If we love a title and bow down before money we also have our admiration and respect for simple virtues, such as courage and devotion, which can be found in any class. Teachers as a body have not to any great extent won the admiration and respect of the world. A leading article in the *Times* says: "Drudgery and failure, real or apparent, is the inevitable lot of all who teach. . . . The teaching profession, throughout history, has pursued its high calling under the shadow of some degree of hostility, or even contempt, on the part of men unwilling to content themselves with its immaterial rewards." But, if the children of the nation are to have the best opportunities that can be provided, the teaching profession must be inspired by the appreciation and honour of the nation. The Royal garden party, to which all the heads of teaching institutions in London were invited, is a herald of a wiser view by the nation of the value of the teacher. And we thank the King and Queen for the example they have set.

**A Noble Work completed.** It was very fitting that the Queen should in person open the new Bedford College for Women, which is rapidly approaching completion, in Regent's Park. The Queen is the representative of the women of England. She is a graduate, and the only honorary woman graduate, of the University of London. She has herself seen during her lifetime the steady growth of opportunities of higher education for women. Bedford College has existed for more than sixty years. When it was founded it required both faith and courage to proclaim the right of women to enjoy University education; it required both faith and courage for students to enter the College doors. Now there is no University in England to which women do not flock, and none in which they cannot graduate (with the curious exception of Oxford and Cambridge—proof of the conservatism of ancient institutions). Now there is no Local Authority which in planning new schools takes



less thought for girls than for boys. This enormous change has come about in little more than half a century. The ultimate effects are still to be seen; but we believe they will prove of immense value to the life of the people.

*Report of the Consultative Committee on Practical Work in Secondary Schools.*

THE Report of the Consultative Committee on Practical Work in Secondary Schools forms a valuable compendium of views and possibilities. Four years ago the Committee were asked to consider to what degree education by means of practical work should be encouraged in secondary schools. They have interpreted their terms of reference so as to limit the discussion to constructional handcraft and domestic arts. There is a vast amount of information, both useful and interesting. Various subjects of manual instruction are treated in detail and the opinions of witnesses are given. In a subsequent number we hope to return to this report. The long period during which the Committee have been considering the matter indicates the thoroughness of their inquiries. The necessity for manual work of some kind is now generally recognized—manual work that shall exercise the muscles and creative work that shall exercise the imagination. It is no longer argued that manual instruction is fitting only for those who are going to earn their living by the exercise of a craft. We now believe that training and exercise of the muscles, especially those of the hand, have an important bearing on intellectual development.

*The Over-dose of Books.*

WE now have the support of scientific investigation for the fact, which we all knew more or less vaguely from experience, that the intellectual activities are closely connected in their growth and development with the bodily activities. There was a time when schools existed to give boys just those things they could not get at home. At home they could get all the bodily activities they needed; to school they went for book learning. But, as intellectual study gradually became more specialized and more absorbing, particularly when competitive examinations made their appearance, the schools began to make ever-growing claims on the time of the pupils. Book-work became more intense, and there was less leisure left to the pupils to carry on, in the light of their own instincts, their bodily education by means of play and sports. The school now takes a larger share of the pupil's life, and aims at educating all sides of his nature. Therefore the education of the fingers cannot be omitted. The fingers need exercise, not merely that they may become strong and supple, but also that by their activity they may let loose the activity of the brain.

*Handwriting.*

WE are sorry that the Consultative Committee do not lay stress on handwriting as a subject of manual instruction. Here is an exercise that every child must practise. It requires the most delicate adjustments of the muscles; it is

creative, its possession gives joy. In the present generation handwriting has suffered a loss of dignity because in a previous generation it had been developed into a conventional, artificial, and lifeless means of artistic expression. Handwriting as an art died when "copperplate" was introduced; but, now that we understand its possibilities and value, there is no reason why the subject should not regain its true position. Preliminary exercises must prepare the fingers to hold the slender pen. In this way we shall avoid the blundering efforts to write that are made by young children. Each piece of manual activity has its proper age. The pen is too delicate an instrument for very young pupils. And, when writing comes back to its own, we shall perhaps be persuaded to believe that each hand alike must become expert. Only thus can we get the best development of the brain and the most complete balance and harmony of mind and muscle.

*University Representation.*

IN spite of a clear and convincing speech from Sir Philip Magnus, and in spite of the support of Mr. Balfour, Sir Philip's amendment to the Plural Voting Bill, which would have removed Universities from the operation of the Bill, was not accepted by the House. The present position is this: the representation of Universities is left unaltered by the Bill, but a voter will not be able to register in more than one area. A University graduate, if he is a man, may elect to vote in the constituency in which he resides or he may vote in the University of which he is a graduate. It is quite evident that the tendency will be for voters to register in their locality and not at their University. Thus the Universities will be shorn of the majority of their electorate. Of the value of University representation no one has any doubt, and it would have been a very reasonable concession that graduates should have been allowed to vote in both constituencies. Sir Philip expressed himself as opposed to a general extension of the franchise to women, but he stated that he would certainly support a motion giving the franchise to registered women graduates.

*Training of Teachers: a New Scheme.*

THE Board of Education have now issued their alternative scheme for the training of teachers in secondary schools. The proposals have been for some time under discussion by the associations of teachers, and are, of course, expected. The alternative method is briefly this: a secondary school, recognized as efficient by the Board, may take one or two, and in no case more than three, teachers in training. The teacher in training must follow a definite course for at least a year, usually in the school, but special arrangements may be made for absence in order to attend a course of professional lectures at a University. A school will only be approved for this purpose "if the head master or head mistress or some other senior member of the staff is specially qualified and has the necessary interest and leisure to super-

wise the teachers' training." At the end of the year the Board will endorse the head teacher's certificate that the teacher in training has completed the period of training in a satisfactory manner. In order to qualify for grants, the teachers in training must be University graduates in Honours. The grant is £40 for the first, £30 for the second, and £20 for the third student in training.

THE Board of Education have issued regulations for University Tutorial Classes, indicating the conditions upon which grants will be paid. The University or other controlling body must be responsible for the framing of the syllabus and the selection of a suitable tutor. The instruction must aim at reaching, within the limits of the subject covered, the standard of University work in Honours. The course must extend over a period of three years, and must occupy at least two hours a week for twenty-four weeks in each year. At least one-half of the time is to be devoted to class work. The number of students enrolled in a class may at present be thirty-two, but the Board hint at a preference for twenty-four as the limit. If the due conditions are fulfilled the Board will pay a grant of £30 for each class, or half the amount paid for tuition, whichever be the smaller. The marvellous success of these classes shows how eagerly opportunities for extended education are seized upon by people who are not surfeited with education. In some other cases the educational fare is so elaborate and the dainties so pressingly offered that the appetite revolts.

WE regret to notice that the Report of the Welsh Department of the Board of Education again shows hostility to the work of the Central Welsh Board. The *Times* says nothing more than the fact in stating that "in certain sections of the report may be found the unmistakable disparagements of the work of the Central Welsh Board which have recently become so regular a feature in the annual reports of the Department. Surely it is time that this petty warfare ceased." And again: "It is a great misfortune that between these two bodies there appears to exist an unaccountable hostility." It is certainly a serious misfortune for Wales. The Central Welsh Board is charged with the duty of inspecting and examining the secondary schools of Wales. For this duty it receives a Parliamentary grant. It is in practice, though not technically, a branch of the Board of Education charged with certain responsibilities which are the function of the Board. So long as this warfare continues education in Wales suffers. If the two bodies work together harmoniously, all the energy that is now devoted to criticism can be spent on education.

A SCHEME for pensions for the teaching staff at the newer Universities will come into force in September next. It is compulsory upon all professors entering after that

date at a salary of £300 a year or upwards. Option is permitted to those appointed at lower salaries. The scheme applies to all the Universities and University Colleges receiving grants from the Board of Education. We believe it will be possible for other Universities to join if they wish to do so. There are two important points about the scheme: it is compulsory, and it covers all the institutions affected. A separate scheme for each University would have less chance of attaining financial soundness. The insured persons will have the choice of various forms of policy in different offices. It is estimated that 10 per cent. of salaries will be required to make the scheme a success, and the Board will probably pay half this amount. The normal age of retirement is taken as sixty, but there is no rigid rule.

MR. ROBERT BRIDGES' has done good service in calling attention to our growing want of care in pronunciation. Things have come to such a pass that in the case of many vowel sounds distinct enunciation appears affected, and in hundreds of words the vowels may be represented by the sound that a hesitating speaker is supposed to use between the words of his address. We want a rough awakening on the subject, and Mr. Bridges' "Tract on the Present State of English Pronunciation" will have much effect. A movement has already begun in the schools to try to bring about a clear and accurate utterance. The science of phonetics, introduced into schools by teachers of foreign languages, is being called in to the aid of the colleagues who teach English. It is not, of course, that we want to worry small children with the science of sound production, but the teacher who knows how sounds are produced and can produce at will all the sounds of which the vocal chords are capable has acquired a trained sense of hearing and is in a better position to teach his pupils distinct articulation and clear utterance.

THE new Regulations for Junior Technical Schools which the Board of Education have just issued will be welcomed in many localities. The traditional foundation of the studies carried on in secondary schools is literature. To some extent this foundation has been broadened and will become still broader. In secondary schools we plan the curriculum, as far as possible, on ideal lines—that is to say, we plan a course of study that will enable the growing pupil to practise all his aptitudes and develop his whole nature. But the ideal is not always possible, and we see the melancholy sight of children removed from their studies in order to take a course of shorthand and book-keeping at an institution that claims frankly to be utilitarian. Now we believe that the subjects of study demanded for the lower branches of the Civil Service can be made educational. If not, the Commissioners can alter them. But the Board have made a distinct concession to the needs that many parents feel to be imperative, and have allowed the formation of the Junior Technical

Schools, which will give the desired "clerical" training on educational lines.

THE Council of the College of Preceptors has been invited to unite more closely in the work of the League of the Empire. We therefore give in this number some account of the League's doings that members of the College may be able to decide how far its support should be given. The work of the League, from its formation some twelve years ago, has been closely connected with schools. It endeavoured to unite the schools in various parts of the Empire, to bring them into relation with one another, and to promote mutual interest. For instance, a school in London may be affiliated with a school in Canada; mutual correspondence may take place and the two schools may learn to know one another and to be interested in each other's doings. The League also started Empire Day celebrations in schools. Recently, owing to the generosity of a member, a residential club has been opened for teachers. Almost all Associations of Teachers throughout the Empire are affiliated to the League.

WE have before pointed out in these columns that in the public mind education is often a matter of bricks and mortar, and that until a saner view is taken by "the man in the street" we shall find educational progress difficult. Our view received striking though unexpected confirmation the other day in a leading article which appeared in a paper of good standing that is usually well-informed on educational matters. The article was designed to show the absolute necessity of the professional training of teachers. As a clinching argument the writer said that if anyone was in doubt about the value of training he only need spend an hour or two in seeing one of our training colleges; adding that the best model was the one at Leeds. Nothing could show more clearly how the public mind is permeated with the idea of buildings. To see a magnificent building, elaborately equipped, is a proof of the value of training! About the spirit that gives life to the inanimate stone and that can be secured only by making the teaching profession honoured and self-supporting, not a word. We have before us a hard campaign to convince the country that it is men and women that make the schools.

LORD HALDANE, in his article in the *Nation*, distinctly assumed the inclusion of private schools in a national scheme of education when he said, speaking of those who provide education: "Be they Local Authorities or be they individuals." Indeed, we may take it as axiomatic. A scheme cannot be said to be national that excludes a portion of the nation. We may take it that private schools will be inspected and reported as efficient, when circumstances allow. But it is not at all clear that the Government will put forward any scheme for payment of

grants to schools not under public management. Indeed, everything points the opposite way. State recognition will mean much, and in particular it will mean this: a private school that is recognized as efficient will be officially known. It will be recognized as efficient for the supply of a certain grade or type of education; for it is clear that we must expect the classification of schools according to the ages of entrance and leaving, the scope of the curriculum, and the provision of equipment. A recognized private school will have an assured position in the eyes of the public of the area. But this is not all.

THE most important result of recognition will be that the Local Authority cannot continue to ignore the existence of the school. The Authority will know that a certain school is filling a certain place in the educational scheme of the area. It will know that the Government Inspectors have found the school efficient for certain purposes. It will be difficult to see, under such circumstances, how a local grant can be withheld. The grant may take different forms. Some schools might ask only admission for their pupils to scholarship examinations. Others might need new buildings; and there is no reason why the Authority should not build a school for a private proprietor, letting it at a peppercorn rental, and making certain conditions with regard to fees. Private schools need not wait till the Local Authorities come to them. There are towns in England where the education depends very largely upon private initiative. There is no reason why the whole body of private-school masters and mistresses should not unite to press upon the Authorities the claims of these schools for financial aid. Conditions and regulations would have to be hammered out. This done in one locality, a valuable precedent would be formed.

AT a recent speech day ceremony the head master humorously remarked (referring to the changes that had in recent years come over education) that a boy actually complained to his master that he liked his lesson. What a revolution is implied in those few words! The boy inherited the tradition that lessons are disagreeable, and so strongly was it impressed upon his mind that he was half prepared to resent the fact that he found them pleasant. Childhood is the time for play and joy. Play, because it is by play that children educate those qualities they will need in later life; joy, because we believe it to be the universal heritage of man, and the one means by which his spirit can develop, that his childhood be one of joy. Social reformers cannot be contented till opportunities of joy are everywhere. In recent years we have grown to think of the school task as something essentially irksome. That is because we have tried to make the children little adults. We are now considering their needs and finding out the activities suitable to their age, and seeking how to develop their aptitudes.

## SUMMARY OF THE MONTH.

On July 3, in the House of Commons, Mr. Charles Bathurst asked the President of the Board of Education if, in view of the increasing expenditure of Local Education Authorities in respect of the salaries of teachers and their present inability to meet their reasonable demands in face of the opposition of rate-payers, he would, after consultation with the Chancellor of the Exchequer, consider the advisability of providing in the forthcoming Government Education Bill for making the salaries of teachers in elementary and grant-receiving secondary schools a charge upon the national exchequer, leaving it to the Local Education Authorities to provide out of the local rates for the erection and repair of school premises and all other costs of maintenance.

MR. PEASE replied to the above question: "I am of course considering all proposals which appear to be practicable. I may, however, point out that this proposal would, on the present figures and without any allowance for increase of salaries, involve a charge on the Exchequer of considerably over £17,000,000 and an increase of the existing grants by more than £5,000,000. The proposal would also involve other administrative consequences, the importance of which the hon. member with his experience of local government will, I am sure, appreciate." Mr. Bathurst continued: "Does not the right hon. gentleman recognize that it is only logical, seeing that the Government call the tune as regards quality, that the Government should also pay the piper?" Mr. Jonathan Samuel asked: "May I ask the hon. gentleman whether it would not be better as an alternative suggestion to make a good building grant to the Local Education Authorities?" To which Mr. Pease replied: "I am afraid I cannot deal with that question at the moment."

"SPEAKING generally," says Mr. M. E. Sadler in *Indian Education* for June, "it may be said that in the matter of their new Education Bill the Government is thinking aloud. The fact is, there is no clear lead in public opinion. But to any great change, and especially to changes affecting the work of the Local Authorities or prolonging compulsory attendance at school, or introducing new regulations for the giving of religious teaching in elementary schools, there is likely to be strong, and possibly effective, opposition. The Government, perhaps, would have found it easier to deal with education if they had not hinted at a very ambitious scheme. What is really wanted at the present time is more public money for education. The country is not eager for any far-reaching changes in its educational administration. It wants the education which it has at present to be improved. The Local Authorities and other bodies engaged in educational work need more money in order to develop what they have begun, and to do properly what they have undertaken. The provision of larger funds for educational work would develop educational interest in the country. The machinery is already at work, but it needs more oil."

A CORRESPONDENT writes:—"It is to the credit of the Board of Education that, whilst teachers have had to agitate for their own registration, the Board issued in 1908 a register of schools without being asked. The official title of the register is 'List of Secondary Schools in England Recognized by the Board of Education as Efficient.' But it can hardly be described as a good all-round success. In the fifth annual issue which came out this spring are included 986 schools with a line of statistics for each. Of these, 885 as grant-earning schools come on the list automatically. These are chiefly foundation schools, county and municipal schools, and schools belonging to religious orders—Anglican and Roman. There are only 101 other schools (foundation schools with a higher fee, trust schools, and 17 private

schools) that have been added on their own application. There are recognized private schools for girls at Bishop's Stortford, Clifton, Colchester, Darlington, Devonport, Harrogate, Leicester, Rottingdean, and Thame—one at each; and three at Seaford. There are corresponding boys' schools at Harlow, Kendal, Loughton, and Muswell Hill; and one co-education school near Petersfield. But where are the rest?"

IN 1907, continues our correspondent, the Board issued a report on schools, public and private, in the North of Europe, where the recognized schools play a great part. Of the three different kinds of secondary schools in these countries—State schools, municipal schools, and recognized private schools—the last provide the greatest contingent of pupils (except in boys' schools in Sweden). It would seem, therefore, that this list of recognized schools is a useful importation from abroad. But cannot the Board be induced to go a step further and import also reasons and inducements to make the schools come flocking to their register? These schools abroad, through recognition, obtain the right of sending in candidates to the State Leaving Examination; and everywhere, except in Norway, the State helps them by sums of money to make their fees moderate enough for parents' means. It is not the law, but only a regulation, that forbids this in England.

THE London County Council thinks that, in spite of the large number of cheap books and newspapers that are available, there is need for a special periodical for school children. This would inform the children and give them reasonable views upon current events and activities, and would at the same time be the means of introducing them to literature. The general lines upon which the suggested paper should be conducted are as follows:—(1) A short chronicle of the events told in such a fashion as to interest children; (2) original stories, serial or other, suitable for boys and girls; (3) biographical sketches of great personalities; (4) extracts from English literature in prose and poetry connected with current events or anniversaries; (5) articles on London history in its association with buildings, streets, or districts; (6) a reproduction in each number of some noted picture or portrait, or a representation of some building of historic or architectural interest with simple descriptive details; (7) essays or other school work of exceptional merit; (8) problems for solution in such subjects as literature, history, geography, and arithmetic; (9) accounts of pupils' visits to places of interest in town or country; (10) records of special achievements by pupils or ex-pupils in any field of distinction; (11) a correspondence column; (12) a page for parents.

THE Board of Education announce that they are prepared to recognize a new type of school for technical education. These will be "day schools, organized as part of the system of higher education, and providing a continued full-time education under school conditions for pupils from elementary schools in preparation either for artisan or other industrial employment or for domestic employment." Each course must be organized to cover not less than two and not more than three years, and provision may be made for practical experience in works and elsewhere. The age of the pupils will be from thirteen to sixteen. Grants will be paid at the rate of £3 for pupils under thirteen and £5 for older pupils. This may be increased to £7 for courses involving exceptionally costly methods of instruction. No pupil, except with the consent of the Board, is to be allowed to enter for any examination in secular subjects other than one confined to the pupils of the school. Every pupil must take one of the approved courses. Classes are to be limited in size to thirty-two for ordinary classwork and twenty-four for work in which individual attention from the teacher is required.

THE Principal of King's College, London, in the course of an address on Commemoration Day, announced that owing

to the removal of the Strand School from King's College, forty-three new lecture rooms and laboratories would be available for University purposes. They would be ready for use in October, and would afford a welcome relief to the congestion from which almost all departments were suffering. The English library of the late Dr. Skeat would be housed, together with that of the late Dr. Furnivall, in a light and spacious room on the ground floor of the college, which would be used as an English seminar room, and, it was hoped, would serve as a centre for the advanced study of English in London. Similar seminar rooms would be provided for the other arts departments. On the science side research laboratories were to be provided for engineering, botany, chemistry, geology, physics, physiology, experimental psychology, and zoology. The students' common rooms, which had up till now been inconveniently small and scattered about the building, would all be concentrated in excellent rooms on the ground floor, near the refectory. The use of the Strand School fives court and gymnasium would add to the social life of the college, and the fine new Theological Hostel in Vincent Square and the Medical Hall of Residence contemplated close to King's College Hospital at Denmark Hill would also, it was hoped, find room for members of other faculties, and fill a gap that was sorely felt.

THE London Education Committee report that they have given careful consideration to the points raised in the report of the committee appointed by the British Association to inquire into the influence of school books upon eyesight. They have tentatively approved certain standards of types which they consider suitable for children at stated ages. They have also considered the paper, the margin, the binding, and illustrations. They have arranged for experiments to be made in certain schools with specimens of printing, for they do not feel that at present there is evidence that would justify definite action. On this point they say: "We are, however, of opinion that it would not be advisable, without very careful investigation and experiment, to lay down definite standards in respect of the size and the character of the type for books to be used in the schools maintained by the Council. There are other considerations besides the mere size of the type. For technical purposes the quotation of the size of any type refers to the body of the type. The face of the type, from the impression of which the printed character is obtained, varies in size upon types of the same sized body. Again, in considering the matter from the particular point of view now under discussion, regard must be had to the space between the words and between the lines."

THE Report of the Welsh Department of the Board of Education says that "the tendency to express educational ideals and policy by means of examination papers, and the domination of examinations over the school, have had two regrettable results. The one is that the governors of the school often neglect, and sometimes forget, the nature of their duties towards the school. The other is that the curriculum has often become so academic and general in character, and so confined to subjects that can be tested by examinations, that it has diverged widely from the instruction originally outlined, for the guidance of governors, in their schemes. It is very necessary, in the present circumstances of schools in Wales, to emphasize the fact that the responsibility for the nature and scope of the instruction given at each school rests entirely with the governors, subject to the provisions of their schemes, and to the duty of consulting in almost all cases the County Council, and in all cases the head master—the former in order that the school may take its proper place in the county system of education, and the latter in order that the course of instruction may be duly and efficiently carried out."

THE German public-school boys who visited King's College School, Wimbledon, were entertained to luncheon at the Guildhall by Colonel and Alderman Sir Charles Wakefield.

The boys, who had come from Frankfort, had been seeing the sights of London under arrangements made by Colonel Vickers Dunfee. They were present at the Royal Review on July 5 in Hyde Park, and were taken over the Houses of Parliament by Mr. A. C. Morton, M.P., while Bishop Boyd-Carpenter conducted them through Westminster Abbey. They also had special opportunities for inspecting the Royal United Service Institution and its museum. They were shown the Tower Bridge with its bascules in operation, and Major-General Pipon took them over the Tower of London. They had an opportunity of looking at the many interesting features and contents of the Guildhall and its library in company of Mr. W. T. B. Tippitts, Chairman of the Library Committee, and Mr. H. Kettle, the Librarian. Prebendary Reynolds acted as their guide to St. Paul's Cathedral.

A MEETING of secondary and technical teachers, organized by a Committee of the South Midland Branch of the Incorporated Association of Assistant Masters and other Associations of secondary and technical teachers, was held on Friday, June 27, in King Edward's High School for Girls, Birmingham, Mr. Cary Gilson taking the chair. The following resolutions were submitted:—(1) "That this meeting, representing all classes of secondary and technical teachers, welcomes the prospect of any improvement in the organization of secondary and technical education, and strongly urges upon His Majesty's Government the absolute necessity for a more liberal scale of salaries than at present prevails in the great majority of secondary schools and technical institutions." (2) "That this meeting is of opinion that no pension scheme for secondary and technical teachers in England and Wales can be considered adequate which does not provide benefits approximately equal to those now secured to Scottish teachers." Both the resolutions were carried unanimously.

## A NATIONAL SYSTEM OF EDUCATION ON A NEW BASIS OF STATE GRANTS.

[Presented to the Federal Council of Secondary School Associations, July 9, 1913, and printed for circulation by order of the Council.]

[NOTE.—Details even of an important character have been deliberately excluded from this Memorandum in order that the principle advocated of a new basis for State Grants (see Sec. 5) may not be obscured.]

### A NATIONAL SYSTEM NEEDED.

1. IN the interests of national efficiency a national system of education is an imperative need.

By a national system is meant an organization which should provide, for each of the districts into which the country at large may be divided, a systematic linkage of accessible institutions for education—schools (elementary and secondary), technical institutes, colleges (University and other). This provision will not be effective unless the institutions are (a) sufficient in number and kind; (b) linked together so as to form an educational system; (c) accessible to all, not only by situation, but also by means of scholarships and suitable fees.

### DEFECTS OF PRESENT CONDITIONS.

2. Beyond a fairly good supply of elementary schools there is nothing approaching a national system in England. Secondary schools are still too few, and many of them are difficult of access, whether on account of their situation or of the fees that are charged; and in both kinds of school the teaching staffs—the most important element—are too often incompletely qualified and poorly paid. In certain populous districts—e.g. London—no doubt the last ten years have witnessed vigorous efforts to deal with the whole field of education, but England is far from possessing such a general provision as exists in Scotland; and the attention of Local and School Authorities has, in the first instance, as a result

of administrative action arising out of the Education Act (1902), been devoted to externals, such as building and equipment, rather than to the personnel of the teaching staff. Further, teachers are in a state of unrest—divided in aims, and discontented with their status and conditions of service; as a consequence, teaching staffs are being recruited less and less from among those whose character and abilities specially fit them for a work in which fresh and vigorous personality is indispensable. In secondary schools in particular it is becoming increasingly difficult to hold out to teachers such inducements as will compete with the careers offered by business, the professions, and the public service.

#### OBJECTIVES IN REFORM.

3. It is possible, however, by a single financial reform, and that of a simple character, to deal effectively with each of these difficulties. It is demonstrable that by a simple change in the basis of State grants the State would be enabled (a) to relieve Local Authorities of an increasing incubus of financial responsibility; (b) to raise the status and qualifications of teachers and to weld them into a profession; and, in consequence, (c) to equalize throughout England the conditions for securing the efficiency of schools and other educational institutions, which is the recognized object and justification of State grants.

#### THE FINANCE PROBLEM; RELATION OF RATES TO TAXES.

4. One of the most difficult problems in educational finance is to apportion between the State on the one hand and the Local Authority on the other either the whole of the cost or that part of it which must be met from public sources. Hitherto the share borne by rates has been continually increasing, while that borne by taxes has remained approximately the same. Yet, as a general rule, for any rise in the standard of requirements the Central Authority is responsible; and it would therefore appear reasonable that the consequent increase in cost should be met by corresponding grants from the State.

To secure a better apportionment of the burden some persons would favour a system by which State grants should in each case amount to one-half or some other fixed fraction of the total cost of maintenance. But from an administrative point of view such a system, being based on the cost of individual institutions, would be exceedingly difficult to apply, whilst in thinly populated and poorly provided areas even an equal apportionment would leave a burden too great for those Local Authorities which relegate educational interests to a subordinate place in their programmes as carried into practice.

Moreover, as regards secondary schools and technical institutes, the range of variation in cost is so wide that any considerable addition to the State grant, *if based as now on attendance* (see Appendix, note 1), would merely aggravate the present discontent of School Authorities. Also in many districts difficulties would arise, whether by reason of the sporadic nature and varying extent of existing endowments, or of the defective supply of institutions providing education higher than elementary.

#### PRINCIPLE OF REFORM ADVOCATED.

5. *The principle hereby advocated is the single one of changing the unit on which State grants are based from the pupil to the teaching staff.* Grants at present are made in respect of attendance of pupils. The change now suggested is to make grants depend upon salaries of teachers.

#### PARAMOUNT IMPORTANCE OF IMPROVING TEACHING POWER.

6. The apportionment of burden between rates and taxes would for the first time be based on a principle at once sound, effective, and permanent. The change suggested would place the cost of teaching upon the State; it would leave to Local Authorities and other School Authorities the cost of maintenance (apart from salaries), and of providing buildings and equipment as needs arise; and it would tend to raise the standard of school efficiency throughout the country.

This plan would have the advantage also of focusing attention, for a time at least, on essentials. It seems imperative for the sake of educational progress that *for a few years the efforts for betterment should be concentrated on teaching power*, and that the first place should not as hitherto be held by the less important items of building and equipment.

#### COST OF SCHOOL EDUCATION.

7. It appears from statistics issued by the Board of Education\* that teachers' salaries, whether in elementary or secondary schools, accounts for from 70 to 75 per cent. of the total cost of maintenance. It is this item of expenditure which is the most burdensome to Local Authorities, not only because it is already considerable, and must, if only by automatic increment of salaries, increase from year to year, but also because the advantages accruing from this heavy and increasing expenditure, unlike expenditure on buildings and equipment, cannot readily be evaluated, and consequently fail in most cases to appeal either to electors or to administrative authorities.

The State at present is contributing for England and Wales for the general purposes of education\* about £13,000,000 (elementary £11,750,000; secondary £750,000; technological £500,000). If the State were to make its contribution equivalent in amount to the present expenditure upon teachers' salaries and other emoluments, it is estimated that in the first instance the charge on public funds would amount to about £19,000,000 (elementary £16,000,000; secondary £2,000,000; technological £1,000,000).

If it be objected that an increase of £6,000,000 at once, with a prospect of a further rise as soon as the new scales come into force, would be too much to ask of the State, it may be answered that the principle of basing grants on salaries would still be asserted if the State were to make grants equivalent to four-fifths or some other preponderating fraction of the cost of salaries.

Such a revised system of grants would relieve Local Authorities of a burden which admittedly renders their work difficult, and in many cases is making education unpopular with the electorate.

#### STATUS AND QUALIFICATIONS OF TEACHERS.

8. At present in elementary education there appears to be an increasing shortage, not only in the number of qualified teachers, but also in that of teachers of any kind. Unless, therefore, the attractiveness of posts in these schools can be substantially increased, educational progress must be seriously retarded. In the field of secondary education, where the personnel of the staff is of vital importance to efficiency, there is so serious a lack of fully qualified teachers as to place England in a position inferior to that of some other countries *in the efficiency of the average secondary school.*

Thus both in secondary and in elementary education a new departure directly authorized by Parliament is imperative, if a regular supply of efficient teachers is to be made available throughout the country. Such a departure would not only stimulate and encourage individual teachers but would associate them in corporate service and would lay the basis of a united and efficient professional body.

With a well-founded expectation of reasonable emoluments, fair prospects and professional status, a larger number of able persons would qualify themselves to become teachers. *Such persons would not become Civil Servants, inasmuch as School Authorities and Local Authorities would continue to appoint, pay, and dismiss their teachers.* A more uniform status would, however, naturally tend to the mobility and interchange of teachers throughout the country and would

\* For Elementary Schools, see Statistics of Public Education in England and Wales, 1910-12 (Cd. 6551), Part II, Financial Statistics, Tables 134 and 146. For Secondary Schools, see Parliamentary Paper (Cd. 5951) presented to the House of Commons in November 1911; and for all kinds of Grant-earning Institutions, House of Commons Return (No. 115) for the year 1911-12, relating to Education in England and Wales, presented May 6, 1913.



diminish among them such inequalities as now arise from purely local conditions.

An important corollary to the new departure is that the State would thus be enabled to take steps to raise the general standard of qualifications required from teachers, and in particular from those in secondary schools. At present (except in the case of the Heads of certain schools) no such standard exists, the question of qualifications being left entirely to individual governing bodies. In this respect, more than in any other, England is behind other countries, where a high standard of attainment and of ability to teach is secured by Government requirements as to qualifications and training, and is recognized by adequate salary scales.

#### EQUALIZATION OF SCHOOL OPPORTUNITIES.

9. *A system of schools thus staffed would bring about to an increasing extent that equalization of school opportunities which must be a main object of educational organization in a democratic State.*

Such a system would require that, as heretofore, the Board of Education should inspect all grant-earning schools, while Local Authorities should consider the educational needs of their areas, and after consultation with the Board should provide or aid necessary schools and other teaching institutions. To such duties and responsibilities the scheme advocated would add, so far as the Board is concerned, the duty of establishing some classification of schools, and of determining the numbers and qualifications of school staffs together with appropriate salary scales.

In this connexion it will be obvious that an extension of powers, so as to require inspection, at the cost of the State, of all kinds of schools and teaching institutions, must be authorized by Parliament. Such schools and institutions, if declared efficient within certain ranges of age and work to be specified by the Board of Education, would be entitled to State recognition within their respective ranges. Without such an extended survey and recognition no truly national system of education can come into existence.

#### CONDITIONS ESSENTIAL FOR A NATIONAL SYSTEM.

10. In short, if a national system is to be established, fresh interest must be aroused in all quarters. Schools must be vitalized; teachers must be welded into a professional body; Local Authorities and School Authorities must be stimulated and aided; while the State itself must definitely assume responsibility for seeing that schools and other teaching institutions are efficient, and that equal educational opportunities are brought within the reach of all who desire to learn.

#### APPENDIX.

##### NOTES ON CERTAIN IMPORTANT POINTS.

##### BASIS OF GRANT.

I. A change in the basis of grant is by no means unprecedented. Examples of three such changes have occurred in connexion with the system known as payment by results, which was adopted in 1861, greatly modified in 1891, and abandoned finally in 1898.

The present method of basing grant on attendance of pupils, though undoubtedly convenient from an administrative point of view, is no longer necessary for the purpose of ensuring regular attendance. The increasing attention that is given to the physical well-being of children has gone far to prove the unsoundness of continuing to base State aid entirely upon attendance; it may be that in certain areas some stimulus of this kind is still necessary to ensure a reasonable degree of regularity, and for this purpose a satisfactory standard of attendance should be made an essential condition of grant; but power should be reserved to reduce the amount granted to any individual school in case the attendance fell below the required standard.

It is, of course, probable that the application to State grants of a new principle may, until the necessary adjustments are effected, cause a certain amount of disturbance in individual cases; but it is submitted that the proposed method

would work out more equitably, and certainly more effectively, in the country at large than the present method, which by its dependence on number of pupils treats schools in towns more favourably than those in thinly populated districts, and thus helps to encourage the general drift of population from the country into towns. Again, by changing its basis of grants in the manner proposed the State would be enabled to take account of the fact that a small school is relatively more expensive to work than a large school.

#### EXAMPLE.

As an example, in secondary education, of the finance of a Local Authority providing a number of small schools, the case of Cornwall is typical. It appears from the accounts issued by this Authority that the county has established ten provided secondary schools, which in the three years 1910, 1911, 1912, contained 1,154, 1,285, 1,432 pupils, respectively; in the same years grants from the Board of Education amounted to £5,593, £5,616, £6,060, while the corresponding cost of salaries was £10,238, £12,479, £13,372, out of a total cost of maintenance of £13,518, £16,139, £17,612.

In this case the Board's grant in two years out of the three amounted to less than half the salaries; and the grant increased only 8 per cent. while the expenditure both on salaries and on total cost of maintenance increased 30 per cent.

#### SALARY SCALES AND PENSIONS.

II. The proposed scheme does not necessitate the adoption of a uniform scale of salaries, prescribed by the Central Authority; the cost of living even differs in towns from that in country areas, and this difficulty might be met, as in Prussia, by the addition to the salary as fixed by scale of a variable maintenance allowance.

Moreover, for administrative purposes it might be necessary to continue existing scales or actual salaries for a period of (say) two years, and although the general aim should be to secure complete mobility among teachers by such equalization of conditions as can be effected by administrative arrangements, the liberty of Local Authorities to fix a high standard of pay and qualifications for their area should not be restricted. This could be provided for by setting limits within which the State would restrict its grants, and by leaving to any Authority which desired to extend such limits freedom to do so at its own expense.

A natural consequence of the adoption of the principle here advocated would be that the State would also contribute towards pensions for teachers, taking over or taking into account any pension funds already provided by Local Authorities and governing bodies.

#### CASE OF WELL-ENDOWED SCHOOLS.

III. It is assumed that differentiation in the amount of grant should be made in the case of schools possessing large endowments. The fairest solution seems to be to place such schools upon a lower and perhaps a sliding scale of grant, so that a provided school would receive a greater percentage of its income from the State than would a well-endowed school. This would secure to no small extent the equalization of educational opportunity.

#### SUPPLEMENTARY GRANTS.

IV. Areas which have to meet extraordinary demands in the provision of school places (whether elementary or secondary) should receive special help outside a general scheme of grants based on salaries. The proposed scheme would not be complete without some reserve of discretionary power to meet cases of peculiar hardship — e.g. in especially necessitous areas, grants in aid for building new schools or in relief of loan charges. Such discretionary power should, however, be exercised only in very exceptional cases.

DR. M. E. SADLER, Vice-Chancellor of the University of Leeds, will give the opening address at the Oxford Summer Meeting organized by the Extension Delegacy, on Friday, August 1.

## FOLK SCHOOL AND SHAKESPEARE SUMMER SEASON AT STRATFORD-ON-AVON.

By E. J. NOTCUTT.

OF the making of holiday courses for teachers there is no end. Few are the teachers who, as August approaches, are not painfully conscious that much study is a weariness to the flesh. Yet it is to such that the School of Folk Dance and Song appeals as a source of physical and mental refreshment. As the name suggests, the dancing is not that of the crowded ballroom under glare of gaslight, but dancing that emanates from the soil under the glorious sun, or maybe under the stars.

Folk dance and song have caught on of late. Even the ancient University of Oxford has succumbed to the charm. The country dance we have always had with us, the joyous expression by movement of the social instinct. But many quaint old country dances have recently been revived. Who ever heard of "Hey, boys, up go we!" or "Gathering Peascods," till the revival of Folk-lore? Country dances are comparatively simple and particularly suitable for young children. The morris dance, more educational, is far more difficult. Here comes in the *raison d'être* of the Folk School. For the morris dances and the sword dances, as the Director, Mr. Cecil Sharp, explains, are the survivals of a religious ritual associated with Whitsuntide—a ritual for which the training was severe, occupying the weeks between Easter and Whitsuntide. They are professional dances with complicated steps requiring much initiation.

August is not theoretically the month of dance and song, but it has proved to be excellent owing to the possibility of outdoor demonstrations. Few prettier scenes can be imagined than a demonstration of folk dances in the Theatre Garden with the background of trees, the historic Avon flowing past, the air fragrant with flowers. Now and again a boat draws up to the banks and the rowers watch from among the reeds. Above the heads of the spectators proper, Prince Hal holds aloft the crown soon to be rightfully placed on his head, Falstaff chuckles, Hamlet philosophizes, Lady Macbeth wrings her hands, Shakespeare—towering above them all—gazes with an inscrutable look, "out-topping knowledge," at the evolutions of "Bobbing Joe," "Laudnum Bunches," or "Green Garters."

Somehow atmospheric conditions do not count at Stratford. I have seen a complicated morris dance being built up step by step with wind and rain driving without, also with a temperature approaching 90° in the shade. Little do the dancers reck, so absorbing is the interest. After the morris dance comes relief in the form of folk song or singing games and singing dances. In the intervals are informal talks and discussions with Mr. Sharp, who has found a mission in life in this work. But the half only is told. The F. R. Benson Company, past and present, are nightly interpreting Shakespeare or other dramatists in the Memorial Theatre. English history, tragedy, and comedy will be presented. Two modern plays by John Masefield and Bernard Shaw are to be performed, and Lord Lytton's "Richelieu."

Strange is it, but true, that in spite of elaborate settings on the London stage the voice of Shakespeare speaks with clearer notes in his native town. Nowhere else can one so readily enter into the Shakespearean spirit. It is this that makes the Spring Festival unique. The environment conduces to this end. The little town with its old-world elements, whose quiet is never jarred by sound of noisy tram, where the necessary railway station is not obtrusively in evidence—the town with its associations of birthplace, school, and shrine, gives a sense of preparedness for greater things to come. One enters the theatre with mind attuned for what the poet's pen has bodied forth. Then the spell begins to work. The atmosphere is curiously psychic. A subtle sympathy links together player and playgoer to mutual understanding and mutual profit. The audience go for more than mere diversion, and they get it. "He that seeketh findeth, and to him that knocketh it shall be opened." Partly

is it that the Company from reiterated practice are steeped in the spirit of the great Master to a degree unattainable in one season. Partly is it due to the high ideals and lofty imaginings of Mr. F. R. Benson. Partly is it that the Association work not for dividends, but for the furtherance of dramatic art.

The Memorial Theatre is the only endowed theatre in England, so at Stratford during August there will also be presented village children's plays, "The Harvest Masque," by Stratford townfolk; "The Drama of Job," by the Norwich players; "Glastonbury," by the Bedford players; "The Tinker's Wedding," by the Dunmow players.

Mr. Benson will initiate discussion on the plays each week, and there will be lectures on "Handcraft," "Design," "Heraldry," "Folk-lore," "Folk Song," "Folk Dance."

The jaded teacher who wants mental stimulus and change of thought can get both at Stratford for a very small outlay. None will go away without pleasant memories of a happy holiday, and fresh inspiration drawn from the two enthusiasts in their respective arts—Mr. Benson and Mr. Sharp—whose genial personality is felt at every street corner.

Mr. Benson and the Stratford-on-Avon Players, as the Company are to be appropriately called in America, ought to have a rousing send-off at the close, when they bid a temporary farewell to Stratford and their many friends.

LECTURES FOR TEACHERS.—During the Session 1913-14 Dr. John Adams, Professor of Education in the University of London, will give two courses of lectures which will be open without fee to teachers on Saturday mornings at 11.30 at the London Day Training College, Southampton Row. The first course will be given during the Michaelmas term, the subject being American Education; and the second course in Lent term will be on the Literature of Education.

## CORRESPONDENCE.

### INSURANCE PAYMENTS DURING HOLIDAYS.

To the Editor of "The Educational Times."

DEAR SIR,—It will be of interest to many of your readers to know the substance of a communication from the Commissioners just received by me on the vexed question of payment of Insurance contributions for holiday periods. The Commissioners state that they are of opinion that where the salary paid to the teacher is an annual one, it may be assumed to cover holiday periods, unless the employer is able to show that this is not the case. That in that case the ordinary weekly contributions are payable by employer and employee during the holiday periods as, although no services are being rendered, remuneration is received in respect of holidays.—I am, yours faithfully,

ERNEST TIDSWELL,

Hon. Secretary, Secondary, Technical, and University Teachers' Insurance Society.

10 Mecklenburgh Square, W.C.

July 17, 1913.

### "THE NEED FOR MASTERS."

To the Editor of "The Educational Times."

SIR,—In view of the great changes which are said to be immediately ahead, this is surely a time when secondary-school teachers need to unite as closely as possible. The article in your last issue on "The Need for Masters," by H. Bompas Smith, seems to me particularly unfortunate from that point of view, and calculated to promote discord and feeling in the ranks of the profession. It is full of statements in support of which no proof is advanced, and, lest their truth be generally assumed, I ask the favour of a little of your space in which to challenge the writer's assertions.

In the third paragraph he says: "No one who is acquainted with the staffs of our smaller grammar schools or our municipal secondary schools will deny that many of their masters would do excellent work

in other spheres, but that they cannot be said to exercise a refining influence or to inspire wide intellectual interests." I suggest that if you alter the sentence, so that it reads: "No one who is acquainted with the staffs of our larger grammar schools, . . ." it is just as true as it was before. Right through the ranks of teachers there are those who have missed their vocation, and who are not realizing to the full the possibilities and responsibilities of their work, but I deny altogether that all these go to make up the staffs of our smaller grammar schools or municipal secondary schools, and that all the masters of our best schools (i.e. large grammar schools) are "men of culture and refinement, stimulative and effective teachers."

But later in the article the writer suggests what in his mind is the failing in the ineffective and uncultured teachers. He says: "The proportion of men from Oxford or Cambridge entering the profession is steadily becoming smaller. Most head masters find it exceedingly difficult, if not impossible, to get the kind of men they want (presumably Oxford and Cambridge men). Hence many schools are staffed with men who have themselves been educated at inferior schools" (presumably other than the larger grammar schools). . . "On the whole the average Oxford or Cambridge man is more likely to be fitted for the particular work than are men from the newer Universities, and the increased proportion of the latter class is an indication of the frequent employment of an unsuitable type of Master." It would have been interesting if there had been some attempt to state clearly any reasons which justify this assertion, for such it is.

Now I have tried to sum up in my own mind the ideas of the writer on this subject, and have reached the following conclusion, which I think fairly represents the article. Most men from modern Universities are unsatisfactory secondary-school teachers because education at Oxford or Cambridge is able to give "culture and refinement" which cannot be acquired at one of the modern Universities.

A "pass" man of Oxford or Cambridge is able "to inspire wide intellectual interests" when a First Class Honoursman of Birmingham, London, or Manchester is unable to do so. Why—why is this so?

Unfortunately this view is held by many in whose hands secondary or grammar school appointments rest, for it seems almost hopeless for a man from the modern Universities, however brilliant his scholastic attainments, however successful his teaching experience, to apply for head masterships, or for the better paid assistant masters' posts in the larger grammar schools.

If this view is correct, what justification is there for the existence and continuance of the training departments for secondary-school teachers at our modern Universities? Why should not all who intend to enter the profession be plainly told that their only hope of later success lies in a course at Oxford or Cambridge?

Much more might be said, but I fear that I have already trespassed seriously upon your space.—I am, &c.,

July 9, 1913.

M.A. (Manc).

## CURRENT EVENTS.

INCLUDED in the Shakespeare Summer Season at Stratford-on-Avon, which opens on August 2, is a School of Folk Song and Dance, organized by the English Folk Dance Society under the direction of Mr. Cecil Sharp. On another page of this issue Miss Notcutt gives an account of the aims of the School. Information can be had from Mr. W. H. Savery, 11 Henrietta Street, Covent Garden, W.C.

MR. WALTER RIPPIMANN proposes to continue the very useful courses on Phonetics for modern language teachers which he has delivered for the last four years. The lectures will be given on Saturday mornings, beginning on October 18. Intending students should write to 45 Ladbroke Grove, W.

SCHOOLBOYS are great stamp collectors. The current number of *History* contains an article entitled "History from Postage Stamps," by D. B. Armstrong, editor of the *Stamp Collectors' Annual*.

BROWN UNIVERSITY, originally known as Rhode Island College, intends to celebrate the one hundred and fiftieth anniversary of its foundation in October of this year.

WITH money left with the Lord Mayor by the French President on the occasion of his recent visit to London, 2,000 London children have enjoyed a day in Epping Forest.

THE London County Council announce a large number of lectures for teachers, which begin after the midsummer holidays. The lectures and classes are open, upon the payment of a nominal fee, to all

teachers employed in the County of London, whether in Council or other schools. The Council's handbook, which contains all particulars, may be had from the Education Officer, Victoria Embankment, W.C.

PROF. C. G. BARKLA has been appointed to the chair of Natural Philosophy in the University of Edinburgh.

MISS KATE STEVENS, 48 Trinder Road, Crouch Hill, N., will be glad to receive and acknowledge subscriptions to the Stead Memorial Hostels' Fund for Women Workers.

THE REV. S. E. LONGLAND, assistant master at Wellington College, has been appointed Warden of Trinity College, Glenalmond.

MR. LEWIS MARSH, assistant master in the City of London School, has been appointed Head Master of the Ealing County Secondary School.

H.M. OFFICE OF WORKS have granted special facilities for art students desiring to study the arms and armour in the Tower of London. Copies of the regulations dealing with the issue of free tickets of admission to approved students can be obtained from the Curator of the Armouries, Tower of London, E.C.

THE Cambridge University Press will shortly publish a work of special interest in view of the new Education Bill promised by the Government. It is entitled "A National System of Education," and has been written by Mr. J. Howard Whitehouse, M.P., the Chairman of the Education Group of the House of Commons, whose labours on behalf of boys are well known. He deals in his work with the following aspects of the subject: The co-ordination of all forms of education, Reforms in both elementary and secondary schools, University reform, Legislative reforms respecting juvenile labour and further education.

MR. T. E. PAGE has been made a Governor of Charterhouse School.

THE party of American schoolboys who are now visiting England spent a day at Winchester. The Head Master showed them over the College buildings, and explained to them the Winchester traditions. The boys say that this was the most interesting of the many visits they have paid.

AT a meeting convened last month by the League of the Empire an Imperial Union of Teachers was inaugurated.

THE REV. F. H. GEORGE, assistant master of Hurstpierpoint College, has been appointed Head Master of King's College, Taunton. Mr. George was a scholar of Jesus College, Cambridge, and obtained a Second Class in the Classical Tripos of 1893. He was formerly a master at Berkhamsted School.

AFTER the recent opening ceremony of Bedford College the following letter was received from Mr. E. W. Wallington, private secretary to the Queen: "The Queen commands me to write and tell you how much pleased she was with all the arrangements which were made in connexion with Her Majesty's visit to the Bedford College for Women. Nothing could have been better done, and the Queen was intensely interested in all that she saw. The Queen did not fail to notice the guard of honour formed by members of the University of London Officers' Training Corps, and much appreciated their presence on the occasion."

THE annual prize distribution at Uplands School, St. Leonards-on-Sea, under the direction of the Church Education Corporation, took place on July 14. Sir Mackworth Young presided, and the prizes were presented by Mrs. Woodhouse, late Head Mistress of the Clapham High School. The annual report recorded a very successful year, and a point mentioned for the favourable consideration of parents was a scheme primarily for promoting the study of foreign languages, and also for increasing good-fellowship among the nations by the international exchange of children during the summer holidays. A good opportunity would thus be offered for a pleasant holiday in fresh surroundings, with the added benefit of being able to learn to speak a foreign language. An appeal was also made to parents to allow their girls to remain at school until they had had a year in the sixth form. Benefit from public-school life did not come only from the acquisition of knowledge. Education in its fullest sense must mean that along with the acquisition of knowledge there was developing a sense of responsibility, a realization of one's duty to one's neighbour, and a real desire to learn and prosper in every way.

1913.

## THE COLLEGE OF PRECEPTORS

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The Second Course of Lectures (Forty-first Annual Series) will commence on Thursday, September 25, at 7 p.m.

The Course is intended for teachers of all kinds who are in actual practice. Its purpose is to give assistance, so far as this can be accomplished by means of lectures, in the ordinary daily work of the teacher. All the matters detailed in the syllabus will be treated with the directness and frankness that are essential to their satisfactory discussion, but that are not always desirable in a printed book or a reported discourse. The lecturer will neglect no opportunity of indicating how the present state of affairs in schools may be improved, but he will concern himself mainly with the most likely ways of helping teachers to make the best of things as they are.

## SYLLABUS.

I. (Sept. 25.) *The Practical Teacher*.—Meaning of the term: general contempt for theory: nature of theory: its inevitableness: rule of thumb itself based on a theory: teachers by the grace of God: relation of theory to experience: practical dangers of lack of theory: the doctrinaire and the empiric: the pedagogic type of mind and its distribution: unintelligent demand for mechanical directions: real dignity of the profession lies in the fact that such directions are not enough: the practical teacher *must* use his intelligence if he wishes to succeed.

II. (Oct. 2.) *Class Management*.—Nature of a class: difference from a group of individuals: "sympathy of numbers": fallacy of "the average": common and peculiar qualities: the class as unit: class leaders and their manipulation: laws of interaction among the elements of the class: troublesome elements and their treatment: size of the class: personality of the teacher: fabled power of the eye: different ideals of class discipline: "talking" in class: possibility of teaching on discipline maintained by another: the old "discipline master."

III. (Oct. 9.) *Preparation of Schemes of Work*.—Contrast with former plan of prescribed courses: internal v. external control: the teacher's opportunity of independence: selection of basis: degree of detail—exoteric and esoteric: need for elasticity: place for rigidity: correlation with other subjects: co-operation of specialists and ordinary class teachers: class unit and school unit: relation to capacity and attainments of teacher.

IV. (Oct. 16.) *Home-work and Corrections*.—Spheres of the parent and the teacher in relation to school work: parent as teacher: parent as "preparation master": "causing another to learn": special characteristics of home-work: principles on which amount and kind of home-work should be determined: unit of home study: dangers of home study with special reference to the nature of the home: marking written work: misdirected energy in correction: the pupil's responsibility, the class teacher's, and the head teacher's.

V. (Oct. 23.) *How to Study*.—Learning from the pupil's point of view: absence of desire to know: how to rouse it: even when desire is roused there is difficulty enough: pupils naturally ignorant of how to study: teacher usually takes too much for granted: prescription of work to be done: kinds of learning: reproduction test: the dynamic test: constructive learning: rhythm of learning: concentration and diffusion: fallacies about thoroughness: temporary and permanent learning.

VI. (Oct. 30.) *Textbooks*.—Teacher's relation to textbook: nature of textbook: authority of textbooks: dangers of the use of textbooks: correlation of textbooks with work of class: tests of a good textbook: print and illustrations: pupil as his own textbook maker: advantages and dangers of note-taking by pupils: the note-book as textbook: edition difficulties and difficulties with publishers: the economic question: ownership of textbooks.

VII. (Nov. 6.) *The Teacher's Reading*.—The reproach of publishers: teaching "the inarticulate profession": urgent need of general reading to counteract the narrowing tendency of the profession: special reading of two main kinds, (a) the literature of the teacher's "subject," i.e., his speciality, (b) the literature of education generally: possibility of excess of educational theory: newer class of literary presentation of educational problems: practical help to be had from such books: suggested minimum professional library for the teacher.

VIII. (Nov. 13.) *The Pupil's Charter*.—Demand for perfect naturalness of pupil: self-expression v. self-realization: demand for absolute freedom: Madame Montessori's System: Count Tolstoy's anarchic school: Froebel's "a passivity, a following": these different but not irreconcilable views: caprice v. freedom: self-imposed restrictions involved in freedom: subjective limitations of freedom increase with the aid of the pupil: corresponding regulation of school control: from educand to educator.

IX. (Nov. 20.) *Artifices in the Schoolroom*.—School an artificial society: based on recognized convention deliberately adopted: distinction between education and pedagogy: M. Boutroux' attack on pedagogy: manipulation of the school environment: Rousseau: interference with the ordinary laws of development: school stage-management: the teacher as actor: nature and human nature: various grades of truth: parallel restrictions of liberty in school and in world: the schoolmaster and the World Spirit.

X. (Nov. 27.) *Teaching Devices*.—As result of much theorizing a certain number of practical hints are now made available for teachers: the vacuum: mistake traps: anticipatory illustrations: the manipulation of rule and exception: the awful example: the use of the standard: mnemonics legitimate and illegitimate: fixing the alternative: learning by rote: cram, benevolent and malignant: the arithmetical challenge: elaboration: manipulation of suggestion in both its positive and its negative form.

XI. (Dec. 4.) *Use of Apparatus*.—Distinction from furniture: danger of being dominated by apparatus: over-elaborate apparatus: ready-made and home-made apparatus, permanent and temporary: hints for preparing apparatus: various kinds of school maps: the optical lantern: various kinds of blackboards: mechanical aids to blackboard drawing: coloured chalks: optics of the blackboard: eye-strain and how to prevent it: writing and drawing on blackboard: uneducational and excessive use of the blackboard.

XII. (Dec. 11.) *External Authorities*.—The teacher's many masters: their different kinds of authority: how to deal with authorities that are inconsistent with each other: need for the teacher to study adult psychology: need for sympathetic treatment of the official in order to get best educational results: the surd of freedom as found in case of class-teacher: the distribution and dissipation of responsibility: result on teacher's freedom: danger of teacher's failing to take advantage of what freedom is left him.

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## SECONDARY EDUCATION.

THE NEXT STEP TOWARDS A NATIONAL SYSTEM.

By R. F. CHOLMELEY, M.A.,

Head Master of Owen's School, Islington, and Hon. Sec. of the Incorporated Association of Head Masters.

### III.—THE SUPPLY OF SCHOOLS.

"BECAUSE THOU HATEST TO BE REFORMED."

THERE are few qualities of which we boast with less reason than our respect for liberty, which is the name we give to social laziness. Because of this social laziness, which includes almost every other social defect, we have allowed education to grow up like the products of an untilled garden, proud of our unwillingness to distinguish the flowers from the weeds, and resenting, on the highest principles, any attempt to induce us to cultivate with discernment; and consequently a muddled education may destroy the effectiveness of a whole generation without the greater part of the victims even knowing what has happened. So true is this that it is common to find the very persons who have suffered most protesting most vehemently against reform. They have survived; they feel themselves to be capable and worthy citizens; to say that others ought to be better taught than they were is to say that they were ill taught, and that is a reproach. This kind of opposition to reform deserves to be faced with much patience; it is impossible not to sympathize, for example, with the Civil Service clerk, who, having been forced to earn money at fifteen, has entered the service as a boy clerk, and by determined industry has forced his way to a position from which the effort to make education count for more looks like a belittling of his merits—or with the teacher to whom the demand for higher qualifications from teachers looks like a reflection upon his competence to do that which he knows he can. This state of mind constitutes a real difficulty; it is perfectly natural, there is an element of truth in it, and it is not to be lightly dismissed.

We must recognize that while the reformer has his eye on the next generation, it is to this generation that he has to make his appeal. That appeal can be made successful only by driving home persistently and continually the parental responsibility of each generation for the next; the responsibility of the nation for its children, of each of us for the children of all. The demand for more and better education does mean—it cannot but mean—a belief that those who have had the best education to-day are the better for it; to deny that would be to stultify the movement at its beginning; but it also means a passionate desire to make a liberal and reasonable system of education play a far greater part in the inspiration of to-morrow.

#### THE APPEAL IS FOR THE CHILDREN.

We must appeal from the covetousness that drags boys and girls into the labour market, and from the dulled imaginations of those who have had to think so hard for themselves that they have forgotten how to think of others, to the fathers and mothers who care for their children, and to all who, whether they have children of their own or not, care for the children of the nation, because they represent the nation's future. To these we can appeal: we can ask them to say, and to say persistently, that so long as there are places in England where children cannot continue their education adequately because there are not schools for them to go to, we have not got the elements of such a system as will keep the nation alive. It is of no use to appeal to those who think that this does not matter, that schools merely do in a pedantic way what the office or the shop does as effectively and with less waste of money, that the agricultural half-timer learns more from leading horses than from reading poetry, that the street is the greatest of educators.

There is something in what they say: it has been, and still is, a defect in much of our teaching that it is too far removed from life, and that defect is responsible for much of the indifference or hostility with which it is regarded. It is easily accounted for; every chapter in the history of education supplies causes; and the very conditions which spur us to call for more and better education to-day play their part in making the path of the reformer difficult. When we know that we are resisting the exploitation of children's labour, it is only natural that we should take the easiest method of protecting them, by deferring as long as possible the teaching of things that will make their labour profitable. If the farmer wants boys on the farm one method of check-mating him is to see that boys do not learn what might make them useful to him; if the business man wants youths who can write shorthand and use a typewriter, we suspect him—not always without reason—of wanting nothing else, and do our best to prevent him from getting them.

#### EDUCATION AND EMPLOYMENT.

The teacher's suspicion of the employer constitutes a very serious difficulty. The practical man's suspicion of teachers leads to useful criticism and helps us to keep out of real danger; but if all we are to get by making our children into active-minded and competent young persons is still keener exploitation of their abilities, the case is indeed desperate.

Not many months ago considerable interest was aroused by the accounts of experiments made in America with a view to discovering the exact relation between certain factors of the efficiency of workmen engaged in shovelling gravel. It was said to have been proved that by using shovels of a particular size so as to regulate the quantity of gravel lifted in a single operation, the average workman would shovel exactly as much gravel in a day as human endurance would permit. The discovery made for the efficiency of the workman; it is not surprising that the workmen are said to doubt whether it made proportionately for their general welfare. The reason why this story illustrates the educational problem is easy to see; the workman was improved, he was made more efficient for his particular job; but as a human being he was left untouched; the improvement had nothing to do with that, it concerned him solely as

an instrument. Whether he was likely to make higher wages as a more efficient instrument seemed to be wholly open to doubt; what was less open to doubt was that a general standardization of shovels meant also a more accurate standardization of shovellers, and the setting of a pace that a good many would be unable to keep up with.

#### THE AIM OF EFFICIENCY.

The moral was expressed long ago by Kant, when he said: "Use no creature solely as a means." When we ask for schools, and schools, and more schools, in order that more children may grow up to be more efficient members of the community, we must remember always to keep two objects in view. We want each of them to be more efficient for his particular work, whatever that may be, whether he is to be a bricklayer or a bishop; but we also want him to be more efficient as a human being, which may be quite simply expressed by saying that we want him to be *happier in his work*. Ultimately these two ends are one; and that is why educational reform is an inspiring thing. Efficiency, rightly understood, is not a mechanical virtue, but a virtue of the whole creature; the creature used solely as a means will never reach the highest point of efficiency, because the greater part of his nature will be asleep or suppressed, and what we have to aim at is the effective development of the whole.

#### THE NEED FOR MORE SECONDARY SCHOOLS.

For this we must have everywhere an adequate supply of schools; and because the critical point in the development of a child is the point at which he ceases to be a child, and the critical question just now is what we mean to do for him at that point, we must have an adequate supply of secondary schools. Merely to aim at "putting tops on our elementary schools"—to use a favourite phrase—leaves the problem less than half solved: merely to abolish fees for secondary education would be hardly to touch the problem. We have not enough provision for secondary education, and if all fees were abolished to-morrow an insignificant number would be able to take advantage of the abolition. As for putting tops on our elementary schools, if that meant a four-year course for every child who had not proceeded to a higher school at twelve, with some security that there would be no leaving until the course were finished, there would be something to be said for it, although even so it would help to perpetuate and even to extend the distinction between the elementary-school product and the children who have finished their school life in other places. But there is an even more valid objection to this kind of development than the probability that it will not do what it professes to do. The real objection is that children before twelve or thereabouts and children after twelve are different, and require different treatment. If we are to have a complete educational system we must try to base it upon facts of human nature; and those facts, which are already recognized in the provision of scholarships and free places, point directly to the supply of secondary schools as the only right means of providing secondary education.

#### THE DUTY OF LOCAL AUTHORITIES TO PROVIDE.

How are we to secure this supply? The Act of 1902 left it to the option of Local Authorities, with no more than a hearty recommendation to do what might seem desirable, combined with permission to spend money not exceeding the sum produced by a 2d. rate. Local Authorities have done something; but very few have come near the limit imposed by the Act, and some have taken small advantage of it. If the whole additional cost of educational reform is to be borne by the rates, it is useless to expect anything better; but if, as was suggested in my first article, the whole question of reform is attacked boldly, and the provision of a teaching profession secured by taxes, then we may fairly do what the Act of 1902 would have done; we may make the Local Authorities definitely responsible for the supply of secondary schools, and insist upon their doing the work. This work should be the great opportunity for stimulating and



making full use of local patriotism, and therefore the task, not merely of supplying schools, but of co-ordinating the supply, should be as far as possible left to local bodies, acting separately or in combination, although the final ratification of the arrangements proposed would necessarily rest with the Board of Education.

#### EQUALIZATION.

In a national system this is the indispensable function of the Central Authority; only through it can the inequality of resources as between one locality and another be so dealt with as to meet the universal need and each separate scheme become an item in the general plan. This is true nationalization; for we shall not be able to call our system truly national so long as a child's chances of education depend upon the district in which he or she happens to live.

#### IV.—THE TEACHERS.

##### WANTED: A TEACHING PROFESSION.

For Heaven's sake let no one skip this section from a suspicion that it may not concern him; for of all the topics that enter into this question of reforming education, this of the teacher is by far the most important and the most necessary for those who are not teachers to take an interest in. Unless people in general will not merely consent to take an interest in teachers, but insist upon finding out what sort of teachers are wanted, and how they are to be got, and what sort of work they are to be set to, and how they are to be kept at it, all talk of educational reform is mere superfluous chatter. And do not let us suppose that these are questions that can be disposed of in a sort of philanthropic or charitable spirit, as though it were merely a matter of improving the outlook for a number of worthy persons who are doing a good work for shamefully little pay. That is a view of the case which it is impossible to ignore; but for the nation it is not the most important view. It is not at this moment the national conscience that needs awakening so much as the national business intelligence.

##### STUPIDITY OF PAYING TOO LITTLE.

If, in January 1911,\* in grant-earning secondary schools over 40 per cent. of the assistant masters were earning salaries of less than £160, and close upon 40 per cent. of the assistant mistresses were earning less than £120, we ought no doubt to be ashamed of paying so little for what we get; but we ought to be still more ashamed of expecting to get anything at the price. It is not merely meanness, it is sheer unpractical foolishness to suppose that we can take one step towards getting our children educated as we want them educated, until we have made up our minds to pay for it in the only effective way, by making it worth while for spirited and intelligent people to educate them.

I am not going to deny that there are spirited and intelligent people engaged in education now; there are far too many of them, considering what they are paid for it, but there are too few for our needs; and what is more important, it is becoming increasingly difficult to get more of them. As a profession for self-respecting people, education is on the point of being found out.

##### THE STANDARD LOWERED.

That means, not that nobody will come into it, but that it is getting more and more difficult to get the right man or woman for a given kind of work. It means in the long run that all the work is being, in the literal sense of the word, degraded; it means that to a dangerously increasing extent first-class work is being entrusted to second-class workers, second-class work to third-class workers, third-class work to anybody who will take it. The mischief of this degradation is obscured and also intensified by the fact that at first the second-class worker who takes first-class work is the pick of the second-class; and the better he or she does the

work the less does it seem to matter that the people who ought to be doing it cannot be got to do it, and that the whole business is going down a grade. "Bad money will drive out good money." Sir Thomas Gresham's maxim ought to be written in letters of gold over the doors of every Education Office; for bad education *drives out* good education.

##### A "DEGRADED" EDUCATION.

If we offer for the most advanced—by which I mean, as nearly as one phrase can express it, the most intellectually and spiritually exacting—work in education, inducements that are not sufficient to attract into it those whose own education has been most complete, we shall get the work done in a kind of way even as the work of exchange can be done in a kind of way by a debased currency; but just as a debased currency, though it pass muster for a time among those who are brought up to use it, leaves them helpless for trade with those who use genuine money, so in the intellectual rivalry of nations a "degraded" system of education is a most ruinous makeshift. We shall never treat education properly until we understand that it is, as Lord Haldane has told us, a question of National Defence, and that by neglecting it we are acquiescing in a national weakness.

##### TEACHING POWER MUST BE SECURED.

But, if we make the teaching profession worth entering, if we offer to teachers something that may be called a career, and if we make it clear that we are doing this *because teaching power is a matter of national interest*, we shall be in a position to say what we require from teachers, and to see that we get it. We shall be able to require training. Nothing illustrates more clearly the chaotic administration of secondary education than the fiasco of secondary training. In the three years from 1908 to 1911 the number of women students who completed a course of secondary training was 176, 139, and 133 respectively. The number of men for the same three years was 23, 35, and 33. In 1911-12 there were probably more—"a considerably larger number" is the estimate of the Board of Education. There are plenty of subsidiary reasons for the failure, but none that matter in comparison with the fact that secondary teaching does not offer a career worth training for.

##### HOW TO INSIST UPON TRAINING.

The Board of Education is sometimes blamed for not encouraging, or even for not insisting upon, training—at any rate for schools under its control. Those who so blame the Board probably over-estimate the forces at its command. The only means by which the Board achieves effective control over schools are its grants, which are based upon the attendance of pupils. To use these grants in the only way in which they could be used to back up training—namely, by withholding them from schools where untrained teachers were appointed, would be a measure whose boldness could be justified only by success; and there is not the least doubt that it would have been a complete failure. It would be quite easy for the Board to prescribe that the average height of all teachers in grant-earning secondary schools should be not less than 7 feet; it may be doubted whether such a regulation would make a great deal of difference. One does not even ask for the moon without being fairly sure that there is a moon to ask for; and to ask for a supply of trained teachers in present circumstances is to ask for what does not and cannot exist. Action of this kind might have disclosed the nakedness of the land; but it would have been more likely to divert attention from the real necessities of the case, and concentrate it upon a convenient opportunity of showing that the Board itself was the root of all evil. The truth is that the Board knows well enough that there is no justification for demanding training from secondary teachers. Elementary teachers are not without their grievances—nothing could be further from the purpose of these chapters than any desire that they should be shelved or belittled—but, at any rate, when the Government insists that they shall be trained, the Government pays for it; the secondary teacher

\* See the Parliamentary Paper (Cd. 5951) issued by the Board of Education in 1911—a most illuminating document.

still labours under the suspicion of being a sort of well-to-do amateur, to whom the cost of a year or so of training on the top of a University education is a matter of no importance.

Since the facts as a rule are quite otherwise, and secondary education has chiefly depended—so far, at least, as men are concerned—upon the supply of amiable and imprudent persons who want to earn something the instant that they have taken their degrees, and for the rest see no reason why they should not all become head masters in a few years, the new demand for training has simply—to use a commercial expression—dislocated the market. It has produced the effect, admirable enough in itself, of causing large numbers, who might have come into the teaching profession without thinking, to think as many as two or three times about it, and then to do something else. The days of kidnapping young persons into the teaching profession are over; and we must make it a profession worth entering with the eyes open. Then we can insist upon training.

#### WHAT TRAINING MAY MEAN.

Moreover, when we are in a position to insist upon training, we shall take it more seriously in other ways; we shall be forced to deal seriously with the question what constitutes secondary training, instead of acquiescing in sporadic attempts to adapt the system constructed to meet the needs of elementary teachers; we shall try to find out what the Universities really can do in the matter, and what can be done by the schools themselves whose efficiency is at stake; we shall ask and insist upon discovering whether there is only one sort of effective training or several, and if there are several, what differentiates them, and to what varying conditions each is appropriate. These are not easy questions to answer; but they are urgent. We have to remember that in thinking of secondary education we have a subject of great variety, and that although all must be directed towards a common aim, the production of efficient citizens, conscious and proud of what they owe to their education, the roads that lead to that goal are many, and not all to be travelled comfortably with the same equipment. If we are to take away from education the reproach of unreality, we must have a teaching profession that is in touch with life, and able to base its practice upon life. Philosophy was none the worse for being brought down from the clouds and made to walk among men; and there is no reason to fear that the highest educational ideals will suffer from the attempt to bring them into a more intimate relation with the things that we actually do, and the aspirations that actually govern our social intercourse. If there is any meaning in this doctrine, a teaching profession trained for its work will become a social force of incalculable value, because it will not only be—what every teacher must in some measure be—a reconciler of the practical with the ideal side of life, but it will help as no other institution can help to bring about that reconciliation between unity of thought and diversity of business upon which the real oneness of the nation depends.

#### THE LEAGUE OF THE EMPIRE.

[COMMUNICATED.]

To say that in twelve years much may happen is merely to state an obvious fact and to perpetrate an unnecessary platitude. But, after all, it is not altogether useless to draw attention to the lapse of time, nor unwise to survey the events of a decade. In twelve years nations are born and die, great enterprises are won or lost, reputations are made or tarnished or utterly destroyed, and institutions crumble or flourish as the fickle tide of public opinion ebbs or flows. Amid many uncertainties one substantial verity survives: in the slow, sure order of things a good cause defies all vicissitudes, and strong, virile organisms come into being, quietly and sometimes almost unnoticed, to secure their rightful place in the scheme of things, whilst weak, ineffec-

tual or injurious projects find an appropriate place in the background, or else fade away into oblivion.

From among the strong growth, its serenity undisturbed by storm and stress and its usefulness unimpaired by changing circumstance, the League of the Empire may be selected for special notice, for few, if any, of the many organizations formed within the last dozen years can show a better record of useful work or offer more abundant proof of enduring vitality. From the first year of the League's existence, when a Correspondence Branch was formed for the benefit of children throughout the Empire, to the present day when we see the formation of an Imperial Union of Teachers—surely a great achievement—the League of the Empire has worked quietly and steadfastly with the double purpose of strengthening Empire unity and of securing perfect co-operation between educationists and Education Authorities throughout the Empire. Statesmen and party politicians may dream of work for Imperial unity under whatever label they choose to designate this great ideal, but they always come to grief over definitions and abstract considerations. With the League of the Empire it is different. They are not concerned with party politics, and therefore their policy is easy to define. The League simply ask all people, everywhere in the British Empire, to draw together for the purpose of advancing the work of education, thus cementing ties between one country and another in the Empire, and every such country with the Home land; for unless citizens of the Empire realize the need of close association with each other, and understand the meaning of the principles underlying true citizenship, Imperial unity is impossible and every scheme of federation must fail.

What may be set to the credit of the League of the Empire in matters of education? To begin with, the children of the Empire have been brought into close touch with each other. Wherever the flag is seen there are children who eagerly embrace the opportunities afforded them by the League for mutual inspiration and intercourse. Who can pretend to measure the weight of influence exerted by over 26,500 members of a world-wide organization like the Correspondence Branch of the League, regularly exchanging friendly and intimate communications across the seas? If the League of the Empire had stopped here, good and remarkable work had been done, but this was only the beginning. A further step naturally followed—the affiliation of schools throughout the Empire, bringing many thousands of scholars into relationship one with another. Here figures fail to illustrate the extent of the vast organization set on foot by the League in its early years. Every movement in the direction of effecting unity between children of the Empire has met with success, and the interest shown in the Empire Essay Competitions for the Meath Cup and the League of the Empire Prizes gives sufficient proof of the popularity of this section and of the widespread attention devoted to this particular work of the League.

But important though it is to enlist the interest and sympathies of children in Imperial work of the character in which the League has been for so long engaged, there are other large groups of people in whom the League has always felt a deep interest and for whom much of their work has been done. Teachers throughout the Empire have benefited through the operations of the League. Six years ago the first Imperial Conference between the Educational Departments in the Empire was arranged and convened by the League of the Empire, and the same year saw the initiation of a scheme providing for the migration of teachers desiring to take up definite study in other parts of the Empire than their own. This scheme involves also the interchange of teachers between school and school in one country or another of the Empire. This provision has attracted many teachers, and many have availed themselves of the arrangements made by the League for this purpose. We understand that the Council of the League propose to allot a generous sum to this branch of the League's work from the fund of £10,000 which they are now raising for general and special purposes. Certainly there can be no better method of increasing the

usefulness of a teacher than by providing means of studying questions affecting the profession in different lands.

Great causes move slowly. It is impossible in a very short time to bring to fruition ideas that have their birth in the midst of difficulties and embarrassments such as the League have fought all through the past twelve years. Following the affiliation of schools it would seem to have been a simple matter to bring about an association of teachers, but it was not until 1910 that the Teachers' Associations of the Empire affiliated themselves to the League, and two years later the first Imperial Conference of Teachers' Associations of the Empire was held, when over 600 delegates and representatives from all countries in the British Empire met in London under the auspices of the League to discuss many subjects of enormous importance to the teaching profession. Arising out of that Conference we now have the Imperial Union of Teachers, an organization that cannot fail to help the teacher and consequently advance the work of education in the countries forming the British Empire. This Union was inaugurated at the first Annual Meeting of Teachers' Associations of the Empire, held on July 19 in London, when arrangements were discussed for the next Imperial Conference of Teachers' Associations to be held in Toronto by invitation of the Government of Ontario. There was a large attendance of teachers and representatives of Education Authorities from different parts of the Empire. During their stay in this country the Overseas teachers will enjoy a long program arranged for their entertainment.

Perhaps the most interesting development which has occurred recently in the history of the League of Empire is the foundation of a Club at 28 Buckingham Gate, Westminster. The Club is intended to be a permanent organization for teachers at home or coming from Overseas, and for all interested in Imperial work of any kind. There can be no doubt that the Club will be of great service to associated teachers. It provides a centre which has long been needed for all engaged in the work of education. The teacher's life is always hard, often lonely, and is inevitably monotonous. The Club will do much to introduce variety and pleasure into the life of the teacher, and will provide many fresh opportunities for gaining knowledge of value in the teaching profession, and of profiting by the experience of educationists coming from other parts of the Empire. Full particulars of the Club and the moderate subscriptions may be obtained from the Hon. Secretary, to whom all communications should be addressed.

The general work of the League of the Empire covers a large variety of interesting matters, but all are more or less intimately connected with the work of education, with which the League has been so closely identified during the last twelve years. A "History of the British Empire" and two Imperial Textbooks have been prepared and published, and the value of the "History" is shown by the fact that a portion of it was prescribed for the Oxford Local Examination last year. The Intelligence Department has done much useful work during the last six years and has earned the appreciation of the Imperial Education Conference. When, in 1907, the island of St. Helena was in deep distress, the League founded a Lace and Needlework Industry which has since been taken over by the Government and has proved a very successful and beneficent undertaking. As every one knows, the annual Empire Day Parade in Hyde Park was initiated and is regularly organized by the League.

Enough has been said to indicate the scope of the activities of the League of the Empire. Its continued success is due to consistent loyalty to the principles on which it was founded; and while those principles exist—and they are eternal—the League will be a useful and a necessary force in the educational world.

The London School of Dalcroze Eurhythmics will open on September 30 in a central position. It will be under the direct supervision of Prof. Dalcroze himself. Provisional Prospectus may be obtained of Mr. P. B. Ingham, Merchant Taylors School, E.C.

## A PLEA FOR QUIET.\*

At a time when a fountain with a thousand jets is throwing out educational ideas on all sides, so that no one can escape being drenched with the spray, it requires either the courage of despair or a childlike confidence in your patience to address you to-day on any aspect of the great work in which we are all engaged. The fountain never ceases for one moment to play—the daily Press, and especially the *Morning Post*, educational journals and reviews, the endless reports, suggestions, and regulations from the Board of Education, the speeches of distinguished educationists at the annual prize-givings of our public schools, and at the openings of new schools or new Universities, the essays and lectures on education that are published, the conferences of teachers which take up a large part of the holidays and even half-term holidays and every other Saturday—would seem to call for a protest against adding one other word to this bountiful supply of material for thought. And yet, perhaps, it may not be waste of time to consider the real force that is impelling the fountain. There is the force of thought from those who have the gift to see more clearly than others into the heart of the matter; the force of practical wisdom springing from the experience of teachers; the force of public opinion springing from the experience of parents; and the more artificial force of the Legislature, whose great business it is to direct what I may call the other more natural forces into channels beneficent to the child.

### PUBLIC EXAMINATIONS.

For instance, one idea that is being much spoken of at the present moment is that public examinations have tended to absorb too much of the attention, the time, and the mental and physical strength of both teachers and pupils. Behind this idea is the wisdom of those who have minutely studied the matter; the experience of the teachers; public opinion, which has become aware that the passing of many examinations may mean nothing at all of solid value; and the Legislature, which is, no doubt, at this moment pondering as to how it can help to direct this idea so that in future examinations may take the humble but useful place of testing certain forms of education for certain purposes, whilst safeguarding the public from ever again regarding success in passing examinations as the main achievement to be accomplished at school. Besides the force behind any such detail of educational work such as a system or systems of examinations, there is, one is happy to think, the force of large and lofty ideas which is driving this fountain to display the marked activity which we see it displaying at the present moment.

### CORRECTIVE AND CONSTRUCTIVE IDEAS.

There are what may be called corrective ideas and constructive ideas. Among the first is the resolute determination to face the fact that much in our social condition is more wrong than it need be if the teaching and training of the young were better done. In every stratum of society boys and girls often seem to lack a protective talisman to carry them safely through what appears to be for many a danger zone immediately succeeding the happy, promising school days. Another great idea behind the best thought about education is that if only there were enough ability, wisdom, and devotion to grapple with the present situation, it is pregnant with hope for the growing generation and for those which are to follow it. It is almost bewildering to look down the many vistas that seem now to be opened up and to give a far-off glimpse of a Promised Land to those who have the patience to explore and to follow the light. Another great idea put forward every day is that if education is to do its work well, it should help to fit each boy and each girl for doing exactly that which Nature especially intended

\* Presidential Address delivered at the Annual Conference of the Association of Head Mistresses at Cheltenham by Miss Douglas, Head Mistress of the Godolphin School, Salisbury.

that particular child of hers to do. The son of the labourer and the son of the peer may both find themselves "on the land" in Canada if the land calls to them individually, and in early years the particular bent of each child must not be lost sight of in the organization of the school as a whole. Again, the influence of *esprit de corps* is receiving more attention than ever before. It has for long been part of the very essence of any large public secondary school, but it is now being recognized as capable of very much further development in our primary schools, and in the movements for promoting the welfare of boys and girls after school age. That very interesting little book, "Across the Bridges," has much on this topic, and school managers and members of Care Committees are directing much thought and enthusiasm to the making of a fuller use of the magnetism that membership of a community should transmit.

#### TALENT AND CHARACTER.

But there is a greater idea still than even such as these, and it is that education has to do with so many free spirits which are intended to remain free and to go out with an untrammelled energy to do their part in life; with so many wills which must be helped to express themselves in the power of service; with so many hearts which must be nourished by a loving kindness which will reproduce the fruits of love. I don't know who it is that describes so vividly seeing some native boys in Egypt swimming over the First Cataract of the Nile for their amusement. Each boy is supported on a log and shoots through the boiling, eddying race of waters almost always without mishap. And why? Because of his own skill, his own power of choice and judgment, and his individual ability to use the log. The writer makes this story of adventure into a parable. The rushing cataract is life, the log is the endowment the boy receives from Nature, and he says that it is in the main not with the river nor with the log, but only with the swimmer that education has to deal. And this reminds us of Goethe's saying: "Es bildet ein Talent sich in der Stille, sich ein Charakter in dem Strom der Welt." Now, if this is true that a talent ripens amid peaceful surroundings and character is formed by contact with the strong river of life, it seems as if there should be no lack of strong character to-day. I think, however, that Goethe might possibly be disappointed if he were to look at the volume and impetuous rush of human life to-day, with a view to measuring its effect on human character. I think he would say that for the making of the best character there must be quiet times of refreshment and nourishment if the fibre is to be strong enough for the conflict which is to make it stronger still. And what would he say about the chances at the present time for the ripening of talent? We hear so much about an educational system which should secure the discovery and the encouragement of talent, and we seem to take for granted that the best soil for it is a school, but Goethe would say that there is great danger lest the talent be too roughly handled in the routine of school life. As schools are likely to become more and not less a part of the permanent fabric of society, we have to consider how they can be managed so as to justify their existence as providing both for the formation of character and the ripening of talent—for surely these are two of the chief functions which a school has to perform.

I have already suggested that more peace and quiet are necessary if character is to grow strong, persistent, and patient, and if the talents latent in children are to develop freely and naturally and richly. I would therefore narrow down your attention this morning to considering the importance of trying to secure a peaceful atmosphere in the school, and also of helping to give the girls in our schools a firm grip of the fact that in quietness and in confidence shall be their strength. There are signs that, in spite of the material development on all sides, there is side by side with it a great awakening to the reality of the spiritual forces in life. Nature's law of compensation is at work, and if, on the one hand, her material agencies seem to be fighting against her spiritual forces, this very conflict provokes the stronger

energy in the spiritual field. The material age seems to be over in the sense that surely never again can scientists ignore the fact that man is a spiritual as well as a material being. But materialism may be a very real foe to any individual life, and we all know that it is absolutely necessary to see to it with the utmost deliberate thought that there shall be given in our schools clear spaces of opportunity for spiritual growth. Religion is a necessity of human nature, and pagans and Christians alike witness to this fact if they are trying to live a life in accord with their highest instincts.

#### BODY AND SPIRIT.

A human being must be sustained by drawing from deep wells of life which remain deep and constant, however the supply may fail on the surface of arid materialism. Whether we take this figure of speech or whether we take another that the spirit of man is in truth his breath and he must have fresh air to breathe; or whether you look on him as a child of light who must be bathed in the clear glory of the sun—whatever figure we use, it is clear that body without spirit is dead. We all know this; we all know that just as we have to provide time for meals, time for exercise, time for bed, so we must provide time for that quiet intake by the spirit of fresh inspiration; but is it not one of our greatest difficulties to do this in sufficient measure? Is it not difficult to arrange for everything else we consider desirable for the girls in our schools and to stop deliberately short at the point where everything else may be in possible danger of crowding out the quiet spaces that are needful for the spirit, and of giving to the school atmosphere rather too large an ingredient of excitement and rather too small an ingredient of peace? In our own position I think some of us must find it difficult to remember that the thing in ourselves which is of paramount importance to the young lives around us is freshness of mind and body and a cheerful and calm spirit which gives the impression of unruffled repose to all who come near us. It is very difficult to some natures to refuse to respond to what seems to be pressing claims on their time and energy and interest outside of, though linked closely it may be to, their own special work; but it is all important to exercise the strictest self-control in this matter and to remember the fact that being is more than doing, and that nothing can be done well if the strain on the nervous system is too severe. This is especially the case with teachers who have to do with children and young people in their time of exuberant growth. The freshness and vigour they display must be met with freshness and vigour. In other spheres of work duty may imperatively call for a deliberate sacrifice of strength and even life. A district nurse who is tired out may know that she can relieve pain and possibly save life by one more long journey or by sitting up through the night, and she does it, whatever it cost her. And there are other callings in life which demand the cheerful surrender of life and limb, such as that followed by the stout hero in the ballad of "Chevy Chase"—

For Winterington needs must I wayle,  
As one in doleful dumps;  
For when his leggs were smitten off  
He fought upon his stumps.

But teachers have to make it a first duty to keep themselves whole in body and soul if they are to be capable of doing the particular work they have undertaken to do. We may well shrink from talking much to the girls about the spiritual side of life, but if the school is a very peaceful place, and if they feel that the teachers in it are themselves as children, looking up to ideals which in truth are the realities of life, then each child may learn the secret of how most truly to live her own life.

I hope you will forgive me for having dwelt upon such a well-worn theme as that it is the spirit that giveth life, but when I recall for a moment the simile with which I started I cannot help remembering that the force which drives a fountain must come from above, and that some sprays more than others catch the magical sunlight of truth and have in them an eternal element of life. I have pur-

posely refrained from speaking in detail of any of the many ways in which we may try to promote the strong and natural growth of the inner life of the children in our schools, for circumstances and conditions vary with every school, and those of us who have been at work the longest probably feel most keenly the very great difficulty of the task. I suppose the best we can any of us do consists in never being tired of trying to correct our mistakes and beginning again, fortified by the inspiration which comes to us through our daily contact with those young lives who unconsciously do so much for us.

### THE UNIVERSITY OF BRISTOL.

It is now some six months ago since Dr. Maurice Gerothwohl, in response to a challenge in the *Spectator* of January 25 by the Bishop of Bristol, delivered over his name in the *Observer* a vigorous attack upon the administration of Bristol University. For many weeks before that a vehement but anonymous discontent had been expressing itself in different quarters of the Press. The charges first made against the Authorities of the University were, briefly, a clumsy nepotism in the improper conferring of degrees on the occasion of Lord Haldane's installation as Chancellor in October 1912, and certain irregularities of procedure which might be held legally to invalidate their action—as when, without warrant from the Statutes, they formed a Joint Committee of Senate and Council for recommendation to the aforesaid degrees. Such matters are, indeed, far from unimportant; and yet it required no extraordinary acumen to detect in these expostulations an indignant warmth in excess of what the ostensible error demanded. The true grounds of this indignation Dr. Gerothwohl laid bare. He spoke on behalf, if not of a party yet of a number of persons within the University, who found it the scene of intolerable friction—petty but destructive—of incessant, subtle detraction, and the meanest personal animosities. In the lively correspondence which ensued there soon came prominently forward the case of Prof. Cowl, who, in the organization of the new University, had been deprived—as no other professor was deprived—of the chair he had held in the old University College and for the first year in the University itself.

No specific complaints were brought against him as grounds why he should be removed, but there was talk of “uncongeniality” and “impossibility,” of the work of his department (English) being unsatisfactory, and of the students not finding his lectures suited to their needs. These two last lines of objection seem fairly well disposed of by a consideration of the examination results in English Literature during his tenure of the professorship in University College, and also by the testimony of the students themselves. Of these, some of the seniors, in 1910, when his position was threatened, addressed a letter, expressing their sense of what they owed to him, to the Vice-Chancellor for communication to the Council, which is none the less good evidence in his favour because it did not at the time reach its ultimate destination. We learn that this, embodied in a memorial sent in the first instance to Lord Haldane, has now been circulated among the 330 members of the Court of Bristol University, as has likewise another memorial, addressed to Lord Morley, which recounts with emphatic appreciation and in somewhat greater detail the services rendered by Prof. Cowl to those whom he taught. Nor has other and weighty testimony from English scholars of repute been wanting. There remains, then, the alleged “uncongeniality” or “impossibility”; and this, according to the “Brief Statement” of his position given by Prof. Cowl to the public, would seem to date back to disagreements between himself and his colleagues at the time when, as Honorary Organizing Secretary to the Committee for Establishing a University in Bristol, he was engaged in framing the University constitution.

On the part of the authorities of Bristol University we

have statements in justification of their action in regard to Prof. Cowl—and notably the lengthy statement sent to the Press by Sir Isambard Owen on May 17. But we observe that these relate to the mode of procedure by which they eliminated him—which seems, indeed, to have been uncommonly smooth and ingenious—and neither make reference to the fault they had to find with him, nor explain the fact that he was never given an opportunity of meeting his enemies face to face or rebutting charges against him.

If the case of Prof. Cowl had stood alone it would have been sufficiently regrettable as indicating that somewhere, somehow, there were things in Bristol University not altogether as they should be: but it by no means stands alone. Dr. Gerothwohl has brought to public knowledge attacks of a similar kind upon the Professors of Classics and Physiology, equally nebulous as to their reason and insidious as to their operation, which were defeated, they both being Oxford men, by strong representations on the part of Oxford University. Needless to say, if there were indeed solid grounds for dismissing these two professors, their retention on such a pretext was a deplorable thing.

And, yet again, the controversy between Dr. Gerothwohl and the University has elicited from Dr. Geraldine Hodgson, who has been for some dozen years in charge of the Department of Secondary Education at Bristol, and whose name is sufficiently well known to our readers, a letter to the *Standard* of April 19, in which she states that she holds letters witnessing directly to attempts made to render her own position at the University untenable. This evidence, as it appears from his account of proceedings at certain meetings, Dr. Gerothwohl can corroborate from his own first-hand knowledge. Here there is not even the shadow of an accusation of incompetence: we can discover nothing beyond mere personal feeling.

Nor are the reasons which led Dr. Hodgson to make the public statement above referred to quite undeserving of attention. There was an attempt on the part of some members of the junior staff to counter Dr. Gerothwohl's allegations about friction and discontent by getting up a memorial expressing their general confidence and satisfaction. To this they obtained 43 signatures out of a possible 140 odd; and the document was then made use of as if it had been truly representative. Comment is needless. It is clear that anyone who genuinely believed in a necessity for reform would feel morally bound to counter in turn.

Side by side with this memorial we may set for consideration another incident which has at least an unpleasant appearance. On October 23, 1912, at a special meeting, Convocation—i.e. the body of graduates, the academic body of the University—passed two resolutions disapproving of that lavish distribution of honorary degrees with which the public controversy over Bristol University began. Shortly afterwards, on October 31, the ordinary meeting of Convocation took place. The Vice-Chancellor was present at this. He attempted—*vide* Dr. Gerothwohl's account in the *Standard* of April 26—to bully Convocation into rescinding their resolutions: informing them that they had acted beyond their powers, and that what they had done would tend to stop the flow of donations to the University. It can hardly be necessary to labour the point that Sir Isambard Owen was mistaken in his view of the extent of the powers of Convocation, or to urge that interference with the constitutional freedom of the academic body is dangerous to the spirit and the welfare of a University. We cannot avoid the conviction that the very attempt argues the existence of something that requires reform; and this is reinforced by observing the manner in which the University Authorities have dealt with the most active of their critics. Dr. Gerothwohl, after the failure of a decidedly unpromising endeavour to extract an apology from him, was suspended from his functions as Lecturer in French, and when, according to the annual tenure by which the junior staff at Bristol hold their posts, the time came for renewing his appointment, he was “not reappointed.”

A good deal of somewhat bitter reproach has been directed



against the devoted few who have openly supported Dr. Gerothwohl in attacking what he conceives to be radical evil in the administration of Bristol University and in demanding reform and the redress of wrong. It is hard, even unfair, people say, to press so heavily upon so young an institution: it is, also, always the more seemly way to wash one's dirty linen in private. As to the youth of Bristol University, we confess we find in that a reason not so much for leaving it to itself as for freeing it as early as may be from the hoary traditions of the old University College, whose undesirable vivacity would seem to be in no small degree a cause of all this woe. As for the unseemliness of washing one's dirty linen in public, one must not forget that there may present itself the bare alternative of washing it in public or not washing it at all. And—to some people, though possibly not to all—there comes a moment when the second alternative involves more than flesh and blood can stand. A careful study of the matter will, we think, make it clear to an impartial observer, that attempts have been made to get this particular washing done in private, and that they have failed.

"No, no," remarks the caviller, "that is off the point. The point is there is no dirt to wash, except in the imagination of these reckless accusers." Is that so? We come here to the most important point of all. So far, what we have been considering is the internal condition of a not specially distinguished local University; here the scope widens.

All along what the reformers have been pressing for is an inquiry—an inquiry, so the authorities declare, they are perfectly ready for: let but the visitor order it. A vain attempt was made by the supporters of reform outside Bristol, to obtain an inquiry by means of questions in the House of Commons, where the President of the Board of Education—whose family connexion with the Chairman of Council of Bristol University did not altogether escape public comment—stolidly blocked the way. They turned next to Lord Haldane, and then, by his advice, direct to Lord Morley himself, the visitor. To Lord Morley was presented a memorial, signed by no less than 116 professors and lecturers of the various British Universities, many many of them not inferior to himself in capacity, integrity, and distinguished public service, asking that at least into Prof. Cowl's case an inquiry should be instituted. Now to flout this body of opinion—representing as it did the fine flower of University opinion throughout England—would be virtually to flout the Universities as a whole. Here was a matter which vitally concerned them—on which they had a right to claim attention—on which no one was more strictly bound to form and maintain a judgment. Suppose these men (the list includes the best names in English learning), having looked carefully into the matter, had decided definitely that Prof. Cowl was right and the University of Bristol wrong, there would justly have been no small presumption that it was so. How much more when they merely submitted their conviction that there was a case for inquiry and their request that one should be held. The memorial was sent to the Press. It obtained in several papers but little prominence; in many cases only a few of the signatories were mentioned. Lord Morley refused the inquiry. No immediate announcement of the refusal was made in the Press: still less was it explained. A notice of it in the *Globe* some days after the decision was taken was the first intimation of it. There were no comments on it—if any mention of it at all—in the leading morning papers.

The Government thus has openly flouted the Universities in a matter on which the Universities had abundantly the right to the decisive word. For, be it remembered, the inquiry asked for directly concerned the internal economy of a University and not its relation to matters outside. What those who care for learning and education have here to consider is in reality the somewhat complicated problem of the relations on the one hand between Government and the internal management of Universities, and between Government and men of learning in their own department; and, on the other, the relation of both to the Press. For there can be no

doubt that the interests of learning and education required that this situation and all that is implied in it should be widely known and canvassed; and that, on the contrary, it was withdrawn as far as possible from public observation.

We deprecate Lord Morley's action fully as much in the interests of Bristol University as in that of its antagonists—nay more. Again and again Dr. Gerothwohl has—in our opinion rightly—urged the University not merely to acquiesce in an inquiry, but resolutely to demand one. And now, after this clear and definite statement on the part of so many men of academic experience and eminence, anything that carries the slightest appearance of an attempt to shield the University authorities should surely be firmly repudiated—contested even—as being equivalent to the tacit admission not merely of the existence of something wrong, but also of their inability through lack of courage or lack of conscience to put the wrong right.

This piecing together of events and statements which have already all been made public may serve to set in clearer light a somewhat long and complicated controversy. Meanwhile, it behoves all who are connected with education and Universities to realize that the position is a novel one: that as such it can hardly fail to prove the inception of a new tradition—at the least, the establishment of precedent, and that it is a matter of vital importance whether or not it shall be possible for representatives of the whole body of University life in England to have pressed for inquiry into a matter of presumed injustice directly concerning them, and have pressed in vain. Let no one be deceived by the idea that, as the affair of a local University, it is unimportant. It might as reasonably be argued that insults to the flag on the seas should be condoned where it is flown by anything less than a Dreadnought.

## REVIEWS.

*Education and Ethics.* By Emile Boutroux. Translated by Fred Rothwell. (5s. net. Williams & Norgate.)

It is a favourable sign of the times that men of the rank of M. Boutroux should so far concern themselves with the work of education as to deliver courses of lectures to students in training to be elementary teachers, and should publish those lectures in book form. The lectures are all the better that they do not profess to be learned. As the author himself tells us: "They are familiar and homely chats, intended to be listened to, not with pen in hand, as though notes were to be taken and subsequently elaborated, but rather with mind and heart alert, as when we are dealing with things that concern us personally." It would be well that more of our professors undertook work of this kind. The mere knowledge that they must make their readers understand them would have a chastening effect, and would certainly tend to clearness. In the case before us the results are of the happiest.

The matter treated in the 232 pages falls into six sections. The first deals with the Principal Types of Ethics under the three sub-heads, Hellenic or Æsthetic Ethics, Christian or Religious Ethics, and Modern or Scientific Ethics. The other sections deal with Pessimism, The Motives of Study, Reading Aloud, Interrogation, and School and Life. The author is more at home in the earlier parts, where he is dealing with ethics proper. Naturally he is unable to solve the eternal mysteries of this subject. But he has made a presentation that comes nearer to making a system intelligible to young readers than anything to be found elsewhere. The chapter on Pessimism in particular gives just the sort of treatment that this subject needs and that it so seldom gets. In view of the unwholesome dramatic literature that is at present making such claims on the attention of the young, it is highly desirable that this matter should be clearly understood, and those who are responsible for the guidance of young men and women cannot do better than get them to read the first half of this book.

On the purely pedagogical side M. Boutroux is surprisingly good. No doubt much of his matter is familiar, but it is remarkably well expressed, and is free from the excessive



formalism that usually marks the work of the professional expert. M. Boutroux's main thesis appears to be that Pedagogy must be distinguished from education, and that the distinction is not in favour of pedagogy. It is true that he limits his strictures to "certain aspects of pedagogy," but it is not difficult to see that he regards all pedagogy with suspicion as that which substitutes art for Nature, and even so turns art into artifice. He is severe on the set scenes and the manipulated situations of the "Émile," and is all for the natural development of the individual in a normal environment. Ultimately, however, this stage-managing of the educational process is only a matter of degree. Some of it there must be if there are to be schools at all, and this is clearly seen in M. Boutroux's own prescriptions. Thus on page 217 we are told that "the master's rôle is to consist in utilizing all the conditions of school life, and even, if need be, in calling forth appropriate incidents." The words we have ventured to italicize indicate our author's surrender. He sees that Nature must include art: we cannot take Nature neat. "Consequently the natural is the result of co-operation between Nature and judgment." Our author is keenly alive to all that is implied in the familiar *paradoxe sur la comédien*, though he is not always successful in keeping clear of the inconsistencies immanent in all such discussions. In one passage, for example, he strips Nature of a quality that is ordinarily regarded as specially her own. "Sincerity, feeling's first virtue, is not to be found in Nature, pure and simple." There is no lack of interest in following the windings of the subtle mind of our author through the ever-recurring paradoxes rising out of this discussion.

Most teachers would like to believe with M. Boutroux that "it is unnecessary by means of artifice to force Nature to proceed towards the end assigned to her by reason; all that is needed is to allow her to follow her own course." But if we feel that we need a little help in directing Nature we have the comfort of getting it in the concluding chapters of his book. Every teacher will get something of value in the two chapters—Reading Aloud and Interrogation. For here we have the results of the observation and reflection of a specially fine mind directed upon matters that have become stale to those who are professionally concerned with them. There is in these two chapters endless material for discussion in the teachers' common room. The final chapter, School and Life, is too short for such an important subject, and certainly does not recognize sufficiently what has already been written on this subject. But here, as elsewhere, our author is himself, and not somebody else, and we must let him deal with his subject in his own way. For example, his attack upon what he calls the "pragmatic method" (by which he means what is often called "the direct method" in the teaching of languages, and generally the method of bringing the pupil face to face with facts without the intervention of didactic books and formulæ) is unexpected in this place, but the reader cannot but admit that it is both skilfully woven into the context and vigorously carried out. The practical applications made by M. Boutroux will irritate a great many of his readers, but it may not be too much to say that this is one of the chief merits of the book. What the professional teacher needs is just the stimulation here supplied.

"Heroes of the Nations."—(1) *Canute the Great* (995 circ.—1035) and the Rise of Danish Imperialism during the Viking Age. By Laurence Marcellus Larson, Ph.D., Associate Professor of History in the University of Illinois. (2) *Roger of Sicily, and the Normans in Lower Italy* (1016–1154). By Edmund Curtis, M.A. Oxon., Lecturer in History at the University of Sheffield. (5s. each. Putnam's Sons.)

(1) Readers who figure Canute as an ancient potentate commanding the rising tide to respect his boots will be somewhat surprised to learn from Prof. Larson that the great king "died in the prime of manhood, having scarcely passed the fortieth year"; and it may be news to learn that he was "by race more a Slav than a Dane," his mother being a Polish princess. Canute began life as a viking, and ended it as a statesman. In order, however, to show the nature of his inheritance, Prof. Larson explains the imperialistic policy of the dynasty, from the time of Gorm the Aged, his great grandfather, who sat on the throne of King Shield, who is com-

memorated in the opening lines of Beowulf; and he traces the Danish conquest of England down to the appearance of Canute on the scene in 1016. By a laborious and critical piecing together of the scanty authorities, he then narrates how Canute victoriously extended his dominion also over Denmark, Norway, and part of the Slavic lands (not of Sweden, as Steenstrup has satisfactorily shown in correction of what is apparently a scribal error in Canute's charter of 1027), and thus constituted himself Emperor of the North. Prof. Larson has excellent chapters on Canute's dealings with the Church, and on Northern culture in Canute's time; and in the last chapter he narrates briefly the collapse of the Empire immediately the strong hand of Canute was withdrawn. The illustrations are numerous and instructive. The book is a most careful and useful piece of work. Naturally there is much balancing of probabilities, but that is inherent in the materials, and brings into relief the judicial qualities of the author.

(2) The story of Norman valour, enterprise, and statesmanship in Apuleia and Sicily involves some of the most romantic and fascinating episodes in medieval history, and, though a number of Continental scholars have done good work in the field, it has been left to Mr. Curtis to set forth, for the first time in English, a continuous and detailed narrative of the period. There are the rivalries as well as the friendships of the Hauteville dynasty and the ducal house of Capua, both of Norman stock; the great career of Robert Guiscard, the greatest of the great sons of Tancred, "the true hero of the epic of the Norman conquest of Lower Italy," "in statecraft and genius for conquest perhaps not inferior to his contemporary William the Conqueror"; and—the main purpose of the book—the establishment and consolidation of the Kingdom of Sicily by Roger II; to say nothing of the second Crusade and African conquests. The final chapter traces the after-fate of the Kingdom. The book is a very able and most welcome work. The illustrations are numerous and good. On the vexed question of the extent and nature of the powers conferred on Roger I and inherited by Roger II and his successors—a point of very great historic importance—we should agree with Caspar, whom Mr. Curtis follows; but the original texts should have been fully set forth. It is impossible for a reader to gather, from Mr. Curtis's narrative and his appendix combined, a definitely clear view of the controversy which "led to a *bellum diplomaticum* of eight centuries between the Sicilian Kings and the Papacy."

*The Fundamentals of Psychology.* By Benjamin Dumville. (4s. 6d. University Tutorial Press.)

Though this book is described as "a brief account of the nature and development of mental processes," it is specifically meant for the use of teachers, and, as a matter of fact, is particularly well adapted to the needs of students in training. Its characteristic is thoroughness. Nothing is left to chance. The whole field is most carefully covered; the student is not left at any point without sufficient material to carry on his studies. The book is, therefore, particularly suitable for the private student who wishes to depend upon his textbook. The needs of the student working in a class under a teacher are not, however, neglected. The book is supplied with a large number of questions placed at the end of the chapters. These fall naturally into two classes: questions that test the power of reproducing knowledge acquired and questions that imply exercise in the application of such knowledge. They bear all the marks of having originated in the course of the actual work of a training college.

Mr. Dumville is conservative in his method of treating the subject. His chapters bear such time-honoured titles as "Sensation," "Perception," "Imagination," "Ideation," "Memory," "Conation and Feeling," "The Will," "Attention." But his recognition of the newer points of view is indicated by such titles as "The Instincts and Innate Tendencies," and "The Nature and Development of the Sentiments." Mr. Dumville makes no claim to originality in respect of the subject-matter of his psychology. He rightly relies upon the standard-writers on the subject and, in particular, makes excellent use of Mr. McDougall's results. The value of the book lies in the skill with which the matter is presented. It is, indeed, a model of lucid exposition.

*Education in relation to Industry.* A Report on Technical, Trade, Applied Art, Manual Training, Domestic, Commercial, and Public Schools in Canada and the United States. (2s. 6d. net. E. J. Arnold.)

This is a report prepared by four Commissioners sent out to Canada and the United States, in the early summer of 1911, by the National Association of Education Officers. The Association felt that "the educational machinery established by the [Education] Act of 1902 having now reached a stage of easy working, it becomes increasingly necessary for Local Education Authorities to turn their minds to the many purely educational problems which await solution." It was originally intended to include institutions of University standing, and this matter was to have been dealt with by Mr. Blair, the Chief Executive Officer of the London County Council Education Committee, but unfortunately pressure of work prevented him from carrying out his intention. The four Commissioners who actually went are Mr. W. P. Donald (of Barnsley), who is responsible for the section on "Commercial Education"; Mr. Percival Sharp (of St. Helens), who writes on "Industrial Education"; J. E. Pickles (of West Bromwich), whose subject is "Art, Manual and Domestic Instruction"; and Mr. J. B. Johnson (of Ealing), who reports generally on "Elementary and Secondary Schools." The Report runs to 187 pages, and contains a great deal of material that must be of the highest value to those who are responsible for the carrying out of the developments that must soon take place in the industrial education of this country.

## GENERAL NOTICES.

### ENGLISH.

*The Troublesome Reign of King John: being the Original of Shakespeare's 'Life and Death of King John.'* Edited by F. J. Furnivall and John Munro. (Pp. xli, 184. 2s. 6d. net. Chatto & Windus.)

This is a valuable addition to the series of Shakespeare Classics edited by Prof. Gollancz. No greater illumination can be thrown on the art of our supreme dramatist than that which is afforded by a comparison between his finished products and the earlier efforts to deal with the same subject on which they were based. The treatment of the theme of King John offers a fruitful field for such a comparison, and the reader is very effectively helped in his task by the excellent introduction, begun by the veteran Shakespearean scholar, whose death we have recently had to lament, and ably completed by Mr. Munro.

*English Composition based on the Study of Literary Models.* By A. Cruse. (Pp. 198. 2s. 6d. Oxford University Press.)

Guides to the teaching of composition have lately been appearing with some frequency, and it is not always easy to discover the *raison d'être* of each new claimant to attention. In particular, it is seldom clear whether the book is meant to be placed in the hands of pupils or is written only for the use of teachers. This is the case with the present volume, for, while the models seem fitted for class study, the advice which accompanies them is of a kind that should be offered only in the form of criticism on practical exercises that have been performed by the pupils. The suggestions are thoroughly sound, if they are not highly original, and the selection of illustrative extracts from representative authors, which forms the special feature of the work, has been carried out carefully and judiciously made.

"Perse Playbooks."—No. 3: *Plays and Poems by Boys of the Perse School, Cambridge.* (Pp. 100. 2s. net. Heffer.)

The publication of the literary efforts of schoolboys requires some justification, and it is a little doubtful whether the apology offered by Mr. Caldwell Cook in his introduction to this volume is altogether adequate. It is true that the three plays constructed by the co-operation of master and boys for school performance show very considerable merit, as well from the literary as from the dramatic standpoint; but, on the other hand, the selected poems by particular boys in the lower forms have no special distinction, and it is probable that the appearance of their productions in print will lead the juvenile writers to conceive a higher opinion of them than they deserve. The plea must be accepted, however, that the plays offer a demonstration of what can be done to kindle the literary interest of boys and develop their taste and judgment by enlisting their activities in a definitely creative task. The cultivation of the dramatic instinct is beginning to be recognized as a powerful lever in education, and the proof of what is achieved in this direction in the

Perse School can hardly fail to be a stimulus to others. The educational Utopia that Mr. Caldwell Cook takes occasion to set forth in his introduction may seem too idealistic to be very relevant to the matter in hand, but it is full of interesting suggestions.

*The Positive Evolution of Religion.* By Frederic Harrison, D.C.L. (Pp. 267. 8s. 6d. net. Heinemann.)

Though Mr. Harrison's treatment of his subject is less systematic and dispassionate than his title seems to suggest, his readers cannot fail to find an absorbing interest in these "final thoughts on the general problem of religion" of one who has spent a long and strenuous life in searching after truth. The author traces the growth of religious ideas and religious practice from the standpoint of one who follows Auguste Comte in discarding all supernaturalism, and recognizing humanity as the highest constraining force; but even those who cannot unreservedly accept this view will appreciate the sympathetic spirit with which all forms of religious faith are handled and their significance assessed.

### CIVICS.

*Our Empire.* By F. J. Gould. (1s. Longmans.)

A valuable little book on which the teacher can draw for the purpose of an "Empire lesson." It consists mainly of stories of those who have realized the meaning of civic duty. It is written in Mr. Gould's usual clear and vigorous style.

*Citizens of the Empire.* By Ierne L. Plunket. (1s. 6d. Frowde.) A useful new volume in the "Oxford Elementary School Books Series." A great deal of practical information is given in reference to the life of the citizen of to-day in relation to the State.

*The British Subject: his Rights and his Duties.* By Thomas Bateson, M.A., and W. J. Weston, M.A. (8d. net. McDougall.)

Deals with the State as we know it to-day, showing how the existing conditions have of necessity grown from the simplest political beginnings. Throughout is kept in view the citizen's duty to the State.

*Civics.* By L. J. Sparkes. (1s. Headley Bros.)

Intended for boys and girls from fourteen to sixteen years of age. It is crammed with information interesting to pupils who have some understanding of history, and may serve as an introduction to the serious study of "Whitaker's Almanack" or some similar book.

*Lessons in Citizenship.* By A. J. Waldegrave. (1s. 6d. net. Nelson.)

The volume has been written in accordance with the syllabus of the Moral Instruction League and is issued with the League's approval. The special attempt of the writer is to base upon a study of facts the sense of personal responsibility on the part of each individual, and the work has been done well. There is a valuable chapter on the training of the will. The book is meant for teachers, but would be found readable by anyone.

*The Rights and Duties of a Citizen.* By Henry Elliot Malden. (1s. 6d. Methuen.)

That an eighth edition of Mr. Malden's valuable book has been called for may be taken as an indication of the spread of the teaching of civics in the higher classes in schools and in technical institutes. The reputation is well deserved; the work is sound and scholarly.

### HYGIENE.

*Fitness for Play and Work.* By Eustace Miles, M.A. With Prefatory Note by General Sir R. S. Baden-Powell. (Paper, 1s.; cloth, 1s. 6d. Murby.)

Mr. Eustace Miles writes this book for boys at school or who have just left school. He gives a definite course of gymnastic exercises intended to secure general "fitness," and he adds valuable hints on how to keep healthy in mind as well as in body.

*Simple Health Rules and Health Exercises for Busy Women and Girls.* By Maud Curwen and Ethel Herbert. (1s. net. Simpkin, Marshall.)

Quite a valuable little book, giving a series of simple exercises, with photographic illustrations and a number of useful health rules, dealing with sleeplessness, depression, the need of air and sunshine, the care of the teeth and skin, and several other topics.

*Personal Hygiene for Girls.* By Mary Humphreys. (1s. 6d. Cassell.)

No detail of a girl's home life is overlooked in this book. There are chapters on physiology, clothing, food, the house, and a number of physical exercises with illustrative diagrams. The mental side is not neglected. A book that can be safely recommended.

(1) *Confidences: Talks with a Young Girl concerning Herself.* By Dr. Edith B. Lowry. (2) *Truths: Talks with a Boy concerning Himself.* By Dr. E. B. Lowry. (Each 50 c. Chicago: Forbes & Co.)

Dr. Edith Lowry has executed her task with skill and with some originality. It might, perhaps, have been expected that the publishers would obtain the services of a male writer to deal with the book intended for boys; but it must be admitted that Dr. Lowry has handled the requisite details with as sure a hand as when writing for her own sex.

"New World Health Series."—Book III: *Primer of Physiology*. By John W. Ritchie. (60 cents. World Book Company.)  
This is a practical textbook, for use in elementary schools, of physiological principles and their application to the problems of health.

## SCIENCE.

*The Atmosphere*. By A. J. Berry, M.A. (1s. net. Cambridge University Press.)

This little book—No. 53 of the Cambridge Manuals—deals with the chemical and physical phenomena associated with the atmosphere, and will be found full of interesting information of a distinctly educational value. An excellent account is given not only of the discovery but also of the properties of the constituents of the atmosphere. The modern views held concerning combustion are briefly discussed, and chapters are included dealing with liquid air, atmospheric radioactivity, and the probable composition of the atmosphere in early geological time. Undoubtedly a good shilling's worth.

*A Textbook of Experimental Metallurgy*. By A. F. Gower, F.C.S. (3s. 6d. net. Chapman & Hall.)

This book—a new and enlarged edition of the author's original work—has been arranged to satisfy the new conditions caused by the rearrangement of the Board of Education examination in this subject, and suitably covers the ground of the syllabus prescribed for the Lower Examination. A knowledge of the fundamental principles of Theoretical Chemistry has been assumed, but with a general application of this knowledge the student should experience no difficulty in following out the various metallurgical processes and assays that have been described. Special stress has been laid on the necessity for accuracy and exactness in manipulation, which as a direct result of habit can only be successfully attained by frequent repetition. The treatment throughout is clear and concise, but at the same time sufficiently comprehensive, and the book should find a ready appreciation amongst those who are making a start in this subject.

*Elementary Experimental Dynamics*. By C. E. Ashford, M.A., Head Master of the Royal Naval College, Dartmouth. (4s. Cambridge University Press.)

This book forms the second part of an introductory course in mechanics for schoolboys. The method of treatment is designed to concentrate attention on simple quantitative experiments with the ultimate idea of developing a true conception of fundamental principles from the results obtained. The general arrangement of the work and the clear manner in which it is explained may well be calculated to instil into the mind of the student the power of realizing the mechanical meaning of each step taken in the manipulation of the formulæ, thus establishing a sound foundation in mechanical principles which should do much to smooth away many of the difficulties inherent to the more advanced parts of the subject. The experimental illustrations are remarkably simple, but at the same time conclusive. Many examples taken from simple engineering practice are interspersed throughout the text, and are certain to arouse interest not only on account of the natural fascination that exists amongst schoolboys for things mechanical, but more especially on account of the fact that their sense of power is greatly increased when they discover that a study of mechanics will enable even approximate values for the performance of a machine to be obtained. The graphical treatment of velocity, acceleration, work and energy problems forms a distinctly excellent feature of the book and renders possible the introduction of sections of the work which would otherwise have come outside the scope of the simple mathematics that the book assumes. The chapters on Energy, Momentum, and Fluid Pressure on a Surface are especially interesting and instructive and allow of the insertion of a type of example rarely met with in elementary books, but which are important as illustrative of mechanical action constantly met with in everyday life. The book is one that may be unhesitatingly recommended.

## GEOGRAPHY.

*A Handbook of Geography*. Vol. II. *Asia, Australasia, Africa, and America*. By A. J. Herbertson, M.A., Ph.D., Professor of Geography in the University of Oxford. (Pp. xvi, 681; 244 Figs. 4s. 6d. Nelson.)

A book written to rank as intermediate in character between the ordinary elementary school geography and such a work as Dr. Mills's "International Geography." The present volume contains a large amount of detail, arranged so as to be readily available. The matter has been brought up to date, and the whole should prove a very useful Upper Form textbook for secondary schools, or an extremely valuable reference book for the elementary school. It is difficult to speak too highly of the accounts of the physical features of the continents as a whole, which precede the discussions of the various political units. The many carefully executed diagrams and maps assist the explanations of the text, though Dr. Herbertson does not claim that the book is also a self-contained atlas. There are many selected extracts from various sources which add to the general interest of the book.

*A Commercial Geography of the World*. By Frederick Mort, M.A., B.Sc., Late Lecturer in Commercial Geography, Glasgow Athenæum. (Pp. viii, 392; 98 Figs. and Maps. 2s. 6d. Oliver & Boyd.)

A very useful volume, containing much more than the uninteresting grouping of "useful facts" which is frequently the sum total of commercial geography. The author, while emphasizing the influence of purely natural and climatic features, has not neglected the human factor, and the book has gained in consequence: the first section of the work is very good in this respect. The book is well balanced, about one-third being devoted to the British Empire. The summary of the history of European commerce, which is placed at the end, is useful, though it might have been a little more detailed, especially so as the little that is given appears to justify the inclusion of this particular section. The diagrams and maps are well drawn, and the arrangement of the whole-page orographical map to face a similar scale railway map, in one or two cases, is a good feature.

*Ordnance Survey Maps: their Meaning and Use*. By Marion I. Newbiggin, D.Sc., Editor of the *Scottish Geographical Magazine*. (Pp. 126; 5 illustrations. 1s. net. Johnston.)

Though not a handbook for beginners, this small book contains much important information, especially for the teacher. It points out the most valuable aspects of map-study, and should do much to combat the merely mechanical work of section-drawing, &c., which is all too popular at the present day, and is considered by many to be the *summum bonum* of all ordnance map work. The suggestions in Chapter III, dealing with the study of slopes, are particularly good. The greater portion of the book is devoted to actual analyses of eight selected 1-inch sheets, four in Scotland and four in England. The method employed is excellent, and must suggest many ideas to the enthusiastic teacher—e.g. in the analysis of Sheet 44 (Northwich) we find the sub-headings: Position, Geology, General Characters of the Surface, Pools, Flashes, and Meres, Human Geography, Means of Communication, Position of Towns. It is to be hoped that such books as the present one will lead schools to analyse carefully and seriously their home sheet. Facilities exist for the publication of satisfactory results, and in course of time the whole of the British Isles may be included in these interesting O.S. sheet analyses.

*A Practical Atlas of the British Isles*. Introduction by Edgar F. Phillips, late Lecturer in Geography to Essex County Teachers' Class. (Pp. 24. Paper, 6d. net. Arnold.)

A collection of about a hundred and seventy carefully chosen exercises based on twenty-one accompanying maps. The maps are accurate and well arranged, while the exercises stimulate thought—a production quite on the right lines for the use of beginners.

## PUBLICATIONS RECEIVED.

## EDUCATION.

John Smith of Harrow: Recollections and Impressions of the Rev. John Smith, M.A., for twenty-five years Assistant Master at Harrow School. By Edward D. Rendall and Gerald H. Rendall. Smith, Elder, 3s. 6d. net.

[A sympathetic account by his friends of a very simple and noble man.]

Steps towards Educational Reform: some Practical Suggestions for Improving our National System. By C. W. Bailey, M.A., Head Master, Holt Secondary School, Liverpool. Cambridge University Press, 1s. net.

[Considers what is needed to make the promised Education Bill a success.]

Everyday Problems in Teaching. By M. V. O'Shea, Professor of Education, University of Wisconsin. Longmans, 4s. 6d. net.

Variations in the Grades of High School Pupils. By Clarence Truman Gray, A.M., Instructor in the Department of Education, University of Texas. No. 8 of the Educational Psychology Monographs, edited by Guy Montrose Whipple. Baltimore: Warwick & York, 1 dol. 25.

[A scientific inquiry into classification and methods of promotion from the Kindergarten to the University.]

Vives: On Education. A Translation of the "De Tradendis Disciplinis" of Juan Luis Vives, together with an Introduction by Foster Watson, D.Lit., Professor of Education in the University College of Wales, Aberystwyth. Cambridge University Press, 5s. net.

## CLASSICS.

The Peace of Aristophanes. Acted at Athens at the Great Dionysia, B.C. 421. The Greek Text revised, with a Translation into corresponding metres, Introduction, and Commentary, by Benjamin Bickley Rogers, M.A., Hon. D.Litt., Honorary Fellow of Wadham College, Oxford. Bell, 10s. 6d.

Sermo Latinus. By J. P. Postgate, Litt.D. Key to Selected Passages. New Edition, enlarged. Macmillan, 6s. net.

The Rhesus of Euripides. Translated into English Rhyming Verse, with Explanatory Notes. By Gilbert Murray, Regius Professor of Greek in the University of Oxford. Allen, cloth, 2s. net; paper, 1s. net.

A Greek Vocabulary for the use of Schools. By T. Nicklin, M.A., Assistant Master at Rossall School. Cambridge University Press, 2s. 6d. net.

[Contains 1,300 words, all those that are found more than twenty times in the whole of Euripides and Thucydides combined.]

Classical Association, The Proceedings of the. Vol. X, January 1913. Murray, 2s. 6d. net.

#### FRENCH.

Colomba. Par Prosper Mérimée. Notes de H. L. Hutton, Chief Modern Language Master at Merchant Taylors School. Preface de M. Augustin Filon. Dent, 1s. 6d.

[Charmingly printed; preface, notes, and bibliography all in French.]

Manuel Pratique de Prononciation et de Lecture Françaises. Phonétique; transcriptions phonétiques. Par L. Bascan, Directeur d'École Supérieure Professionnelle. Edition revue et corrigée. Dent, 2s. 6d.

Le Barbier de Seville. Par Beaumarchais. Edited, with Introduction, Argument (in English) to each Act, and Explanatory Notes, by Ernest Weekley, M.A., Professor of French, University College, Nottingham. Hachette, paper, 6d.; cloth, 9d.

Little French Plays for Little English Children. By Mrs. A. G. Latham, with an Introduction by A. G. Latham, M.A., Professor of Modern Languages at Armstrong College, Newcastle-on-Tyne. Macmillan, 1s.

Récits et Compositions d'après l'Image. Par M. Anceau et E. Magee, Edgbaston High School for Girls. Illustré de 14 Planches en Couleurs. Black, 6d.

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[Prof. Rippmann's "First English Book" has gained a large sale in many countries, and he has been asked by teachers using it to prepare a second book. Here is his response. It is arranged in the style with which we have grown familiar, and will prove very helpful.]

Lessons in Prose and Verse Composition. By W. J. Addis, M.A., formerly Head Master of the Holborn Estate Grammar School. Dent, 1s. 4d.

The Student's Word Book. By F. A. Ginever, B.A. Preface by W. W. Skeat, M.A. Gill, 4d.

Précis Writing, A Progressive Course of. By F. E. Robeson, M.A., Assistant Master at Eton College. Frowde, 2s. 6d.

The Hero Readers.—(1) British Sailor Heroes, Series I. (2) British Soldier Heroes, Series I. Heinemann, 1s. 6d. net each.

The Tudor Shakespeare.—(1) Hamlet. (2) Richard II. (3) The Sonnets. Macmillan, 1s. each.

The Oxford Story Readers. Fourth Series.—Bonnie Prince Charlie. From "Tales of a Grandfather." Frowde, 1s.

English Literature for Schools. Edited by Arthur Burrell.—Gulliver's Journey to Lilliput and Brobdingnag. By Jonathan Swift. Dent, 6d.

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The Vision of Piers the Plowman. Translated into Modern Prose by Kate M. Warren, Lecturer in English Language and Literature, Westfield College. Edward Arnold, 2s. 6d.

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[These "Lessons in Speaking, Reading, and Writing English" have been in use for some time in America. They have now been re-edited for use in English schools by Prof. J. W. Adamson.]

#### HISTORY.

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A Social History of England. By George Guest, B.A., Head Master of St. Paul's School, Bournemouth. Bell, 1s. 6d.

#### RELIGION.

Genesis, as Originally Compiled. By the author of "God's Week of Creation Work." Copies may be obtained (9d. net) from F.W.H., 168 Dunstan's Road, East Dulwich, S.E.

The Origin and History of Reincarnation: a Symposium arranged by S. George. The Power Book Co., 2s. 6d. net.

#### BIOGRAPHY.

"J": a Memoir of John Willis Clark, Registrar of the University of Cambridge and sometime Fellow of Trinity College. By A. E. Shipley, Master of Christ's College. Smith, Elder, 10s. 6d. net.

#### PHILOSOPHY.

The Philosophy of the Present in Germany. By Oswald Külpe, Professor of Philosophy in the University of Bonn. Translated from the Fifth German Edition by Maud Lyall Patrick and G. T. W. Patrick. Authorized. Allen, 3s. 6d. net.

#### GEOGRAPHY.

The Oxford Geographies. Edited by A. J. Herbertson.—(1) The Clarendon Geography. Vol. II: Part IV, Asia; Part V, Africa and Australasia; Part VI, America. By F. D. Herbertson, B.A. 3s.; or in separate Parts, 1s. 4d. each. (2) A Commercial Geography of the World. By O. J. R. Howarth, M.A., Assistant Secretary of the British Association. 2s. 6d. (3) An Elementary Geography of Scotland. By Marion I. Newbigin, D.Sc. 1s. 6d. (4) Animal Geography: the Faunas of the Natural Regions of the Globe. By Marion I. Newbigin, D.Sc. 4s. 6d. Clarendon Press.

Maps and Survey. By Arthur R. Hinks, M.A., F.R.S., Chief Assistant at the Cambridge Observatory and University Lecturer in Surveying and Cartography. Cambridge University Press, 6s. net.

Cambridge County Geographies.—Lincolnshire. By E. Mansel Symson, M.A., M.D., F.S.A. With Maps, Diagrams, and Illustrations. Cambridge University Press, 1s. 6d.

Dent's Practical Notebooks of Regional Geography.—Book VI: The British Empire in America and Asia. Dent, 6d. net.

Bacon's New Series of County Contour Maps. 10 × 7½ in. 1d. each; special quotations for large quantities.

#### MATHEMATICS.

Annals of Mathematics (June 1913). Published under the auspices of Princeton University. Second Series, Vol. 14, No. 4.

A Junior Course of Arithmetic. By H. Sydney Jones, M.A., Head Master of Cheltenham Grammar School. Being Exercises selected from "A Modern Arithmetic, Part I." Macmillan, 1s. 6d.

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Arnold's Systematic Arithmetics. By R. Fewkes, Head Master of the Huntingdon Street Intermediate School, Nottingham. Books I and II, each 3d.; Books III, IV, and V, 4d. each. Edward Arnold.

The Household Arithmetic for Girls. By Mrs. E. Griffin. Book I, paper 4d., cloth 4½d.; Books II and III (Intermediate and Senior), each paper 5d., cloth 5½d. Pitman.

Exercises in Visual Arithmetic. By A. J. Berry, M.A., Director of Education, Preston. Books I, II, and III (Junior, Intermediate, and Senior). Pitman, each, paper 3d., cloth 4d.

(Continued on page 336.)

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- Practical Drawing. By R. M. Metcalfe, A.R.C.Sc., Lecturer at the Wigan Mining and Technical College. Edward Arnold, 2s. net.
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- Income Tax Simplified. By Arthur Fieldhouse. Second Edition. Simpkin, Marshall, 1s.
- Report of the Council of the City and Guilds of London Institute. Swansea Training College, from 1872 to 1913. British and Foreign School Society.
- Report of a Conference on the Teaching of English in London Elementary Schools. Second and Enlarged Edition. London County Council, 1s.

MATHEMATICS.

Readers desiring to contribute to the *Mathematical columns* are asked to observe the following directions very carefully:—

- (1) To write on one side only of the paper.
- (2) To avoid putting more than one piece of work on a single sheet of paper.
- (3) To sign each separate piece of work.

17524. (A. E. JONES.)—Determine  $\theta$  from the following equation

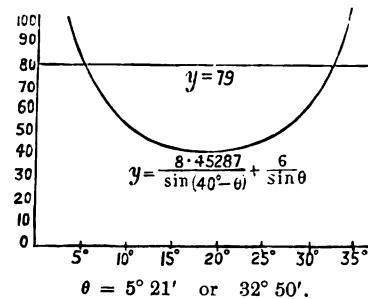
$$79 = \frac{8.45287}{\sin(40^\circ - \theta)} + \frac{6}{\sin \theta}.$$

A neat solution is wanted.

Solution by FREDERICK PHILLIPS.

Plot the graph  $y = \frac{8.45287}{\sin(40^\circ - \theta)} + \frac{6}{\sin \theta}$

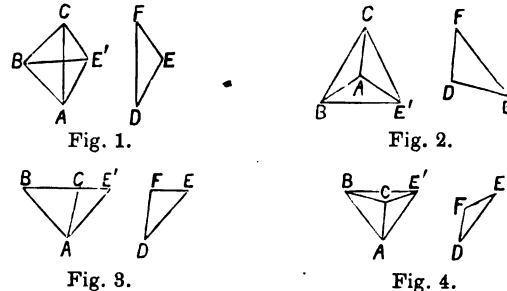
and find where it cuts  $y = 79$ .



17487. (G. JAGO, M.A.)—ABC and DEF are two triangles having  $AB = DE$ ,  $AC = DF$ , and angle BAC greater than angle EDF. Show that angle ABC  $<$ ,  $=$ , or  $>$  DEF, according as the sum of angles ACB, DFE  $<$ ,  $=$ , or  $>$  two right angles.

Solution by the PROPOSER.

Let  $\triangle DFE$  be placed so that D lies on A, DF along AC, and therefore F lies on C, and E at E' on the opposite side of AC to B, and let BE' be joined.



Then, because  $AB = AE'$ ,  $AC = AC$ , and  $\angle BAC > \angle E'AC$ ; therefore  $BC > CE'$ ; therefore, in  $\triangle CBE'$ ,  $\angle BE'C > \angle E'BC$ . Also in  $\triangle ABE'$ , because  $AB = AE'$ , therefore  $\angle ABE' = \angle AE'B$ . Then (1) if  $\angle ACB + \angle DFE < 2$  right angles, i.e.,  $\angle BCE' < 2$  right angles, and if  $\angle BAC + \angle E'AC < 2$  right angles (as in Fig. 1),

$\angle AE'C = \angle AE'B + \angle BE'C$ ,  $\angle ABC = \angle ABE' + \angle E'BC$ ; therefore  $\angle AE'C > \angle ABC$ , i.e.,  $\angle DEF > \angle ABC$ .

(2) If  $\angle ACB + \angle DFE < 2$  right angles, i.e.,  $\angle BCE' < 2$  right angles, and also  $\angle BAC + \angle E'AC > 2$  right angles (as in Fig. 2),

$\angle AE'C = \angle BE'C - \angle AE'B$ ,  $\angle ABC = \angle E'BC - \angle ABE'$ ; therefore  $\angle AE'C > \angle ABC$ , i.e.,  $\angle DEF > \angle ABC$ .

(3) If  $\angle ACB + \angle DFE = 2$  right angles } (as in Fig. 3);  
i.e.,  $\angle ACB + \angle ACE' = 2$  right angles }

CB and CE' are in a straight line, and because

$AB = AE'$ ,  $\angle ABE' = \angle AE'B$ , i.e.,  $\angle ABC = \angle DEF$ .



(4) If  $\angle ACB + \angle DFE > 2$  right angles,  
 $\angle ACB + \angle ACE' > 2$  right angles (as in Fig. 4).

Then  $\angle AE'C = \angle AE'B - \angle BE'C$ ,  $\angle ABC = \angle ABE' - \angle E'BC$ ;  
 therefore  $\angle AE'C < \angle ABC$ , i.e.  $\angle DEF < \angle ABC$ .  
 therefore  $\angle ABC <, =, \text{ or } > \angle DEF$ ,  
 according as  $\angle ACB + \angle DFE <, =, \text{ or } > 2$  right angles.

**17057.** (PULINBHARI DAS, M.A.)—Find a point P on a circle, such that the angle subtended at P by two given points in the plane of the circle may be bisected by the radius through P.

*Solution by Professor J. C. SWAMINARAYAN, M.A.*

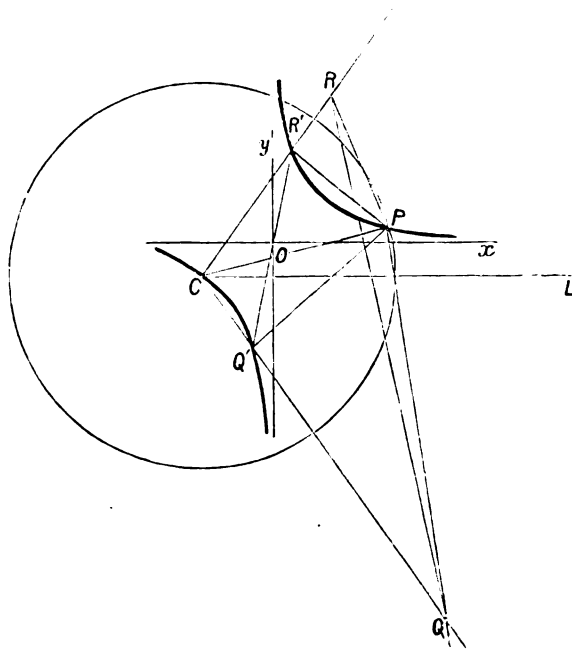
Let Q, R be the given points, and let the circle (centre C) be the given circle.

Find Q', R', inverse points of Q and R respectively with respect to the given circle.

Bisect Q'R' at O.

Bisect  $\angle QCR$  by CL.

Through O draw Ox and Oy parallel and perpendicular to CL.



With O as centre, Ox, Oy as asymptotes, describe a rectangular hyperbola passing through Q', R', and the centre C, cutting the circle in the point P.

Since Q'R' is a diameter of the rectangular hyperbola, the chord CP subtends equal or supplementary angles at Q' and R';

therefore  $\angle CQ'P = \angle CR'P$ .

Since  $CP^2 = CR' \cdot CR$ ,

CP touches the circum-circle of triangle R'PR;

therefore  $\angle CR'P = \angle CPR$ .

Similarly since  $CP^2 = CQ \cdot CQ'$ ,

CP touches the circle PQQ';

$\angle CQ'P = \angle CPQ$ ;

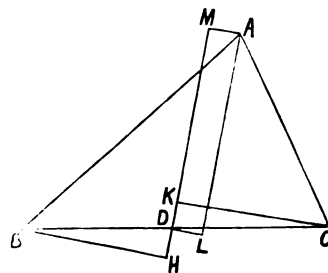
$\angle CPR = \angle CPQ$ ;

therefore

therefore PQ and PR are equally inclined to CP.

N.B.—The rectangular hyperbola which passes through Q'R' must pass through C, because if a parallel and a perpendicular to the bisector of an angle of a triangle are drawn through D, forming the rectangle DLAM, and if CK is perpendicular to DM, and BH is perpendicular to DM, we can easily prove that

$$CK \cdot KD = BH \cdot HD \\ = AL \cdot LD.$$



**13575.** (The late Professor SYLVESTER, F.R.S.)—Show that in multiplying together two numbers the chances of the first figure in the product being 1, 2, 3, 4, 5, 6, 7, 8, 9, 0 are as 4, 12, 4, 12, 9, 12, 4, 12, 4, 27 respectively.

*Solution by A. M. NESBITT, M.A., R. TATA, M.A., and others.*

The figures in the unit's place may be produced as follows:—

- 1: by (3.7), (1.1), (9.9).
  - 2: by (9.8), (3.4), (6.7), (2.6), (1.2), (8.4).
  - 3: by (9.7), (1.3).
  - 4: by (2.2), (3.8), (4.1), (7.2), (9.6), (8.8), (6.4).
  - 5: by (1.5), (3.5), (5.5), (7.5), (9.5).
  - 6: by (1.6), (2.3), (4.4), (6.6), (7.8), (8.2), (9.4).
  - 7: by (1.7), (3.9).
  - 8: by (1.8), (2.4), (3.6), (4.7), (6.8), (2.9).
  - 9: by (1.9), (3.3), (7.7).
  - 0: by (1.0), (2.0), ..., (9.0), (2.5), (4.5), (6.5), (8.5), (0.0).
- Now to get (say) a 3 and a 7 is twice as likely as to get 9 and 9. Hence we get the chances

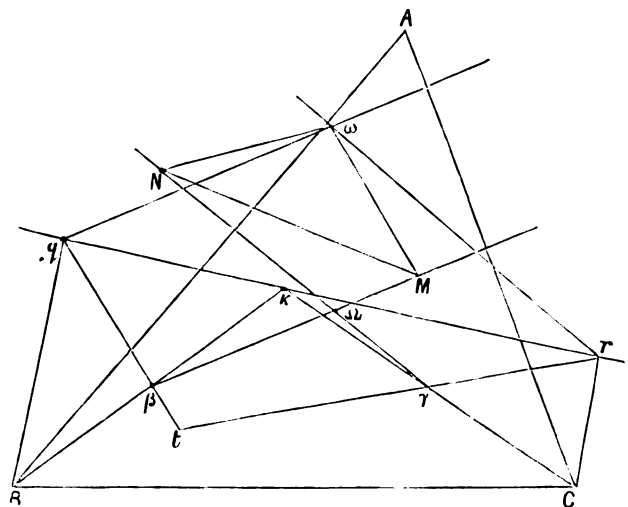
for 1 ...	$2 + 1 + 1 = 4$ ,
.. 2 ...	12,
.. 3 ...	4,
.. 4 ...	12,
.. 5 ...	9,
.. 6 ...	12,
.. 7 ...	4,
.. 8 ...	12,
.. 9 ...	4,
.. 0 ...	27.

**17463.** (C. E. McVICKER, M.A.)— $\kappa$  is any point in the plane of a triangle;  $\kappa D, \kappa E, \kappa F$  are drawn at right angles to the sides. If a conic be drawn through D, E, F, and having its centre half-way between  $\kappa$  and the orthocentre, show (i) that this conic is an ellipse whose major and minor axes are the greatest and least distances of  $\kappa$  from the circumference of the circum-circle, (ii) that this ellipse is the locus of the orthopoles, with respect to the triangle, of all lines drawn through  $\kappa$ .

*Solution by R. F. DAVIS, M.A.*

Let  $\omega$  be the orthopole of any straight line  $qr$  passing through a given point  $\kappa$ ; Bq, Cr perpendiculars on  $qr$ ;  $q\omega, r\omega$  perpendiculars to AC, AB.

Take  $\beta, \gamma$  the middle points of  $\kappa B, \kappa C$ ; and complete the parallelograms  $\omega q\beta M, \omega r\gamma N$ . Then  $\beta M, \gamma N$ , being perpendiculars to AC, AB, intersect in  $\alpha$ , the middle point of the join of  $\kappa$  to the orthocentre.



Now the triangle  $\omega MN$  is of determinate size and shape, being congruent to the triangle  $\kappa\beta\gamma$ . For

$$\omega M = q\beta = \kappa\beta, \quad \omega N = r\gamma = \kappa\gamma, \\ \text{and} \quad \angle M\omega N = \angle \beta\tau\gamma = \pi - (\angle Bq\kappa + \angle \gamma r\kappa) \\ = \pi - (\angle B\kappa q + \angle \gamma\kappa r) = \angle B\kappa\gamma.$$

Hence  $MN = \beta\gamma = \frac{1}{2}BC$ ,  $\angle MoN = \pi - A$ ,  
and circum-diameter  $\Omega MN = R$ .

Since the triangle  $\omega MN$  slides with  $M, N$  on the fixed lines  $\Omega\beta, \Omega\gamma$ , the vertex  $\omega$  describes an ellipse, centre  $\Omega$ . The sum and difference of the semi-axes of this ellipse is the circum-diameter of  $\Omega MN (= R)$  and twice the distance between  $\omega$  and the circum-centre of  $\Omega MN$  (for, since  $OB = OC$ ,  $\angle BOC = 2A$ , the circum-centre  $O$  bears the same relation to the triangle  $\kappa BC$  as the circum-centre of  $\Omega MN$  does to the triangle  $\omega MN$ ).

By considering special positions of  $qr$  it is easily seen that  $D, E, F$ , the feet of the perpendiculars from  $\kappa$  on the sides of  $ABC$ , also lie on the ellipse.

The PROPOSER solves thus:—

Taking rectangular axes at the centre of the circumcircle, radius unity, and using complex coordinates,

$$\zeta = x + y \sqrt{-1}, \quad \zeta_0 = x - y \sqrt{-1},$$

let  $(a, a_0), \dots$  be the vertices of the triangle  $ABC$ .

It can be shown that the pedal lines of two points  $\omega$  and  $\omega'$  on the circle intersect at  $\zeta = \frac{1}{2}(a + \beta + \gamma + \omega + \omega' + a\beta\gamma/\omega\omega')$ , a point recently called the *orthopole* of the chord  $\omega\omega'$ .

As the chord turns round a fixed point  $\kappa$ , its orthopole obviously describes a locus passing through the feet of the perpendiculars from  $\kappa$  on the sides.

Let  $\mu$  be the mid-point of the chord (its first coordinate). Then

$$\omega + \omega' = 2\mu = 2(\rho + \frac{1}{2}\kappa), \text{ say};$$

therefore  $\omega_0 + \omega'_0 = 2\mu_0 = 2(\rho_0 + \frac{1}{2}\kappa_0)$ .

Now  $\omega\omega_0 = 1 = \omega'\omega'_0$

(by the equation of the circle  $ABC$ );

therefore  $\frac{\omega + \omega'}{\omega_0 + \omega'_0} = \frac{\rho + \frac{1}{2}\kappa}{\rho_0 + \frac{1}{2}\kappa_0} = \frac{2\rho}{\kappa_0}$

[because  $\rho\rho_0 = \frac{1}{2}\kappa\kappa_0$  (geometry)];

therefore  $\zeta = \frac{1}{2}(a + \beta + \gamma + \kappa + 2\rho + \kappa_0 a\beta\gamma/2\rho)$ .

$\zeta$  is then the resultant of the vectors  $\frac{1}{2}(a + \beta + \gamma + \kappa)$ ,  $\rho$ ,  $\kappa_0 a\beta\gamma/4\rho$ .

The first is constant; the length  $|\rho|$  of the second is a constant, say  $b$ ; the length  $|\kappa_0 a\beta\gamma/4\rho|$  of the third =  $\frac{1}{2}$ , say  $a$ ; the modulus of  $\kappa$  being double that of  $\rho$ . Moreover, the product of the last vectors is  $\frac{1}{2}\kappa_0 a\beta\gamma = \text{constant}$ ; they are therefore equally inclined to the fixed vectors denoted by  $\frac{1}{2}\sqrt{(\kappa_0 a\beta\gamma)}$ , which are equal and opposite. It can be shown that these equal and opposite vectors are parallel to the pedal line of the point on the circle  $ABC$  nearest to the fixed point  $\kappa$ .

If, now, we take a jointed parallelogram whose sides  $a, b$ , above defined, turn round a fixed point and are equally inclined to a fixed straight line, it will be easily seen that the opposite corner of the parallelogram describes an ellipse whose centre is at the fixed point, of semi-axes  $a + b, a - b$ . The ellipse described by  $\zeta$  has, therefore, its axes parallel to the pedal lines of the ends of the diameter through  $\kappa$ .

**17391.** (A. W. H. THOMPSON.)—Show that a set of parallel curves may be generated in the following way.  $x$  is a variable point on a curve  $\Gamma$ ,  $\xi_1, \xi_2, \dots, \xi_n$  are a set of parallel lines fixed in regard to the tangent and normal at  $x$ ; then, as  $x$  traces the curve, the envelopes of  $\xi_1, \xi_2, \dots, \xi_n$  are a set of parallel curves.

*Solution by R. F. DAVIS, M.A.*

Imagine two thin wires  $BAB', CAC'$  rigidly jointed at right angles in the point  $A$ , and the wires placed so that  $A$  is over  $x$ ,  $AB$  along tangent at  $x$ ,  $AC$  along normal at  $x$ . Then, if the wires move so that  $A$  is over a consecutive point  $x'$ ,  $AB$  and  $AC$  along tangent and normal at  $x'$ , then the Centre of Instantaneous Rotation can easily be seen to be the centre of curvature  $\eta$  at  $x$ . Then the parallels  $\xi_1, \xi_2, \dots, \xi_n$  are all turning about  $\eta$ , and touch their respective envelopes at the points where a common perpendicular through  $\eta$  to these parallels meets them.

**14505.** (ANON.)—A small ring  $P$  of mass  $m$  is acted on by gravity, and by a force  $\mu PA$  towards a fixed point  $A$ . It is placed on a circular wire, radius  $a$ , angle of friction  $\frac{1}{2}\pi$ , at rest in a vertical plane, with its centre  $C$  vertically below  $A$ . If  $AC = c$  and  $(\mu c - mg)\sqrt{3} = \mu a$ , find the limits between which equilibrium may exist. If the wire be slowly rotated in its plane around its centre, what will happen to the small ring when released from rest, distinguishing the different portions of the ring according to the effect produced? [Trinity College, 1895.]

*Solution by C. W. ADAMS.*

Let  $O$  be the point in  $CA$  such that  $CO = a/\sqrt{3}$ .

Then  $mg = u(c - a/\sqrt{3}) = \mu AO$ .

The central force and gravity are therefore represented by the vectors  $\mu PA$  and  $\mu AO$ , and their resultant by the vector  $\mu PO$ .

The condition for equilibrium is therefore

$$\angle OPC \leq \frac{1}{2}\pi,$$

which is seen by simple geometry to be equivalent to  $\angle ACP$  not lying between  $\frac{1}{2}\pi$  and  $\frac{3}{2}\pi$  on either side of the vertical.

Suppose now that the larger ring rotates slowly in the direction in which  $\angle ACP (= \theta)$  is measured positively. Then, by considering the changes in the total tangential component,

$$\mu PO (\pm \sin \frac{1}{2}\pi \pm \sin \angle OPC),$$

we arrive at the following results for the behaviour of the small ring when released from rest at the positions defined by  $\theta$ :

$0 \leq \theta < \frac{1}{8}\pi$ , it moves with large ring;

$\theta = \frac{1}{8}\pi$ , it remains at rest;

$\frac{1}{8}\pi < \theta < \frac{1}{2}\pi$ , it retreats along large ring;

$\theta = \frac{1}{2}\pi$ , it remains at rest;

$\frac{1}{2}\pi < \theta \leq \frac{3}{2}\pi$ , it moves with large ring;

$\frac{3}{2}\pi < \theta < \frac{7}{8}\pi$ , it advances along large ring;

$\frac{7}{8}\pi \leq \theta < 2\pi$ , it moves with large ring.

**17352.** (Professor K. J. SANJANA, M.A.)—"To find three numbers such that the product of any two plus the third gives a square."—*Diophantus*, III, 12. Obtain the following solutions:—

$$\frac{a+1}{4-a}, \frac{a^2-3a+1}{4-a}, \frac{a^2+a}{4-a}; \quad a^2, \frac{a^2-4a+1}{4}, \frac{a^2+4a+1}{4};$$

and show how others may be found.

*Attempted Solution by A. M. NESBITT, M.A.*

The second of the proposed solutions may be arrived at as follows:

$$(m+n)^2 - (m-n)^2 = 4(x^2 - l).$$

If  $l = k^2$  this is satisfied by  $m+n = 2x$ ,  $m-n = 2k$ ;

whence  $m = x+k$ ,  $n = x-k$ . Now  $m+nl$ , which is a perfect square, =  $x(1+k^2) + k - k^2$ .

Put  $x = p^2k^2 + q^2$  and it becomes

$$p^2k^4 - k^3 + (p^2 + q^2)k^2 + k + q^2,$$

which is the square of  $pk^2 - rk - q$ , provided that  $pr = qr = \frac{1}{2}$  and  $(p+q)^2 = r^2$ , i.e.,  $r = 1$ ,  $p = q = \frac{1}{2}$ . Thus  $x = \frac{1}{2}(1+k^2)$ ,

$$m = \frac{1}{2}(1+k^2+4k), \quad n = \frac{1}{2}(1+k^2-4k), \quad l = k^2.$$

If  $l = 1$ , we may also proceed thus:

$$mn = x^2 - 1, \quad m+n = y^2 = z^2, \quad m-n = \sqrt{(y^4 - 4x^2 + 4)}.$$

If  $2x = y^2$ ,  $m-n = 2$ ; therefore  $m = y^2/2 + 1$ ,  $n = y^2/2 - 1$ .

If  $2x = y^2 - 2$ , we get  $l = 1$ ,  $m = (y^2 + 2y)/2$ ,  $n = (y^2 - 2y)/2$ .

Again, in  $(m+n)^2 - 4x^2 = (m-n)^2 - 4l$

put  $m-n = pl + q$ , thus  $(pl+q)^2 - 4l$  has factors; therefore  $1-pq$  is a perfect square. Suppose now that  $l = z$ , so that  $l^2 - lm - n = 0$  or  $n = kl$  if  $k = l-m$ . If now we take  $p = -3$ ,  $q = 1$ , as the simplest solution of  $1-pq = \square$ , we get

$$m-n = 1-3l \text{ or } lk+k = 4l-1, \text{ and } l = (1+k)/(4-k).$$

I admit this is not too satisfactory.

**17471.** (Professor J. C. SWAMINARAYAN, M.A.)—If

$$A + B + C = 180^\circ,$$

prove the identity

$$\begin{aligned} & \operatorname{cosec} A (\sin^4 A - \sin^2 B \sin^2 C) [\sin(B-C) - \cos C \sin(C-A) \\ & \qquad \qquad \qquad - \cos B \sin(A-B)] \\ & + \operatorname{cosec} B (\sin^4 B - \sin^2 C \sin^2 A) [\sin(C-A) - \cos A \sin(A-B) \\ & \qquad \qquad \qquad - \cos C \sin(B-C)] \\ & + \operatorname{cosec} C (\sin^4 C - \sin^2 A \sin^2 B) [\sin(A-B) - \cos B \sin(B-C) \\ & \qquad \qquad \qquad - \cos A \sin(C-A)] \equiv 0. \end{aligned}$$

Also point out the important geometrical truth which it represents.

*Solution by F. W. REEVES, M.A.*

$$\begin{aligned} & \Sigma \operatorname{cosec} A (\sin^4 A - \sin^2 B \sin^2 C) [\sin(B-C) - \cos C \sin(C-A) \\ & \qquad \qquad \qquad - \cos B \sin(A-B)] \\ & = \Sigma \frac{\operatorname{cosec} A}{16R^4} (a^4 - b^2c^2) [\cos C \{ \sin(C+A) - \sin(C-A) \} \\ & \qquad \qquad \qquad - \cos B \{ \sin(A+B) + \sin(A-B) \}] \\ & = \Sigma^2 \frac{\operatorname{cosec} A}{16R^4} (a^4 - b^2c^2) (\cos^2 C \sin A - \cos^2 B \sin A) \\ & = \Sigma \frac{(a^4 - b^2c^2)(b^2 - c^2)}{32R^6} = 0. \end{aligned}$$

QUESTIONS FOR SOLUTION.

17562. (F. R. HAMILTON, B.Sc.)—A straight bore is made through a solid homogeneous ellipsoid. Prove that, whatever the position of the bore, a particle placed in the bore will perform simple harmonic motion under the attraction of the ellipsoid.

17563. (Communicated by C. M. ROSS, B.A.)—Prove that, if the summations with respect to  $n_1, n_2, \dots, n_m$  are carried out successively, the series

$$\sum_{n_1=0}^{\infty} \sum_{n_2=0}^{\infty} \dots \sum_{n_m=0}^{\infty} \frac{(n_1 + n_2 + \dots + n_m)!}{n_1! n_2! \dots n_m!} \left(\frac{x}{m}\right)^{n_1 + n_2 + \dots + n_m}$$

is convergent for all values of  $x$ , such that  $-m < x < 1$ , and is equal to  $(1-x)^{-1}$ . (Tripos, Part I, 1903.)

17564. (J. HAMMOND, M.A.)—Show how to find an infinite number of series, such that half the sum of the squares of any two consecutive terms, in each series, is a square number; and prove that

$$1 + 7 + 17 + 31 + \dots + (2n^2 - 1)$$

$$\text{and} \quad 7 + 23 + 47 + 79 + \dots + (4n^2 + 4n - 1)$$

are two of the series in question.

17565. (R. F. DAVIS, M.A.)—If  $a + c = 2(b + 1)$ , express  $x$  in terms of  $a, b, c$  in such a manner that  $x + a, x + b, x + c$  shall be perfect squares.

17566. (NORMAN ALLISTON.)—In one of his notes to Bachet's "Diophantus," Fermat writes: "I have also discovered and proved that no triangular number except 1 can be a biquadrate." What is his, or any other, proof?

17567. (J. J. BARNIVILLE, B.A.)—Prove that  $x^{21} - 57x^{14} - 289x^7 + 1$  is divisible by  $(x^3 - x^2 - 2x + 1)(x^6 + 5x^3 + 11x^2 + 13x^3 + 9x^2 + 3x + 1)$ .

17568. (Professor K. J. SANJANA, M.A.)—Employing some general method, obtain the solution in positive integers of

$$x + y - 5 \equiv 0 \pmod{22}, \quad x - y + 2 \equiv 0 \pmod{7}, \quad 4xy + 4x + y \equiv 0 \pmod{18},$$

$$\text{and} \quad 4xy + 2x + 6y \equiv 0 \pmod{23},$$

17569. (C. E. YOUNGMAN, M.A.)—Tangents drawn to a quartic curve at four collinear points cut it again at eight points, which must needs lie on a conic. Show that in the case of the hypocycloid this conic is always a rectangular hyperbola. And the hyperbola touches the line of contacts when that line is either a normal to the hypocycloid or a central chord.

17570. (A. M. NESBITT, M.A.)—A pair of common tangents to two conics  $S, S'$  touch  $S$  in  $A, B$ , and touch  $S'$  in  $C, D$ . The line  $AB$  touches  $S'$ , and the line  $CD$  touches  $S$ . Find the invariant relation between  $S$  and  $S'$ .

17571. (V. DANIEL, B.Sc.)—Show that for a triangle  $ABC$  on fixed base  $b$  the locus of  $B$  is an ellipse, foci  $A$  and  $C$ , of eccentricity  $1/(m+1)$  or  $1/(m-1)$ , according as  $BI$  or  $BI_2$  is  $m$  times the circum-radius of  $AIC$ .

17572. (Professor E. J. NANSON.)—Having given two tangents to a parabola and the envelope of the chord of contact, find the locus of the focus.

17573. (W. E. H. BERWICK.)—Given four systems of coaxial circles in a plane, show that in general it is possible to find two more coaxial systems, each of which contains a circle belonging to each of the four given systems.

17574. (Professor NEUBERG.)—Les tangentes menées par les sommets du triangle  $ABC$  au cercle circonscrit forment un nouveau triangle  $A'B'C'$ . Soient  $\alpha$  la droite joignant les pieds des hauteurs du triangle  $A'BC'$  issues de  $B$  et  $C$ ; soient  $\beta, \gamma$  les droites analogues des triangles  $B'AC, C'AB$ . Les droites  $\alpha, \beta, \gamma$  forment un triangle homothétique à  $ABC$ . Les coordonnées normales du centre d'homothétie sont proportionnelles à  $\sin A \sin 2A, \sin B \sin 2B, \sin C \sin 2C$ . Trouver l'aire du triangle  $\alpha\beta\gamma$ .

17575. (F. GLANVILLE TAYLOR, M.A., B.Sc.)—If  $H, I, O$  are the ortho-, in-, and circum-centres of  $ABC$ , and  $H', I'$  the images of  $H$  and  $I$  respectively through  $O$ , so that  $O$  is the mid-point of  $HH'$  and of  $II'$ ; and if  $V$  is the isogonal conjugate of  $I'$ , prove that  $H'I'V$  is a straight line.

17576. (N. W. McLACHLAN, B.Sc., A.M.I.E.E.)—A hole 4 in. diameter is bored through a right circular cylinder 10 in. diameter, so that the axes of the hole and cylinder intersect at an angle  $\cos^{-1} \frac{1}{2} \sqrt{3}$ . The cylinder is cut by a plane at right angles to the plane containing the two axes. Find the inclination of the axis of the cylinder to this plane if the area intercepted by it is 70 sq. in.

17577. (H. D. DRURY, M.A.)— $ABC$  is any triangle,  $O$  its ortho-centre. Prove geometrically that the volume of the rectangular parallelepiped whose edges are the sides of the triangle is equal to the sum of the volumes of the three parallelepipeds whose edges are respectively the sides of the triangles  $OBC, OCA, OAB$ .

17578. (W. F. BEARD, M.A.)— $Y, Y', Z, Z'$  are points on a diameter of circle centre  $O$ , such that  $OY = OY', OZ = OZ'$ . From any point  $A$  on the circumference chords  $AYB, AZC$  are drawn. Prove that  $BZ', CY'$  meet on the circumference.

17579. (Professor J. C. SWAMINARAYAN, M.A.)— $P$  is any point within a spherical triangle  $ABC$ . Show that if the three arcs  $PA, PB, PC$  are denoted by  $x, y, z$  respectively, either of the following relations exists between  $x, y, z$ :-

$$(a) \begin{vmatrix} 1, & \cos c, & \cos b, & \cos x \\ \cos c, & 1, & \cos a, & \cos y \\ \cos b, & \cos a, & 1, & \cos z \\ \cos x, & \cos y, & \cos z, & 1 \end{vmatrix} = 0;$$

$$(b) \Sigma \cos^2 x \sin^2 a - 2 \Sigma \cos y \cos z \sin b \sin c \cos A = 1 - \cos^2 a - \cos^2 b - \cos^2 c + 2 \cos a \cos b \cos c.$$

OLD QUESTIONS AS YET UNSOLVED (IN OUR COLUMNS).

14427. (Professor H. LANGHORNE ORCHARD, M.A., B.Sc.)—On the diameter of a circle of unit radius is described the ellipse  $3x^2 + 4y^2 = 12$ , of which  $S, H$  are foci; and on  $SH$  as minor axis is described another ellipse, of which the area is the same as that of the first ellipse, and of which the foci are  $S'$  and  $H'$ ; then a circle is described on  $S'H'$  as diameter. Find the area common to this circle and to the two ellipses.

14440. (F. H. PEACHELL, B.A.)—It is well known that the velocity of sound rises with the temperature. In metal organ-pipes, this is counterbalanced to a certain extent by the expansion of the metal. Find the coefficient of expansion of a metal such that the pitch of an organ-pipe built of it should remain the same for ordinary ranges of temperature.

14468. (R. P. PARANJPYE, B.A.)—Show that, if  $x, y, z$  be the rectangular Cartesian, and  $r, \theta, \phi$  the polar co-ordinates of a point, and  $x, y, z, r$  be integers, then the product  $xyzr$  is a multiple of 7,200, provided  $\theta$  and  $\phi$  have commensurable trigonometrical ratios. [N.B.—The last condition is necessary; otherwise the question is not true, e.g.,  $2^2 + 2^2 + 1^2 = 3^2$ , but  $2.2.1.3 = 12$ .] (This is a generalization of Quest. 14367.)

14500. (G. D. WILSON, B.A.)—Prove that, for the series 1, 3, 11, 41, ... in which  $v_{n+1} + v_{n-1} = 4v_n$ ,

$$v_p + v_q = v_{p+q} \{v_{p-q} + v_{p+q}\}, \quad \text{if } p+q \text{ be even,}$$

$$\text{and} \quad v_p + v_q = v_{p+q+1} \{v_{p-q-1} + v_{p+q+1}\}, \quad \text{if } p+q \text{ be odd.}$$

14507. (EDWARD V. HUNTINGTON, A.M.)—Given

$$f(x_1) + f(x_2) + \dots + f(x_n) = 0,$$

where the  $x$ 's may be chosen at pleasure provided  $x_1 + x_2 + \dots + x_n = 0$ , it is evident that, if  $f(x) = Cx$ , the condition is satisfied. Prove that this is the only admissible form of the function.

14544. (Professor A. DROZ-FARNY.)—Une droite coupe une spirale logarithmique. Quel est le lieu des centres de courbure correspondants aux divers points d'intersection?

NOTICE TO CORRESPONDENTS.

It is requested that all Mathematical communications should be sent to the Mathematical Editor,

Miss CONSTANCE I. MARKS, B.A., 10 Matheson Road, West Kensington, W.

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THE LONDON MATHEMATICAL SOCIETY.

Thursday, June 12, 1913.—Prof. Love, President, in the chair.

The following papers were communicated:—

"The Electromagnetic Force on a Moving Charge in relation to the Energy of the Field": Sir J. Larmor.

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(i) "On the Fractional Part of  $n^{\theta}$ "; (ii) "The Trigonometrical Series associated with the Elliptic  $\theta$ -Functions": Messrs. G. H. Hardy and J. E. Littlewood.

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No. 628.

AUGUST 1, 1913.

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# CLASS LISTS

## OF CANDIDATES WHO HAVE PASSED THE CERTIFICATE EXAMINATION OF THE COLLEGE OF PRECEPTORS.—MIDSUMMER, 1913.

The list of successful candidates at the Colonial Centres will be published in the October number of "The Educational Times."

[Throughout the following Lists, bracketing of names implies equality.]

### PRIZES.

#### FIRST CLASS [or SENIOR].

##### General Proficiency.

- |   |  |
|---|--|
| 1. Phillips, R. G.<br>( <i>Isbister Prize.</i> )    | Stationers' Company's School, Hornsey. |
| 2. Ellingham, H. J. T.<br>( <i>Pinches Prize.</i> ) | Stationers' Company's School, Hornsey. |
| 3. Toole, R. W.                                     | St. Aloysius' College, Highgate.       |
| 4. Swarbrick, F. W.                                 | St. Joseph's College, Dumfries.        |

##### English Subjects.

- |                    |  |
|--------------------|--|
| 1. Phillips, R. G. | Stationers' Company's School, Hornsey. |
| 2. Cope, B.        | St. Aloysius' College, Highgate.       |

##### Mathematics.

- |                               |  |
|-------------------------------|--|
| 1. Phillips, R. G.            | Stationers' Company's School, Hornsey.                               |
| 2. { Bell, C. W.<br>Mount, H. | Yorkshire Society's School, S.E.<br>Yorkshire Society's School, S.E. |

##### Modern Foreign Languages.

- |                    |   |
|--------------------|---|
| 1. Phillips, R. G. | Stationers' Company's School, Hornsey.  |
| 2. Rugeroni, C. A. | Christian Brothers' College, Gibraltar. |

##### Classics.

- |                     |                              |
|---------------------|------------------------------|
| 1. Carpenter, J. W. | Hawkesyard College, Rugeley. |
| 2. Clark, W. F.     | Hawkesyard College, Rugeley. |

##### Natural Sciences.

- |                        |  |
|------------------------|--|
| 1. Ellingham, H. J. T. | Stationers' Company's School, Hornsey. |
| 2. [Not awarded.]      |  |

##### Taylor-Jones Prize for Scripture History.

- |   |  |
|---|--|
| 1. { Moore, Miss A. C.<br>Newby, Miss K. L. | The Friends' School, Mountmellick.<br>The Hiatt Ladies' College, Wellington, Shropshire. |
|---|--|

##### "Eve Silver Medal" for Proficiency in German.

- |                 |  |
|-----------------|--|
| Phillips, R. G. | Stationers' Company's School, Hornsey. |
|-----------------|--|

#### SECOND CLASS [or JUNIOR].

##### General Proficiency.

- |                      |                                    |
|----------------------|------------------------------------|
| 1. Keeping, H. A. R. | Portsmouth Boys' Secondary School. |
| 2. Pottle, H. G.     | Portsmouth Boys' Secondary School. |
| 3. Pool, F. E.       | Newquay College, Cornwall.         |
| 4. Cooper, C. H.     | Portsmouth Boys' Secondary School. |

#### THIRD CLASS.

##### General Proficiency.

- |                      |                             |
|----------------------|-----------------------------|
| 1. Bolger, P. A.     | Dominican Convent, Wicklow. |
| 2. Silke, Miss M. R. | Dominican Convent, Wicklow. |
| 3. Bolger, P. R.     | Dominican Convent, Wicklow. |
| 4. Payne, Miss E. M. | Victoria College, Belfast.  |

The following is a List of the Candidates who obtained the FIRST and SECOND PLACES in each Subject on FIRST CLASS PAPERS. (Only these who obtained Distinction are included.)

<i>Scriptures History.</i>		<i>Book-keeping.</i>		<i>Light and Heat.</i>	
1. { Moore, Miss A. C. Newby, Miss K. L.	The Friends' School, Mountmellick. The Hiatt Ladies' College, Wellington, Shropshire.	1. Nicholson, W. Cope, B. 2. { Gormley, A. J. Kelly, C. Swarbrick, F. W.	St. Joseph's College, Dumfries. St. Aloysius' College, Highgate. St. Joseph's College, Dumfries. St. Joseph's College, Dumfries. St. Joseph's College, Dumfries.	1. Ellingham, H. J. T.	Stationers' Company's School, Hornsey.
<i>English Language.</i>		<i>French.</i>		<i>Chemistry.</i>	
1. { Miles-Cadman, C. F. Netto, Miss D.	Butley School, nr. Tunstall. Loreto Convent, Europa, Gibraltar.	1. Ruiz, A.	Christian Brothers' College, Gibraltar.	1. Ellingham, H. J. T.	Stationers' Company's School, Hornsey.
<i>English History.</i>		<i>German.</i>		<i>Physiology.</i>	
1. { Huggett, F. G. Miles-Cadman, C. F. Phillips, R. G.	Fartown Grammar School, Huddersfield. Butley School, nr. Tunstall. Stationers' Company's School, Hornsey.	1. Phillips, R. G.	Stationers' Company's School, Hornsey.	1. Prentice, H. V.	Steyne School, Worthing.
<i>Geography.</i>		<i>Italian.</i>		<i>Botany.</i>	
1. Phillips, R. G.	Stationers' Company's School, Hornsey.	1. Lavagna, G.	Linton House School, Bayswater.	1. Freeman, Miss D. M.	Private tuition.
<i>Arithmetic.</i>		<i>Spanish.</i>		<i>Drawing.</i>	
1. Phillips, R. G.	Stationers' Company's School, Hornsey.	1. Ruiz, A.	Christian Brothers' College, Gibraltar.	1. Pitt, E.	Newtown School, Waterford.
2. { Carpenter, J. W. Cope, B.	Hawkesyard College, Rugeley. St. Aloysius' College, Highgate.	2. { Facio, E. Rugeroni, C. A.	Christian Brothers' College, Gibraltar. Christian Brothers' College, Gibraltar.	2. { Bailey, Miss H. G. Ball, J. J. Perkins, R. N. C. Robinson, Miss W. E.	Private tuition. St. Joseph's College, Dumfries. Private tuition. New Orphan Houses, Bristol.
<i>Algebra.</i>		<i>Welsh.</i>		<i>Music.</i>	
1. Mount, H.	Yorkshire Society's School, S.E.	1. Hill, Miss M. J. Davies, Miss M. M. M.	Private tuition. Tutorial School, New Quay, Cardigan.	1. Chapman, D. J.	Grammar School, Eccles.
2. Madgwick, E.	Private tuition.	2. { Evans, Miss J.	Old College School, Carmarthen.	<i>Political Economy.</i>	
<i>Geometry.</i>		<i>Irish.</i>		1. Miles-Cadman, C. F.	
1. Bell, C. W.	Yorkshire Society's School, S.E.	1. McGary, Miss M.	St. Mary's Convent, Bruff.	2. { Freeman, Miss D. M. Furlong, Miss C.	
2. { Evans, Miss L. Phillips, R. G.	Tutorial School, New Quay, Cardigan. Stationers' Company's School, Hornsey.	<i>Latin.</i>		St. Mary's Convent, Rhyll.	
<i>Mechanics.</i>		1. Wylde, P. J.		<i>Shorthand.</i>	
1. Madgwick, E.	Private tuition.	2. Clark, W. F.		1. Mount, H.	
		<i>Hebrew.</i>		2. { Donovan, C. A. Toole, R. W.	
		1. Badash, Z.		Yorkshire Society's School, S.E.	
				2. { St. Aloysius' College, Highgate. St. Aloysius' College, Highgate.	
				<i>Domestic Economy.</i>	
				1. Evans, Miss J.	
				Old College School, Carmarthen.	
				1. Miles-Cadman, C. F.	
				Butley School, nr. Tunstall.	
				2. { Prout, Miss C. L.	
				Cardiff & South Wales Correspondence School, Cardiff.	

CLASS LIST—BOYS.

N.B.—The small italic letters denote that the Candidate to whose name they are attached was distinguished in the following subjects respectively:—

a. = Arithmetic.	du. = Dutch.	gr. = Greek.	ma. = Magnetism & Electricity.	s. = Scripture.
al. = Algebra.	e. = English.	h. = History.	ms. = Mensuration.	sc. = Elementary Science.
b. = Botany.	f. = French.	he. = Hebrew.	mu. = Music.	sh. = Shorthand.
bk. = Book-keeping.	g. = Geography.	i. = Italian.	nh. = Natural History.	sp. = Spanish.
ch. = Chemistry.	ge. = German.	ir. = Irish.	p. = Political Economy.	tr. = Trigonometry.
d. = Drawing.	geo. = Geology.	l. = Latin.	ph. = Physiology.	w. = Welsh.
do. = Domestic Economy.	gm. = Geometry.	lt. = Light and Heat.	phys. = Elementary Physics.	z. = Zoology.
		m. = Mechanics.		

The small figures <sup>1</sup> and <sup>2</sup> prefixed to names in the Second and Third Class Lists denote that the Candidates were entered for the First and Second Classes respectively.

In the addresses, Acad. = Academy, C. or Coll. = College, Coll. S. = Collegiate School, Comm. = Commercial, Conv. = Convent, Elem. = Elementary, End. = Endowed, Found. = Foundation, H. = House, Hr. = Higher, Inst. = Institute, Int. = International, Inter. = Intermediate, Poly. = Polytechnic, Prep. = Preparatory, P.-T. = Pupil-Teachers, S. = School, Sec. = Secondary, Tech. = Technical, Univ. = University.

FIRST CLASS [or SENIOR].

Honours Division.

Phillips, R.G. <i>h.g.a.gm.f.ge.</i> Stationers' Co.'s S., Hornsey	(Marriott, A.E. <i>a.</i> Gram. S., Eccles White, G. <i>s.</i> Newquay Coll., Cornwall	(Bebbington, A. Private tuition Bowker, J.A. University S., Southport Dowling, W.H. Southall County Sec. S.	Pool, F.E. <i>s.h.al.ms.phys.</i> Newquay Coll., Cornwall
Ellingham, H.J.T. <i>h.a.f.lt.ch.</i> Stationers' Co.'s S., Hornsey	Beckly, W.E. Dunheved Coll., Launceston Rowe, P.W. <i>a.</i> Balham Modern S.	Harris, A. Newtown S., Waterford Woods, J.F. Newtown S., Waterford	Cooper, C.H. <i>h.g.a.al.lt.ch.</i> Portsmouth Boys' Sec. S.
Toole, R.W. <i>a.sh.</i> St. Aloysius' Coll., Highgate	Prentice, H.V. <i>ph.</i> Steyne S., Worthing Huggett, F.G. <i>s.h.</i> Fartown Gram S., Huddersfield	(M'Grath, J. St. Joseph's Coll., Dumfries Perkins, R.N.C. <i>a.d.</i> Private tuition	Hainsworth, J.R. <i>s.h.a.al.gm.ms.lt.</i> Newquay Coll., Cornwall
Swarbrick, F.W. <i>a.bk.f.</i> St. Joseph's Coll., Dumfries	(Clark, W.F. <i>h.l.</i> Hawkesyard Coll., Rugeley Devlin, J. St. Joseph's Coll., Dumfries	(Fleming, L.P. <i>a.</i> St. Joseph's Acad., Kennington Rd., S.E. Udom <i>a.</i> Private tuition	Trevorrow, J.P. <i>s.h.a.al.gm.ms.</i> Newquay Coll., Cornwall
Madgwick, E. <i>s.a.al.m.</i> Private tuition	(O'Connor, G. Salesian S., Farnborough Pye, S. St. Joseph's Coll., Dumfries	(Baines, A.J. St. Joseph's Coll., Dumfries Hetherington, W. Friends' S., Wigton Mather, A.R. Wilmslow College	Pursehouse, E. <i>g.a.al.gm.ms.</i> Eye Gram. S.
Jacob, H.W.J. <i>a.lt.</i> Stationers' Co.'s S., Hornsey	Pitt, E. <i>a.d.</i> Newtown S., Waterford Crook, W.E. <i>a.</i> Brondebury Coll., Willesden Lane, N.W.	(Carless, W.J. <i>a.</i> King's S., Worcester Davies, D.T.E. Private tuition Watson, G.W. Willow H., Walsall	(Edwards, A.B.D. <i>a.al.lt.</i> Portsmouth Boys' Sec. S.
Miles-Cadman, C.F. <i>s.e.h.a.ph.p.do.</i> Butley School, nr. Tunstall	Hewitt, S.W. St. Joseph's Coll., Dumfries Collins, J.E. <i>s.a.</i> Friends' S., Wigton	Coad, O.E. Dunheved Coll., Launceston Digby, E.E. Marlborough College	Hitchens, W.H. <i>a.al.gm.f.lt.sh.</i> Portsmouth Boys' Sec. S.
Cope, B. <i>s.h.a.bk.do.</i> St. Aloysius' Coll., Highgate	Gormley, B.H. <i>d.</i> St. Joseph's Coll., Dumfries	Davies, J.H.P. Private tuition Tutorial S., New Quay, Cardigan	Sénéchal, M. <i>bk.ms.f.</i> Marist Bros.' Coll., Grove Ferry
Kelly, G. <i>a.bk.f.</i> St. Joseph's Coll., Dumfries	Feeley, M.J. <i>a.al.</i> Hawkesyard Coll., Rugeley	Hughes, J.O. Private tuition	Bosworth, R. <i>g.al.gm.d.</i> Eye Gram. S.
Jarvis, M.F. <i>a.</i> Stationers' Co.'s S., Hornsey	Copple, J. St. Joseph's Coll., Dumfries Cummins, R.E. <i>s.</i> Newtown S., Waterford	Enoch, T.E. The College, Weston-s.-Mare	Bancquart, H. <i>s.a.bk.f.</i> Marist Bros.' Coll., Grove Ferry
Lonjarret, A.C. <i>f.d.</i> Stationers' Co.'s S., Hornsey	Mitchell, P.J. <i>lt.</i> Private tuition	(Baker, K.W. King Edward VI Gram. S., Lichfield Chapman, C. Private tuition White, G.R. <i>a.</i> Brondebury Coll., Willesden Lane, N.W.	(Cheney, E. <i>a.ms.f.d.</i> County Gram. S., Market Harboro Daley, R.C. <i>a.al.f.lt.</i> Portsmouth Boys' Sec. S.
Mount, H. <i>a.al.sh.</i> Yorkshire Society's S., S.E.	Donovan, C.A. <i>sh.</i> St. Aloysius' Coll., Highgate	Pugh, S.F. Private tuition Raddall, T. Dunheved Coll., Launceston	(Lefrançois, C. <i>bk.f.d.</i> Marist Bros.' Coll., Grove Ferry
Rugeroni, C.A. <i>sp.</i> Christian Bros.' Coll., Gibraltar	(Phipps, L.J. <i>a.</i> Stationers' Co.'s S., Hornsey Woodman, D. St. Joseph's Coll., Dumfries Wyld, P.J. <i>l.</i> Hawkesyard Coll., Rugeley	Isard, O.C. The Leys S., Cambridge Zahringer, F.H. St. Aloysius' Coll., Highgate	Tribe, H. <i>a.al.gm.d.</i> Portsmouth Boys' Sec. S.
Verano, A. <i>a.</i> Christian Bros.' Coll., Gibraltar	(Coyle, T.C. Hawkesyard Coll., Rugeley Thomas, D. Tutorial S., New Quay, Cardigan	Farrell, R.J. Newtown S., Waterford	Coquet, D. <i>s.a.bk.</i> Marist Bros.' Coll., Grove Ferry
Stark, H. <i>a.sp.</i> Christian Bros.' Coll., Gibraltar	Gavanagh, T.J. St. Joseph's Coll., Dumfries	(Harris, C. Newquay Coll., Cornwall Lumsdaine, A.A.M. Private tuition	Froom, F.E. <i>a.gm.ms.</i> Argyle H., Sunderland
Cronin, M. <i>s.sh.</i> St. Aloysius' Coll., Highgate	Francis, C.A. Stationers' Co.'s S., Hornsey	Jolliffe, B.O. Dunheved Coll., Launceston	Pizarello, E. <i>a.</i> Christian Bros.' Coll., Gibraltar
Holland, E.L. St. Joseph's Coll., Dumfries	(Broderick, H. Wilmslow College Kelsey, P.G. <i>a.</i> Private tuition	Sharpley, F.C. Dunheved Coll., Launceston	Ruiz, A.J. <i>sp.</i> Christian Bros.' Coll., Gibraltar
Gormley, A.J. <i>bk.</i> St. Joseph's Coll., Dumfries	Phillips, C. <i>h.</i> Private tuition	Leng Eastbourne College	Brown, G.F. <i>a.f.</i> County Gram. S., Market Harboro
Bell, C.W. <i>a.gm.sh.</i> Yorkshire Society's S., S.E.	Wood, A. Newquay Coll., Cornwall	Lewis, D. Higher Grade S., Mountain Ash	Chapman, D.J. <i>mu.</i> Gram. S., Eccles
Nicholson, W. <i>a.bk.</i> St. Joseph's Coll., Dumfries	(Symons, T.R. Dunheved Coll., Launceston Turner, J.W. <i>s.h.</i> Dunheved Coll., Launceston	Poynor, F.J.R. Stafford Coll., Forest Hill	Churchill, C.H. <i>g.lt.</i> Portsmouth Boys' Sec. S.

FIRST CLASS [or SENIOR].

Pass Division.

Hopkins, C.W. Stationers' Co.'s S., Hornsey	Bate, J.B. St. Joseph's Coll., Dumfries
Carpenter, J.W. <i>a.l.</i> Hawkesyard Coll., Rugeley	Walters, D.A. <i>H.</i> Dunheved Coll., Launceston
Dukes, A. <i>a.sh.</i> Yorkshire Society's S., S.E.	Ellison, B.D. St. Joseph's Coll., Dumfries
Laws, S.J. <i>a.</i> Stationers' Co.'s S., Hornsey	Jones, T.J. Tutorial S., New Quay, Cardigan
	Minto, R.B. <i>s.</i> Friends' S., Wigton
	Chapman, F.W.B. Newtown S., Waterford
	Diacono, H. St. Joseph's Coll., Dumfries
	Dotto, J.L. Christian Bros.' Coll., Gibraltar

SECOND CLASS [or JUNIOR].

Honours Division.

Keeping, H.A.R. <i>h.g.a.al.gm.u.ch.d.</i> Portsmouth Boys' Sec. S.	(Salter, D.R. <i>h.g.a.</i> King Henry VIII S., Abergavenny
Pottle, H.G. <i>h.g.a.al.gm.f.lt.ch.d.</i> Portsmouth Boys' Sec. S.	Steel, J.D. <i>a.al.d.</i> St. Aloysius' Coll., Highgate
Mentienne, R. <i>s.a.bk.ms.f.</i> Marist Bros.' Coll., Grove Ferry	Tonkinson, W.N. <i>g.</i> Argyle H., Sunderland
	Palmer, P.R. <i>g.a.d.</i> County Gram. S., Market Harboro
	Manrique, S. <i>bk.f.</i> Marist Bros.' Coll., Grove Ferry
	(Comte, J. <i>a.</i> Marist Bros.' Coll., Grove Ferry
	Flynn, J.L. <i>f.</i> St. Joseph's Acad., Kennington Rd., S.E.
	Lewis, J.E. <i>gm.</i> Newtown S., Waterford

BOYS, 2ND CLASS, HONOURS—Continued.

Cartier, I.P. s.a. al. Newquay Coll., Cornwall
Dawson, F.W. g.a. St. Aloysius' Coll., Highgate
Munday, R.B. a. al. Private tuition
Bannister, T.R. g.a. f. Hawkesyard Coll., Rugeley
Brown, P.H. a. l. Eye Gram. S.
Cook, H.N.F. c. h. g. a. Private tuition
McGirr, T.H. a. l. f. Hawkesyard Coll., Rugeley
Lensch, F.H. b. k. d. St. Aloysius' Coll., Highgate
McSweeney, R. a. f. St. Joseph's Coll., Dumfries
Stainton, K.E. h. St. Bede's, Hornsea
Robertson, W.A. a. l. Yorkshire Society's S., S.E.
Jacobs, S. Argyle H., Sunderland
Loetschert, J.H. b. k. St. Aloysius' Coll., Highgate
Chapman, R.F. a. g. m. Newtown S., Waterford
Jones, T. Pencader Gram. S.
McAdam, T.V. g. f. Private tuition
McQuillan, J. Newtown S., Waterford
Parker, C.S. h. g. Private tuition
Williams, T.E. g. m. f. Tutorial S., New Quay, Cardigan
Balmford, J.K. Gram. S., Eccles
Greenwell, E.A. Argyle H., Sunderland
Widery, F.W. h. g. Private tuition
Pearce, A.E. e. g. f. 19 Clarence St., Penzance
Fisset, A.H. a. f. d. Gram. S., Taplow
Ennitt, G. f. d. St. Joseph's Coll., Dumfries
Ball, J.J. d. St. Joseph's Coll., Dumfries
Randall, L.J. a. University S., Southport
Conrad, A.G. f. St. Joseph's Coll., Dumfries
Joye, L.J. H. Private tuition
Still, B. H. University S., Rochester
Weir, A. P. Argyle H., Sunderland
Greenhalgh, G. Gram. S., Eccles
Harris, A. F. Loughton School
Cunnack, R. F. Dunheved Coll., Launceston
Maginness, R. M. Private tuition
Batchelor, A. W. Osborne High S., W. Hartlepool
Browning, M. P. h. g. c. Private tuition
Skitt, H. G. f. Wellington Coll., Salop
Thornley, A. e. a. d. g. m. f. Private tuition
Tice, S. W. R. h. k. St. Aloysius' Coll., Highgate
Wood, R. E. a. Gram. S., Eccles
Isola, A. al. Christian Bros. Coll., Gibraltar
Langdon, E. B. m. s. Private tuition
Baranda, A. St. Joseph's Coll., Dumfries
Edwards, J. C. S. University S., Rochester
Gillman, A. T. g. Hawkesyard Coll., Rugeley
Wilkinson, F. Gram. S., Eccles

SECOND CLASS [or JUNIOR].

Pass Division.

Chambers, L. B. g. a. d. West Bridgford Higher S., Nottingham
McMenemy, T. J. T. St. Aloysius' Coll., Highgate
Stott, W. D. Gram. S., Eccles
Thompson, W. D. h. Private tuition
Sparks, E. A. Haileybury Coll., Herts
Cook, A. C. Argyle H., Sunderland
Dauverchain, P. f. d. St. Joseph's Coll., Dumfries
Moissant, L. H. J. f. Chichester Gram. S.
Harrison, H. S. Argyle H., Sunderland
Smith, B. W. St. Joseph's Coll., Dumfries
Tigar, A. A. Hawkesyard Coll., Rugeley
Gower, S. J. a. f. Judd Comm. S., Tonbridge
Russell, G. C. Newtown S., Waterford
Serrier, L. b. k. f. Marist Bros. Coll., Grove Ferry
West, V. J. Gram. S., Eccles
Wright, T. Friends' S., Wigton
Glaisby, K. Uppingham School
Marshall, H. M. Argyle H., Sunderland
Rose, C. O. Eye Gram. S.
Sandoe, W. A. f. All Hallows' S., Honiton

Barker, F. h. al. Brighton College
Bradley, W. J. St. Aloysius' Coll., Highgate
Kemp, J. F. St. Joseph's College, Dumfries
Bloomer, A. C. H. h. Private tuition
Croney, T. h. g. Hawkesyard Coll., Rugeley
Harrison, E. C. Argyle H., Sunderland
Swan, E. V. Newcastle Modern S.
Anderson, E. G. a. Private tuition
Jones, T. W. Pencader Gram. S.
Spear, A. D. Eastward Ho! Coll., Felixstowe
Kerr, W. P. St. Joseph's Coll., Dumfries
Richards, C. W. B. Private tuition
Dawes, H. B. f. Private tuition
De Frece, C. I. f. Gram. S., Taplow
Ewen, H. St. Joseph's Coll., Dumfries
Mack, A. S. Private tuition
Morris, O. G. Private tuition
Wilms, W. A. St. Joseph's Coll., Dumfries
Bacon, L. G. a. Tudor Hall, Hawkhurst
Beckwith, E. T. Mount Radford S., Exeter
Clarke, E. L. St. Paul's S., West Kensington
Freeman, E. A. d. Gram. S., Taplow
Rochard, G. A. a. f. Gram. S., Taplow
Watson, N. H. 107 Normount Rd., Newcastle-on-T.
Darling, O. R. Mount Radford S., Exeter
O'Halloran, M. T. a. St. Joseph's Acad., Kennington Road, S.E.
Pfaff, E. H. Private tuition
Ball, R. W. C. Private tuition
Bardrick, H. G. V. Shoreham Gram. S.
Cholmeley, H. J. Richmond Hill S., Richmond
O'Connor, H. J. St. Joseph's Acad., Kennington Road, S.E.
Smith, A. B. Gram. S., Ongar
Badash, Z. h. e. Argyle H., Sunderland
Edney, C. H. h. Kensington Coaching C., Nevers Sq., S.W.
Lyst, E. P. St. Joseph's Acad., Kennington Road, S.E.
Barnard, W. G. Green Park Coll., Bath
Bartle, A. F. a. Private tuition
Conolly, J. L. Private tuition
Jeffrey, L. F. h. Friends' S., Wigton
Levinstein, D. al. Rutherford Coll., Newcastle-on-T.
Myers, F. J. Private tuition
Durham, W. F. Yorkshire Society's S., S.E.
James, M. d. Mill St. Higher Standard S., Pontypridd
Carter, C. J. d. Stafford Coll., Forest Hill
Course, R. R. h. f. Private tuition
Pascoe, C. f. Private tuition
Roberson, A. R. G. Brighton College
Brommage, J. Mill St. Higher Standard S., Pontypridd
Brooke-Thorne, H. V. Private tuition
Hepton, J. B. Hawkesyard Coll., Rugeley
Lenton, S. H. Northampton School
Speakman, E. G. a. Private tuition
Walker, V. D. Holderness Coll., Withernsea
Wineroppe, S. a. Central High S., Leeds
Douglas, H. E. M. E. Brighton College
Grant, J. W. Cavendish S., Matlock Bank
Taylor, J. University S., Southport
Allen, G. A. Private tuition
Kimber, F. L. f. Esplanade H., Southsea
Lambert, H. S. Bridlington Gram. S.
Coward, H. h. Friends' S., Wigton
Danino, A. Christian Bros. Coll., Gibraltar
Carter, D. R. Newquay Coll., Cornwall
Bird, M. E. Stafford Coll., Forest Hill
Cooper, C. R. Ecelsior Tutorial Classes, L'pool
Brooks, R. A. D. Dover College
Harris, R. Private tuition
Meldrum, N. F. e. Private tuition
Richards, C. W. h. Pencader Gram. S.
Baker, C. J. Richmond Hill S., Richmond
Evans, P. W. g. m. Tutorial S., New Quay, Cardigan
Shalles, E. G. Private tuition
Sumner, W. H. University S., Southport
Lawson, D. Private tuition
Mansfield, F. A. Coopers' Co's S., Bow
Vigurs, R. C. Newquay Coll., Cornwall

Clifton, D. G. Tudor Hall, Hawkhurst
Gamage, J. E. f. St. George's Coll., Weybridge
Michalsky, A. V. a. New Orphan Houses, Bristol
Woollett, H. W. Wellingtonborough School
Fidler, J. H. D. f. Broadgate S., Nottingham
Lawrence, E. al. f. Private tuition
Whitworth, L. Hyde Gram. S.
Huggard, C. W. Newtown S., Waterford
Reardon, J. St. Joseph's Coll., Dumfries
Revelle, R. O. Private tuition
Barker, E. H. Heversham Gram. S., Milnthorpe
Nightingale, A. J. Mount Radford S., Exeter
Anglin, L. A. Newtown S., Waterford
Bonifacio, F. Christian Bros. Coll., Gibraltar
Drury, L. S. J. L. h. Private tuition
1 Flood, S. J. St. Joseph's Coll., Dumfries
Place, A. N. Private tuition
Smylie, M. Private tuition
Worth, H. M. Gram. S., Newton Abbot
Dyson, J. Longwood Gram. S., Huddersfield
Goldberg, J. Raleigh Coll., Brixton
Root, E. W. a. Alton H., Blackheath
Wood, G. A. Private tuition
Carrette, R. H. Private tuition
Hayward, T. G. Stationers' Co's S., Hornsey
Jones, T. W. Higher Grade S., Mountain Ash
Strong, C. J. Newquay Coll., Cornwall
Attewell, S. d. West Bridgford Hr. S., Nottingham
Prynn, E. f. Private tuition
Roberts, G. Private tuition
Sanderson, G. Fartown Gram. S., Huddersfield
Badwell, F. E. s. Tankerton Coll., Whitstable
Bennett, W. W. Eastward Ho! Coll., Felixstowe
Brown, R. C. V. d. Dunheved Coll., Launceston
Brown, S. d. St. Joseph's Coll., Dumfries
Laxton, A. New Coll., Herne Bay
McOwan, J. Corner H., Goldstone
Squire, F. J. C. Private tuition
Stokes, D. L. Epsom College
Walker, R. W. New Coll., Herne Bay
Banbury, B. Dunheved Coll., Launceston
Carter, F. St. Dunstan's Coll., Margate
Robinson, R. R. Simon Langton S., Canterbury
Bennison, P. C. Osborne High S., W. Hartlepool
Bowen, W. R. d. Pencader Gram. S.
Dawson, F. A. Eastward Ho! Coll., Felixstowe
de Morsier, S. M. f. Heathcroft, Hainpstead
Vigurs, J. T. C. Newquay Coll., Cornwall
Hughes, H. Coll. S., Colwyn Bay
Payton, F. T. C. a. St. Oswald's Coll., Ellesmere
Phillips, J. C. L. Private tuition
Thomas, W. Tutorial S., New Quay, Cardigan
Beardmore, W. B. West Bridgford Hr. S., Nottingham
Cooper, F. Private tuition
Davies, R. C. L. New Coll., Herne Bay
Naylor, E. J. al. Alton H., Blackheath
Paul, J. S. G. F. Gram. S., Ongar
Unger, K. R. St. Paul's S., West Kensington
Costa, L. G. Stafford Coll., Forest Hill
Hyde, W. T. New Orphan Houses, Bristol
Jaques, N. C. St. George's Coll., Weybridge
McCluskey, J. St. Joseph's Coll., Dumfries
Wilson, A. J. St. Joseph's Coll., Dumfries
Wolstenholme, W. H. Cheltenham Technical S.
de Silva, J. P. Private tuition
Evans, G. P. Skerry's Coll., Southampton St., Holborn, W.C.
Houghton, F. L. Dunheved Coll., Launceston
Jones, T. M. Private tuition
Appleyard, F. N. f. Private tuition
Greson, L. P. St. George's Coll., Weybridge
Lister, W. Private tuition
Lyon, H. J. The Chestnuts, Henley-on-Thames

Burr, H. B. a. Private tuition
Hagan, J. N. J. Private tuition
1 Hickman, A. Private tuition
Lanyon, H. C. Dunheved Coll., Launceston
Walker, D. N. f. Private tuition
Case, H. Craven Lodge, West Ealing
Farrington, A. J. New Coll., Herne Bay
Harte, L. g. St. Joseph's Coll., Dumfries
Mohammed Nada el Shakankiry Private tuition
Robinson, O. F. W. Private tuition
Watts, J. W. Bedford Gram. S.
Edgoose, B. W. Boys' Coll. S., Victoria Rd., Aldershot
Bradley, E. A. J. Simon Langton S., Canterbury
Davies, A. Pencader Gram. S.
Lee, P. M. Private tuition
Moreland, J. L. St. George's Coll., Weybridge
Ryss, W. G. h. d. u. Private tuition
Banks, H. K. Private tuition
Coury, M. N. Kensey S., Launceston
Wilson, E. N. Private tuition
1 Hand, P. G. T. Private tuition
Shuttleworth, W. University S., Southport
Smith, L. C. B. Private tuition
Walton, A. Cavendish S., Matlock Bank
Allwood, J. H. Private tuition
Attwood, S. Private tuition
Davies, T. G. L. Clark's Coll., Newport Rd., Cardiff
Leonard, D. Private tuition
Chaloner, F. Private tuition
McCorry, F. J. St. George's Coll., Weybridge
Nunn, E. A. Private tuition
Ryder, H. G. Private tuition
Whittock, D. K. Private tuition
Hook, V. Salesian S., Battersca
Kelly, L. P. St. Joseph's Acad., Kennington Rd., S.E.
Mathias, T. E. h. Private tuition
Pollard, A. J. Broadgate S., Nottingham
Fox, C. J. B. Newcastle Modern S.
Lockey, S. T. Skerry's C.,
New Bridge St., Newcastle-on-T.
Taylor, T. Commercial S., Bridlington
Thomas, G. P. Dunheved Coll., Launceston
Brooks, W. E. Gram. S., Taplow
Church, C. E. Private tuition
Squire, F. G. Private tuition
Walker, W. J. Southsea Training S.
Monk, W. H. Private tuition
Paul, W. R. Gram. S., Ongar
Smith, J. S. Cavendish S., Matlock Bank
Brooke, G. A. University S., Southport
Kingsford, V. G. Private tuition
Quarterman, R. E. Stafford Coll., Forest Hill
Collins, A. E. L. Tudor Hall, Hawkhurst
Cox, H. A. Private tuition
Greenwood, H. G. University S., Southport
Tyler, A. E. Private tuition
Torley, L. St. Joseph's Coll., Dumfries
Windsor, J. St. George's Coll., Weybridge
Conoley, C. W. St. George's Coll., Weybridge
Hake, O. W. Richmond Hill S., Richmond
Hardy, E. H. Balham Modern S.
Jewell, F. Newquay Coll., Cornwall
McCabe, J. St. Joseph's Coll., Dumfries
Mole, A. D. Holt H., Chesnut
Randall, S. University S., Southport
Bottrell, A. H. Newquay Coll., Cornwall
Clayton, B. F. Paddington High S., for Boys
Evans, E. B. Pencader Gram. S.
1 Ferguson, C. J. Stonyhurst Coll., Whalley
Graham, P. R. London Coll., Holloway Rd., N.
Heptinstall, L. Private tuition
Hill, W. G. Broadgate S., Nottingham
Morgan, B. B. d. Royal Schools for the Deaf, Old Trafford
Walton, R. Gram. S., Eccles
1 Williams, E. Private tuition
Williams, F. Private tuition
Williams, J. H. Queen's Coll., Taunton
Baker, T. J. d. High S., Broadstairs
Gradwell, G. F. St. George's Coll., Weybridge
Hendry, A. B. Private tuition
Knowles, C. R. Private tuition
Pannell, R. O. Private tuition
Swanson, G. B. Private tuition
Wilson, J. A. d. St. George's Coll., Weybridge

BOYS, 2ND CLASS, PASS—Continued.

Howard, R. Private tuition
Caldwell-Barry, G. St. George's Coll., Weybridge
Heather, E.F. Private tuition
Hulett, E.A.H. Private tuition
Pickles, C.E. H. Private tuition
Alexander, A. Private tuition
Booth, A. Private tuition
Caldwell, H.E. Ashland High S., Wigan
Litchfield, A.F.D. New Coll., Herne Bay
Amor, A.J. Private tuition
Frosali, H.A. i. Stafford Coll., Forest Hill
Jones, D.E. Tutorial S., New Quay, Cardigan
Kowler, F.R. Private tuition
Valvona, P. Private tuition

Goodway, L.R. Richmond H., Handsworth
Head, T.E. Balham Modern S.
Puckle, R.H. A. New Coll., Herne Bay

Gerrie, W.H. Private tuition
Gray, L.R. Private tuition
Greenwood, L.P. Gram. S., Ongar
Taylor, A.P. 19 Clarence St., Penzance

Ashby, S. Old College S., Carnarthen
Meyer, F.A. Portsmouth Gram. S.

Gaines, H. Private tuition
Orniston, W.H. Private tuition
Roberts, W. St. Catherine's Coll., Richmond

Dickson, E. Private tuition
Panning, W. Stonyhurst Coll., Whalley
Gadsby, J.E. Private tuition
Morgan, G.A. Gram. S., Ongar

Blundell, F.B. St. Catherine's Coll., Richmond
Harwood, J.O. Private tuition
McMenemy, J. St. Joseph's Coll., Dumfries

Green, K. Newquay Coll., Cornwall
Brooks, H.W. Dudley H., Lee
Hillson, W.S. Private tuition

Barford, M.F.E. St. George's Coll., Weybridge
Davies, W. Tutorial S., New Quay, Cardigan
Downing, D.B. Southport College
Heron, G.C.H. Holt H., Chesham
Purketh, L.T. Xaverian Coll., Manchester
Purcell, A.R. Private tuition

Bidden, A.C. Dunheved Coll., Launceston
Whalley, C.F. Fartown Gram. S., Huddersfield
Williams, T.H. Private tuition

Laver, H.N. New Coll., Herne Bay
Singleton, W.H.G. Southport College
Henry, T.R. Private tuition

Beattie, N.R. Blyth Secondary S.
Pearce, R.E. Bethany H., Goudhurst

Davies, A. University S., Southport
Lawson-Brown, A. Private tuition
Ornrod, T.E. Ashland High S., Wigan
Taylor, E.M.F. St. Paul's S., West Kensington

Prain, J.S. Private tuition
Westgarth, T. Friends' S., Wighton

Moor, G. Gram. S., Taplow
Johnson, S. Private tuition

Connel, C.M. Gram. S., Ongar
Stocken, L.O. Private tuition

THIRD CLASS.

Honours Division.

Alphonse, E. bk.f. Marist Bros.' Coll., Grove Ferry
Cardon, M. bk.f. Marist Bros.' Coll., Grove Ferry
Betts, H. s.e.g.a.al.gm.f.l. County Gram. S., Market Harboro'

Verpoten, L. f. St. Aloysius' Coll., Highgate

Bolger, P.A. s.a.al.gm. Dominican Conv., Wicklow
Vidal, S. f.d. Marist Bros.' Coll., Grove Ferry

Bolger, P.R. s.al.gm. Dominican Conv., Wicklow
Fidler, W.J.H. h.a.al.gm. Thorne Gram. S.

Clayphan, G.A. a.al.gm.d. Thorne Gram. S.
O'Shea, A.D. St. Aloysius' Coll., Highgate

Hutchinson, H.G. gm. St. Aloysius' Coll., Highgate
Whelan, L.E. al.bl. St. Aloysius' Coll., Highgate

Dearlove, H.J.S. e.g.al.f.l. Hawkesyard Coll., Rugeley
de Aguiar, John al.gm. St. Aloysius Coll., Highgate

Fell, W.J. St. Joseph's Acad., Kennington Rd., S.E.
Doherty, H.L. St. Aloysius' Coll., Highgate

Duce, O.A. h.al.gm. County Gram. S., Market Harboro'
O'Neill, V.W. g.a.al.gm. St. Joseph's Acad., Kennington Rd., S.E.

Silversides, A.E. a.al.gm.l. Hawkesyard Coll., Rugeley
Goodwin, L.C. a.al.gm. Gram. S., Eccles

Shipwright, T.A. K. a.al. St. Aloysius' Coll., Highgate
Tussaud, G.B. St. Aloysius' Coll., Highgate

Herra, R.G. St. Aloysius' Coll., Highgate
Hilton, V.G. h.g.a.al. Hawkesyard Coll., Rugeley

Richardson, C.A. a.al.gm. St. Joseph's Acad., Kennington Rd., S.E.
Vasileco, G.E. al. St. Aloysius' Coll., Highgate

Wagstaffe, G.J. h.g.a.al. County Gram. S., Market Harboro'
Maze, J. a.al.gm.f.d. St. Boniface's Coll., Plymouth

Glynn, T.J. e.h.a.al. St. Aloysius' Coll., Highgate
Johnson, L. al.gm.d. County Gram. S., Market Harboro'

O'Hare, T.P. al. St. Aloysius' Coll., Highgate
Reynolds, F.C. a.d. Eye Gram. S.
Voraz, C. al. Marist Bros.' Coll., Grove Ferry

Bold, J.H.W. a.f. Gram. S., Eccles
Brown, A.J.C. e.a.al. Eye Gram. S.

Prior, E.N. a.al.gm. Thorne Gram. S.
Knight, J.R. s.a.al. County Gram. S., Market Harboro'

Olney, F. d. Salesian S., Farnboro'
Epps, S.M. a.al.d. Upton Coll., Bexley Heath
Simmons, L.J. al. St. Aloysius' Coll., Highgate

Bennett, F.C. a.al.gm. Gram. S., Ongar
Greenland, B. a.al.gm. Thorne Gram. S.
Irving, E. a.al.d. University S., Southport

Ivens, H.D. s.al. St. Aloysius' Coll., Highgate
Owen, R.J. e.a.al.gm.l. Newcastle Modern S.

Pursehouse, W.H. a.al.bk. Eye Gram. S.
Walton, R.G. a.al.d. St. Aloysius' Coll., Highgate
Williams, W.M. gm. St. Aloysius' Coll., Highgate

Davies, G.L.R. a.gm.w. Pencader Gram. S.
Groves, H. a. Gram. S., Ongar
Hutchinson, M. a.al.gm.l. Thorne Gram. S.
Kingston, D.E.J. a.al.f. St. Aloysius' Coll., Highgate

Staudt, J.M. al.gm. St. Marist's Acad., Kennington Rd., S.E.
Wilkins, J.F. a.al. Taunton School

Giollitto, M.M. al.gm.d. St. Joseph's Acad., Kennington Rd., S.E.
Vine, A.R. a.f.l. Cranbrook Park S., Ilford

Cox, J. al. Marist Bros.' Coll., Grove Ferry
Malzer, A. a.al.bk. St. Aloysius' Coll., Highgate

Sowerby, R.W. h.al.bk. Grove H., Highgate
Cronin, T.J. a. St. Aloysius' Coll., Highgate
Davias, J.F. al.f. Newcastle Modern S.

McCartney, T.H. gm. St. Aloysius' Coll., Highgate
Hannah, S.H. a.al.gm. Newcastle Modern S.

Hutton, A.F. bk. St. Aloysius' Coll., Highgate
Wells, J.M. a.al. St. Joseph's Acad., Kennington Rd., S.E.

Gedge, E.G. a.al. St. Aloysius' Coll., Highgate.
Harvey, E.F.S. a.al. St. George's Coll., Weybridge

Jones, W.J. a.gm.d. Pencader Gram. S.
Ponce, A. a.s.p.d. Christian Bros.' Coll., Gibraltar

Gonzalez, H. sp. Christian Bros.' Coll., Gibraltar
Hawkins, W.M.A. g. Ludisfarne Coll., Westcliff-on-Sea

Sykes, J.E. University S., Southport
Thomas, S. a.al.d. Pencader Gram. S.
Welch, H. s. Salesian S., Farnboro'

Bacon, E.A. h. St. George's Coll., Weybridge
Loustain, V.J. a.al.d. St. Aloysius' Coll., Highgate

Starling, S.A. St. Aloysius' Coll., Highgate
Currie, C.H. St. Aloysius' Coll., Highgate

Hodson, J.S. Radnor S., Redhill
Bowring, J.R. Radnor S., Redhill

Jarry, G.F. a.al. Taunton School
Russo, P. al.gm. Christian Bros.' Coll., Gibraltar

Volant, P. a.f. Castle Hill S., West Ealing
Bryan, S.H. a. The College, Weston-s.-Mare

Lidington, H.L. al. Upton Coll., Bexley Heath
Cuckney, H.D. a.al. University S., Rochester

THIRD CLASS.

Pass Division.

2Roberts, F. Christian Bros.' Coll., Gibraltar
2Sacarello, P. Christian Bros.' Coll., Gibraltar

2Jaques, H.M. St. Aloysius' Coll., Highgate
2Salton, W.K. Argyle H., Sunderland

2Facio, A. Christian Bros.' Coll., Gibraltar
2Ash, R.S. al. Yorkshire Society's S., S.E.

2Holdsworth, J.P. Tudor Hall, Hawkhurst
2Chinassi, R. University S., Southport

2Facio, R. sp. Christian Bros. Coll., Gibraltar
2Scott-Boss, M. Beverley S., Barnes

Hill, W. h.sh. Salesian S., Farnboro'
2Alcazar, J. St. Joseph's Coll., Dumfries

2Fogarty, C.J. St. Aloysius' Coll., Highgate
2Badams, S.J. Willow H., Walsall

2Slocombe, R.C. Dunheved Coll., Launceston
2Turner, J. St. Joseph's Coll., Dumfries

2Edwards, S.L. Private tuition
2Reeve, H.N. Beckenham County S.

2Delaney, M. St. Joseph's Coll., Dumfries
2Pereira, C. St. George's Coll., Weybridge

2Parkin, B. Longwood Gram. S., Huddersfield
Bayne, T. al.gm. Southport College

Hopkins, R.W. University S., Rochester
Norton, F. Christian Bros. Coll., Gibraltar
Sillet, A.F. a.al. Eye Gram. S.
Webster, H. a.al.gm. Newtown S., Waterford

2Bannister, B.N. a.al.gm. Hawkesyard Coll., Rugeley

Pickford, J.C. al.d. Gram. S., Eccles
Revill, W.J. a.gm. Hawkesyard Coll., Rugeley

Scarborough, J. al.gm. Argyle H., Sunderland
2Beaumont, A. bk. Marist Bros.' Coll., Grove Ferry

Entwistle, H. Gram. S., Eccles
Johnson, J.S. a.al. Newcastle Modern S.

2Keep, G.H. Streatham Modern Coll.
2O'Shea, M.F.D. St. Aloysius' Coll., Highgate

Tarrant, S.A. St. John's Coll., Brixton
Watts, W.H. St. Aloysius' Coll., Highgate

Barnes, P.A. a. Endcliffe Coll., Sheffield
Bennett, J.V.P. al. Higher Grade S., Blackpool

Christian, L.D. e.h.g.a. Hawkesyard Coll., Rugeley
Evans, W.B. e.w.d. Pencader Gram. S.

Grostuls, A.J. St. Aloysius' Coll., Highgate
Heil, L.A. St. Aloysius' Coll., Highgate

Mair, J.G. a.al. Newcastle Modern S.
2Rodrigues, J. St. Joseph's Coll., Dumfries

Stone, V. a. Hawkesyard Coll., Rugeley
2Barnard, A.G. St. Aloysius' Coll., Highgate

2Gosling, R.T.L. St. George's Coll., Weybridge
Grosstephen, F.G.C. a. St. Aloysius' Coll., Highgate

Walters, G.A.B. St. George's Coll., Weybridge
2Whiteside, A.H. New Coll., Herne Bay

Wilkins, H.R. l. Cranbrook Park S., Ilford
2Brown, A.J. a. Balham Modern S.

Groves, A.f. Marist Bros.' Coll., Grove Ferry
Hall, J.S. Gram. S., Eccles

2Johnson, F. Greystones, Scarborough
2Triay, H. Christian Bros. Coll., Gibraltar

Wilson, J. St. Joseph's Coll., Dumfries
2Wilson, R. St. Joseph's Coll., Dumfries

Dorey, A.W. al.bl. University S., Rochester
2Hitchcock, C.G. d. Stafford Coll., Forest Hill

LeCorre, H.f. St. Boniface's Coll., Plymouth
Steel, A. a. Argyle H., Sunderland

Huggard, K. d. Newtown S., Waterford
2Watt, W. St. Joseph's Coll., Dumfries

2Gardner, P.L.J. Stafford Coll., Forest Hill
Gowlett, W.R. a. Gram. S., Ongar

Molloy, M. gm. Salesian S., Farnboro'
Moutarde, J. Marist Bros. Coll., Grove Ferry

2Way, R.H. Ealing Gram. S.
Fletcher, J.S. gm. Cavendish S., Matlock Bank

Imossi, G. Christian Bros.' Coll., Gibraltar
Jennings, G.C. l. Radnor S., Redhill

McCormack, F.J. a.al. Catholic Gram. S., St. Helens
Merifield, F.W. a. Boys' High S., Erdington, Birmingham

Bate, F.B. a.al. The Douglas S., Cheltenham
de Aguiar, Joseph al. St. Aloysius' Coll., Highgate

2Etheredge, E.O. Gram. S., Taplow
Evans, D.H. a.w. Pencader Gram. S.

Gibbons, H.N. Hyde Gram. S.
Giudici, D.C. St. Aloysius' Coll., Highgate

Hearty, J.F. Upton Coll., Bexley Heath
Meddings, B.A. a. St. Aloysius' Coll., Highgate

Brodie, L. Gram. S., Eccles
Denvir, E.G.J. St. George's Coll., Weybridge

John, D.R. Taunton School
Noordin, W. l. Cranbrook Park S., Ilford

2Rostano, J. Christian Bros. Coll., Gibraltar
Simmons, B.F. St. Aloysius' Coll., Highgate

Tynan, S. a. High S., Broadstairs
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 2Evans, J.P. Tutorial S., New Quay, Cardigan  
 Jones, E.T. a. Tutorial S., New Quay, Cardigan  
 Newbold, S.W. h.a. St. George's Coll., Weybridge  
 Sandercock, K.L. s.e. Newquay Coll., Cornwall  
 Thomas-Evelyn, R. Gram. S., Eccles

Blakey, W.C. a. Ightham Rectory, Kent  
 Brockway, F. Salesian S., Farnboro'  
 Evans, J.E. d. Eye Gram. S.  
 Rogers, H.C.B.h.a. St. Mary's Coll., Barnes  
 Wilson, L.T. Richmond Hill S., Richmond

Burke, A.J. a. Hawkesyard Coll., Rugeley  
 Dinnis, Claude Stafford Coll., Forest Hill  
 Dunn, E. Salesian S., Battersea  
 Fisher, F.G.s. St. Aloysius' Coll., Highgate  
 Gama, S. f. Notre Dame de France, Lisle St., W.C.  
 Harvey, G.F. Taunton School  
 Jennings, A.J. Gram. S., Ongar  
 Kirk, D.A. St. Joseph's Coll., Dumfries  
 McLoughlin, D.P. a.d.gm. Dominican Conv., Wicklow  
 Murray, E.C. a. St. Aloysius' Coll., Highgate  
 Shirliff, T.H. a.d. Thorne Gram. S.  
 Stock, W.E. L. Cranbrook Park S., Ilford  
 Verrell, R.C. s. Bethany H., Goudhurst  
 Wilcockson, E.A. St. Aloysius' Coll., Highgate  
 2Wood, G.F.B. Fartown Gram. S., Huddersfield  
 2Young, M.J. Bethany H., Goudhurst

Harrison, R. gm. Argyle H., Sunderland  
 Simmonds, L.C. St. George's Coll., Weybridge  
 Tibbles, P.F. The College, Weston-s.-Mare

Baker, H.P. St. Aloysius' Coll., Highgate  
 Carlin, F.R. St. Aloysius' Coll., Highgate  
 Crothall, A.G. a. Tudor Hall, Hawkhurst  
 Hills, F.T. a. University S., Rochester  
 Massey, G. a. Craven Lodge, West Ealing  
 Thompson, A. Salesian S., Farnboro'  
 Winkup, E.H. Gram. S., Eccles

Korshaw, H.S. g. Gram. S., Eccles  
 McHale, E.P. St. Aloysius' Coll., Highgate  
 2Petitt, M.S. Bethany H., Goudhurst  
 Stott, G.B. Gram. S., Eccles  
 2Taylor, E.G. Paddington High S. for Boys  
 Walton, H.J. Newcastle Modern S.

Allan, E.H. a. Endcliffe Coll., Sheffield  
 Holt, F. Gram. S., Eccles  
 2Kelly, M. St. Joseph's Coll., Dumfries  
 Martin, L. a. St. Joseph's Coll., Dumfries  
 2McLachlan, A. St. Joseph's Coll., Dumfries  
 Mock, E.H. Mount Radford S., Exeter  
 Rowcroft, A.E. Bethany H., Goudhurst  
 Shackleton, G. a. Newtown S., Waterford  
 2Turner, G. St. Joseph's Coll., Dumfries

2Bradford, C.F. d. West Bridgford Hr. S., Nottingham  
 2Clacher, H. St. Joseph's Coll., Dumfries  
 Cockrell, R.M. e. Bethany H., Goudhurst  
 Corea, B.C. St. George's Coll., Weybridge  
 dePaiva, C. gm. Salesian S., Farnboro'  
 Gaida, S. Notre Dame de France, Lisle St., W.C.  
 2Houghton, R.A. Fartown Gram. S., Huddersfield  
 Keene, C. University S., Southport  
 McLaughlan, W.H. St. Joseph's Coll., Dumfries  
 2Pillrow, S.E. Private tuition  
 Rostant, L.A. St. Aloysius' Coll., Highgate  
 Tussaud, G.P. St. Aloysius' Coll., Highgate

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 2Diacano, A. St. Joseph's Coll., Dumfries  
 Malcham, H. a. Thorne Gram. S.  
 2McCartland, W. St. Joseph's Coll., Dumfries  
 McMenemy, T. St. Joseph's Coll., Dumfries  
 2Studd, A.L. Queen's Coll., Taunton

Baxter, J.D. a. New Coll., Herne Bay  
 2Hillman, E.H.A. d. Paddington High S. for Boys  
 2Huxley, B.F. Boys' Private S., Weim  
 Jenkins, H.E. a. Taunton School  
 2Jenkins, J.R. Pencader Gram. S.  
 2Jones, T.W. Gram. S., Taplow  
 Kaltenbach, E.A. St. Aloysius' Coll., Highgate  
 McVittie, D. Gram. S., Eccles  
 Merry del Val, R. gm. Christian Bros.' Coll., Gibraltar

Posso, H. Christian Bros. Coll., Gibraltar  
 Rutland, L.G.L. a. St. George's Coll., Weybridge  
 Shipley, R.R. a. Thorne Gram. S.  
 Walton, C. a. gm. Gram. S., Eccles

Drabble, R.E. Cavendish S., Matlock Bank  
 2Melling, G. St. Joseph's Coll., Dumfries  
 Poole, W.H. Newtown S., Waterford  
 Rossi, F. Salesian S., Battersea  
 Wilson, B.O.N. e. St. George's Coll., Weybridge  
 Youngson, A. W. Lindisfarne Coll., Westcliff-on-Sea

Bowling, V. McD. Kauterskill Coll., Birchington  
 Britto, F. a. Christian Bros. Coll., Gibraltar  
 2Chew, R. St. Joseph's Coll., Dumfries  
 Halliday, A.B. e.gm. Newtown S., Waterford  
 Leach, T. Hawkesyard Coll., Rugeley  
 Martin, W. d. St. Joseph's Coll., Dumfries  
 Wall, J. Craven Lodge, West Ealing  
 Westrip, G.M. Bethany H., Goudhurst

Besley, A.P. Taunton School  
 2Henderson, I.L. Stafford Coll., Forest Hill  
 2Hendry, J. St. Joseph's Coll., Dumfries  
 Howe, G.F. Boys' High S., Erdington, Birmingham  
 Hughes, C.R. e.d. Taunton School  
 Insal, H.J. a.d. Private tuition  
 Kennington, T. gm. St. Bede's, Hornsea  
 Miller, L.H.J.B. Newcastle Modern S.  
 Oldfield, S.H.R. Endcliffe Coll., Sheffield  
 Packman, G.I. University S., Rochester  
 Sullivan, G.W. bk. University S., Rochester  
 White, E.P.H. New Coll., Herne Bay  
 Wyatt, B.B. a. Taunton School

Dinnis, Cyril, d. Stafford Coll., Forest Hill  
 Durrant, P.J. Richmond Hills, Richmond  
 2Jeffrey, S.R. Bethany H., Goudhurst  
 20'Neill, J. St. Joseph's Coll., Dumfries  
 Preston, H.M. St. Bede's, Hornsea  
 Rayment, G.P. d. Westwood H., Maldon  
 Russell, C. Salesian S., Farnboro'

Bell, C.L. gm. Dominican Conv., Wicklow  
 Dumble, L.J. Richmond Hill S., Richmond  
 2Fermie, G. St. Joseph's Coll., Dumfries  
 Lowe, C. Gram. S., Taplow  
 Pearson, H. Salesian S., Battersea  
 Spring, C.E. g. Balham Modern S.  
 2Walters, C. Dunheved Coll., Launceston  
 Wood, H.M. a. Hyde Gram. S.

Barracough, H. a. Lindisfarne Coll., Westcliff-on-Sea  
 Burnip, C.G. Eye Gram. S.  
 Davies, D.P. Tutorial S., New Quay, Cardigan  
 Gueguen, M. d. St. Boniface's Coll., Plymouth  
 Hawes, L. Fartown Gram. S., Huddersfield  
 Jones, T.E. a. Pencader Gram. S.  
 Mace, G. a. f. St. Boniface's Coll., Plymouth  
 Matthew, A.J. Eye Gram. S.  
 Stonhold, H.W. Taunton School

2Bates, V.C. Bethany H., Goudhurst  
 Boyle, E.P. St. Joseph's Coll., Dumfries  
 2Bradbury, E.W. Boys' Private S., Weim  
 Davies, E.G. Taunton School  
 Hitch, N.G. Upton Coll., Bexley Heath  
 Houghton, C. gm. St. Bede's, Hornsea  
 2Quinn, J. St. Joseph's Coll., Dumfries  
 2Sanders, W.T.S. Willow H., Walsall  
 Thouard, A. f. Salesian S., Farnboro'  
 Tynan, C. Salesian S., Farnboro'  
 Watts, V.H. University S., Rochester  
 Williams, B.P. a. Taunton School

Cullen, H.A.M. St. Aloysius' Coll., Highgate  
 2Jones, J.R. Tutorial S., New Quay, Cardigan  
 2Thomas, H.H. Dunheved Coll., Launceston  
 Trim, E.A. Taunton School  
 Williamson, M. Craven Lodge, West Ealing

Brown, J. Southport College  
 Currie, D. Taunton School  
 Everett, C. Balham Modern S.  
 2Hiehens, E.W.T. Private tuition  
 Jones, L. Lindisfarne Coll., Westcliff-on-Sea  
 Spencer, H.C. St. George's Coll., Weybridge

Castle, G. St. Peter's S., Blackheath  
 Gregory, C. New Coll., Herne Bay  
 2Hamilton, J. Private tuition  
 Jolly, J.W. Eastward Ho! Coll., Felixstowe  
 2King, R.W.G. Ascham Coll., Westcliff-on-Sea  
 Whiteside, H. Southport College

Bannigan, J. a. St. Joseph's Coll., Dumfries  
 Bowen, G.W. Taunton School  
 Brooks, J. Christian Bros. Coll., Gibraltar  
 Bulger, A.G. St. Aloysius' Coll., Highgate  
 Dillon, J. St. Joseph's Coll., Dumfries  
 Jeffries, G. Craven Lodge, West Ealing  
 Jones, D.E.W. Balham Modern S.  
 LaGogue, Y.A. f. St. Boniface's Coll., Plymouth  
 Merchant, T.J.A. Taunton School  
 Monfort, C. Salesian S., Battersea  
 Scudamore, C.G. Gram. S., Taplow  
 Skeffington, A.B. Alton H., Blackheath

Allan, A. St. Joseph's Coll., Dumfries  
 Bowling, W.C. Kauterskill Coll., Birchington  
 Burgess, D.W. St. Aloysius' Coll., Highgate  
 2Crowther, T. Royal Schools for the Deaf, Old Trafford  
 Cruz, C. Christian Bros. Coll., Gibraltar  
 Cumming, C. Southport College  
 Johnson, H.R. Eye Gram. S.  
 Millward, K.A. The College, Weston-s.-Mare  
 2Phillips, G.T. The County Secondary S., Holloway  
 Platt, J.H. Hyde Gram. S.  
 Simmonds, D.G. Bethany H., Goudhurst

Ewen, C. St. Joseph's Coll., Dumfries  
 2Greenfield, P.R. Tankerton Coll., Whitstable  
 Harold-Barry, C.W. St. George's Coll., Weybridge  
 Hearn, G.H. a.d. Clark's Coll. Modern S., Brixton Hill  
 2Hetherington, J. St. Joseph's Coll., Dumfries  
 Latimer, W.E. d. Newcastle Modern S.  
 Perkins, S. St. Joseph's Coll., Dumfries  
 Sedgwick, W. New Coll., Herne Bay  
 Snythers, G.H. St. Aloysius' Coll., Highgate  
 2Watson-Lynch, L. Bethany H., Goudhurst

Barwell, R.N. St. Aloysius' Coll., Highgate  
 Blackledge, R. Salesian S., Battersea  
 Enoch, J. Pencader Gram. S.  
 Marshall, R.M. a. Newcastle Modern S.  
 2Pearson, W.G.M. Private tuition

Brignall, L.E. Balham Modern S.  
 Chapman, W.E. Richmond Hill S., Richmond  
 Fielding, D.A.E.M. New Coll., Herne Bay  
 Fletcher, R.J. Lindisfarne Coll., Westcliff-on-Sea  
 Hallett, R.E. The College, Weston-s.-Mare  
 Huxham, A.V.L. St. Catherine's Coll., Richmond  
 Pinnock, C.B. Gram. S., Taplow  
 Portella, C. a. St. Aloysius' Coll., Highgate  
 Reynolds, T.G. gm. Newtown S., Waterford

Jackson, N.E. Kauterskill Coll., Birchington  
 Meacham, J. High S., Broadstairs  
 Nugent, T. St. Joseph's Coll., Dumfries  
 Smith, F.H. The Douglas S., Cheltenham  
 Stephens, C.H. Newquay Coll., Cornwall  
 Tremain, B.T. Newquay Coll., Cornwall  
 Walker, P. High S., Broadstairs  
 White, K.C. Newtown S., Waterford

Blair, D. St. Joseph's Coll., Dumfries  
 2Doyle, P.K. St. George's Coll., Weybridge  
 Foster, W. Salesian S., Battersea  
 Huart, A. Christian Bros. Coll., Gibraltar  
 Stone, T.E. Mount Radford S., Exeter

Davan, C.W. Dudley H., Lee  
 Dean, J.R. Balham Modern S.  
 Richards, O.L. Taunton School

Carter, R.A. Bethany H., Goudhurst  
 Kay, C. a. Endcliffe Coll., Sheffield  
 Ward, B. St. Aloysius' Coll., Highgate  
 Young, R. Bethany H., Goudhurst

Bailey, L.J. Stafford Coll., Forest Hill  
 Smith, S.W. Stafford Coll., Forest Hill  
 2Walton, N.C. Willow H., Walsall  
 Wilson, A. Salesian S., Battersea  
 2Parker, E. St. Bede's, Hornsea

2Duval, G.D. Tankerton Coll., Whitstable  
 Evershed, L.E. Bethany H., Goudhurst  
 Girling, L.J. Eastward Ho! Coll., Felixstowe  
 Hardiman, E.A. St. John's Coll., Brixton  
 2Harne, W.J. Dunheved Coll., Launceston  
 Hutchinson, M.J. St. George's Coll., Weybridge

2Jenkins, H. Old College S., Carmarthen  
 Lloyd, D.R. Taunton School  
 Mitchell, W.S. Newquay Coll., Cornwall  
 Patey, T.A. Taunton School  
 Peugilly, A.R. Taunton School  
 Thomas, J.L. Gram. S., Eccles

Aonso, A. Christian Bros. Coll., Gibraltar  
 2Bennett, R.C. St. George's Coll., Weybridge  
 Davies, E.D.T. Tutorial S., New Quay, Cardigan  
 Gage, J. Salesian S., Battersea  
 2Miller, W.S. Dunheved Coll., Launceston  
 O'Neill, L. St. Joseph's Coll., Dumfries  
 Shepard, D.A. Stafford Coll., Forest Hill  
 Watson, H. St. Joseph's Coll., Dumfries  
 Wilson, W. St. Joseph's Coll., Dumfries

Cole, M. St. Joseph's Coll., Dumfries  
 Douthwaite, J.D. Gram. S., Eccles  
 Douthwaite, S.M. d. Eastward Ho! Coll., Felixstowe  
 Shaw, G.E. a. Thorne Gram. S.

Armstrong, J.B. Willow H., Walsall  
 Copper, H.W. Eye Gram. S.  
 Fillmore, E.M. a. Clark's Coll., Newport Rd., Cardiff  
 Goulding, H.J. St. George's Coll., Weybridge  
 Hammond, E.V. Radnor S., Redhill  
 Heather, W.F. Newtown S., Waterford  
 Hill, J.H. Newtown S., Waterford  
 Jacob, G. Pencader Gram. S.  
 McMahon, W. Salesian S., Battersea  
 Radway, N.A. Herne H., Cliftonville, Margate  
 Stagnetto, J. Christian Bros. Coll., Gibraltar  
 Tipper, R.E. St. Joseph's Coll., Dumfries

Roberts, H.C. Newquay Coll., Cornwall  
 Robertson, A. Eastward Ho! Coll., Felixstowe  
 Weinberger, E.J. Private tuition

2Chambers, A.R.E. Stafford Coll., Forest Hill  
 Davies, G. Cherwell House, Bexhill-on-Sea  
 Jones, J.P. Royal Schools for the Deaf, Old Trafford  
 2Rheam, M. Kensey S., Launceston  
 Ward, G. Craven Lodge, West Ealing

Collins, F.A. Taunton School  
 Curran, P. Salesian S., Battersea  
 Green, F.W. Bethany H., Goudhurst  
 2Hayne, D.P. Dunheved Coll., Launceston  
 Lamb, A.R. Lindisfarne Coll., Westcliff-on-Sea  
 Moore, R. a. Balham Modern S.  
 2Parnell, R. Dunheved Coll., Launceston

Clancy, J. Salesian S., Battersea  
 Jones, N.M. I. Rocklyn, Bristol  
 Lucy, D. Salesian S., Battersea  
 Polkinghorne, L.A. Newquay Coll., Cornwall

Blissett, L.R. Stafford Coll., Forest Hill  
 2Fullham, C.S. St. Bede's, Hornsea  
 2Holt, R.N. Newquay Coll., Cornwall  
 2Jaffe, A.J.L. New Coll., Herne Bay

Leggett, O.A. Fairhaven S., Bristol

Frost, F.R. Endcliffe Coll., Sheffield  
 Manning, D.W. Mount Radford S., Exeter  
 Mitchell, A. Gram. S., Taplow  
 Ross, L.P. Bethany H., Goudhurst  
 Taylor, C.F. Richmond Hill S., Richmond

Avon, L. High S., Broadstairs  
 2Donovan, W.H.B. Mile End H., Portsmouth  
 Fish, A.E. Bethany H., Goudhurst  
 Heddon, W.J. Old College S., Carmarthen  
 Watkins, A.L. Eye Gram. S.

Price, F. Salesian S., Battersea  
 Tackaberry, S. Newtown S., Waterford  
 Townsend, G.A. Bethany H., Goudhurst  
 Walker, J.A. Holt H., Cheshunt

Grover, A.L. New Coll., Herne Bay  
 Savage, H.N. Bethany H., Goudhurst

Hancock, C.P. Stafford Coll., Forest Hill  
 Morgan, P.K. St. George's Coll., Weybridge

Maybury, A.H. Lindisfarne Coll., Westcliff-on-Sea



CLASS LIST—GIRLS.

For list of Abbreviations, see page 344.

**FIRST CLASS [or SENIOR].**

**Honours Division.**

Dernersessian, A.I. s.f.d.  
English High S. for Girls, Constantinople  
Netto, D. e.a.  
Loreto Conv., Europa, Gibraltar  
Moore, A.C. s.  
The Friends' S., Mountmellick  
Dernersessian, S.V. s.f.  
English High S. for Girls, Constantinople  
Diamant, N. f.ge.do.  
English High S. for Girls, Constantinople

**FIRST CLASS [or SENIOR].**

**Pass Division.**

Evans, L. gm.  
Tutorial S., New Quay, Cardigan  
Dillon, M.P. f.do. St. Joseph's S., Lincoln  
Doukhovetzky, A. e.d.do.  
English High S. for Girls, Constantinople  
Newby, K.L. s.  
The Hiatt Ladies' Coll., Wellington  
Halliday, W.M. s.  
The Friends' S., Mountmellick  
Bailey, H.G. ph.d. Private tuition  
Brash, M. s.  
The Hiatt Ladies' Coll., Wellington  
Davies, E.C.  
Tutorial S., New Quay, Cardigan  
Vinicombe, V.K.  
English High S. for Girls, Constantinople  
Goode, M.H. Cyfarthfa Castle  
Municipal Sec. S., Merthyr Tydfil  
Parsons, C.J. s. Private tuition  
McQuillan, E.M. s.  
The Friends' S., Mountmellick  
Freeman, D.M. b.p. Private tuition  
Quinlivan, M.J. do. St. Joseph's S., Lincoln  
Groom, M.S.  
The Hiatt Ladies' Coll., Wellington  
McGarry, M. ir.do. St. Mary's Conv., Bruff  
Crouin, M.  
St. Mary's Conv. of Mercy, Buttevant  
O'Mahony, A. sh. St. Mary's Conv., Bruff  
Fossitt, O. s. The Friends' S., Mountmellick  
Walsh, M. Sienna Conv., Drogheda  
Paul, A.S. a. The Academy, Ballymena  
Robinson, W.E. s.a.d.  
New Orphan Houses, Bristol  
Davies, M.M.M. 10.  
Tutorial S., New Quay, Cardigan  
Lewis, J. a.  
Cyfarthfa Castle Municipal Sec. S.,  
Merthyr Tydfil  
Harty, E.M.  
English High S. for Girls, Constantinople  
Bracegirdle, R.  
Inglewood S., Moberley, Knutsford  
Ramsay, C.A.  
English High S. for Girls, Constantinople  
Stambolian, Z.J. f.  
English High S. for Girls, Constantinople  
Maybin, E. The Academy, Ballymena  
Murray, E. Sienna Conv., Drogheda  
Danino, T. Loreto Conv., Europa, Gibraltar  
Humphreys, M.G.  
Staple Hill Council S., nr. Bristol  
Coenca, F. do.  
English High S. for Girls, Constantinople  
Williams, A. Private tuition  
Rhys, A.M. Old College S., Carmarthen  
Annette, E.B. Cyfarthfa Castle Municipal  
Sec. S., Merthyr Tydfil  
St. Mary's Conv., Bruff  
Hartigan, M.  
Papadopoulos, A.  
English High S. for Girls, Constantinople  
Marshall, D.N. Pengwern Coll., Cheltenham  
Prout, C.L. do. Cardiff & S. Wales  
Correspondence S., Cardiff  
Moseley, E. Private tuition  
Owen, G. do. Cyfarthfa Castle Municipal  
Sec. S., Merthyr Tydfil  
Wilkinson, S. a. Private tuition  
Dawe, E. do. Private tuition  
Hehir, M.M. St. Joseph's S., Lincoln  
Williams, M.E.  
Mill St. Higher Standard S., Pontypridd

Caddy, L.J. Private tuition  
Davies, F. a.  
Mill St. Higher Standard S., Pontypridd  
Coombs, B.C. Private tuition  
Williams, M. Private tuition  
Lewis, E.A. Private tuition  
Dwane, K. St. Mary's Conv., Bruff  
Skyrmes, E.G. Private tuition

**SECOND CLASS [or JUNIOR].**

**Honours Division.**

Clift, F.H.L. al.  
The Hiatt Ladies' Coll., Wellington  
O'Byrne, E.C. s.g.m.f.  
Dominican Conv., Wicklow  
Ennis, L. s.f.d. Dominican Conv., Wicklow  
Browne, W.E.W. s.d.  
The Friends' S., Mountmellick  
Davey, E.M. b. Eye Gram. S.  
Alesbury, E.E. s.f.  
The Friends' S., Mountmellick  
Mumford, M. s.  
Crouch End High S. and Coll., Hornsey  
Kerr, A.E. s.f.  
The Friends' S., Mountmellick  
Niggemann, E.S. e.  
The Hiatt Ladies' Coll., Wellington  
Salt, A.M. s.g. Brownlow Coll., Bowes Pk.  
Welch, M. Loreto Conv., Europa, Gibraltar  
Kennedy, N. f.  
St. Mary's Boarding S., Glasnevin, Dublin  
Poujade H. e.h.g.f.  
LaSagesse Conv., Golder's Green Rd., N.W.  
Pickering, E.S. Friends' S., Wigton

**SECOND CLASS [or JUNIOR].**

**Pass Division.**

Moore, A.S.F. s.d.  
The Friends' S., Mountmellick  
Thomas, M. Pencader Gram. S.  
Brereton, A.  
Convent of the Holy Faith, Haddington  
Rd., Dublin  
Neabitt, B.E. a.do. Victoria Coll., Belfast  
Turner, N.A.M. sh. Private tuition  
Wingate, R. h. Private tuition  
Lloyd, M. e.h.  
The Hiatt Ladies' Coll., Wellington  
O'Connor, E. s.h. Private tuition  
Jesson, G.M. f.  
New Orphan Houses, Bristol  
Goslin, E.  
Mill St. Higher Standard S., Pontypridd  
Franks, Y. s.  
The Haven, Woodside Avenue, Esher  
Owen, G. K.  
The Hiatt Ladies' Coll., Wellington  
Berry, V.M. a. Private tuition  
Armstrong, L.G.L. f.  
Pengwern Coll., Cheltenham  
Blair, R.L.F. e.f. Private tuition  
Underhill, C.R.  
Mill St. Higher Standard S., Pontypridd  
McMillan, M. do. Friends' S., Wigton  
Blair, G.E.A. e.f. Private tuition  
Robinson, M.N.  
The Hiatt Ladies' Coll., Wellington  
O'Beirne, L. St. Mary's Conv., Bruff  
Bentham, E.M. s.f.  
Ravenscourt Park, W.  
Downing, M.J. Collegiate S., Hawkhurst  
Partridge, D.M. Geneva H., Brondesbury  
Kirtou, E.M. f. Private tuition  
Couvreur, A. f. La Sagesse Conv.,  
Golder's Green Rd., N.W.  
Freeman, E.M. Stamford House, Edgbaston  
Roberts, L.W. e.f. Private tuition  
Herbert, J.M. St. Joseph's S., Lincoln  
Adams, D.E.M. s.e.ph. Private tuition  
Laurie, E. J.  
The Hiatt Ladies' Coll., Wellington  
Long, E. Victoria College, Belfast

Hogan, A. St. Mary's Conv., Bruff  
Michalsky, E.P. h.  
New Orphan Houses, Bristol  
Williams, M. g.  
Mill St. Higher Standard S., Pontypridd  
Lewis, H. D.  
Tutorial S., New Quay, Cardigan  
Ryan, M. do.  
St. Mary's Boarding S., Glasnevin, Dublin  
Corkill, D.M. al. Private tuition  
Brennan, M.J. St. Joseph's S., Lincoln  
Carver, M.R. s.  
The Hiatt Ladies' Coll., Wellington  
Kennedy, K.  
St. Mary's Boarding S., Glasnevin, Dublin  
MacKnight, E.I. f.do. Victoria Coll., Belfast  
Thomas, M.G. Pengwern Coll., Cheltenham  
Thompson, D. s. Friends' S., Wigton  
Isherwood, E.M. s. Private tuition  
Jenkins, L.  
Mill St. Higher Standard S., Pontypridd  
O'Brien, M.A. h. St. Joseph's S., Lincoln  
Game, P.M. University S., Rochester  
Lewis, M. do. Cyfarthfa Castle Municipal  
Sec. S., Merthyr Tydfil  
Johnson, H.I. Friends' S., Wigton  
Sheedy, A.  
St. Mary's Boarding S., Glasnevin, Dublin  
Brereton, M. Conv. of the Holy Faith,  
Haddington Rd., Dublin  
Frawley, N.  
St. Mary's Conv. of Mercy, Buttevant  
Parry, B.  
Mill St. Higher Standard S., Pontypridd  
Cragg, D. E.  
The Hiatt Ladies' Coll., Wellington  
Evans, J. v.do. Old College S., Carmarthen  
Furlong, C. e.p. St. Mary's Conv. S., Rhyl  
Henderson, A.L. Friends' S., Wigton  
Oliver, E.M. Cyfarthfa Castle Municipal  
Sec. S., Merthyr Tydfil  
Stephens, E.A. Private tuition  
Hudson, H.D. Private tuition  
Rausnitz, A.W. Geneva H., Brondesbury  
Tucker, K.H. f. Private tuition  
Zachrisson, M.  
LaSagesse Conv., Golder's Green Rd., N.W.  
Jones, K.P. Private tuition  
Mills, L.M.  
Cardiff and S. Wales Corresp. S., Cardiff  
Baxter, A.J. The Academy, Ballymena  
Blakie, M.K. f. Oriel Coll. S., Larne  
Harries, L.M. g.  
Mill St. Higher Standard S., Pontypridd  
Humphries, E.M.  
New Orphan Houses, Bristol  
Smith, S. Private tuition  
Thomas, R.E.  
Mill St. Higher Standard S., Pontypridd  
Blee, C. Newtown S., Waterford  
Linnane, G.M. h.f.  
St. Mary's Dominican Conv., Kingstown  
Moylan, M.  
St. Mary's Dominican Conv., Kingstown  
Weinberger, E. Private tuition  
Jacomb, J.D. Private tuition  
Watkins, E.M. do. Cardiff & S. Wales  
Correspondence S., Cardiff  
Rayner, G.V.M.  
Fartown Gram. S., Huddersfield  
Sandler, G.C. Private tuition  
Thomas, H.A.G. Old College S., Carmarthen  
Davies, M.E. Private tuition  
Jenkins, M.  
Clark's Coll., Newport Rd., Cardiff  
Wilson, N.E. Minerva Coll., Dover  
Lyall, G.I. St. Joseph's S., Lincoln  
Macdonald, E.C. Friends' S., Wigton  
Twohy, B.A. f. St. Joseph's S., Lincoln  
Williams, A.  
Mill St. Higher Standard S., Pontypridd  
Miller, L.I. e. Hornsey County S., Harringay  
Quinlivan, N.F. St. Joseph's S., Lincoln  
Shanahan, D.  
St. Mary's Boarding S., Glasnevin, Dublin  
Strain, K.E.C. Victoria Coll., Belfast  
Williams, B. Cyfarthfa Castle  
Municipal Sec. S., Merthyr Tydfil  
Murray, M. A. Sienna Conv., Drogheda  
Davies, I.B. H.  
Granville Coll., West Croydon  
James, A.L. Pencader Gram. S.

Blakie, R.M. Oriel Coll. S., Larne  
Heaton, M. ge. Private tuition  
Baker, B.H. Hornsey County S., Harringay  
Hill, M.J. w. Private tuition  
Weir, J. Aintree High S., Liverpool  
Goodwin, E. Cavendish S., Matlock Bank  
O'Brien, Mary St. Mary's Conv., Bruff  
Wood, G. Cavendish S., Matlock Bank  
Phillips, L.M. Private tuition  
Webster, E.S. Raymont, Shortlands  
Williams, M. Private tuition  
Byrne, E. Conv. of the Holy Faith,  
Haddington Rd., Dublin  
McCarthy, D. Conv. of the Holy Faith,  
Haddington Rd., Dublin  
McNamara, H.M. f. St. Joseph's S., Lincoln  
Pardee, E.M. Private tuition  
Aspden, G.W.  
West Bridgford Higher S., Nottingham  
Biddlecombe, M.M. Carley Coll., Brighton  
Morris, E. Minerva Coll., Dover  
Smith, M.  
The Hiatt Ladies' Coll., Wellington  
Griffiths, M. Private tuition  
Imossi, A. Loreto Conv., Europa, Gibraltar  
Wilson, A.M.  
Colne Valley S., Rickmansworth  
Evans, E. Pencader Gram. S.  
Strain, A.J. Victoria Coll., Belfast  
Breen, M. St. Mary's Coll., Bruff  
Penn, B.M. Cambridge H., Camden Rd., N.  
Kent, A.V. D. a.  
Central Higher Standard S., Cannock  
O'Donnell, L. St. Mary's Conv., Bruff  
Cotterell, D.M. Private tuition  
Jones, A.J. Old College S., Carmarthen  
Hince, D.W.  
The Hiatt Ladies' Coll., Wellington  
Mills, D.K. Stamford House, Edgbaston  
Thackery, D.R.  
Fartown Gram. S., Huddersfield  
Winer, M.M. Private tuition  
Luthard, E.  
West Hill Infants' S., Hedgesford  
Raleigh, M. St. Mary's Conv., Bruff  
Wilson, K.M. High S., Sidney Place, Cork  
Sutherland, C.H.B. Private tuition  
Williams, L.E.  
Tutorial S., New Quay, Cardigan  
Carroll, N.M.  
St. Mary's Dominican Conv., Kingstown  
Dotto, M.T.  
Loreto Conv., Europa, Gibraltar  
John, F.G.  
Clark's Coll., Newport Rd., Cardiff  
Kennedy, A. St. Mary's Conv., Bruff  
King, A. Minerva Coll., Dover  
Rees, E.M. Private tuition  
O'Brien, Marian, St. Mary's Conv., Bruff  
Lindsay, I. Oriel Coll. S., Larne  
Shield, D. Friends' S., Wigton  
Moloney, A.M. St. Joseph's S., Lincoln  
Anderson, E. Private tuition  
Benson, E.A. Private tuition

**THIRD CLASS.**

**Honours Division.**

Fayle, L.M.R. s.e.h.a.a.l.b.  
The Friends' S., Mountmellick  
Silke, M.R. h.al.gm.f.  
Dominican Conv., Wicklow  
O'Shea, Kitty, e.h.a.gm.f.  
St. Mary's Conv., Bruff  
Payne, E.M. e.a.gm.f.ge.  
Victoria Coll., Belfast  
Austin, I.E. a.gm.ge.d.  
Victoria Coll., Belfast  
Bavoux, G.M. a.f.  
The Convent S., Cadogan St., Chelsea  
Tallon, L.al.gm. Dominican Conv., Wicklow  
Baker, S.M. s.e.al.  
The Friends' S., Mountmellick

GIRLS, 3RD CLASS, HONOURS—Continued.

Brenan, E. e. h. g. bk. ir. Conv. Holy Faith, Holmpatrick, Skerries Kuhlmann, M. a. g. d. St. Ethelburga's High S., Deal Pool, W. M. e. a. ul. f. County Gram. S., Market Harboro'

Graham, R. h. al. gm. Dominican Conv., Wicklow Ratcliff, E. s. e. h. g. Girls' Coll. S., Thaxted Poole, E. M. e. d. The Friends' S., Mountmellick

Clayton, M. h. gm. f. Victoria Coll., Belfast Grainger, M. a. ul. gm. Dominican Conv., Wicklow

Moloney, A. al. ir. Conv. Holy Faith, Holmpatrick, Skerries Kavanagh, R. h. gm. Dominican Conv., Wicklow Whittock, I. G. s. e. a. Devon Lodge, Wyde Green

Croskery, S. E. al. f. Princess Gardens S., Belfast O'Neill, N. s. e. h. St. Mary's Conv., Bruff Cunningham, B. G. gm. Victoria Coll., Belfast

Kinsey, E. M. s. e. The Hiatt Ladies' Coll., Wellington Whelan, A. a. bk. l. St. Mary's Day S., Glasnevin Conv., Dublin

Glover, N. L. g. a. ul. Princess Gardens S., Belfast Herd, E. M. F. gm. f. Victoria Coll., Belfast Holland, F. Dominican Conv., Wicklow Thorp, E. M. P. s. d. The Friends' S., Mountmellick

Farrelly, J. a. St. Mary's Boarding S., Glasnevin, Dublin

Castrillo, A. sp. Loreto Conv., Europa, Gibraltar Clarke, E. H. al. gm. Victoria Coll., Belfast Donovan, K. A. s. St. Mary's Conv., Bruff Harrington, M. h. gm. Dominican Conv., Wicklow

O'Shea, Kathleen, tr. d. St. Mary's Conv., Bruff

Barker, K. g. The Hiatt Ladies' Coll., Wellington Doherty, F. J. a. gm. St. Mary's Dominican Conv., Kingstown Fenton, J. gm. St. Mary's Conv., Bruff O'Byrne, K. al. gm. Dominican Conv., Wicklow

Guagnino, I. Loreto Conv., Europa, Gibraltar McDermott, M. h. gm. Dominican Conv., Wicklow

Kealy, D. a. al. bk. Conv. of the Holy Faith, St. Dominick St., Dublin Bologna, M. T. f. Notre Dame de France, Leicester Place, W.C. Byles, E. M. a. al. Notre Dame High S., Clapham Tyler, N. ef. Loreto Conv., Europa, Gibraltar

Coghlan, M. A. ir. l. St. Mary's Boarding S., Glasnevin, Dublin Phillips-Jones, M. V. s. al. v. Preswylfa Girls' High S., Cardiff

Aherne, N. al. gm. St. Mary's Conv. of Mercy, Buttvant Austin, E. Sienna Conv., Drogheda Blanchot, P. E. f. Conv. of the Sisters of Nevers, Withead, Brighton

Murtagh, M. St. Mary's Boarding S., Glasnevin, Dublin

Bodega, A. B. a. Notre Dame High S., Clapham Chambers, M. E. al. Finsbury Pk. High S., Adolphus Rd., N. Horwood, A. M. s. a. Beauclerc H., Sunbury-on-Thames Jacobs, N. E. e. d. New Orphan Houses, Bristol

McEnery, V. gm. Dominican Conv., Wicklow Moroney, A. St. Mary's Conv., Bruff

Anderson, L. a. gm. Conv. of the Holy Faith, Haddington Rd., Dublin 2Bagat, M. f. Convent de la Mere de Dieu, Surbiton Hill

Day, D. M. a. Eye Gram. S. Materne, J. C. M. f. d. Private tuition O'Dwyer, M. St. Mary's Conv., Bruff

Madden, O. M. ge. Private tuition Slattery, A. M. ir. St. Mary's Conv., Bruff Smyth, E. R. "Hopedune," Portrush

Ansell, V. C. h. a. Beauclerc H., Sunbury-on-Thames Barrow, P. s. Annandale, Market Harboro de Lys, B. a. St. Ethelburga's High S., Deal Nelson, M. J. gm. Conv. of the Holy Faith, Haddington Rd., Dublin

Potten, F. W. a. Beauclerc H., Sunbury-on-Thames 2Twohig, K. Conv. of the Holy Faith, Clontarf, Dublin

Waugh, N. A. gm. Victoria Coll., Belfast Dowling, D. M. a. St. Winefride's S., Wimbledon Duff, R. St. Mary's Day S., Glasnevin Conv., Dublin

Forde, M. bk. St. Mary's Boarding S., Glasnevin, Dublin Richardson, M. Holy Faith Conv., Clarendon St., Dublin Stephenson, M. Dominican Conv., Wicklow

Morton, W. M. s. e. a. Felix H., East Dulwich Coleman, A. I. a. al. Eye Gram. S. Jonguet, T. f. St. Ethelburga's High S., Deal Kempe, L. M. s. a. New Orphan Houses, Bristol

Girling, L. L. a. Beauclerc H., Sunbury-on-Thames Hanchett, M. a. d. New Orphan Houses, Bristol

Mosedale, N. N. Devon Lodge, Wyde Green Patron, M. Loreto Conv., Europa, Gibraltar Price, A. St. Margaret's S., Southerndown, nr. Bridgend

Whatling, H. Eye Gram. S. Derham, M. Conv. Holy Faith, Holmpatrick, Skerries Greaves, M. Holy Faith Conv., Clarendon St., Dublin Lambert, G. E. a. Beauclerc H., Sunbury-on-Thames O'Regan, B. St. Mary's Conv., Bruff Rodenhurst, J. M. s. The Hiatt Ladies' Coll., Wellington

Cattell, D. E. Norton Lodge, Small Heath, Birmingham Hudson, M. Brook Green Girls' College, Kensington Long, F. E. s. Lynton H., Portsmouth

2Benion, M. M. Boys' S., Chadsmoor, Cannoek Clarke, E. A. g. The Hiatt Ladies' Coll., Wellington Gros, Y. h. f. Mansfield Coll., Cliftonville, Margate Mills, G. J. D. Collegiate S., Hawkhurst Morgan, N. E. The Hiatt Ladies' Coll., Wellington Smyth, E. S. Hopedune, Portrush

Coghlan, N. s. e. St. Mary's Conv., Bruff Dent, W. K. The Bryant S., Wainfleet 2Hosford, E. J. S. Private tuition James, G. z. a. Mill St. Higher Standard S., Pontypridd McAuliffe, S. St. Mary's Conv., Bruff

Flint, D. a. New Orphan Houses, Bristol Mills, D. Brent Hill S., Hanwell Murray, I. V. N. s. Princess Gardens S., Belfast Young, E. A. al. Finsbury Park High S., Adolphus Rd. N.

Curtin, O. M. s. Notre Dame High S., Clapham 2Morgan, G. Private tuition Northey, E. A. Victoria Coll., Belfast Warren, O. High S., Sidney Place, Cork Worsley, G. Lower Coll., Lytham

Armstrong, D. H. Landowne Ladies' S., Belfast 2Davies, E. M. Mill St. Higher Standard S., Pontypridd Williams, R. a. Mill St. Higher Standard S., Pontypridd

Joseph, D. Preswylfa Girls' High S., Cardiff Lynch, M. St. Mary's Conv., Bruff Williams, L. V. g. d. The Hiatt Ladies' Coll., Wellington

Campbell, M. d. Hopedune, Portrush Gaze, E. Mill St. Higher Standard S., Pontypridd Gilsenan, A. J. gm. St. Mary's Dominican Conv., Kingstown

Haywood, I. Devon Lodge, Wyde Green Rees, E. Preswylfa Girls' High S., Cardiff Smith, D. B. 9 Castleton Terrace, Belfast

O'Brien, K. St. Mary's Conv., Bruff Rees, D. M. The Newlands, Bootle Sweeney, M. A. St. Ethelburga's High S., Deal

Banks, T. St. Mary's Conv. S., Rhyl 2Connolly, M. Dominican Conv., Wicklow 2Devane, B. St. Mary's Dominican Conv., Kingstown Liston, N. s. St. Mary's Conv., Bruff McDonnell, L. St. Mary's Day S., Glasnevin Conv., Dublin

Provost, J. Ivydene, Blackpool Shanley, M. a. Conv. of the Holy Faith, St. Dominick St., Dublin Shaw, W. a. Fartown Gram. S., Huddersfield

Davies, M. H. v. Pencader Gram. S. Davis, C. E. The Friends' S., Mountmellick Jones, L. Dominican Conv., Wicklow Stevenson, E. S. Victoria Coll., Belfast White, V. d. Knock Inter. S. & Kindergarten, Belfast Worrall, F. M. Linwood S., Altrincham

Buniaux, I. f. Ancey Conv., Seaford Danino, M. L. Loreto Conv., Europa, Gibraltar Fresco, S. s. London Jews' Society Mission S., Constantinople

2Jones, F. Mill St. Higher Standard S., Pontypridd LeSaux, M. M. f. The Convent S., Calogan St., Chelsea Pages, G. S. f. Portway Coll., Reading

Ashe, K. bk. Holy Faith Conv., Clarendon St., Dublin Hill, D. E. a. Fartown Gram. S., Huddersfield Holloway, S. F. a. New Orphan Houses, Bristol

Rath, M. Sienna Conv., Drogheda Ryan, C. St. Mary's Day S., Glasnevin Conv., Dublin

Cooper, H. Loreto Conv., Europa, Gibraltar Curwen, F. M. s. Lowther Coll., Lytham Davies, A. V. St. Margaret's S., Southerndown, nr. Bridgend

2Humphreys, M. St. Mary's Conv., Bruff Owens, T. Conv. Holy Faith, 116 Coombe, Dublin Sexton, L. St. Mary's Dominican Conv., Kingstown Smith, M. A. Felix H., East Dulwich

Breen, L. St. Mary's Conv., Bruff Maconachie, W. M. Princess Gardens S., Belfast O'Brien, Mamie St. Mary's Conv., Bruff Wiles, D. I. Oriol Coll. S., Larne

Abeni, F. s. London Jews' Society Mission S., Constantinople Black, I. s. Princess Gardens S., Belfast Hyner, K. M. Rhianna Coll., Hunstanton Leonard, V. F. e. The Friends' S., Mountmellick

Smith, A. C. L. Private tuition 2Ball, F. M. Cyfarthfa Castle Municipal Sec. S., Merthyr Tydfil Brogan, M. M. St. Mary's Dominican Conv., Kingstown

2Browne, M. Conv. of the Holy Faith, Haddington Rd., Dublin 2Lindsay, E. St. Mary's Conv., Bruff Scally, M. B. St. Mary's Dominican Conv., Kingstown

2Slater, V. Central Council S., Stalybridge 2Smith, K. L. Private tuition 2Corcos, J. s. Mansfield Coll., Cliftonville, Margate Maconachie, B. H. Princess Gardens S., Belfast

2McCourt, K. R. St. Mary's Dominican Conv., Kingstown Naylor, E. Seaford, Blackpool O'Byrne, M. E. Conv. of the Holy Faith, St. Dominick St., Dublin

Heynes, M. Sirsa H., Cheltenham Letellier, M. f. Ancey Conv., Seaford Sheppard, D. P. Clonmanron S., Christchurch

2Westlake, I. Private tuition 2Lyons, M. Conv. of the Holy Rosary, Cannoek Meeke, M. al. Conv. of the Holy Faith, St. Dominick St., Dublin Percival, K. s. Elvaston S., Tulse Hill, S. W. Solbe, A. M. G. Holt H., Cheshunt Templeman, N. St. Winefride's S., Wimbledon Wood, L. C. d. The Hiatt Ladies' Coll., Wellington

2Evans, C. Old College S., Carmarthen Gardiner, J. St. Mary's Day S., Glasnevin Conv., Dublin 2Jones, R. St. Mary's Conv., Bruff

Lyng, C. M. St. Mary's S., Conv. of Mercy, New Ross Martin, H. M. Victoria Coll., Belfast 2O'Brien, May St. Mary's Conv., Bruff

Beck, B. Victoria Coll., Belfast Boyles, L. a. Mill St. Higher Standard S., Pontypridd 2Cowan, B. E. Private tuition Crawford, S. N. P. f. Victoria Coll., Belfast Hosford, S. D. A. Private tuition

2Condon, M. St. Mary's Conv., Bruff Halpin, A. St. Mary's Conv., Bruff Healy, E. Holy Faith Conv., Clarendon St., Dublin Jones, G. S. a. Mill St. Higher Standard S., Pontypridd

2Rogers, L. St. Mary's Conv., Bruff Smith, A. E. s. 4 Trinity Terrace, Cheltenham Tarte, H. M. St. Anne's Conv., Camp Hill, Birmingham Turner, V. Elvaston S., Tulse Hill, S. W. Wilson, M. St. Mary's Day S., Glasnevin Conv., Dublin

Heffernan, A. St. Mary's Dominican Conv., Kingstown Huet, R. f. d. Ancey Conv., Seaford 2Jones, E. R. Old College S., Carmarthen 2O'Brien, C. St. Mary's Conv., Bruff

Moran, U. Dominican Conv., Wicklow 2Pike, E. L. New Orphan Houses, Bristol Rooney, M. E. Sienna Conv., Drogheda Woods, K. M. Eye Gram. S.

Gagne, G. f. Ancey Conv., Seaford Isola, L. Loreto Conv., Europa, Gibraltar Marshall, I. G. Lynton H., Portsmouth Norman, C. a. al. Mill St. Higher Standard S., Pontypridd Robinson, W. M. The Hiatt Ladies' Coll., Wellington

2Taylor, G. M. Mill St. Higher Standard S., Pontypridd Fleming, L. A. St. Mary's Conv., Bruff Lambert, M. A. Rhianna Coll., Hunstanton 2Woodhead, G. Longwood Gram. S., Huddersfield

Jones, E. M. d. Lowther Coll., Lytham Landale, L. M. Seaford, Blackpool Ludlow, V. V. Lowther Coll., Lytham Hill, L. K. Park Coll., Northumberland Pk., Tottenham

Dunn, V. A. Newry Lodge S., East Twickenham Reville, A. L. Newry Lodge S., East Twickenham Ross, I. B. Landowne Ladies' S., Belfast Sythes, F. M. E. a. Princess Gardens S., Belfast

Matthews, M. Mill St. Higher Standard S., Pontypridd Russan, E. Convent of St. Maur, Weybridge

Mohbat, M. H. Lowther Coll., Lytham O'Connor, A. d. St. Mary's Conv., Bruff Wolfe, N. St. Mary's Conv., Bruff Wranghan, J. Convent de la Mere de Dieu, Surbiton Hill

O'Regan, M. St. Mary's Conv., Bruff Osborne, M. s. Fartown Gram. S., Huddersfield Rees, M. Mill St. Higher Standard S., Pontypridd

Adkins, M. Thicket Lodge S., Broadstairs Dent, E. The Bryant S., Wainfleet Mayer, D. J. Granville Coll., West Croydon Coll. S., Colwyn Bay

McNally, K. W. Sienna Conv., Drogheda Potts, F. W. Royal Schools for the Deaf, Old Trafford 2Purcell, A. St. Mary's Conv., Bruff Williams, M. St. Mary's Conv., Bruff

2Barry, T. St. Mary's Conv., Bruff Hamilton, M. Newtown S., Waterford McKibbin, B. M. Victoria Coll., Belfast Murray, R. Sienna Conv., Drogheda Woolley, B. R. Lonsdale H., Moseley, Birmingham

Haggett, S. Girls' High S., Highbridge Smith, T. M. St. Anne's Conv., Camp Hill, Birmingham Townshend, N. A. St. Mary's Coll., Barnes

Dell, E. G. Chiswick Girls' S., Brackley Rd., Chiswick Gilliland, E. I. Victoria Coll., Belfast Gilbert, M. St. Mary's Conv. S., Rhyl Richards, A. M. M. St. Anne's Conv., Camp Hill, Birmingham

THIRD CLASS. Pass Division.

2Drabble, M. Cavendish S., Matlock Bank 2Halliwell, M. L. f. Private tuition 2Wiesem, H. ge. Minerva Coll., Dover 2Paterson, L. Victoria Coll., Belfast 2Wingate, S. h. Private tuition 2Ellis, D. J. do Olive H., Ventnor

LOWER FORMS EXAMINATION.—PASS LIST, MIDSUMMER, 1913.

BOYS.

<p>Akers, A.W. Holt H., Cheshunt Alexander, D. Salesian S., Battersea Allen, N.H.C. Cheltonia Coll., Streatham Alvarez, J. Christian Bros. Coll., Gibraltar Anderson, R.H.R. St. Aloysius' Coll., Highgate Andrews, E. Gram. S., Southend-on-Sea Andrews, V.R.B. Eastward Ho! Coll., Felixstowe Arambarri, J. St. Aloysius' Coll., Highgate Arbuckle, V.L. Taunton School Arkwright, J. Catholic Gram. S., St. Helens Armstead, H.S. Lindisfarne Coll., Westcliff-on-Sea Armstrong, H. Argyle H., Sunderland Ashcroft, F.A. Catholic Gram. S., St. Helens Aspinall, D.A. St. Catherine's Coll., Richmond Aston, C.M. St. Joseph's Coll., Norwood Atkinson, S.R. St. Joseph's Coll., Norwood Atmetlla, E. St. Aloysius' Coll., Highgate Attias, J. Christian Bros. Coll., Gibraltar Aylott, H.J.F. Lindisfarne Coll., Westcliff-on-Sea Baker, R. Endcliffe Coll., Sheffield Balch, C.L. Ilford Coll., Seven Kings Bantock, V. Eastward Ho! Coll., Felixstowe Barker, L.H. St. Aloysius' Coll., Highgate Barnes, C.C. The Modern S., Streatham Common Barrett, J.W. St. Joseph's Coll., Norwood Barry, H. Salesian S., Farnborough Bastin, D.F. The Douglas S., Cheltenham Bateman, G.L. Tudor Hall, Hawkhurst Beesley, F.A. Catholic Gram. S., St. Helens Bell, J.F.T. Margate College Benham, J.J. St. Joseph's Coll., Norwood Beniso, I. Christian Bros. Coll., Gibraltar Bennett, R.G. St. George's Coll., Weybridge Bennett, R.P. Gram. S., Ongar Benson, V.C. Lindisfarne Coll., Westcliff-on-Sea Bentley, J.M. Temple Coll., East Sheen Benton, W.F.D. Lindisfarne Coll., Westcliff-on-Sea Bezu, L. St. Boniface's Coll., Plymouth Birehall, E. Inveresk, New Brighton Blackwell, A.S. The Gram. S., Hyde Blewitt, D. Dominican Conv., Wicklow Blundell, R.S. St. Catherine's Coll., Richmond Bonar, H.J.T. Taunton School Boon, L.C. St. John's Coll., Southsea Boon, R.H.P. Tothill S., Plymouth Bowden, F.R. Mount Radford S., Exeter Bowles, E.B. Salesian S., Farnborough Boyce, F. Salesian S., Farnborough Bracken, J. St. Aloysius' Coll., Highgate Bradley, C. St. Aloysius' Coll., Highgate Bradley, S.A.J. University S., Rochester Bradnum, L.W. Taunton School Branley, A.G. Taunton School Brasse, E.W. Grove H., Highgate Broadbridge, M.C. Lankaster School, E. Finchley Broughton, C.C.M. Upton Coll., Bexley Heath Broughton, F.A. Streatham Gram. S. Brown, H. The College, Weston-s.-Mare Browning, L. St. Joseph's Coll., Norwood Bruce, F.R. Lindisfarne Coll., Westcliff-on-Sea Bruno, S. Salesian S., Battersea Bruzon, L. Christian Bros. Coll., Gibraltar Bulger, J.A. St. George's Coll., Weybridge Bulger, M. St. George's Coll., Weybridge Bull, E.G. St. George's Coll., Weybridge Bunt, F.D. Ilford Coll., Seven Kings Burnage, E.N. St. Aloysius' Coll., Highgate Busch, H.J. The Gram. S., Taplow Butcher, H. Salesian S., Battersea Butler, W.C.H. St. Joseph's Coll., Norwood Byron, G. St. Placid's, Ramsgate Caffyn, L.D. New Coll., Herne Bay Caime, L.F. St. John's Coll., Southsea Caldwell, A. St. Aloysius' Coll., Highgate Calvert, E.B. Upton Coll., Bexley Heath Capon, P.J.L. Streatham Gram. S. Carlton, F.A. Dudley H., Lee Carter, H.D. Tudor Hall, Hawkhurst Chambers, H.E. Ilford Coll., Seven Kings Cheseman, G.L. Lankaster School, E. Finchley Cheramy, L. Salesian S., Battersea Chint, E.S. Margate College Clare, P.G. St. Boniface's Coll., Plymouth Clarke, D.F. Ilford Coll., Seven Kings</p>	<p>Clavijo, J. Christian Bros. Coll., Gibraltar Clutton, G.F. Eastward Ho! Coll., Felixstowe Cockram, H. Beverley S., Barnes Coe, R.H. Lindisfarne Coll., Westcliff-on-Sea Collins, J.A. Catholic Gram. S., St. Helens Coulber, A.C. Taunton School Commassons, G. St. Aloysius' Coll., Highgate Conoley, B.J. St. George's Coll., Weybridge Cooke, F. Cavendish Coll., Clapham Park Cooper, J.W. St. John's Coll., Southsea Cooper, L. St. Aloysius' Coll., Highgate Corner, F. St. Aloysius' Coll., Highgate Coulthard, A.J. The College, Weston-s.-Mare Court, H.E. St. Joseph's Coll., Norwood Cousins, C.L. Taunton School Coxhead, A.H. Cheltonia Coll., Streatham Cragoe, H. St. Joseph's Coll., Norwood Crombie, S. Taunton School Crowley, M.J. St. George's Coll., Weybridge Cuthbert, W.B. Ilford Coll., Seven Kings Dahl, M.C.E. Taunton School Dare, G.C. Taunton School Davan, L.P. Dudley H., Lee Davenport, J.R. The Gram. S., Taplow Davidson, J. Christian Bros. Coll., Gibraltar Davies, F. St. Aloysius' Coll., Highgate Davies, F.G. Taunton School Davis, B.P. Catholic Gram. S., St. Helens Davis, W.S. Tothill S., Plymouth Davison, D.D. Ilford Coll., Seven Kings Debenham, R. St. Aloysius' Coll., Highgate Delancy, P. Notre Dame de France, Lisle St., W.C. Dennett, W.J. Catholic Gram. S., St. Helens di Colonna, y de Vere, B. Dudley H., Lee Dixon, L. Ilford Coll., Seven Kings Doder, L. St. Aloysius' Coll., Highgate Doland, C. St. Aloysius' Coll., Highgate Downing, M.P. St. Boniface's Coll., Plymouth Drake, E.E.A. Richmond Hill S. Dubois, M. Marist Bros. Coll., Grove Ferry Duncan, S.E. Margate College Dunkin, F.J.C. Richmond Hill S. Dunlop, A.C. Salesian S., Farnborough Durant, G.W. St. George's Coll., Weybridge Easton, S.W. Taunton School Edsall, G.H. Ilford Coll., Seven Kings Elliott, H.F. Bethany H., Goudhurst Elwin, D. St. Joseph's Coll., Norwood Erith, G.R.B. Lindisfarne Coll., Westcliff-on-Sea Evans, H. Clark's Coll., Newport Rd., Cardiff Evans, J.P. Tutorial S., New Quay, Cardigan Fagan, T.P. Dominican Conv., Wicklow Farinotto, L. Notre Dame de France, Lisle St., W.C. Farrar, A. Catholic Gram. S., St. Helens Featherstone, J.W. University S., Rochester Feeny, T. Salesian S., Battersea Fenton, J. Argyle H., Sunderland Fitzpatrick, L. St. Aloysius' Coll., Highgate Fitzsimons, F.A. Dominican Conv., Wicklow Flear, N.H. Lindisfarne Coll., Westcliff-on-Sea Foley, V. St. Aloysius' Coll., Highgate Forbes, J.H. Lindisfarne Coll., Westcliff-on-Sea Foreman, G.E. Gram. S., Ongar Fowle, G. University S., Rochester Frances, B. St. Aloysius' Coll., Highgate Frances, R. The College, Weston-s.-Mare Freedman, R. Anby H., West Hackney Gadson, D.F. Ilford Coll., Seven Kings Gedrons, C. Gram. S., Southend-on-Sea Gigli, R. St. Aloysius' Coll., Highgate Gilbert, D. St. Aloysius' Coll., Highgate Gillard, A. Salesian S., Farnborough Gillet, R. Marist Bros. Coll., Grove Ferry Giret, E. Notre Dame de France, Lisle St., W.C. Girling, R.M. Eastward Ho! Coll., Felixstowe Gispert, F.M.M. St. Joseph's Coll., Norwood Glover, R.N. Streatham Gram. S. Glover, S.R. Streatham Gram. S. Goddard, F.J. St. George's Coll., Weybridge Goldschmidt, H.T. Lindisfarne Coll., Westcliff-on-Sea Gonzalez, H. St. Joseph's Coll., Norwood Gordon, F. Stafford S., Farnborough Gould, N.J. Stafford Coll., Forest Hill Goult, S. Salesian S., Farnborough Gowing, G.S. Cheltonia Coll., Streatham Gradidge, J.A. Margate College Gradwell, J.A. St. George's Coll., Weybridge</p>	<p>Green, L. Salesian S., Farnborough Griffin, J.R. Taunton School Grover, S.H. Balham Modern S. Guntler, V.G.M. St. Aloysius' Coll., Highgate Gurney, N. Ilford Coll., Seven Kings Hall, E.N. Taunton School Hall, J.R.E. Newquay Coll., Cornwall Hall, S. Salesian S., Battersea Hamilton, C.C. St. Joseph's Coll., Norwood Hanley, J. St. Boniface's Coll., Plymouth Hare, E. St. Aloysius' Coll., Highgate Harper, H.B.S. The College, Weston-s.-Mare Harrington, J. Salesian S., Battersea Harris, E.T. Taunton School Harris, G.L.H. The Douglas S., Cheltenham Haycraft, E.P. Ilford Coll., Seven Kings Healey, J. Hawkesyard Coll., Rugeley Henderson, K.D. Richmond Hill S. Henderson, R.N. Lindisfarne Coll., Westcliff-on-Sea Heneghan, P. Catholic Gram. S., St. Helens Hickey, N. Salesian S., Farnborough Hickling, R.A. Taunton School Higgins, M. Salesian S., Farnborough Hill, F.R. New Coll., Herne Bay Hind, F.W. Ilford Coll., Seven Kings Hodoway, N.M. Lindisfarne Coll., Westcliff-on-Sea Holden, J.R. Taunton School Holdsworth, N.H. Tudor Hall, Hawkhurst Holmes, A. Gram. S., Ongar Holmes, R.C. Margate College Homewood, E.G. Lindisfarne Coll., Westcliff-on-Sea Homewood, S.F. Lindisfarne Coll., Westcliff-on-Sea Hope, E. Christian Bros. Coll., Gibraltar Horton, W. Salesian S., Farnborough Howland, H.S. Southampton Boys' Coll. &amp; High School Hughes, H. St. Aloysius' Coll., Highgate Humphreys, G.S.L. Taunton School Hurman, D.S. Taunton School Hurst, L.C. Holt H., Cheshunt Hutchison, R.McD.S. Cheltonia Coll., Streatham Hyde, C.W. St. John's Coll., Brixton Invernizzi, C. St. Aloysius' Coll., Highgate Jack, S.J. Lindisfarne Coll., Westcliff-on-Sea Jacobs, V. Argyle H., Sunderland James, L.W. Taunton School Jealous, W.E. Grove H., Highgate Jeavons, H.W. Southampton Boys' Coll. &amp; High School Johnson, G.B. Taunton School Johnston, A. Salesian S., Battersea Jones, E.A. Salesian S., Farnborough Jones, G.E. Gram. S., Ongar Jones, H.D.G. Tutorial S., New Quay, Cardigan Julliard, C. Salesian S., Battersea Kern, E. Salesian S., Farnborough King, G.G. Mount Radford S., Exeter King, G.R. Bethany H., Goudhurst Kitling, H. Osborne High S., W. Hartlepool Knight, A.S. Kauterskill Coll., Birmington Knight, P. St. Aloysius' Coll., Highgate Kregor, C.A.E. New Coll., Herne Bay Lamping, F.S. Cheltonia Coll., Streatham Lane, S. Loreto Conv., Europa, Gibraltar Langdale, F.H. Richmond Hill S. Larthe, A.A. St. Joseph's Coll., Norwood Leech, L.V. Ilford Coll., Seven Kings Leon, C. Preswyla Girls' High S., Cardiff Limmer, R.L.G. Winwick, S. Woodford Linclham, A.J. St. Boniface's Coll., Plymouth Lloyd, F.G. New Coll., Herne Bay Lush, G.R. The Gram. S., Taplow Lynch, T. St. Aloysius' Coll., Highgate Lynter, A. Preston Gram. S., Brighton Macfarlane, B.H. Lindisfarne Coll., Westcliff-on-Sea MacGill, A.M. The Gram. S., Hyde Mackay, J. St. Aloysius' Coll., Highgate Mackay, R.S. New Coll., Herne Bay Maguire, J. St. Aloysius' Coll., Highgate Mallcott, F.L. Ilford Coll., Seven Kings Marchant, B. Salesian S., Battersea Marshall, J.E. St. John's Coll., Southsea Marshall, R.N. New Coll., Herne Bay Martin, A.P. Balham Modern S. Martin, W.B. Lindisfarne Coll., Westcliff-on-Sea Marvin, A.B. Cheltonia Coll., Streatham Mason, G.A. Argyle H., Sunderland May, C.A.L. Grove H., Highgate</p>	<p>McBride, G. St. Aloysius' Coll., Highgate McDaniel, J. St. Aloysius' Coll., Highgate McDermott, M.A.L. St. Boniface's Coll., Plymouth McEntre, E. Salesian S., Farnborough McLaren, A. Salesian S., Farnborough McLoughlin, R.F. Dominican Conv., Wicklow Mena, L. Christian Bros. Coll., Gibraltar Merryweather, S. Salesian S., Battersea Meyer, E. Salesian S., Farnborough Minski, L. Argyle H., Sunderland Mitchell, C.D. Margate College Mitchell, J.L. St. John's Coll., Southsea Mitchell, P.F. St. John's Coll., Southsea Monypenny, J. Salesian S., Battersea Moore, A. St. Aloysius' Coll., Highgate Moore, A.W. Gram. S., Ongar Morgan, B.J.M. 4 Trinity Terrace, Cheltenham Morris, O.J. St. John's Coll., Southsea Mudd, A.W. Grove H., Highgate Mulquin, W. Salesian S., Farnborough Mulvaney, J.A. St. George's Coll., Weybridge Musgrave, H.A. Taunton School Neboisne, G. St. Catherine's Coll., Richmond Nelson, R.E. Clarendon H., Sunderland Nickson, J.H. Catholic Gram. S., St. Helens Noakes, D.S. Tudor Hall, Hawkhurst Nono, J. St. Aloysius' Coll., Highgate Oakes, C. Beverley S., Barnes O'Byrne, M.D. Dominican Conv., Wicklow Olivier, A.P. St. Placid's, Ramsgate Orpin, S.E. Clark's College, Modern S. for Boys, Brixton Hill, S.W. Ortolli, P. Marist Bros. Coll., Grove Ferry O'Shea, D.B. St. Joseph's Coll., Norwood O'Sullivan, A. St. Aloysius' Coll., Highgate Owen, J. Mazenod Coll., Kilburn Packer, T.W. Ilford Coll., Seven Kings Page, B.R. Newquay Coll., Cornwall Pallister, W.T.N. Gram. S., Ongar Parnell, H.C. St. Boniface's Coll., Plymouth Pau, A. Christian Bros. Coll., Gibraltar Pearce, N. Bethany H., Goudhurst Peirce, G.M. Richmond Hill S. Peirce, W.J. Richmond Hill S. Pondlebury, P. Strathnaver, Aughton Petit, V.A.M. Margate College Phillips, R.V. Taunton School Pike, C.D. Kensey S., Lanceson Pincock, F.F. The Gram. S., Taplow Poles, H.G. University S., Rochester Portella, F. St. George's Coll., Weybridge Povelano, J. Christian Bros. Coll., Gibraltar Powley, O. Argyle H., Sunderland Powney, W. St. Aloysius' Coll., Highgate Prentice, C.N. Eastward Ho! Coll., Felixstowe Privett, J.L. St. George's Coll., Weybridge Radford, D.K. Richmond Hill S. Ramsshaw, M.C. Argyle H., Sunderland Ravenor, A.S. St. Boniface's Coll., Plymouth Rayner, F.E. Stafford Coll., Forest Hill Reid, D.H. Richmond Hill S. Rennie, C.G. St. John's Coll., Southsea Revill, G. St. Aloysius' Coll., Highgate Reynolds, J.A. Orrington House, Belfast Rice, G. Ascham Coll., Westcliff-on-Sea Richardson, H.C. Margate College Richardson, J. Endcliffe Coll., Sheffield Rigby, T. Salesian S., Farnborough Riggs, W.J. St. Boniface's Coll., Plymouth Ritchie, H.E. Margate College Robathan, G. St. Aloysius' Coll., Highgate Robb, C. Beverley S., Barnes Roberts, F.C. Taunton School Roberts, R. Salesian S., Farnborough Robinson, H.O. St. Placid's, Ramsgate Rochs, O.M.D. Lindisfarne Coll., Westcliff-on-Sea Rock, G.B. Lindisfarne Coll., Westcliff-on-Sea Rossetto, F.D. Gram. S., Ongar Rossier, G. Taunton School Rowe, F.C. Mount Radford S., Exeter Rowlands, H. Salesian S., Farnborough Rudolph, H. Salesian S., Farnborough Rumbold, J. St. Aloysius' Coll., Highgate Russell, F. Salesian S., Farnborough Rutherford, W.A. Royal Schools for the Deaf, Old Trafford Ryan, J.J. St. Aloysius' Coll., Highgate Sagar, J. St. Aloysius' Coll., Highgate Salau, X.F. St. Boniface's Coll., Plymouth Saltrick, W.R. The Modern S., Streatham Common</p>
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**BOYS, Lower Forms—Continued.**  
 Sanderson, C.N.  
 Osborne High S., W. Hartlepool  
 Sauasset, R. Marist Bros. Coll., Grove Ferry  
 Saville, L.M. Richmond Hill S.  
 Sayers, J.G. Grove H., Highgate  
 Scanlan, B.P. St. Joseph's Coll., Norwood  
 Scott-Atkinson, A.E.L. Margate College  
 Segard, J.J. St. George's Coll., Weybridge  
 Shepard, P.A.  
 Lindisfarne Coll., Westcliff-on-Sea  
 Shipman, D.P. Ilford Coll., Seven Kings  
 Simpson, G.G.A.  
 Willenden Prep. S., Harlesden  
 Smale, H.H. St. Boniface's Coll., Plymouth  
 Smith, C.  
 Hill Croft High S., Amhurst Park, N.  
 Snowdon, J.D. Argyle H., Sunderland  
 Solbé, R.F. de L.G. Holt H., Cheshunt  
 Somers, W.S. Taunton School  
 Somerscales, F.L. Stafford Coll., Forest Hill  
 Spanton, W.P. Tudor Hall, Hawkhurst  
 Spear, C.F. Eastward Ho! Coll., Felixstowe  
 Stagnetto, L. Christian Bros. Coll., Gibraltar

Staight, I.C. The Douglas S., Oheltenham  
 Stanley, H.J. New Coll., Herne Bay  
 Stebbing, H. Gram. S., Ongar  
 Steer, F.E.B. Tudor Hall, Hawkhurst  
 Stephenson, H.T. University S., Rochester  
 Stimson, E.E. Cheltona Coll., Streatham  
 Stockdale, C.E. Argyle H., Sunderland  
 Stonhold, C.J. Taunton School  
 Strickson, T.H. University S., Rochester  
 Stubbs, H.R. Beverley S., Barnes  
 Sullivan, S. Salesian S., Battersea  
 Suvo, P. Marist Bros. Coll., Grove Ferry  
 Sutcliffe, T.A. Cavendish S., Matlock Bank  
 Swift, T.A.C. Catholic Gram. S., St. Helens  
 Swift, W.J. Catholic Gram. S., St. Helens  
 Sydes, E. Gram. S., Southend-on-Sea  
 Sykes, H. Tudor Hall, Hawkhurst  
 Talbot, A.R. Kensey S., Launceston  
 Thacker, K.L. Cheltona Coll., Streatham  
 Thacker, R. Richmond H., Handsworth  
 Thomas, J. St. Aloysius' Coll., Highgate  
 Thompson, E.  
 Conv. of Mercy High S., Pitsmoor  
 Thorp, J.R. Streatham Gram. S.

Todd, H.C. Clark's Coll., Modern S.  
 for Boys, Brixton Hill, S.W.  
 Tresidder, H.S. Streatham Gram. S.  
 Trevorrow, W.H.  
 St. Boniface's Coll., Plymouth  
 Triay, P. Christian Bros. Coll., Gibraltar  
 Tucker, H.W. St. John's Coll., Southsea  
 Tully, K.H.  
 Lindisfarne Coll., Westcliff-on-Sea  
 Turner, J. Salesian S., Farnborough  
 Turner, J.D. Streatham Gram. S.  
 Tyrrell, R.E. Streatham Gram. S.  
 Uspdale, J.W. St. Joseph's Coll., Norwood  
 Varagant, H.P. St. Joseph's Coll., Norwood  
 Vento, J. Christian Bros. Coll., Gibraltar  
 Wallace, F. St. Aloysius' Coll., Highgate  
 Ward, G.A. Margate College  
 Warren, A.E. St. John's Coll., Brixton  
 Warren, W. Eastward Ho! Coll., Felixstowe  
 Watson, F.L. Margate College  
 Webb, E.M. Taunton School  
 Webb, R.W. Taunton School  
 Webb, W.H.C. Margate College  
 Weeger, R. Marist Bros. Coll., Grove Ferry

Well, H.W.T.G. St. Catherine's Coll., Richmond  
 Wells, V.W. Streatham Gram. S.  
 Welton, S.C.B. Ilford Coll., Seven Kings  
 Wheatley, W. Grove H., Highgate  
 White, G.L. Taunton School  
 Whitehead, K.B. Cheltona Coll., Streatham  
 Whitaker, R.L. Taunton School  
 Wigful, H.E. St. Boniface's Coll., Plymouth  
 Williams, F. Ascham Coll., Westcliff-on-Sea  
 Williamson, J.E. The Douglas S., Cheltenham  
 Wilson, E.H. Cavendish S., Matlock Bank  
 Wilson, K.W. The Douglas S., Cheltenham  
 Winchcombe, V. St. Joseph's Coll., Norwood  
 Wingate, O.C. Private tuition  
 Wood, H.A. New Coll., Herne Bay  
 Wood, P.R. Sea View Coll., Warrenpoint  
 Woodington, O.W. Streatham Gram. S.  
 Yates, D.C.  
 Lindisfarne Coll., Westcliff-on-Sea  
 Young, F.F. Streatham Gram. S.  
 Young, L.W. Clark's College,  
 Modern S. for Boys, Brixton Hill, S.W.  
 Young, R.S.C. Argyle H., Sunderland

**GIRLS.**

Agnew, E. Sea View Coll., Warrenpoint  
 Ansley, R.  
 Westoe High S. for Girls, South Shields  
 Alfalt, D.  
 Royal Schools for the Deaf, Old Trafford  
 Anderson, A.J.  
 Knock Inter. S. & Kindergarten, Belfast  
 Archer, E.  
 Conv. Holy Faith, Clontarf, Dublin  
 Austin, E.H. North Middlesex High  
 S. for Girls, Tottenham  
 The College, Goudhurst  
 Bates, F.  
 Lytham H., Newton Heath, Manchester  
 Beard, D.M. The College, Goudhurst  
 Beham, C.  
 Holy Faith Conv., Clarendon St., Dublin  
 Blood, A. Sienna Conv., Drogheda  
 Bourke, K. St. Mary's Conv., Bruff  
 Bracewell, M. Vernon H., Higher Broughton  
 Bridger, D. Loreto Conv., Europa, Gibraltar  
 Broadbridge, D.E.  
 Finsbury Park High S., Adolphus Rd.  
 Burkey, K. Princess Gardens S., Belfast  
 Burnside, I. Princess Gardens S., Belfast  
 Burrell, M. Convent High S., Southampton  
 Byrne, M.  
 Holy Faith Conv., Clarendon St., Dublin  
 Canty, J. St. Mary's Conv., Bruff  
 Carey, B. St. Mary's Conv., Bruff  
 Casebourne, N.  
 Ingleby High S., Winchmore Hill  
 Cheswick, R.J. Sangley Hall, Catford  
 Clarkson, E.M. Rhianna Coll., Hunstanton  
 Clune, M.J.  
 St. Mary's Dominican Conv., Kingstown  
 Colfer, M.E.  
 St. Mary's Conv. of Mercy, New Ross  
 Conolly, C.  
 St. Mary's Day S., Glasnevin Conv., Dublin  
 Cook, M.  
 Conv. of the Ladies of Mary, Sanderstead  
 Cople, E.M. St. Edmund's S., Hunstanton  
 Corkeran, B. St. Mary's Conv., Bruff  
 Coughlan, E. St. Mary's Conv., Bruff  
 Crittenden, G.E. University S., Rochester  
 Cullen, J. Dominican Conv., Wicklow  
 Cummin, L.  
 Holy Faith Conv. S., Glasnevin, Dublin  
 Curtin, G.G. Notre Dame High S., Clapham  
 Dawes, P.M.P.  
 Park Coll., Northumberland Pk., Tottenham  
 Delahunty, A.  
 Holy Faith, Mount St. Joseph, Mullinavat  
 Dermody, M.  
 Holy Faith, Mount St. Joseph, Mullinavat  
 Dorling, D.E. The Limes, Buckhurst Hill  
 Duffy, L. St. Mary's Conv., Bruff  
 Dunne, L.  
 Holy Faith Conv., Clarendon St., Dublin  
 Dwane, K. St. Mary's Conv., Bruff  
 Eastwood, M.B. Private tuition  
 Edwards, E.  
 Brook Green Girls' Coll., Kensington  
 Ettridge, A.G. Leslie H., Cheshunt  
 Fagan, B.  
 Holy Faith Conv., Clarendon St., Dublin  
 Fanning, V.  
 Conv. Holy Faith, Clontarf, Dublin  
 Fegan, V.A. Conv. of the Holy Faith,  
 Haddington Rd., Dublin  
 Ferguson, M.C. Ladies' School, Newtownards  
 Fielden, C. Lowther Coll., Lytham  
 Fishwick, R.M. Rhianna Coll., Hunstanton  
 Flint, A.M. Rhianna Coll., Hunstanton

Galway, M.H.  
 Knock Inter. S. and Kindergarten, Belfast  
 Garcia, E. Loreto Conv., Europa, Gibraltar  
 Garry, S.  
 Holy Faith, Mount St. Joseph, Mullinavat  
 Geary, K.  
 St. Mary's Dominican Conv., Kingstown  
 Goary, M. St. Mary's Conv., Bruff  
 Gibbs, D.L. Brownlow Coll., Bowes Park  
 Giblin, M.B.  
 St. Mary's Dominican Conv., Kingstown  
 Gill, A.F. The Friends' S., Mountmellick  
 Gillespy, M.E. The College, Goudhurst  
 Glantz, E.  
 Mansfield Coll., Cliftonville, Margate  
 Glantz, S.  
 Mansfield Coll., Cliftonville, Margate  
 Glasgow, I.L. Princess Gardens S., Belfast  
 Gootley, F.M. The College, Goudhurst  
 Gold, L.S.  
 Mansfield Coll., Cliftonville, Margate  
 Goodman, M.  
 Mansfield Coll., Cliftonville, Margate  
 Goodyear, C.B. Lowther Coll., Lytham  
 Gornall, J. Seaford, Blackpool  
 Gough, E.  
 Holy Faith Conv., Clarendon St., Dublin  
 Griffiths, T. The Newlands, Booter  
 Grimes, F. Conv. Holy Faith, Skerries  
 Groves, O.A. Abbots Hill, West Hampstead  
 Hall, M. Convent High S., Southampton  
 Halligan, M.  
 St. Mary's Day S., Glasnevin Conv., Dublin  
 Hannon, F. Dominican Conv., Wicklow  
 Harrison, I.V. High S. for Girls,  
 Plymouth Grove, Manchester  
 Harvey, A.  
 Holy Faith Conv., Clarendon St., Dublin  
 Harvey, F.W.  
 Westoe High S. for Girls, South Shields  
 Heap, Mabel  
 Conv. of the Ladies of Mary, Sanderstead  
 Heap, Mildred  
 Conv. of the Ladies of Mary, Sanderstead  
 Henderson, K. Lowther Coll., Lytham  
 Hill, D. Conv. of the Compassion, Olton  
 Hinot, M.A.  
 Conv. de la Mère de Dieu, Surbiton Hill  
 Holland, N. Dominican Conv., Wicklow  
 Horwood, R.G.  
 Beaclere H., Sunbury-on-Thames  
 Ingham, E.H.  
 The Convent S., Cadogan St., Chelsea  
 Isaac, G.R. The College, Goudhurst  
 Ivison, C.  
 Conv. of the Ladies of Mary, Sanderstead  
 Jackson, A.  
 Conv. Holy Faith, Clontarf, Dublin  
 Jackson, M.A. The College, Goudhurst  
 Jacob, W.R. The Friends' S., Mountmellick  
 Jinks, G. St. Joseph's Conv., Redhill  
 Johns, M.M.  
 Beaclere H., Sunbury-on-Thames  
 Johnston, M.V. Lowther Coll., Lytham  
 Jonas, E.M.A.  
 Melbourne Coll., Thornton Heath  
 Jones, E.D. Tutorial S., New Quay, Cardigan  
 Jordan, C.M.  
 Melbourne Coll., Thornton Heath  
 Kavanagh, E.  
 Holy Faith, Mount St. Joseph, Mullinavat  
 Kioby, N.E. St. Edmund's S., Hunstanton  
 Knight, M.G. Scarisbrick Coll., Birkdale  
 Lang, M.S.  
 Mansfield Coll., Cliftonville, Margate

Larkin, M.O. French Convent S., Newhaven  
 Leary, E.M. Richmond High S., Liscard  
 Leigh, M. Scarisbrick Coll., Birkdale  
 Levy, L.M.  
 Mansfield Coll., Cliftonville, Margate  
 Lightfoot, M. Dominican Conv., Wicklow  
 Lord, E. Linwood S., Altrincham  
 Luckhurst, I.D.  
 The Convent S., Cadogan St., Chelsea  
 Marker, M.  
 Melbourne Coll., Thornton Heath  
 Marnell, W. Dominican Conv., Wicklow  
 Mason, D.E.  
 Westoe High S. for Girls, South Shields  
 Matthews, R.G. Holmea, Ongar  
 May, A. Conv. Holy Faith, Skerries  
 McDermott, N. Dominican Conv., Wicklow  
 McDonnell, J. Sienna Conv., Drogheda  
 McEnery, E. Dominican Conv., Wicklow  
 McGrath, I.  
 Conv. Holy Faith, Clontarf, Dublin  
 Mills, E. Brent Hill S., Hanwell  
 Mitchell, J.E. Frobisher Terrace S., Falmouth  
 Mockford, M.K.  
 French Convent S., Newhaven  
 Conv. of the Holy  
 Faith, St. Dominick St., Dublin  
 Murphy, M.  
 Conv. Holy Faith, Clontarf, Dublin  
 Murto, K.  
 St. Francis Xavier's, Gibraltar  
 Mutlow, W.A. Anby H., West Hackney  
 Newby, M.M. Southoe H., Richmond  
 Nichols, W. Notre Dame High S., Clapham  
 Noble, D.G. Stamford H., Bourne  
 Nuttall, M.I. Ivydene, Blackpool  
 O'Brien, A. St. Mary's Conv., Bruff  
 O'Brien, M.  
 St. Mary's S., Conv. of Mercy, New Ross  
 O'Connell, M. St. Mary's Conv., Bruff  
 O'Connor, K.A. Sea View Coll., Warrenpoint  
 O'Driscoll, A. Conv. Holy Faith, Skerries  
 O'Reilly, M.  
 St. Mary's Day S., Glasnevin Conv., Dublin  
 O'Yell, A.I. Leslie H., Cheshunt  
 Pace, I.D. The College, Goudhurst  
 Palmer, H.D.  
 St. Ursula's S., Westbury-on-Trym  
 Palmer, M.A. Anby H., West Hackney  
 Parkinson, M.C. Notre Dame High S., Clapham  
 Penn, I.M.  
 The Convent S., Cadogan St., Chelsea  
 Percy, E.M. Minshull H., Beckenham  
 Perkins, O. Preswylfa Girls' High S., Cardiff  
 Pickering, M. Airedale H., Horsforth  
 Pickup, E. Seaford, Blackpool  
 Pinn, F.D. The Friends' S., Mountmellick  
 Pinn, L.B. The Friends' S., Mountmellick  
 Postans, H.M. Oxford House, Woodbridge  
 Poulten, A.P. The College, Goudhurst  
 Powell, A. Conv. of the Compassion, Olton  
 Powell, L. Dominican Conv., Wicklow  
 Power, K.  
 St. Mary's Dominican Conv., Kingstown  
 Price, G.E. Athena House, Lewisham  
 Price, M. Notre Dame High S., Clapham  
 Price, P. Notre Dame High S., Clapham  
 Priest, D.S. Conv. of St. Maur, Weybridge  
 Priestley, J. Convent High S., Southampton  
 Quigley, M.A.  
 St. Mary's S., Conv. of Mercy, New Ross  
 Raynaud, A.C. St. Mary's Coll., Barnes  
 Robin, P. Brent Hill S., Hanwell

Rogan, N.  
 Holy Faith Conv., Clarendon St., Dublin  
 Russan, L. Conv. of St. Maur, Weybridge  
 Ryan, E.  
 Holy Faith Conv. S., Glasnevin, Dublin  
 Ryan, M.  
 Holy Faith, Mount St. Joseph, Mullinavat  
 Sacarello, R. Loreto Conv., Europa, Gibraltar  
 Sanders, I. Notre Dame High S., Clapham  
 Sara, M.E. Frobisher Terrace S., Falmouth  
 Scribbit, M. Scarisbrick Coll., Birkdale  
 Scullard, V. Convent High S., Southampton  
 Shelley, E.D. Preswylfa Girls' High S., Cardiff  
 Shelley, E.F. Preswylfa Girls' High S., Cardiff  
 Shorey, D.M. The College, Goudhurst  
 Slattery, J. St. Mary's Conv., Bruff  
 Smith, V.E. Princess Gardens S., Belfast  
 Smith, W.M. Southoe H., Richmond  
 Smyth, V.I.T. The Friends' S., Mountmellick  
 Stephenson, T. Dominican Conv., Wicklow  
 Stewart, E. Ladies' School, Newtownards  
 Stewart, E.M. Scarisbrick Coll., Birkdale  
 Stone, J.C. Private tuition  
 Sufferin, T.E.M. Princess Gardens S., Belfast  
 Sweeting, L.A.  
 St. Ursula's S., Westbury-on-Trym  
 Talbot, K.D. Private tuition  
 Talent, L.K.  
 Royal Schools for the Deaf, Old Trafford  
 Taylor, J. Brent Hill S., Hanwell  
 Thery, L.  
 Conv. de la Mère de Dieu, Surbiton Hill  
 Thompson, M. Richmond High S., Liscard  
 Thornhill, J. St. Mary's Conv., Bruff  
 Tibbs, L. Conv. of the  
 Holy Faith, Haddington Rd., Dublin  
 Tingley, L.M. University S., Rochester  
 Tomkins, D.M. St. Mary's Coll., Barnes  
 Towler, A. Lowther Coll., Lytham  
 Underwood, P.M. Rhianna Coll., Hunstanton  
 Vane, D.F. The College, Goudhurst  
 Vane, V.M. The College, Goudhurst  
 Van Noyen, D.G.  
 Girton H., Fairfield, Liverpool  
 Vincent, V.A. Brownlow Coll., Bowes Park  
 Vinson, G.I. University S., Rochester  
 Von Ew, R.  
 The Convent S., Cadogan St., Chelsea  
 Wade, S. The Haughton S., York  
 Wade, T. Dominican Conv., Wicklow  
 Wagner, B.P. Private tuition  
 Walsh, B.M. Conv. of Mercy, New Ross  
 Walsh, E.  
 Holy Faith Conv. S., Glasnevin, Dublin  
 Ward, W.E. The College, Goudhurst  
 Warr, E.B. 268 Wightman Rd., Hornsey  
 Watson, J.  
 Westoe High S. for Girls, South Shields  
 Watson, K.B. Rhianna Coll., Hunstanton  
 Watson, W.E. Rhianna Coll., Hunstanton  
 Watts, P. Notre Dame High S., Clapham  
 Weightman, M.E. St. Mary's Coll., Barnes  
 Wells, S. Minshull H., Beckenham  
 Wenborn, D. Convent High S., Southampton  
 Weston, V. Convent High S., Southampton  
 Wheatley, E. Conv. of the  
 Holy Faith, St. Dominick St., Dublin  
 Whitaker, J. Conv. of the Compassion, Olton  
 Williams, E.H. Southoe H., Richmond  
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# THE EDUCATIONAL TIMES,

AND

Journal of the College of Preceptors.

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For Syllabus, see page 360.

### EXAMINATIONS.

**Diplomas.**—The Winter Examination of Teachers for the Diplomas of the College will commence on the 29th of December, 1913.

**Practical Examination for Certificates of Ability to Teach.**—The next Practical Examination will be held in October, 1913.

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I. (Sept. 25.) *The Practical Teacher.*—Meaning of the term: general contempt for theory: nature of theory: its inevitableness: rule of thumb itself based on a theory: teachers by the grace of God: relation of theory to experience: practical dangers of lack of theory: the doctrinaire and the empiric: the pedagogic type of mind and its distribution: unintelligent demand for mechanical directions: real dignity of the profession lies in the fact that such directions are not enough: the practical teacher *must* use his intelligence if he wishes to succeed.

II. (Oct. 2.) *Class Management.*—Nature of a class: difference from a group of individuals: "sympathy of numbers": fallacy of "the average": common and peculiar qualities: the class as unit: class leaders and their manipulation: laws of interaction among the elements of the class: troublesome elements and their treatment: size of the class: personality of the teacher: fabled power of the eye: different ideals of class discipline: "talking" in class: possibility of teaching on discipline maintained by another: the old "discipline master."

III. (Oct. 9.) *Preparation of Schemes of Work.*—Contrast with former plan of prescribed courses: internal *v.* external control: the teacher's opportunity of independence: selection of basis: degree of detail—exoteric and esoteric: need for elasticity: place for rigidity: correlation with other subjects: co-operation of specialists and ordinary class teachers: class unit and school unit: relation to capacity and attainments of teacher.

IV. (Oct. 16.) *Home-work and Corrections.*—Spheres of the parent and the teacher in relation to school work: parent as teacher: parent as "preparation master": "causing another to learn": special characteristics of home-work: principles on which amount and kind of home-work should be determined: unit of home study: dangers of home study with special reference to the nature of the home: marking written work: misdirected energy in correction: the pupil's responsibility, the class teacher's, and the head teacher's.

V. (Oct. 23.) *How to Study.*—Learning from the pupil's point of view: absence of desire to know: how to rouse it: even when desire is roused there is difficulty enough: pupils naturally ignorant of how to study: teacher usually takes too much for granted: prescription of work to be done: kinds of learning: reproduction test: the dynamic test: constructive learning: rhythm of learning: concentration and diffusion: fallacies about thoroughness: temporary and permanent learning.

VI. (Oct. 30.) *Textbooks.*—Teacher's relation to textbook: nature of textbook: authority of textbooks: dangers of the use of textbooks: correlation of textbooks with work of class: tests of a good textbook: print and illustrations: pupil as his own textbook maker: advantages and dangers of note-taking by pupils: the note-book as textbook: edition difficulties and difficulties with publishers: the economic question: ownership of textbooks.

VII. (Nov. 6.) *The Teacher's Reading.*—The reproach of publishers: teaching "the inarticulate profession": urgent need of general reading to counteract the narrowing tendency of the profession: special reading of two main kinds, (a) the literature of the teacher's "subject," *i.e.*, his speciality, (b) the literature of education generally: possibility of excess of educational theory: newer class of literary presentation of educational problems: practical help to be had from such books: suggested minimum professional library for the teacher.

VIII. (Nov. 13.) *The Pupil's Charter.*—Demand for perfect naturalness of pupil: self-expression *v.* self-realization: demand for absolute freedom: Madame Montessori's System: Count Tolstoy's anarchic school: Froebel's "a passivity, a following": these different but not irreconcilable views: caprice *v.* freedom: self-imposed restrictions involved in freedom: subjective limitations of freedom increase with the aid of the pupil: corresponding regulation of school control: from educand to educator.

IX. (Nov. 20.) *Artifices in the Schoolroom.*—School an artificial society based on recognized convention deliberately adopted: distinction between education and pedagogy: M. Boutroux' attack on pedagogy: manipulation of the school environment: Rousseau: interference with the ordinary laws of development: school stage-management: the teacher as actor: nature and human nature: various grades of truth: parallel restrictions of liberty in school and in world: the schoolmaster and the World Spirit.

X. (Nov. 27.) *Teaching Devices.*—As result of much theorizing a certain number of practical hints are now made available for teachers: the vacuum: mistake traps: anticipatory illustrations: the manipulation of rule and exception: the awful example: the use of the standard: mnemonics legitimate and illegitimate: fixing the alternative: learning by rote: cram, benevolent and malignant: the arithmetical challenge: elaboration: manipulation of suggestion in both its positive and its negative form.

XI. (Dec. 4.) *Use of Apparatus.*—Distinction from furniture: danger of being dominated by apparatus: over-elaborate apparatus: ready-made and home-made apparatus, permanent and temporary: hints for preparing apparatus: various kinds of school maps: the optical lantern: various kinds of blackboards: mechanical aids to blackboard drawing: coloured chalks: optics of the blackboard: eye-strain and how to prevent it: writing and drawing on blackboard: uneducational and excessive use of the blackboard.

XII. (Dec. 11.) *External Authorities.*—The teacher's many masters: their different kinds of authority: how to deal with authorities that are inconsistent with each other: need for the teacher to study adult psychology: need for sympathetic treatment of the official in order to get best educational results: the surd of freedom as found in case of class-teacher: the distribution and dissipation of responsibility: result on teacher's freedom: danger of teacher's failing to take advantage of what freedom is left him.

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The Educational Times.

THE HALF OR THE WHOLE.

We all know that mental activity is freed, developed, and rendered available as a sequel to muscular activity. Doctors tell us that, if we want to develop the brain, we must do so through the muscles of the hand, which is the chief agent of human activity. The child spends years in practising the muscles of his hands, touching, feeling, opening, pulling to pieces everything he can get hold of. The Divine patience of mothers with restless children is a necessary factor in human growth. All through the nursery stages the awakening of the mental powers comes gradually with the increasing activity and security of the movements of the muscles of the hand. In the first years of school life, up to the age of six or seven, education is given mainly through the senses, and, in particular, through the sense of touch, which brings into play the muscles of the hand. Children who are classed as mentally defective are those who show little manual activity, and the key to their minds is found in the use of the hand.

A convention which, so far as we can discover, has never been assigned to any scientific basis requires that the right hand should be used more constantly than the left hand. Certain children appear to be born with a tendency to use the left hand in preference to the right. There are cases on record where the parents have endeavoured to force the use of the right hand, thereby producing definite physical or mental evils. But whether children have a tendency to use the right or the left hand, or whether, as in the majority of cases, there is no marked preference at all, we have strong medical evidence to show that the left hand may be trained to as great expertness and strength as the right. Sir Thomas Oliver tells us that there is not the slightest reason why ambidexterity should not be taught in schools. The left hand gets some training. Nature sees to that. Children in their games use their left hands to some extent, though

parents' admonitions and comrades' laughter soon transfers the bulk of the work to the right hand.

But it is in school, after the kindergarten stage, that the right hand gradually comes to receive more and more training. One of the most important developments that have recently taken place is the introduction of what is called manual instruction in schools. But this at present is very limited. The real, important manual work that every child practises is handwriting. Many hours in the week are spent in writing with the right hand, while the left remains quiescent. The result appears to be the development of the left side of the brain as the speech and language centre. The medical authority we have quoted before says : " It is owing to the more frequent use of the muscles of the right hand, and especially the finer movements of the muscles of the hand, that the nerve cells which regulate and control the motor mechanism of speech come to be located in the left side of the brain." There is not the slightest reason, we are told, why ambidexterity should not be taught in schools. And we have authority for the statement that, if writing with the left hand is acquired, all other left-handed activities follow.

The key to the situation is to be found in handwriting. for this is a delicate operation involving long practice of the finer muscles of the hand. Any school examiner knows that handwriting has deteriorated in recent years ; he also knows that slovenly, loose, and formless handwriting goes with careless thinking. In an age when we are learning that mental power depends upon muscular activity we have allowed the finest exercise in the manipulation of the muscles of the hand to lose much of its force. The present state of things is a reaction against the over-formalism of an earlier generation. Handwriting as a manual art was killed by the development of "copper-plate." We have much leeway to make up in this direction, and when we have done this we may consider whether, by training both hands, we may not develop both sides of the brain and increase greatly the mental powers of our pupils.

The value of ambidexterity cannot be doubted. In music, in games and sport, in surgery, in drawing, in

warfare, in every human activity, the man who can use his left hand in addition to his right takes the lead. If we practised left-handed writing we should hear no more of writers' cramp. In schools where ambidextral writing is practised, we hear favourable reports of the progress of the pupils. Right-handedness is a convention which does not appear to have any biological basis. It has, undoubtedly, produced some evils, which might be removed by the development of equal skill in both hands. The points we wish to bring forward are these: it is realized that mental efficiency depends largely on manual dexterity. Yet we neglect and belittle handwriting, which is one of the most delicate exercises for the finer muscles of the hand, and is, further, practised in all schools. When we are convinced of the value of handwriting as a manual exercise we may go on to consider whether, if the skill of the right hand produces language centres in the left side of the brain, equal skill in writing with the left hand would not produce additional language centres in the right side of the brain. By bringing into activity the whole of the brain instead of half, we may reach a higher stage of mental power. We are indebted for much of the information upon which this article is based to Mr. John Jackson, founder and Hon. Secretary of the Ambidextral Culture Society, who has devoted many years of hard work to spreading these views.

## NOTES.

THE King's Speech at the opening of Parliament in March included the announcement that "proposals will be submitted to you for the development of a national system of education." The Session has closed and no Education Act is inscribed on the Statutes. But the proposals have been submitted in the House by Mr. Pease, in the country by Lord Haldane and Lord Crewe. It soon became evident that the wide measure of reform suggested could not be passed into law during the Session. Parliament follows and does not lead public opinion. Until the country is convinced that education, from top to bottom, must be placed under control and must be generously subsidized, an Education Bill of large scope has no chance in the House of Commons. We say with regret that, in spite of Lord Haldane's crusade, the country is not yet convinced of the value of organization and of the need of the expenditure of another dozen millions. But the time has not been wasted. The seed has been sown, and with hard work, and enthusiastic work, we may see the fruit in a few years.

MR. PEASE's little Education Bill, by which the sum of £100,000 was to have been distributed to Local Authorities in the form of building grants for elementary schools, was dropped. The Bill was regarded by the Opposition as controversial, and in such circumstances, said the Prime Minister, it was impossible for the Government to pass it

during the Session. It is said that the National Society disliked the policy of building grants, and therefore opposed the Bill. No statement has yet been made about the ultimate destination of the £100,000 that the Treasury had been persuaded to grant for educational purposes. The Session, therefore, leaves the Local Authorities in the same position as before. They feel strongly that, in view of the increasing burdens laid upon them by Parliamentary action, they ought to receive larger grants from the Treasury. For years they have been dissatisfied; we may expect before long a more serious protest from them. In our opinion, the sum assigned under the defunct Bill was too trivial to matter. If the much-needed improvements are to be brought about in national education, the Treasury must find millions, not thousands.

THE Government have been no more successful in meeting the grievances of the Free Churches. Since the Act of 1902 was passed the Nonconformists have endeavoured to bring about such an alteration of the law as would prevent them from being compelled to send their children to Church of England schools in single-school areas. Like the Local Authorities, they have met with promises alone. The Session ended with a very definite promise from Mr. Asquith that the Government intended to introduce next Session a Bill dealing with this grievance. Dr. Clifford writes to the newspapers in fiery indignation to point out that the golden opportunity has been lost, for a Bill introduced next Session cannot be secured under the Parliament Act. He points out that in educational matters the Liberals do not rule, but are under the domination of the Tory majority in the Upper House. The grievance of the Nonconformists is an acute one, and it seems likely that the passive resistance leagues will awake into fresh life and organize another campaign of protest.

THE Report of the Consultative Committee on Practical Work in Secondary Schools, to which we made a brief allusion last month, contains a large amount of valuable information as to courses of practical work that are carried out in secondary schools, girls' and boys'. The Committee are convinced that practical work is necessary, and they say so with conviction. They are equally certain that the practical work should be correlated with the book work—i.e. that it should be an integral part of the curriculum and not a mere excrescence. They point out that secondary education in the past has been too exclusively concerned with the cultivation of the mind by means of books and the instruction of the teacher. The volume includes several time-tables that are in use in different schools, and also the views of a number of important witnesses. The Report does not claim to be a fresh message. The Committee have inquired into and written down the practice of the most enlightened schools, and they bid the rest do the same.

THE Committee point out a definite weakness in the organization of many schools in reference to manual work. In modern infant schools handwork predominates. Then comes a quite sudden and unscientific transition to a timetable based almost entirely upon bookwork. And a small dose of manual instruction is given later for a year or two of the school course. This cannot be sound. "The restlessness," say the Committee, "often shown by children after leaving the kindergarten is probably largely due to this break with the methods by which their minds have hitherto been trained." This abrupt transition is undoubtedly a source of weakness. After the kindergarten stage there must certainly be an increasing amount of purely intellectual education; but the manual activities must not be entirely discontinued. To quote once again: "It must be an unnatural method of education to confine a child's school work to the mental processes that centre round books, and to neglect to foster those activities of mind, hand, and eye that are demanded when dealing with concrete things."

THE divorce between principle and practice in educational matters is frequent enough. The Consultative Committee emphasize one instance of this. "The principle," they say, "that the hand should receive systematic training for the performance of its functions is not yet widely recognized in practice, however little any one would dispute it in theory." "Learn by doing" is the motto that this generation needs. Since the advent of inspectors and training colleges, the contrary has been the practice in schools. However fiercely many teachers might dispute the assertion, we are convinced that the practice in schools generally is based upon the motto "Learn by listening." The teacher exhausts himself in explanations and precepts, while the child remains passive. "Surely you must know that!" exclaims the teacher; "I have told it you a dozen times." Yes, but how many times did the child do it? Children prefer arithmetic to French, because in the arithmetic lesson they are doing sums; in the French lesson they are listening to advice on the avoidance of grammatical blunders.

THE system of learning by doing, which is advocated by the Committee, receives an apparent contradiction in the chapter on Rural Secondary Schools. The Report quotes the "pregnant warning" from the evidence of a witness to the effect that too much practical work tended to suppress the desire for reading and the pursuit of knowledge through the more difficult lines of study. The witness is Mr. Smith, Head Master of Sexey's School. He said that the farmers rarely read even up-to-date information about their own special work. Their business had been learnt by hard practice in actual contact with the soil and by word of mouth, with very little book knowledge. "This

attitude of mind in their children," says Mr. Smith, "it is the aim of the school to eradicate." We wish Mr. Smith had phrased it rather differently. The boys come to school with a large amount of knowledge based upon manual work on the soil. The function of the school is to introduce the pupils to other sources of knowledge, and to eradicate the idea, if it exists, that the sound knowledge gained by actual contact with the soil cannot be enlarged by other means.

EVERY instrument, however valuable, has its limitations and restrictions. Examinations are no exception to the rule. The Consultative Committee cannot help feeling that handwork in secondary schools is checked by examination difficulties. "One of the main difficulties," they say, "at present in the way of handwork subjects attaining their proper place in the secondary school is the fact that external examinations give little or no recognition to proficiency in these branches of work." They refer the reader to their recent report on examinations and again recommend the appointment of the interview-examiner, as handwork cannot be examined by means of written answers to questions. "We consider," they continue, "it essential to the existence of handwork as a living study in secondary schools that it should be recognized in any examination scheme that may be devised, because, if it is not, the pressure of circumstances will inevitably lead to its being ousted from the curriculum, however well disposed teachers and pupils may be towards it." This is certainly true. Handwork still suffers from the contempt of the intellectuals. The subject cannot take its proper place until it is put on an equal footing with other school subjects.

THERE is some valuable information in the Report that we are discussing on the much disputed question of the effect of handwork on the other subjects taught. Strong evidence is given that the time spent on manual work reacts favourably on the book lessons; and that pupils who give a certain proportion of time to handwork reach the same level at least as those who spend the whole time on bookwork. Dr. McClure, in giving evidence, expressed the view that dull boys were rare, but that certain boys would not make progress in mathematics or science so long as they were restricted to bookwork; that such boys by means of manual work gained a quickened and more intelligent appreciation of their bookwork. He also thought that certain other boys gained nothing at all from handwork. There were, he said, two minorities—those who would never gain by manual work and those who would gain more by manual work than in any other way. Mr. Sanderson, of Oundle, did not think that dull boys were common, though some boys were better able "to think in things." So-called dull boys, he said, were quite successful in after life.

If handwork is to take its proper place in secondary schools, the provision of suitable teachers is essential. In general intellectual equipment and in social standing the teachers of manual work should be on an equal footing with the rest of the staff. This point affects the Universities, as it is clear that the Universities must consider how they can provide increased facilities for the study of these subjects, combined with their recognition by means of diplomas. In giving evidence on this part of the inquiry, Dr. Percy Nunn pointed out that the standard of the pass degree examinations in London University was abnormally high—out of proportion to the pass degrees of Oxford and Cambridge, for example. The effect, he said, was serious, and it would be a great advantage to remove the idea that London must keep up this high standard in the case of its internal students. This opinion will not, of course, meet with universal acceptance, but the severity of the examinations as they exist not only compels students to overwork, but no time is left for preparation in the art of teaching.

HOUSECRAFT is, we suppose, the usual subject taught in girls' schools to meet the claims of manual instruction. Miss Dove, Head Mistress of Wycombe Abbey School, at the time the evidence was given, is quite sure that, although it is most desirable that girls should understand housecraft, it is not the function of the secondary school to teach it. Miss Dove is convinced of the value of handwork. She said that pupils came to Wycombe Abbey at the age of about thirteen or fourteen. They mostly came from country homes, where they had done nothing, with the consequence that they were often clumsy and stupid. The curriculum at Wycombe includes several subjects of handwork, one or more of which each girl must take. The subjects are plain and art needlework, bookbinding, carpentry, and gardening. Miss Dove spoke of the great value of the manual occupations in developing the intellectual powers of the girls, and teaching them many useful qualities.

SOME six years ago the Board of Education issued a circular advocating the pronunciation of Latin according to the scheme put forward by the Classical Association and approved by other associations of teachers and by philological societies. Mr. Bruce now issues another circular pointing out that the scheme has been adopted to such an extent that uniformity can be assured only by continued adherence to it. Attention is called to the uncertainty and carelessness that still exist in the pronunciation of Latin, and in particular to the disregard of quantity and accent. It is pointed out that in some cases the use of the spoken language is confined to the repetition of the paradigms of substantives and verbs, with the result that the pupils form the habit of laying stress upon the last syllable of a word, and thus learning wrong stress, which

inevitably leads to wrong quantity. The object of the circular appears to be to urge those schools that have not yet adopted the standard pronunciation to do so. The scheme of pronunciation is given in the circular.

WE wish to call attention to an endeavour on the part of a few earnest workers to provide homes for children who are destitute or improperly cared for, in which the principles of universal citizenship and true patriotism shall be inculcated. The homes would accommodate six to twelve children in each, and would be in charge of a married couple or of two friends, one of whom shall have had some training in educational work. Enough garden land would be secured to enable vegetables and fruit to be grown. Handicrafts would be taught, that the children might grasp the idea of independence. Questions of diet and wearing apparel will be carefully considered. The promoters feel that the effect of such an endeavour to pursue the happy mean between dependence and independence in regard to the developments of civilization can hardly be overestimated, and that the conservation of life and energy that is bound to follow will provide a rich inheritance for the generations to come. Information about the scheme will be given by Mr. William J. Tull, St. Faith's, Sollershot East, Letchworth.

THE Carluke School Board have won a certain notoriety by adopting a novel method of making appointments, if we may credit the account given in the *Edinburgh Evening Dispatch*. Two vacancies for teachers were announced and over one hundred applications were received. Nine of the applicants were local ladies. After some discussion the Board decided that they could not go through all the applications, but that they would put the names of the nine local ladies in a hat and appoint the first two that should be drawn out. At first sight this seems an unscientific method; but a little reflection convinces us that the Board acted wisely. All the ladies were qualified, and the Board admitted their inability to make a wise selection. Two further reflections may be permitted. In the first place, it was obviously unfair to allow a hundred teachers to go to the trouble and expense of preparing testimonials that were not to be looked at; and secondly, it is clear that the appointment of teachers should be in the hands of persons with sufficient knowledge to enable them to sift testimonials and decide between rival candidates.

In a recent number of *Punch* there was a story of a child who visited the Zoological Gardens, and came home delighted because she had seen a mouse. The larger and strange animals left her cold. There is a moral in this story that might well be taken to heart by those who prepare books for young children. Mothers, nurses, and governesses search in vain, among the quantities of books



that are produced each Christmas, for anything that is suitable for very young children. Very young children like pictures of objects or animals with which they are familiar. The tea-kettle or the cat delight them; but the gollywog or the elephant have no charm. The first stage in the use of books consists in the recognition of objects that are known. In this way the children come to understand what a picture is. Pictures of unknown objects fail to interest, and are listlessly laid aside. Both in books and toys the providers seem to have in view the adult purchaser rather than the infant user. Something novel, something curious, something startling, attracts the thoughtless grown-up, is taken home, and thrown into a cupboard. Simplicity and familiarity should be the publishers' watchwords.

At the educational conference last Easter, held in connexion with the International Kinematograph Exhibition at Olympia, a committee was appointed to draw up a circular letter to Local Education Authorities, calling their attention to the urgent need of utilizing and controlling moving pictures for educational purposes. This circular has now been issued, mainly through the activity of Mr. A. P. Graves, late Inspector to the Board of Education. Mr. Graves has collected a large amount of information from various countries to show how harmful the Kinema exhibitions may be to children if no control is exercised. We believe that moving pictures will play an important part in education; but we do not believe in the educational value of the Kinema exhibitions as they are usually given. The Local Authorities ought to exercise the powers they possess, or acquire further powers if necessary, in order that school children may be prevented from attending public exhibitions that are not suitable for them.

THE Master of Dulwich finds fault with lawn tennis as school game; and considerable discussion in the newspapers has followed his strictures. Some time ago the mind of the grammar school boy was fed on Latin with a modicum of mathematics. Now school subjects tread so rapidly on one another's heels that the compilation of a school timetable is a complex affair. But football and cricket have persisted with little opposition from rival games. Perhaps the time is coming when we shall pause to consider whether, if different children need different mental pabulum, a similar variety in games may not prove necessary. The main argument in favour of the prevailing games is that they encourage corporate action and develop corporate feeling. Other games give more scope for individual energy. One regretted result of the prevalence of cricket and football is that many simple, natural games have fallen into contempt. These were healthy games and required little apparatus or space. The boy who plays cricket despises leapfrog; but sometimes he is bored with cricket. Though he does not know it, what he wants is variety.

## SUMMARY OF THE MONTH.

MR. KING asked the President of the Board of Education, on August 4, whether he could make a statement about the appointment of the new class of Assistant School Inspectors who had been selected from the ranks of elementary teachers; how many candidates offered themselves for those posts; and how many had been appointed. MR. J. A. PEASE replied: 1,267 candidates applied for appointment as Assistant Inspectors. 168 of these candidates were interviewed by a Selection Committee which I appointed for the purpose. After considering the report presented to me by the Committee, I interviewed 25 of these candidates and have selected 15 of these for immediate appointment.

THE President of the Board of Education has appointed a Departmental Committee to inquire and report, after consultation with the bodies and persons concerned, as to the steps by which effect shall be given to the scheme of the Report of the Royal Commission on University Education in London, and to recommend the specific arrangements and provisions which may be immediately adopted for that purpose and as the basis of the necessary legislation. The Committee is as follows:—Sir George H. Murray (chairman), Sir L. Amherst Selby-Bigge, Sir John Rose Bradford, Sir William S. MacCormick, Dr. George Franklin, Dr. Arthur Keith, Mr. John Kemp (barrister-at-law), and Mrs. Henry Sidgwick, with Mr. H. F. Heath, C.B., as Secretary.

MR. HOARE asked the President of the Board of Education, on August 6, whether he could give the House any approximate estimate of the number of secondary schools in England and Wales other than those which received rate or State aid. MR. J. A. PEASE replied: In addition to the secondary schools in receipt of grants there are 101 schools which have been inspected by the Board and recognized by them as efficient. From the Public Schools Yearbook, the Girls' School Yearbook, and a published list of preparatory schools, it would appear that there are, in addition, 376 preparatory schools for boys, 386 secondary schools for boys, and 227 secondary schools for girls. No approximate estimate can be given of the total number of private schools outside the above categories, but it probably amounts to some thousands.

THE Appointments Board of the University of London reported to the Senate in June that since the appointment of a full-time Secretary the work of the Board had increased to a very considerable extent. The Secretary had visited permanent officials of many Government Departments, and received promises of support in the work of the Board; he had also visited the officials of the Oxford and Cambridge Appointments Board, the Teachers' Registration Council, and a number of principals, head masters, head mistresses, and secretaries of educational organizations. The London Chamber of Commerce, the Association of University Women Teachers, the Central Bureau for the Employment of Women, and various colleges and schools had expressed their readiness and desire to co-operate with the Board. Upwards of two hundred graduates and students had visited the Secretary—many to seek specific advice. The Secretary (Dr. A. D. Denning) will be pleased to give further information, and to see graduates at the Central Offices of the University, South Kensington (Room 23), on Wednesday afternoons 2 to 5, or Thursdays 12 to 1.30, or at other times by arrangement. Educational Authorities, business firms, and others having openings for graduates, are asked to inform the Secretary, who will forthwith notify the more suitable available graduates on his registers, and use every endeavour to secure the candidature of the most capable applicants. Approximately a thousand posts have been notified to suitably qualified graduates registered with the Board within the last three months and many appointments secured. Further

registrations of well qualified graduates and students are now necessary.

THE Carluke School Board adopted an unusual method of appointing two lady teachers to vacancies on their school staffs. The vacancies were at Carluke Junior School and Law School, and the clerk intimated that he had received over a hundred applications from teachers residing in all parts of the country. Nine of the applicants were local ladies. The question as to whether the Board should go over the whole of the applications with a view to drawing up a short list, or should make the appointments from among the local applicants, was discussed at some length, and on a vote being taken the latter course was decided on. A motion was then made to the effect that all the nine names should be put into a hat, and that the first two names drawn should be the teachers appointed, and this was carried by a majority of one. One member termed it "gambling with the reputation of teachers," while another expressed himself to the effect that the method was "a bit unmanly." The lots were drawn, however, and the two teachers declared appointed, and lots were also drawn to decide to which of the schools the ladies should be sent.—*Edinburgh Evening Dispatch*.

MR. LEACH asked the Prime Minister, on August 13, if the Patronage Secretary to the Treasury was speaking on behalf of, and with the authority of, the Government when addressing a meeting on the education question at Shipley, on Saturday, May 3, in saying that it was a scandalous humiliation that scores of good men—the best men in the land—through the inequality and the injustice of the present law, should have been compelled to passively resist, that of that fact the Government was deeply conscious, and that he was able to say to Nonconformists that in any Educational Bill introduced by the Government the first consideration would be the removal of this grievance. Mr. ASQUITH replied that the Government were fully aware of the importance of this matter, and the speech of the Patronage Secretary to the Treasury, to which reference was made, expressed generally the Government's views. The Government intended to introduce next session a Bill dealing with this grievance.

"I BELIEVE myself, and from considerable first-hand experience, in the aims and methods of the Board of Education. I think that at the present moment, at all events, the Board is most anxious to try experiments and to receive suggestions. Where they have suffered in the past is in the fact that the officials who had to initiate and design a scheme of education were of too intellectual and even doctrinaire a type; and the type of English elementary education was therefore designed too much with a view to general culture, and too little with a view to civic efficiency and to local needs and conditions. But a real elasticity seems to me to be increasingly the note of the Board's policy, and the whole situation appears to me to be hopeful and expansive."—Mr. A. C. BENSON, in the *Review of Reviews*.

"BEFORE, therefore, the kinematograph can be incorporated amongst our teaching apparatus, certain safeguards will have to be adopted; exciting scenes will have to be avoided; the films will have to be prepared by educational experts; they must not be passed too rapidly before the children's eyes, and, therefore, only a limited number of them should be employed for a single lesson. Lessons illustrated by the kinematograph should not be given to any class more than once a week, and, in lessons on Nature study and science, the children's own powers of observation should not be interfered with by presentations of growth and change in vegetable and animal life, which have not, as far as possible, been followed by them."—From a Circular Letter to Local Education Authorities issued by a Committee of the International Kinematograph Conference.

Mr. C. BATHURST, on August 11, asked the President of the Board of Education if he could say whether—and, if so, to what extent—kinematograph films are now being used in the teaching of history, geography, or other school subjects in elementary, secondary, technical, or continuation schools; and whether, failing such present use, and considering the educational value of such pictorial representations, the Board is prepared to authorize Local Education Authorities to employ such methods of instruction within their administrative areas?

Mr. TREVELYAN: The use of the kinematograph for purposes of class instruction is very rare in those schools which come within the cognizance of the Board, though one or two instances are known to them. Its adoption by Local Education Authorities does not require the Board's authorization. The Board are making inquiries into the subject, but until further evidence is forthcoming they are not prepared to express any opinion on the value of this method of instructions, which, as the hon. member is probably aware, is still a matter of controversy among educationists.

Mr. C. BATHURST: Does that reply mean that the Board of Education would not approve of the Local Education Authorities themselves advocating the use of such films?

Mr. TREVELYAN: The Local Education Authorities do not require the Board's authorization.

THE Visual Instruction Committee of the Colonial Office has issued a book of lantern lectures on Canada and Newfoundland—the fourth of a series for which a special fund was raised by a Committee of ladies presided over by the Countess of Dudley and under the patronage of Her Majesty the Queen, then Princess of Wales. The book, which is illustrated by maps and views, is being published by Messrs. George Philip & Son, and the slides, as well as those previously issued by the Committee, may be bought or hired from Messrs. Newton & Co., of 37 King Street, Covent Garden, W.C. The Committee will next issue a set of lectures on South Africa, and lectures on the West Indies are being prepared. Books on India, the Sea Road to the East, and Australasia have already been published.

### YORKSHIRE SUMMER SCHOOL OF GEOGRAPHY AT WHITBY.

FROM August 4 to 23 about a hundred and twenty students from all parts of the United Kingdom have been regularly attending the lectures and classes of the above school, which was initiated by the University of Leeds, and has just completed successfully its first meeting at Whitby. The syllabus was unique in that the attention of students has been concentrated on one area only—namely, that of Yorkshire—the structure, climate, historical and economic geography of which have been studied successively.

Prof. P. F. Kendall (Leeds University) gave five lectures on "The Physical Structure of Yorkshire," and paid especial attention to historical geology and to the glacial phenomena of the Cleveland area. Concurrently with the above course, Mr. A. Gilligan (Leeds University) gave practical demonstrations of the physical structure and properties of the chief Yorkshire rocks; and the same gentleman was responsible for the lectures on Yorkshire mining and meteorology and on the North Sea.

Among the most interesting and the most appreciated of the lectures were those of Mr. Sydney D. Kitson, well known in Yorkshire for his lectures as for his creative work in architecture; of Mr. W. C. Collingwood, F.S.A., an authority on Saxon and Danish Yorkshire; of Mr. H. B. McCull, F.S.A., who gave an admirable survey of Medieval Yorkshire; and of Mr. P. W. Dodd (Leeds University), on Roman Yorkshire. Prof. Moorman (Leeds University) showed very clearly and very impressively the historical and geographical significance of place-names and of dialects. Mr. L. Rodwell Jones (Leeds University) gave four lectures on "Yorkshire Industries," in which special attention was given to the geographical factors affecting the woollen and iron industries and the evolution of the port of Hull.

Several whole and half-day excursions were undertaken, and the outstanding phenomena of physical geography, of which the district

provides a wealth of illustration, were studied under the direction of six demonstrators.

The course closed, appropriately enough, with two very suggestive and interesting lectures by Mr. Welpton (Leeds University Education Department) on "The Teaching of Geography." In these he admittedly followed Prof. Mackinder in the latter's claim for the geographical setting of historical epochs; but there was much that was original in his emphasis both of the humanistic side of the subject and of the danger of presenting children with the geography of the geographer rather than with the geography of the citizen.

### SPELLING REFORM.

By Miss ETHEL GAVIN, M.A.,  
Head Mistress of Wimbledon Hill School.

ALL teachers will agree that there is one cry common to every type of school in this country, and that is "Give us more time." Many and various have been the devices suggested to meet this cry—*e.g.* the abolition or restriction of the teaching of classics in boys' public schools, the lengthening of school hours in girls' secondary schools, the restriction of the curriculum to the three R's in elementary schools. Other reformers accept the existing curriculum and concentrate their efforts on so improving methods of teaching that a substantial amount of time may be saved. Following this line of thought the present writer has arrived at the conclusion that, to give the most relief, the subjects which must be reformed are those that touch every school—*viz.* the three R's—and that, of these, two are in such a condition that reform is urgent apart from all considerations of saving time. Reading, under the aspects of Spelling and Enunciation, is the one with which this article will deal.

Our existing system of spelling is positively injurious to the learner, not because it is difficult, but because it is irrational. Can anything be more stultifying to a young child than to find his first efforts at using his reasoning powers invariably unsuccessful? Yet all the care of his teachers and the skill of the primers cannot prevent him from soon facing anomalies such as *g-o*, *d-o*; *s-ca*, *s-ee*; *t-oe*, *sh-oe*; *h-am*, *l-amb*. Later on, who can wonder if he loses heart altogether when faced by eleven symbols to represent one sound ("truth, true, youth, do, chew, school, through, shoe, fruit, rheumatism, manoeuvre"); twelve symbols to represent another ("go, hoe, load, tow, owe, soul, brooch, sew, mauve, yeoman, bureau, though"); ten to represent another ("aim, great, cake, hav, baby, obey, eight, veil, gauge, gaol"); or when he finds one symbol representing eight sounds ("though, tough, through, trough, hough, bough, brought, lough"); or, finally, when he learns that "gnat" begins with a *g*, "knee" with a *k*, "wrong" and "write" with a *w*, and that he has to insert a *b* in "doubt" and a *gh* in "fight"?

Great, indeed, as are the skill and ingenuity displayed in the making of First Readers, these must needs remain poor and uninteresting in matter, for the matter has to be subordinated to the form. What the loss to English children is may be missed unless comparison is made with the First Readers of other countries where the written and spoken language correspond.

In spite, moreover, of all efforts and of much time spent, is there one school in England that does not part every year with pupils whose spelling is still insecure? And yet, since the days of Dr. Johnson and his dictionary, spelling has been elevated into being a sort of hall-mark of the educated man!

The charge that spelling is becoming worse is often made, and, though it is one that, from the nature of the case, cannot be proved or disproved, it seems right and natural that this should be so. For there can be no doubt that of late years great attention has been directed to methods of teaching and that great improvement has resulted, and that all the new thought is directed towards making the child use his reason. Now the more the teacher and the child practise rational methods, the more incapable both become of practising arbitrary and irrational methods; the difficulty of teaching an

arbitrary and irrational subject such as English spelling in a rational way is almost insurmountable.

To some extent it is probable that the faulty enunciation of English which is prevalent at the present day—*e.g.* the tendency to slur the last syllable of the word, the failure to move the lips in speech—is due to the concentration of attention on the written language at the expense of the spoken.

The scheme for the Reform of English Spelling put forward by the Simplified Spelling Sosiëti is based on the principles that the written language should represent the spoken, that each sound should always be represented by the same symbol, and that one symbol should represent only one sound.

As there are forty sounds odd in the English language, it follows that, logically, we should have forty symbols odd to represent them. Probably one day this will be the case, but for cogent reasons the Simplified Spelling Sosiëti have decided that it is wiser to put forward a scheme where the only symbols employed are those with which the public are already familiar. In brief, this scheme is as follows: *k*, *q*, and *c* are redundant letters and disappear from the alphabet, which is enriched by digraphs (combinations of two letters) until it contains the necessary number of symbols to represent every sound. Consequently, a beginner on the new system must be taught that the digraph *ee* (in "meet") does not mean the sound of *e* (in "met") doubled, but has a value of its own; the digraph *ie* (in "lie") does not mean the sound of *i* (in "hit") plus the sound of *e* (in "met"), but has a value of its own, and so on. The digraphs adopted in the scheme are, whenever possible, in use already in some words—*e.g.* the digraph *ie* in use in "lie, tie." &c., is extended to other words with the same sound—*e.g.* "light, bite," which become "liet, biët"; thus "toe, toad, toll" become "toe, toed, toel."

We claim, then, that the new scheme will secure the following advantages, which appeal to teachers in particular:—(1) a new and valuable method for training the reason of the young child; (2) a new value attaching to clear enunciation, which will arrest the present deterioration of speech and finally improve it; (3) the possibility of using instructive books in school from the very first; (4) a great saving in time which will be set free for other subjects.

Other advantages of the new scheme, to which one may refer as the imperial and commercial advantages, do not appeal to teachers more than to other members of the community, so are not developed here.

Let us now consider the question of disadvantages attendant on the adoption of the new system, if indeed there are any. As regards the young child learning his native language for the first time, I can see none; he has no associations with any form of language but the spoken; to him it is pure gain that Mary had a "litl lam," with no unnecessary letters in its description. When he is old enough, however, to begin the study of another language, say Latin, I admit his knowledge of English may not be of as much help to him as it might be if represented in the old spelling. It is easier to see a connexion between "station" and *statio* than between "staishon" and *statio*. Granted that Latin is a compulsory subject for every boy in every secondary school in England and America and the British Dominions beyond the Seas (and we know this is very far from being the case), yet compare the numbers affected with the 150,000,000 white men to whom English is the mother tongue, the 350,000,000 coloured men to whom it is the official tongue, and the numberless foreigners who already make English their second language, on account of its commercial importance and simple structure, though in spite of its barbarous spelling. We must also remember that though the new spelling may obscure some derivations, in other cases it brings us nearer to the original—*e.g.* "sovereign" is further from *superamus* than "soverain," "doubt" from *doute* than "dout," "sprightly" from "sprite" than "sprietli" from "spriet."

It has been alleged that even for the grown-up the new spelling will "destroy the history" of a word. To teachers it is unnecessary to point out that history is indestructible: we may add new chapters, but we cannot wipe out.

There is no doubt, however, that for the grown-up one disadvantage does exist. To them the new spelling seems ugly. But there is no inherent beauty in the old spelling, no inherent ugliness in the new. It is a mere matter of habit. The mind instinctively resents a breach of established custom, and represents the uneasiness it feels as an offence to its sense of beauty. The new spelling has, indeed, the sort of beauty which may be claimed for any instrument which is well adapted to its uses; and this the old spelling has never possessed. Originally "uncouth" meant simply "unknown, unfamiliar." That is the sense, and the only sense, in which the new spelling is uncouth. To those accustomed to write "tho, enuf, naibor, frend, siv, peepl, filosofer," how monstrously uncouth would appear such forms as "though, enough, neighbour, friend, sieve, people, philosopher"! Any proposal for their adoption would have seemed insane. The new spelling will become every day less "uncouth" to those who familiarize themselves with it.

It is to be remembered that the English language has been simplified twice already to its infinite gain. Previous generations have thrown away both inflections and genders; their retention was contrary to the practical genius of the race, and they disappeared, and who now regrets them?

In conclusion, teachers are not asked for the present to adopt the new scheme in their schools: this would, obviously, be impossible, and unfair to their pupils. But we of the Simplified Spelling Society do ask for their help in all other ways. The first step towards the adoption of the scheme is to organize public opinion in its favour and to make it widely known. In these directions the Society can have no more valuable recruits than those to whom it now appeals—teachers.

## FREE CHILDREN.

By DR. ARNOLD EILOART.

SOME years ago one of our boys wanted to go to a neighbouring free school, and he went. In a few weeks he had picked up words and practices which made it imperatively necessary to remove him to a cleaner moral atmosphere. Later one of our girls wished to go to a private day school, and she went. In the schoolroom twenty-five girls were shut up for six hours a day with all windows closed. The little girl, accustomed to the open air, frequently came home with a headache, and in a few weeks was down with diphtheria. In her case it was necessary to seek a cleaner physical atmosphere.

In both cases there was something good at the school which made our children want to go there. The companionship of other children was doubtless the chief attraction. Now what we need is more of the good of the ordinary school with less of the bad. The good of a school consists in learning to express oneself, both in co-operation with others and alone, in word and in deed. But in the ordinary school this expression is hindered by constant repression. Hence joy, the chief source of expression, is banished. (I call joy the chief source of expression because from it comes play of all kinds, including dancing, singing, music, poetry, and all the arts, not excepting the useful arts, which, besides being play, are the crown of all work.)

The school, then, with one hand invites expression, with the other forbids it. Natural expression thus checked, artificial inducements to expression arise: competition and prizes are introduced to give a fictitious interest to subjects either in themselves uninteresting or made so by the mode of teaching them; and, as the readiest means of working the system of repression, punishments multiply.

The evils above mentioned are peculiar to or specially developed in schools; besides these there are in schools evils common to our life in general. Our children are taught to lead lives such as we lead, unnatural lives. Their activities are not the natural vent of their energy—the result of their growth, the giving out of which is as natural as the taking in

of air and food—but are decided by quite other considerations, such as what will, and what will not, bring future food and future luxuries; also, and very largely, by what will give least trouble to the teacher while giving the greatest show that something is being taught. And something is indeed being taught; far too much, for the more we teach the more we prevent the children from learning; while we are making them learn from us they cannot be learning from each other; while we are making them learn what we choose, they cannot be learning what they choose.

Does true culture require all this teaching? For a plant, culture means keeping it clean, free from hindering growths, but free to associate with helpful growths both visible and invisible, and free to obtain sufficiency, but not excess, of natural agencies, as light, heat, air, and moisture. Apply these principles to human beings and you would have none of that evil atmosphere, moral and physical, which poisoned my children. Children, far more than plants, must be free to associate and free to avoid harmful association. The ideal will be a club rather than a school. Each child will join with those it likes best. In this way groups will grow together into clubs, clubs varying in character as much as individuals vary. Children will find their own level, and those whom one group finds it impossible to welcome may, by welcoming each other, form another group. Nothing is more certain than that, given freedom, children needing society will get together and will get the society they deserve. The problem "Which school?" is solved then by Freedom in the simplest possible way. As little difficulty is presented by the problem "What shall we teach?" The children having got together will decide what to do. They will need a meeting-place under shelter, a clubhouse. To make this they will need tools. Let us hope that some of them will be poor enough to need food and to feel Nature's pressure to provide this for themselves. For just in that proportion in which you remove a child from the discipline of Nature, you must provide artificial discipline. In one sense every child should be poor—poor in money and rich in everything that money will not buy. The wealth of love which this implies will spare the child from bearing on his small shoulders the full pressure that Nature exerts on the adult; but the same love that relieves him of all that would be oppressive in Nature's discipline will take care to leave him enough to be educative.

In learning to raise food the children will need to plan the ground (map-making), to calculate the seed necessary, and the cost, and the number of plants to a given area (arithmetic), besides all the practical qualities of tidiness, doing things at the right time, forethought, and handiness. These qualities will be developed also by building and carpentering, cooking and dressmaking; and higher qualities by making all work as beautiful as possible.

This brings us to play, for play leads to all the fine arts—music, singing, poetry, dancing; while drama—the play—combines all these with acting and with artistic dress. For all these ends, these kinds of play which are also work, for all these kinds of work which are also play, the children will welcome means which, if urged on them by irrelevant authority, they would reject as "too much fag."

They will also seek helpers. Parents and friends of all ages, anyone who can help the children to do *what they want*, will thus be drawn by the children into the club. Such persons will be those who most enjoy the children's society and who most enjoy doing what the children want done. Some such persons may find that more and more of their time is monopolized by the children, leaving no time to earn a living; their living will then be provided by the fees of parents.

But no one should start a school or join the club with the idea of getting a living; rather, as in the Brooklyn Play House described by Ernest Crosby in his inspiring little book "Tolstoy as a Schoolmaster," each should pursue his own work as far as possible and respond to the children's demands for instruction by letting them help in that work; though at times and especially in "play" they will entirely give themselves up to the children. But, above all, the children will learn to help one another and will be each other's best teachers; especially as the best way to learn a subject is to teach it.

But before the children can co-operate the parents must co-operate in providing them with the means. The children

must have capital, the accumulated wealth of experience and material. To arrange this provision will involve a co-operative movement—a local, a neighbourhood, movement. Parents, do you wish to give your children at once freedom and society? If so, is it not high time that you get together and decide what to do? If you think it is, I gladly offer myself as a link to connect you one with another.

## CORRESPONDENCE.

### THE UNIVERSITY OF BRISTOL.

To the Editor of "The Educational Times."

SIR,—May I be permitted to congratulate you upon the article under the heading "The University of Bristol" in your issue of August 1, 1913? Its facts are entirely accurate and the commentary thereon moderate and restrained. The situation has been dealt with very largely of late, but most writers have failed to recognize that the most important body in the University is its graduates. The sole reason of its existence is to maintain their honour and integrity, and with them rests the entire expression of its democratic character. By the fiasco of the honorary degrees much harm has been done, and, in all probability, in no place has it appeared more ridiculous than in the city of Bristol itself. Possibly the Council has been too severely blamed. The fact that its members self-appropriated degrees and the evidence of nepotism must be regarded with the utmost seriousness and entirely deprecated; but still, was Council suitably advised by its chief academic adviser in these matters? A great responsibility rests with him.

It is begging the question to recite the several academic personages sitting upon the Council. Most of them fail to appear, and the most active of the members are laymen, without much knowledge of academic usages, and business men withal. It is hardly to be expected that the habits of a lifetime can be changed in a moment, as it were, and other methods followed, by the governing body. They evidently saw no absurdity in awarding degrees to themselves. They had done a deal of executive work, and, accustomed to civic usages, they saw no incongruity in bestowing upon each other such honours as they had at their disposal. They knew that Town Councillors made each other aldermen and that Ministers conferred distinctions upon their political friends: that the situation was at all dissimilar did not appear to them. To them the University was a Bristol Institution, and the honours were regarded, for the most part, merely as recognitions of Bristol citizenship. The question of injury to the working degrees did not enter their businesslike minds. Of course there was the Vice-Chancellor to advise them, but excessive urbanity failed to save them from ridicule.

With regard to the Cowl incident, there again Council failed to appreciate the situation and were badly advised. Senate certainly failed to support their colleague. Many members of Senate belong to the older Universities, to which they are sincerely attached. Jealous of the traditions connected with their institutions, they fail to regard the University of Bristol and its graduates with sufficient seriousness. To them even now it is only a local school in which they happen to be employed as teachers, its degrees not to be taken too seriously. That such an honorary list should be sent forth by Oxford or Cambridge is, to them, unthinkable; but as for Bristol—what matters?

The stand taken by Convocation, its firm attitude—in spite of the bullying effort on the part of the Vice-Chancellor—in the exercise of its legitimate right, is a sign of great promise for the future. Convocation is a power now, and it must be the power in the University in the future. By it, and by it alone, will the traditions of Bristol University be built up. These traditions must be born of us, possibly with much travail; but they must be native—they cannot be adopted or transferred from outsiders. To this end it is the bounden duty of all graduates to register as members of Convocation at the earliest possible moment. It is a part of responsibility in return for privilege. The time must come when all honorary degrees—and may they be very few!—must receive the

sanction of Convocation. Without such sanction they can have no academic significance and are not worth the having.

A civic University differs from the older bodies such as Oxford and Cambridge, not so much in strenuous work and effort as in the possibilities it can afford for all that are in the possession of mental abilities. The civic University must not sink to the level of Board schools and day training scholars, but students from such must be afforded the opportunity to rise, and we in Bristol desire that the man from Clifton or such schools may be able and desirous to learn in the same University, personal contact with each other being of the greatest value. The Clifton man may learn the force of personal effort and in his turn convey the meaning of culture and sportsmanlike bearing. This, a true democracy, is a possibility which should be the great ideal of a civic University. By having opportunities for a fair start, the son of the poor man may run the race with the one of gentler birth; but there must be no false values—the prize must be worth the running and the running worth the prize.—Yours truly,  
GRADUATE.

### PHONETIC "DECAY."

To the Editor of "The Educational Times."

SIR,—With reference to your note on "Phonetic Decay," may I point out that the indeterminate sound heard in "about, under," must in any satisfactory system of spelling be treated as a distinct vowel with its own appropriate symbol? Most systems of phonetic spelling fail by ignoring this important sound and representing it by various vowels according to derivation; and in so doing they perpetuate one of the greatest difficulties of our present system of spelling. As a test word for phoneticians I would suggest "troublesome."—I am, your obedient servant,

IMMO S. ALLEN.

London Institution, Finsbury Circus, E.C.

### THE TRAINING OF TEACHERS.

To the Editor of "The Educational Times."

SIR,—The Regulations which were issued on July 2, 1913, for the Training of Teachers for Secondary Schools appear to contain a curious unfairness. While a training college, or presumably a training department of a University, may (page 2, Regulation 11) be recognized when it has three students in training, it cannot claim the grant of £18 per student until it has ten students annually (page 3, Regulation 18 a and b). But a secondary school may now be "recognized" as a training ground, with the proviso (page 5, Regulation 21 e) that "in a small school not more than one teacher in training will be recognized at one time, and in no case will more than three teachers in training be recognized at any one time": and the grants to these students (page 5, Regulation 23) are at the rate of "£40 for the first, £30 for the second, and £20 for the third."

As it is Vacation I have no opportunity of discussing these regulations with my fellow trainers in other Universities; but I can imagine that it will appear to them, as to me, that this is likely to undermine the University training departments, in which, as a rule, the number of students is small, and to transfer them to schools in the cities of the respective Universities.

There should be no rivalry or ill feeling between local schools and Universities: I have no wish to foment such. But the most casual observer must see one grave disadvantage if the Universities be thus supplanted—viz. that students will more and more tend to be trained in their own schools. It has always been the practice, in this University, to—as it were—shuffle the students, sending them to schools with which they were not familiar: and, I believe, this is in accordance with the most enlightened theory and the most usual practice.

It is a tenable theory that the University departments are, as a rule, too small, and that training colleges should

be encouraged to be big. The *schools* will have smaller departments than the Universities, so they cannot meet this charge; which is, indeed, best countered by the fact that a large college in one place has great difficulty in providing sufficient training grounds.

The best solution, I believe, would be to put schools and University departments and training colleges on an equal footing as to grants; starting the grants from the first student in the recognized department; and to recognize suitable schools in places where there is no University department or training college.—I am, very truly yours,

GERALDINE E. HODGSON,

Head of the Secondary Training Department in the University of Bristol.

August 7, 1913.

## CURRENT EVENTS.

THE REV. DR. A. C. HEADLAM, Professor of Dogmatic Theology, King's College, London, and lately Principal, has been appointed Moorhouse Lecturer for 1914. The lectures will be delivered in Melbourne Cathedral, and the subject chosen by Dr. Headlam is "Miracles."

THE Surrey Education Committee have awarded a scholarship of £60 a year for three years, tenable at a University, to Leslie Wrenn, a blind pupil from the Normal College for the Blind at Upper Norwood. The candidate dictated his answers to typists.

FORTY-FOUR students from the Cherwell Hall Training Colleges for women teachers in secondary schools have obtained a diploma during the year ending July 1913.

MESSRS. DENT are issuing a series of French masterpieces under the title of "The Collection Gallia," edited by Dr. Sarolea. The first ten volumes will be published immediately, and will include among others Flaubert's "Tentation de Saint Antoine" and Maurice Barres' "L'Ennemi des Lois." The works will contain frontispieces in photogravure, and will be issued at 1s. net.

THE President of the Board of Education has appointed Sir Frank Short, R.A., P.R.E., to be Professor (supernumerary) of Etching and Engraving in the Royal College of Art.

THE London School of Dalcroze Eurhythmics will open on September 30 at 23 Store Street, Tottenham Court Road, W.C. There will also be public classes in Birmingham, Oxford, and Reading. Preliminary inquiries may be addressed to the Director, at 120 Bedford Court Mansions, W.C.

A COURSE of twelve lectures on Biology and Social Problems has been arranged by the Eugenics Education Society. The lecturers are Prof. J. Arthur Thomson and Dr. M. Greenwood, Jun. The lectures will be held at Kingsway Hall on Friday evenings at 6.30, beginning on September 26. Teachers are admitted at 2s. 6d. for the course; members of the general public at 10s.

ABERDEEN UNIVERSITY has received a bequest of £29,000 for the establishment of scholarships. The donor is Mr. William Robbie, a Scotman, who recently died at Ballarat.

THE REV. HENRY HERBERT WILLIAMS, M.A., Fellow of Hertford College, and formerly scholar of Queen's College, Oxford, has been elected to the Principalship of St. Edmund Hall, vacated by the resignation of Canon E. Moore.

THE DUKE OF WESTMINSTER has given £1,000 to the Olympic Games Fund for 1916, and will receive and acknowledge subscriptions. The committee ask for £100,000.

SIR ALFRED HOPKINSON, K.C., late Vice-Chancellor of the University of Manchester, is proceeding to India in October to advise the Senate of the University of Bombay in regard to questions of administration and organization, and to inspect the working of the affiliated Colleges.

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# Mathematical Education.

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Reader in Mathematics in the University of Liverpool.  
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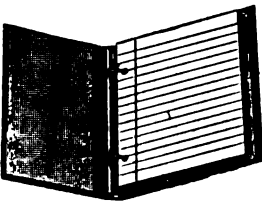
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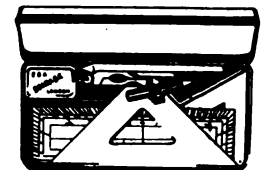
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**SECONDARY EDUCATION.**

THE NEXT STEP TOWARDS A NATIONAL SYSTEM.

By R. F. CHOLMELEY, M.A.,

Head Master of Owen's School, Islington, and Hon. Sec. of the  
 Incorporated Association of Head Masters.

V.—THE PRICE OF EFFICIENCY.

*[For the foreign statistics quoted in this article I am indebted to the Report  
 of an Inquiry into the conditions of service of teachers in English and  
 Foreign Secondary Schools presented to the Incorporated Association  
 of Assistant Masters in Secondary Schools in 1910, and published by  
 Bell & Sons.]*

THE ENGLISH STANDARD.

WHAT have salaries to do with efficiency? I have quoted  
 facts as to the salaries paid in English grant-earning  
 secondary schools. The highest scale adopted by any Local  
 Authority in England begins at £150 and goes up by yearly  
 increments of £10 to £300, or in special cases to £350. That  
 is in London, for men who are graduates of a University;  
 for women graduates the scale is from £120 to £220, and in  
 special cases to £250. In 1911 only 50 out of 121 Local  
 Authorities had adopted salary scales at all, and the most  
 usual limits were from £120 to £200 for men graduates, and  
 £100 to £160 for women graduates.

FACTS FROM ABROAD.

Let us see how some foreign authorities value the provision  
 of higher education. In Prussia the scale for men is from  
 £135 initial salary to £360 final salary, with a rent allowance  
 varying from £65 to £28 according to local conditions; in  
 Bremen the scale is from £200 to £390; in Hamburg from  
 £200 to £450. Few authorities pay an initial salary of less  
 than £150; and, moreover, in some municipalities, where the  
 environment is not attractive, higher salaries have been  
 found necessary to attract competent teachers. In England,  
 if there are such municipalities, it would seem that they pre-  
 fer to allow education to share in the general gloom; at any  
 rate the notion of attracting competent teachers by high

salaries has not penetrated. French teachers are so elaborately classified that it is difficult to give a clear summary of their conditions; but, at any rate, in Paris the range of salaries among the six classes of *professeurs agrégés* (secondary-school masters of the first grade) is from £200 to £320 per annum, to which must be added in each case a sum of £20, the *indemnité d'agrégation*. It is calculated that the well qualified Frenchman may reasonably hope to obtain a salary of £300 after twenty-four or twenty-five years' service; all *agrégés* receive an initial salary of £148 per annum. Finland appears to be the only country in which women possessing the same qualifications as men are paid at the same rate; in Holland men teachers start at £150, women at £100—a difference which compares unfavourably with the London scale. In France, Germany, and the Scandinavian countries increases in salary, are, generally speaking, regular and automatic.

All these countries provide pensions for teachers; in France, where the teachers are Civil Servants, the practice of the Civil Service obtains, and provision is made for widows and orphans; in Germany the teacher's pension amounts in many cases to over 75 per cent. of the final salary, and in thirteen States no contribution is required from the teacher; in Denmark and Holland the pension is two-thirds of the final salary. In England about twenty-five secondary schools have pension schemes; one of these—that of the City of London School, which is financed by the Corporation—may be compared with the least favourable of the foreign systems; the rest fall far below them. It has been seriously suggested that the English Government might make a contribution towards pensions for secondary teachers, if the teachers would contribute twice as much as the Government.

#### WHAT IS THE MONEY PAID FOR?

Now what does all this prove? Surely it proves just one thing, that the nations whose practice is here compared with our own are of opinion that teaching power is worth paying for. Moreover, having made up their minds to pay for it, they are entitled, as we are not, to see that they get it. They do see that they get it. In France and Germany, to take the two greatest of them, it is by no means an easy matter to become a fully qualified secondary teacher, but it is not possible to become a teacher at all without being qualified. France and Germany are in a position to insist upon training, because they make the profession worth training for. In Prussia, the total cost of preparation, from the time that an intending teacher passes his school-leaving examination at about nineteen until the end of his probationary year, is about £540, allowing for four and a half years spent at the University; in France the conditions are different, but the necessary expenditure, before a man can enter the highest grade, must be at least as large; in fact, it is so large that the State has been obliged recently to make a considerable improvement in the financial position of the teachers, in order to induce a sufficient number of candidates to present themselves.

#### INDUCEMENTS.

Let me repeat that the real point is contained in the word "inducement." What can we expect to get if we do not offer inducements that make it worth while for people of first-rate ability to serve us? Why should a man become a schoolmaster in a secondary school in England, for instance, when there are half-a-dozen other careers in which he can put his brains to more remunerative use—not to mention the Civil Service, which makes but a moderate demand upon his brains when once he has got into it, and pensions him in the end thereof?

There is only one answer to these questions. It is understood in business that if you want a thousand pound man or a five hundred pound man, or a three hundred pound man, you offer £1,000, or £500, or £300, as the case may be. It is one of the elements of business capacity to know what is wanted, and to understand that the only way to get it is to pay for it. Trying to get it without paying for it is sometimes called trusting to luck, and sometimes leads to a fraudulent

bankruptcy; but that is precisely what we are doing now in this business of getting a teaching profession, and *we must stop doing it*. If we do not stop doing it we cannot hope to get the teaching power that the nation needs, nor to hold our own with other nations in any sort of adventure that calls for trained intelligence.

#### THE ROAD TO REFORM.

It has already been maintained that this most necessary reform, the creation of a teaching profession, can be carried out—if the nation cares to have it carried out—only by making it the business of the nation as a whole. The method is obvious. At this moment about 75 per cent. of the cost of secondary and elementary education is accounted for by the salaries of teachers. Inadequate as they are, it is evident that it is difficult, if not impossible, to induce Local Authorities, dependent upon the sensibilities of the rate-payer, to face the necessity for increasing this proportion. That is one fact. The other is that the Board of Education now makes grants to secondary schools in England and Wales amounting to about £750,000, based upon the attendance of pupils. For elementary education the grants amount to £11,750,000, for technological £500,000. There is no great principle involved in the preservation of that basis; there is every reason why it should be altered. The attendance can be looked after by the Local Authority, as in practice it is; even the most abandoned type of rate-payer hardly desires to let children stay away from school in order to keep down the rates; but *if the grants made by the Central Authority were based upon the teachers' salaries* the whole question of the provision of a competent teaching profession would, for the first time, have a chance of being treated as a question of national importance, and of being brought into relation with national needs. Even that time-honoured old proverb: "Those who pay the piper have the right to call the tune," would be at last on the side of efficiency; at present it makes for the docility of the piper more often than the excellence of his piping. I do not wish to make the reform here proposed seem a simpler thing than it is; there are plenty of incidental difficulties to be solved in adapting salary scales, and the pensions that must go with them, to the circumstances of different kinds of education, and even to different local conditions; but those difficulties exist now: the difference is that there would then be some chance of a general attempt to meet them, whereas now they are met haphazard, or not at all.

#### THE MOBILITY OF THE TEACHER.

Let me say again that this change does not involve making teachers into Civil Servants; it need not touch the mode of their appointment or dismissal; it need not alter their tenure. One thing it must alter, their mobility, and therefore their chances of promotion. The devotion of teachers to a particular school is a good thing, so far as it is a natural and spontaneous affection; no school can flourish unless it inspires such a devotion; but the confinement of teachers to one school, *glebae adscriptorum*, prisoners at their posts, because to move is to forfeit seniority, and lose the chance of promotion—that is a hindrance to good work in general; and the removal of this hindrance would be one of the incidental advantages of a national system of payment. In this connection the creation of a national system of pensions is particularly to be desired; in no part of our educational system do we cut so mean a figure, compared with Continental nations, as in this; at present pension schemes are so rare, and of such various kinds, that where they do exist they are a very effective restriction upon the mobility of teachers, especially after the first few years of service, when a change of experience may be most desirable. We need have no fear that the individual character of schools will suffer from this mobility, in any sense that is worth preserving; the conception that used to be prevalent, and still exists in too many places, of a successful school as a sort of factory, with trade secrets not to be given away to its rivals, will tend to disappear; and so it ought. We want a high general level of

competence, not a morass with a few dry spots, towards which those condemned to live in less fortunate places look with hopeless envy; we want to make sure that in no part of this country shall anyone be left unsatisfied who wants his children to have the best education suited to their powers.

#### EQUALIZATION OF CONDITIONS.

Surely it is a deplorable and scandalous thing that the best advice that can be given to parents in so many places is to go and live in some other county if they want their children well educated. Yet this is almost inevitable under the present system; for the causes of the want of educational facilities in this or that place are precisely local causes, whether they spring from the poverty of the region or from that poverty of imagination which allows men to acquiesce in bad conditions because they have never thought of anything better. There ought to be local traditions, just as there ought to be school traditions; but both alike must be inspired by a common ideal, or they become the greatest obstacles to every sort of progress, binding and chaining us to every prejudice that we are too idle to see through, and to every sort of tame acceptance of evils that we ought not for one moment to tolerate. Of course those who take that view of education which may be summarized in the words, "Give the child a book," will not think that any of this matters; so long as books can be turned out to suit the growing mind and distributed about the country, it will seem to such that there is nothing more to be desired; but to those who believe that education at its best is not a thing that anybody can get out of any number of books, but something to be done by children and grown-up people together—to these surely the question, what sort of grown-up people are to be helping in it, *wherever it is being done?* is the one question of all that does matter.

#### EFFECTS OF REFORM.

If the change in the basis of State grants which I advocate were carried out in its entirety at once it would transfer £6,000,000 a year from rates to taxes. That looks, and is, a large sum, though the actual effect of the transference upon any single rate-payer would probably disappoint his expectations. But it is not necessary that the change should be carried out all at once in order that its beneficial results may be secured. Those results will begin to be felt the instant that the efficiency of the teacher becomes the direct object of the State grant. So long as the avowed object of State grants is simply to secure the attendance of children at school, it is impossible to make them an effective instrument for any other purpose. Any other purpose is irrelevant; and, therefore, any other use of the power given by the grants tends to become tyrannical—like the conduct of the man who reduced his wife's dress allowance because she played the piano badly.

#### THE NATION'S HOPE.

But if the State makes the efficiency of the teacher its business, without abandoning its general responsibility for the efficiency of the educational system at large, the Central Authority can so concentrate upon its proper function as to make that function the guiding and enlivening activity by which the whole standard of education may be permanently raised to its proper level. Whether the State finds the whole of the money for the teachers, or four-fifths of it, or some other preponderating fraction, it will have taken in hand that which is its proper business; it will have made itself responsible for the development of teaching power throughout the country; it will have created a new force in education; it will have made a national system possible, and the statesman who sees and grasps the opportunity of doing that will earn the gratitude of the nation—for he will undoubtedly have saved it from decay.

#### VI.—THE BUSINESS OF A SECONDARY SCHOOL.

A national system of education involves a national system of schools; and, therefore, unless educational reformers can

show how their ideals may take shape and be put into practice generally through schools, how they may be made to inspire, not merely the work of a few enthusiasts, but a whole system; those ideals, though not unfruitful, will not really reform education. In a sense, no ideal can be too high; the true model, as Plato says, is laid up in Heaven; but if it is not a model of what can be done on earth, we do but strain our eyes in trying to catch sight of it, and spoil them for the work that lies before us. Therefore the test of all educational projects, intended for general use, is to be found in the question, "Can they be carried out in schools?" There are fifty ways of educating a child, and though perhaps it is not possible to say for certain that, like the "nine and thirty ways of constructing tribal lays," "every one of them is right," it is quite conceivable that they may be; what we have to do is to educate children in general, without forgetting that the interests of children in general are the common interests of particular children, and not to be discovered completely by abstract reasoning.

#### WHAT CAN SCHOOLS DO?

What is it that the nation can do, if it cares, for children in general by a system of schools? The most curious delusions exist as to what constitutes a school and what can be done by it. A member of Parliament\* believes that it is possible by building elementary schools on a handsome and comfortable plan to induce parents of all sorts to send their children to them—"as is done in America"—and so to sweep away the "social taint." Faith in bricks and mortar was surely never more pathetically confessed. An eminent scholar† believes that if the training given in elementary schools were what it ought to be, children coming from every sort of home would easily acquire a fine sense of honour, agreeable manners, and, I think, "respect for their 'betters,'" which, for some unexplained reason, does not flourish now as it used to. Respect for their betters is such a difficult thing to teach children—possibly because, as the late Bishop of Oxford once said, it involves teaching them to respect *us*.

#### FAIR AND UNFAIR CRITICISM.

It is not the purpose of these articles to make suggestions about elementary education, except so far as they may be involved in the main thesis; but I do most earnestly protest that we shall make no progress at all in any good direction if we fail to recognize either the immense influence for good that is exercised by the elementary schools as they now are, or the immense difficulties—which have nothing to do with unhandsome buildings or unimaginative teaching—against which they have to struggle. As for buildings, I have taught a form, in the greatest public school in England, in a room which would not be tolerated in an elementary school in the worst quarter of London; and it will be time enough for us secondary teachers to belittle the moral training given in elementary schools when we are sure that our own teaching exercises as civilizing an influence upon the homes from which our pupils come. One thing I would do—I would abolish the word "elementary"; not that it is an inappropriate word for the early stages of education, for it is a very good and expressive word; but "the point lies in the application of it"; and its application to the children of those who take the education provided by the State, because they can no other, has come to be a social nuisance. It pursues them into the secondary school, even into the University; it stands for nothing but an income limit, and I think we should all be better without it, and all its compounds and variations, ex-elementary and higher elementary, and the rest. Language is a social force; and if we could get an educational vocabulary that expressed more nearly what we ought to be thinking about, we should at any rate be rid of a hindrance to clear thinking and a temptation to mix up social prejudices with deliberations which they confuse and embitter.

\* Mr. Joseph King, in the *Westminster Gazette*, May 15, 1913.

† Dr. Rouse, in the *Breving News*, May 1913.

## SCHOOLS AS THEY MIGHT BE.

At any rate, in thinking of secondary schools, let us try to think of them, not mainly in terms of bricks and mortar, and not at all in terms of social prejudice, but as simply as is possible in terms of education; and so thinking let us try to answer the question, what the schools ought to be that are to take away our reproach as an uneducated people. What, in short, are the main conditions of an efficient system? One condition, the creation of a teaching profession upon reasonable terms, has already been proposed; without that, nothing can be done; but suppose we see our way to that, suppose that for the first time we put ourselves in a position to require that something satisfactory shall be done, what is it to be?

## THE REFORMING MOVEMENT.

Let us take a passage from the Report of the Board of Education, and see how it bears upon the question. In a paragraph dealing with co-ordination between elementary and secondary schools the following words occur:—"The influx of an increasing number of scholars, destined in many cases for commercial or industrial callings, has emphasized the need of departing to some extent from the academic bias of the traditional secondary-school curriculum, and of giving greater prominence to work of a practical and vocational character. The necessity for alternative courses within the same school, and for differentiation of type among different schools in the same area, has become more urgent." This, surely, is just to say that education must have a practical bearing upon life. Some go further, and tell us that we shall never get that practical bearing upon life until we have "destroyed the fetish of a good general education"; but surely what we have to do is to give the right meaning to a good general education, so that when we say of so-and-so: "He (or she) is a well educated person," we shall be able to mean not only that that person has learnt a number of things calculated to make life interesting and agreeable so long as there is nothing in particular to be done, but that he has *acquired efficiency*. "This purifying of wit, this enriching of memory, enabling of judgment, and enlarging of conceit, which commonly we call learning,"\* has to be made of practical service; and in order that it may be of practical service we must not set it up as a thing apart from, and superior to, the special interests and ambitions of those whom we wish to teach, but we must, so far as possible, get for it the support of those very interests and ambitions.

## A WIDER EDUCATION.

This necessitates watchfulness in two directions; for the more we widen our conception of education, the greater is our responsibility for deciding in any given case what to teach, and how to teach it. We are rightly abandoning the notion that there is one good kind of education, and that all variations from it are more or less lamentable makeshifts. Today the Consultative Committee of the Board of Education issues a Report nearly four hundred pages long upon *Practical Work in Secondary Schools*, and in the course of an admirable historical sketch reminds us that in 1792 the French Revolutionary Government enacted that "Young people may not be enrolled on the civic register unless they show that they can read and write and practise a mechanical occupation." In London and Birmingham, so long ago as 1887, the encouragement of educational handwork began in earnest; but important as that movement was, even if regarded only as an attempt to fit children to earn their living as they grew up, the broader conception of education to which it led is of far greater importance; for without that broader conception a national system of education could hardly be imagined. The Consultative Committee quote William James, the American psychologist; and we may well consider his words: "The most colossal improvement which recent years have seen in secondary education lies in the introduction of the manual training schools; *not because they will give us a people more handy and practical for*

\* Sir Philip Sidney, "Apologie for Poetry."

*domestic life and better skilled in trades, but because they will give us citizens with an entirely different intellectual fibre."*

## THE NEW DISCOVERY.

The discovery which is already putting new life into education, and which some day may enable us to construct an educational system that will give us not merely scholars and docile workers, but citizens of a new intellectual fibre, is the discovery that vocational and educational aims are not essentially opposed but essentially allied. The development of handwork is but one example of the fruitfulness of this discovery; and the real answer to those who distrust the teacher as a purveyor of useless knowledge will be given when we have learnt to use it in a national system. What is this discovery going to mean for the schools of the future? Those who look with misgiving upon the prospect of a national organization of schools will generally be found to fear the setting up of a uniform and monotonous system—a dead level of regularity, "faultily faultless, splendidly null." All organization is liable to that danger; but the organization for which I plead will escape it, because it will have for its particular object the creation, out of the particular materials ready to hand in every corner of England, of a vigorous and varied citizenship.

## SCHOOLS IN RELATION TO LIFE.

This is what the schools can do if they are organized in their proper relation to the life of the community. The popularity of the great country boarding schools, valuable as their work may be, has tended to obscure this aim. Each of them has, by its own peculiar charm, attracted to itself boys from all over the country and knitted them together in a fellowship based upon common life and interests; but something is lost in the process. The affection which these schools inspire is, by reason of its origin, exclusive and, in a manner, selfish. It is apt to be, as a cynic said of Love, *un égoïsme à deux*; it has not the quality of neighbourliness. If you were to ask a boy at one of the great public schools what was the relation of his school to the common life and interests of the district in which it was situated, he would probably be surprised at the question; the nearest approach to an answer that he could give would be that one of the masters had been Mayor of the Borough, or that the school supported a mission in the East End of London. The idea that a school should be the centre in some sense of a circle of municipal or rural civilization would be strange to him.

## THE TYPE THAT IS NEEDED.

But this is exactly what the schools in a national system ought to be. There is plenty of room for many types of schools; but the general type of school that is most needed now is that type which springs naturally out of the life of the locality, where the training given is based upon the industrial and social character of the locality, and is therefore capable of reacting upon it, and of becoming not merely efficient in itself as a place of education, but a force that can raise the standard of efficiency and of citizenship throughout the community which it serves. There are such schools; but we want more of them, and more of the spirit which animates them, before we can boast of a national system. Education, it has been said, is a spiritual adventure. Life is a spiritual adventure; and not life in the abstract, but every kind of life that is worth living at all, needs to be spiritualized through education. That is what schools are for; and that is what we can make them do, if we care sufficiently to give them the chance to do it.

Miss M., an enthusiastic young teacher, is very keen on the new idea of getting infants of tender years to draw on paper impressions of things seen or remembered. The results so far have not been very encouraging, but she is persevering. The other day, on her examination of the pupils' sketches, she remarked to one little girl, "And what have you been drawing, Mary?" Mary said: "Please, teacher, I tried to draw you, but it wasn't right, so I put a tail to it and made it a dog."—*Manchester Guardian*.



## WORK AND THE WORKER.

By A CHEMIST.

Now that Education Authorities have realized that a youth at fourteen years does not necessarily know all that is to be known, a vast amount of energy, time, and money has been spent on the institution and development of evening classes, both of technical and academic utility, in all parts of the country. The movement appears in the schoolroom of the somnolent village as a continuation school, while in the town of certain local importance it displays itself as a "technical college." These local institutions do not profess to cater for one particular class of student only—each is served as he comes, according to his ability and natural inclinations. There is a considerable tendency nowadays to co-ordinate courses of study. At the same time it is usually permissible for the student to attend any particular class without being called upon to take up the complete course of study mapped out by skilful organizers to meet the student's special needs.

It does not require a major prophet to impress upon us the fact that unskilled labour is hopelessly drifting, and that only the skilled artisan and specialist can contend successfully with the ever-gathering torrent. And rightly so if by "specialist" we understand to be the man who *knows his job*, because it is this man, as a general rule, who is not satisfied that his knowledge of his business is sufficient, and who takes interest in his work to the extent of delving more deeply into it. Unfortunately, there is an extremely common type of "specialist" who flatters himself he knows everything of importance with regard to his own vocation, but consistently rules out of court the idea of making himself more conversant with collateral matters. It would surely be as ludicrous if a teacher omitted to study psychology or a journalist neglected to learn shorthand.

In the first place, therefore, it is essential that a youth, having recently left school, should take steps to make himself master of his craft, and then an ardent student of kindred matters. Otherwise he will find himself very much in the position of the empty egg-shell after the chicken is hatched out.

Every student of chemistry does not necessarily become a chemist by profession; he indulges in the mysteries of the pipette and the test-tube as a relaxation from his ordinary occupation. The classical mind is incomplete until the study of the natural sciences has been added. The arguments in support of compulsory Greek may be weighty, but it cannot be denied that the study of the sciences greatly accentuates the correlation between mind and body. Care, systematic habits, nicety of judgment are fostered, concurrently with an extension of general knowledge and enlargement of horizon.

It is surprising that the average attendance at many of these admirable science and art classes is not greater. The cause is not far to seek: it is often mere lack of application to study. It is assumed that sudden enthusiasm is followed by two or three attendances; then a counter-attraction causes absence, effectually cooling the ardour. Withdrawal, or what is even less desirable, casual attendance for appearance sake, is too often the result. Yet every inducement is held out to the would-be student: well-fitted rooms and laboratories, materials in abundance, highly qualified teachers, all experts in their own particular sphere. This is provided at a cost to the student of, say, one halfpenny per hour, this figure being calculated from a prospectus now before me. What more could be desired? Whether the student wishes to master the elements of his subject or to win a coveted diploma—even a University degree—every reasonable facility is provided for him. Time was when he who would learn had recourse to an old book, a guttering candle, and a wet towel; yet possibly the traveller on this rugged path appreciated the value of his work more than the average passenger on the present-day educational omnibus. It is the *effort* of doing that counts.

Those who organize, those who teach, and those who pay, should receive every encouragement. Nothing is more gratifying and stimulating to a Local Education Authority than a steadily increasing average attendance. Then still more would be done to extend the advantages of a liberal education amongst earnest students, especially amongst those who have not the means nor leisure to pursue their studies to any very

considerable extent apart from the assistance of these local institutions. Progress will, however, be slow until the lesson of self-help is thoroughly learned. The high percentage of teachers who attend evening classes is largely a direct consequence of the fact that they have learned how to learn, and so have attained the capacity of benefiting to the fullest extent by any facilities for further instruction which are offered to them. However, the aim of the organizer is, while welcoming the diligent seeker after power, to attract those who have missed their mark through undirected effort, and so to do a service not only to the worker himself, but also to the world in which he labours.

## THE REAL PROBLEM IN EDUCATION.

By SYDNEY H. KENWOOD.

UNMOVED by the violent and often ignorant strife of sectarians, psychologists have for some years past been coolly debating a question of first-rate importance—a question which vitally concerns national education and which, up to the present time, has received a scant share of public attention. The doctrine of formal training, which enshrines the theory that mental habits and qualities acquired by the study of one subject are naturally transferred to the study of another and to the affairs of life, has of late years been ably attacked; and it would seem that the tide of competent opinion has already begun to set in the direction of a system which expects little if anything from mere transference.

It is at first sight clear that the opponents of formal training would have to remodel the whole school curriculum, and that many subjects at present taught with a view to affording mental training for other work would have to be abandoned. The theory of the opponents—a theory amply supported by sound research—is that everything must be directly taught. It would be well for teachers in general coolly to consider the probable results of this doctrine and the imperfections it discloses in our present system.

It may be said almost with boldness that the "direct" doctrine will be widely welcomed if its effect be to reduce the number of school subjects and the consequent complexity of time-tables. The *raison d'être* of a crowded curriculum is a supposed best preparation for life by the training of such habits and faculties as we call useful, and it need scarcely be said that this *raison d'être* disappears if there be nothing in the theory of transference. Most of us have hitherto believed that, for example, the study of mathematics trained the reasoning powers, and that a classical training was conducive to a wide and comprehensive outlook on life, to a power of seeing the other side, and to deeper appreciation of beauty and of "things humanly beloved." For such reasons—and often for such reasons alone—we have taught these and similar subjects, though fully aware that they could never be directly useful to more than about 5 per cent. of our pupils. Any attempt to simplify time-tables threatens studies not of practical and immediate utility; and to many teachers what physical and mental saving to themselves might follow on the abandonment of such studies would ill compensate for their loss.

Many of us, however, though unshaken by such cries as "What's the use of teaching Latin and Greek?" have been moved to serious consideration by the apparent failure of formal training and its attendant multitude of school subjects, and have wondered whether even the "direct" reforms proposed offer any real solution of a great difficulty unless they insist on a revolution of the present system. It is generally admitted that every child starts life with certain gifts and certain aptitudes; and most people who have taught would probably agree that it is but vain labour to force on a child instruction which it cannot profitably receive. We all know, for example, the result of endless toil expended on those whose musical capacities exist only in the allegations of mothers or other interested persons. Yet this

acknowledgment of limited potentialities, though recommended by a hoary antiquity and borne out by the experience of all, perhaps, who have ever taught, is not allowed to influence the choice of curriculum save at an age when specialization is deemed for some reason useful and proper.

Under present circumstances the world is content to look unmoved on the wearing, useless toil of teachers and on the heroic effort to force, by dint of tissue and gold, a seed to flourish on a soil it loathes. For the modern ideal is that education, like other divine gifts, must be shared by all, and few would question the justice of that ideal; but by a strange inconsequence it is almost as widely held that education should be the same for all, at least up to a certain age. That greatest of educational authorities, the British parent, does not usually stay to consider that systems of pedagogy were made for men—not men that they might conform to the systems; and that the power of profiting from any particular branch of instruction varies from zero to infinity in different individuals. Thus small support would yet be found for a scheme whereby those capable of general culture should receive it and those incapable of extended education should be recognized as such and encouraged to foster such natural aptitudes as they possess.

Reformers are, I think, assured at least of wide professional support if they are prepared to grapple with this fault of the present system, and to promote efficiency by the natural method of setting each child to the task it is best suited to perform. To their efforts, too, we must look for due recognition of a vast class usually left out of account—of those generally pronounced with more or less emphasis “dull”: of the sediment which falls, despite even modern methods of shaking, to the bottom of every class. We cannot philosophize for such under present conditions, since the problem they raise is fundamental, and not to be solved by mere modifications of detail. For the dull we can as yet do nothing save afford opportunities of picking up a few crumbs from the rich feast spread before them. It cannot at present be helped that they of all creatures seem the least capable of picking up anything worth having.

The two evils of crowded curriculum and wasted labour arise, as I have tried to show, from general acceptance of the transference theory; and its opponents are to be congratulated on their courage in attacking a theory supported, at least in some measure, by the vast majority of conscientious parents. And the popular view is, indeed, capable of apology. The faults of the present system—supposing, for the sake of argument, that all children are capable of a general culture—may easily arise from the fact that the right training, or the right subjects, are not supplied. For example, to apply the reasoning of mathematics to the affairs of life would seem to call for special aptitude. Perhaps logic, whose instruments and means are the language of every day, is more likely to affect our habits of thought and expression. This is only one of many suggestions which will rise to the minds of practical teachers who still pin their faith to the doctrine of transference; and, however strong arguments to the contrary may be, it is well to make sure that the present system does not suffer rather from incompleteness than from inherent defect.

No simplification of time-tables, however, will solve what is surely the greater problem—that of the “dull” child. Till we are prepared to regard individual capacities we cannot help the dull to make the best of what powers they have. That system is surely an anachronism which sets out to educate the common factor of humanity rather than its units. Individual instruction alone can afford us any just idea of the potential efficiency of a people; and no questions of economy should prevent the extension to all of what is regarded for wealthy children as a necessity.

THE Governors of Brentwood Grammar School, Essex, have appointed Mr. James Hough, the second master, to be Head Master in succession to the Rev. E. Bean, resigned.

## REVIEWS.

*The Teaching of English Literature in Secondary Schools.*  
By R. S. Bate, M.A. 172 pages. (2s. 6d. net. G. Bell.)

This volume offers a very interesting and valuable contribution to the discussion of a difficult subject. In the first part of the work the author considers questions of method, while in the second part he outlines a course of study. It is in the latter that Mr. Bate appears to most advantage. He is an excellent literary critic and historian; as an educationist he is not so convincing. The three years' course of reading is admirably adapted for students beyond school age, or even for the select few who, in the later years of an extended secondary curriculum, are able to specialize in English literature, but for the great majority of pupils in a secondary school, for whom the subject is only one among many, it is far too full and minute to be at all practicable. Moreover, even if time could be found for it, it could not be held suitable for the average boy or girl. As a teacher Mr. Bate is too apt to magnify his office. The criticism which he suggests to supplement the study of authors and their works is in itself almost always acute and stimulating, but it is seldom suitable for presentation to youthful learners. The teacher is continually advised to “point out” matters which the pupils should discover for themselves, and which they are not likely to discover during the years of school life.

It is now coming to be recognized that little can be done for the general teaching of literature in schools beyond selecting the most suitable works for class study and home reading, and giving what help may be necessary for the understanding of them. In the criticism that arises naturally out of the oral and written discussions on what has been read, the teacher, if he is wise, will refrain from giving voice to any opinion that could be reached only after mature study. The average boy and girl can best be imbued with a love of books through the study of complete works of intrinsic interest, and this necessarily confines attention to a limited number of great authors. Mr. Bate's advice runs counter to all this. In his fear of neglecting any link in the chain of historical continuity he introduces his pupils to many writers who are now read by none but professed students of literature, and who can only be sampled in a cursory and piecemeal fashion. But, though his counsels can be accepted only with large modification, his book will be of great service alike to teachers and to serious students of the history of English literature.

*L'Année Pédagogique.* Edited by L. Cellérier and L. Dugas.  
(7f. 50c. Paris: Librairie Félix Alcan.)

The publication of this the first volume of the “Pedagogical Year” marks a clear advance in the literature of education. One cannot examine, however cursorily, the 487 pages of this handsome volume without realizing that the study of education is at last reaching a stage that may fairly claim to be scientific. The editors tell us that their aim is not to deal with the subject from any utilitarian or subsidiary point of view. Education is for them an end in itself. It is not to be subordinated to any other study or group of studies. It has to be treated as a “science which should draw its principles from within itself, which should be autonomous.” We are told that among the German-speaking peoples there are no fewer than four hundred journals, reviews, and other periodicals devoted exclusively to education, while the Anglo-Saxon races, especially those on the other side of the Atlantic, are very little behind. The editors speak with a becoming modesty of the French contributions, but the very appearance of this yearbook is emphatic testimony to the seriousness with which education is treated across the Channel.

The general plan of the work is, in the first instance, to supply each year four or five original articles written by distinguished educationists and dealing with subjects of the greatest possible breadth. This number, for example, has an article by M. Emile Boutroux on “L'École et la Vie”; two by

M. Cellérier, "Idéal et Education" and "Etude psychologique des méthodes d'enseignement"; one by M. Dugas on "La Sympathie dans l'Education"; and an article on "L'Enseignement Primaire" by an author who is content to sign himself X. But these articles take up only 82 pages. The real book is made up of the 400 pages devoted to the bibliography of the educational books and articles published during the year 1911. There are in all 2,502 notices, so it is obvious that few of them are very long. The average runs to only about 15 of a page—that is, nearly seven notices per page. It is quite an exceptional thing when Atkinson's "Le Secret de la Mémoire" gets nearly five pages to itself. The nature of the notices is the important thing. They are meant to be purely objective, not critical in the sense of ascribing praise or blame, but merely analyses of the books or articles in such a form as to enable the reader with the least expenditure of time to get an idea of what he may expect to find in the original. The editors evidently hope that in the future they may secure the co-operation of authors who write on pedagogy. To this end there is an appeal to such authors inserted just before the actual bibliography, urging them to send in synopses of their own works. The editors point out that no one is quite so well aware as the author himself of what the special point of a book or article is. They recognize that their invitation involves a self-denying ordinance on the part of authors, since there will be a complete loss of that praise that kindly commentators are not disinclined to give. But consolation is to be found in the fact that this flattering "système de critique en matière de science n'est plus de notre temps." It is to be hoped that our English writers will not be behind others in scorning praise and in supplying accurate and unvarnished accounts of their work. As a matter of fact our English writers are well represented in the present volume, and it is clear that they are not their own exponents, for here and there we are glad to note that words of appreciation have found their way, perhaps inadvertently, into some of the notices.

The bibliography is excellently arranged under headings that make it easy to find the particular kind of information that may be required; and there are two very full indexes, the one of authors, the other of subjects. Dealing with such an enormous mass of facts, many of them expressed in languages other than that of the editors, it is impossible to avoid errors, particularly in the matter of proper names. But the number of such errors that we have detected is small, and their nature after all unimportant. For a first volume, doing pioneer work, the success of the *Année* is remarkable. It is difficult to imagine a bit of work of more real service to the study of education than this contribution of MM. Cellérier and Dugas. It is the plain duty of every true educationist to do his utmost to secure the permanency of the work so splendidly begun.

*Matrices and Determinoids.* Vol. I. By C. E. Cullis, M.A. Cantab., Ph.D. Jena. (21s. net. Cambridge University Press.)

The complete work as projected by the author is to consist of three volumes, and will, to judge from the one before us, form a very important addition to the library of higher mathematics. Of the entire work the first volume is now in the possession of a reading public necessarily limited to mathematical experts and advanced students. It is based on a series of Readership Lectures delivered some few years ago in connexion with the University of Calcutta. As we are informed in the preface to the first volume, the second is nearly ready for publication; and from the same source we learn, presumably, that the third is already in the making, and is to discuss the subject more particularly in its application to Vector Analysis and Invariants. The theory in its relation to these branches of higher algebra may really be said to have inspired the production of Dr. Cullis's entire work. The scope of the treatise is a broad one. Square matrices and determinants constitute but a special case of rectangular matrices and determinoids, the general theory of which is here discussed. A calculus such as the writer has set himself the task of framing is bound to require a somewhat extensive nomenclature and a fairly elaborate system of notation, but the reader of the present work is forced to question whether

the amount of detail of this kind which he is asked to try to assimilate is not in excess of what is actually essential. Should his natural desire to be spared a part of it prove a legitimate craving, then it may be expected that the system employed in Dr. Cullis's new volume will gradually be contracted to some extent, and that the changes will involve a proportionate lessening of strain to the reader. The student acquainted with the subject of determinants would grasp the more general theory with greater ease, and therefore with increased power, if he were not called upon to substitute—unnecessarily as it seems to us—for terms already familiar to him in connexion with the less complex subject. To take merely an isolated illustration in support of our contention—it is difficult to understand without explanation why for the well-known "rows and columns" of determinants we are constrained to adopt the more cumbersome nomenclature of "horizontal rows" and "vertical rows."

The above and criticisms of like kind are by no means inspired by a spirit of captiousness. It is inseparable from the true interest of the reader that he should be able to follow without undue labour the thread of the very able exposition. Throughout the whole course of the work the author treats his subject with special reference to the point of view of the student, and does not require his reader to be an equally ripe scholar with himself. The successive chapters of the present volume deal with the fundamental portions of the theory. They treat in the beginning of the character of rectangular matrices and the corresponding determinoids and of the symbolic representation of such functions. The conventions of sign which determine what are styled the *affects* of single elements and their products next occupy the attention.

The third chapter is devoted to the discussion of sequences, or single long row matrices, and much of it is, in a sense, of an introductory character, since it serves to simplify the demonstrations undertaken in the subsequent portion of the treatise. The interest of the volume naturally culminates in the application of the fundamental principles to matrix equations of the first degree and to the solution of the general system of linear algebraic equations regarded as a particular case of the foregoing. The discussion of matrix equations of a degree higher than the first is reserved for the ensuing volume of the treatise. That the pages of the text should frequently be suggestive of analogies between the general theory and the theory of square matrices and determinants is not to be wondered at. An index adds considerably to the value of the book, and is a feature that is absent from a large number of works on advanced mathematical subjects. The volume has been brought out with the care and general excellence characteristic of the publications that are issued by the Cambridge University Press.

*The Municipalities of the Roman Empire.* By James S. Reid, Litt.D., Fellow of Gonville and Caius College, Cambridge, and Professor of Ancient History in the University of Cambridge, Hon. Litt.D. Dubl., Hon. LL.D. St. Andr. (12s. net. Cambridge University Press.)

Prof. Reid has boldly tackled a subject of much complication and difficulty, as well as of high importance. The city was the chief, or rather the sole, ultimate constituent element in the structure of the ancient Roman Empire—the cell out of which developed the mature organism, the master-key to the problem of the ascendancy of Rome, and therefore to the still more difficult problem of the decline and fall of the Empire. The Roman historians, indeed, regard events all but exclusively from the point of view of the city of Rome; and it has been left to the labours of explorers to unearth the monuments that have preserved on stone or bronze the local memorials of civic life. The question Prof. Reid is mainly concerned with is "What rôle the municipalities had allotted to them in the great drama of Roman Imperial government." He treats more lightly and briefly the inner economy and the social circumstances of the Roman Imperial town. It is to be hoped that he will by and by devote a second volume to a special handling of these most interesting and varied matters.

"The first lesson, a lesson of the profoundest consequence, which the municipal history of the Roman Empire teaches,"

says Prof. Reid, "is this: that the rise of the Roman power was furthered incalculably by the scope which it allowed to local freedom; that in its great age it rested on a vast system of civic self-government; that, so long as municipal liberty maintained its vigour, the Empire flourished; and that, when despotism overflowed the municipalities, then the decay of the great Imperial structure went on rapidly to its fatal issue." This statement may be taken generally as the text of the whole work, and it deserves to be pondered in contrast with the modern craze for a uniformity that can only be artificial and misleading. Having described the nature of the municipality and impressed the extreme and wise toleration of local diversities, Prof. Reid proceeds to survey the Empire, province by province, so as to show how the development and the decay of municipal organization in each of them was influenced by the central authority, and to bring into clearest view the extraordinary plasticity of Roman modes of government. Naturally he deals first with the municipal history of ancient Italy, next with the different regions of the Western side of the Empire, then with the Eastern section, which displayed expansion indeed, but not such a transformation as the influence of Italy operated in the West. This is followed by a short account of the administration of the cities in the flourishing period of Roman municipalism and of their relations with the central government, as well as by a brief indication of the causes that led to decay and ruin. The final chapter sketches the social aspects of the municipalities, mainly on the public side.

The volume originated in a course of lectures delivered in the University of London and afterwards in Boston and New York. The lectures have, indeed, been materially expanded; but, as we have already indicated, Prof. Reid has more to say, and we hope he will take an early opportunity to say it. The present volume is lamentably incomplete in one material point — it contains not a single note of reference to authorities.

## GENERAL NOTICES.

### HISTORY.

*A General History of the World.* By Oscar Browning, M.A., Senior Fellow of King's College, Cambridge, and late University Lecturer in History, Vice-President of the Royal Historical Society, &c. (5s. net. Edward Arnold.)

It requires some courage to face seven or eight hundred close-packed pages of history, ranging from Egypt and Assyria, through Greece and Rome and the European countries of the Middle Ages, down to the year of grace 1902. One is not surprised that much even of British history must be severely curtailed, or left altogether for study elsewhere. The question forces itself on the beholder: Why should a one-volume historian attempt to take the whole world—and all time—for his province? However, if the enterprise was to be undertaken, it would be rash to say that any other writer would have made a better job of it. The matter is reasonably well balanced; the essential things are seized and clearly presented; and the style is remarkably fluent, considering the persistent condensation. There are eight good maps and nine useful genealogical tables.

*Studies in British History and Politics.* By D. P. Heatley, Lecturer in History in the University of Edinburgh. (6s. net. Smith, Elder, & Co.)

Here are five essays, various in subject-matter, but uniformly instructive and capable. First Mr. Heatley discusses the views of Bacon, Milton, and Laud on the problem of Church and State—an essay on the interaction of religion and politics in Britain. Next he describes "An American-Independence Group," which he connects strikingly with his own University. Dr. Fothergill was a Rhodesian before Rhodes: James Wilson was a well known lawyer—the "best-read lawyer in the important Constitutional Convention of 1787," and one of the first judges of the Supreme Court; John Witherspoon, President of Princeton University, a descendant of John Knox, "as orator, as political inspirer, craftsman, and instigator, was by no one far surpassed in furthering the American Revolution"; Arthur Lee and Benjamin Rush are less known. "Some Marks of English History" is the heading of a very suggestive treatment of the great problem of politics, how to harmonize authority and liberty (*imperium et libertas*). "Politics as a Practical Study" is a fresh and instructive handling of matters subject to multifarious misconception. The final paper deals with the character and the work of F. W. Maitland. There is a liberal appendix of useful notes and references. These

chapters well deserve the notice of thoughtful students of history and politics, whatever their political views.

*In Feudal Times: Social Life in the Middle Ages.*

By E. M. Tappan, Ph.D. (5s. net. Harrap.)

A fascinating book, simply and agreeably written, and profusely illustrated from contemporary sources and old manuscripts. Dr. Tappan does not essay to narrate the involved history of the Middle Ages; he confines himself to the description of characteristic customs, and to the highest development of each custom. The nurture of page and squire, the knight with his armour and arms, jousts and tournaments, how to capture a castle, daily life in the castle and on the manor, pilgrimages and crusades, military orders and monasteries, hermits and friars, life in town, guilds and traders, schools and literature, science and medicine, architecture and the arts—such are the main subjects of treatment. The standpoint of the highest development of each custom inevitably results in a certain one-sidedness: the darker side of the crusades and of monastic life, for example, is barely even indicated. So far as it goes, however, the volume is most instructive and attractive, and should be read with the ordinary school history. There are some two hundred illustrations, mainly useful.

### GEOGRAPHY.

*A Textbook of Geography, Practical and Physical.* By Ronald M. Munro, M.A., High School, Kirkcaldy. (Pp. 480; 435 illustrations. 3s. 6d. net. Edinburgh: Cormack.)

This book will meet with and deserve a very great demand. It is quite a new idea in geography books, and the result is almost encyclopædic in character. It gains a high degree of success in its attempts to cover every aspect of geography, except regional study, and in this connexion the very extensive index, almost amusing in its strange juxtapositions, hints at the variety of topics included. The section on "Means of Communication" is especially good, but it is to be regretted that the book is rather unequal in character. There are many illustrations, and the book would gain by the omission of several, which are distinctly crude. There is rather too much "smoothing" in the climatic diagrams, and it is by no means clear which are isobars in Figs. 84 and 85, nor is Jordan's photographic sunshine recorder the one in common use at present. The section on map projections stresses those in less common use, and Mercator's projection appears to be incorrectly described as a true cylindrical projection. The classification of human races appears to omit all reference to the important work done relative to any classification based on hair characteristics. Future editions will no doubt improve these few portions which are less satisfactory.

*Deductive Exercises in Geography: Europe.* By Cyril R. Dudley. (Pp. 62; 27 whole-page maps. 1s. G. Philip.)

A book of exercises containing a fairly complete atlas. In the hands of an intelligent pupil it would be very valuable, and systematic work through the entire book would result in the fixing of ideas gained during oral teaching. An elaborate system of symbols is employed so that the maps contain much information without undue crowding. Possibly the least satisfactory map is XI B, intended to be indicative of racial geography, though apparently linguistic borders only are mapped, and these not satisfactorily.

"The Oxford Geographies."—*An Introduction to Plant Geography.* By M. E. Hardy, D.Sc. (Pp. 192; 66 Figs. 2s. 6d. Clarendon Press.)

A book of reasonable size and price, written in a pleasant, non-technical manner, with well chosen drawings and photographs of vegetations. Its 35 chapters are classified in four groups—viz.: Introduction; Main Vegetations of the Globe (arranged in reference to species and areas); Conditions of Plant Life; Survey of the Continents. The distribution maps in the closing chapters are simplified summaries of the excellent vegetation maps compiled by Dr. Hardy in the "Oxford Wall Maps" series. Though the volume is obviously intended for the geography class of the upper forms, yet it would appeal to the general reader, introducing to him a fascinating section of natural science which has been too much neglected in the past. Such books as the present one will do much to gain a better recognition of the important study of plant geography.

### MATHEMATICS.

*Elementary Algebra.* Vol. II. By C. Godfrey, M.V.O., M.A., Head Master of the Royal Naval College, Osborne, and A. W. Sidons, M.A., Assistant Master at Harrow School. (With Answers, 2s. 6d.; without Answers, 2s. Cambridge University Press.)

This book makes a somewhat refreshing departure from the usual method of teaching algebra by its introduction of the elements of the calculus. This is largely rendered possible through the medium of an excellent chapter on variation which by its clear exposition of functional relationship forms a good foundation for succeeding chapters on gradients and rate of change, and enables an easy, yet

(Continued on page 384.)

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17528. (Professor NEUBERG.)—Résoudre l'équation

$$\begin{vmatrix} x & x & x & a & a & a \\ a & x & x & x & a & a \\ a & a & x & x & x & a \\ a & a & a & x & x & x \\ x & a & a & a & x & x \\ x & x & a & a & a & x \end{vmatrix} = 0.$$

Solution by F. J. TURTON, Professor T. P. TRIVEDI, M.A., LL.B., and others.

To resolve

$$\begin{vmatrix} x & x & x & a & a & a \\ a & x & x & x & a & a \\ a & a & x & x & a & a \\ a & a & a & x & x & x \\ x & a & a & a & x & x \\ x & x & a & a & a & x \end{vmatrix} = 0.$$

(1) (3) (4) (2)

Determinant equals subtracting (1) from (3) and (2) from (4),

$$\begin{vmatrix} x & x & 0 & 0 & a & a \\ a & x & x-a & x-a & a & a \\ a & a & x-a & x-a & x & a \\ a & a & 0 & 0 & x & a \\ x & a & a-x & a-x & x & x \\ x & x & a-x & a-x & a & x \end{vmatrix},$$

two columns are identical; therefore  $D \equiv 0$ . Hence the determinant = 0 for all values of  $x$ .

Note by the PROPOSER.

C'est avec intention que j'ai proposé l'identité  $D \equiv 0$  comme une équation à résoudre. Cette identité résulte aussi de la décomposition d'un circulant en facteurs. On peut encore la démontrer en ajoutant à la première colonne les autres multipliées respectivement par les racines  $\theta$ ,  $\theta^2$  de l'équation  $1 + y + y^2 = 0$  et par 1,  $\theta$ ,  $\theta^2$ ; tous les éléments de la première colonne deviennent

$$x(1 + \theta + \theta^2) + a(1 + \theta + \theta^2) = 0.$$

17509. (Professor E. J. NANSON.)—Find the primitive of  $y = 2xp + kp^2$ .

Solution by C. V. L. LYCETT and others.

$y = 2xp + kp^2 \dots \dots \dots (i)$   
 Differentiate; then  $p = 2p + 2(x + kp) dp/dx$ ,  
 or  $p^2 + 2xp \cdot dp/dx + 2kp^2 \cdot dp/dx = 0$ ;  
 therefore  $xp^2 + \frac{2}{3}kp^3 + \frac{1}{3}c = 0$ ,  
 where  $\frac{1}{3}c$  is a constant; therefore  $2kp^3 + 3xp^2 + c = 0$ .  
 Now  $2kp^3 + 4xp^2 - 2yp = 0$ ;  
 therefore  $xp^2 - 2yp - c = 0 \dots \dots \dots (ii)$   
 From (i) and (ii),  
 $p^2(2y^2 + 2cx) = p \cdot (-ck + xy) = 1/(2x^2 + 2yk)$ .  
 Hence  $(xy - ck)^2 = 4(y^2 + cx)(x^2 + yk)$ ,  
 which is the required primitive.

17431. (Professor R. W. GENESE, M.A.)—ABCD is any quadrilateral, P, Q, R, S points of division on the sides, such that AP : PB = DQ : QC and AR : RD = BS : SC. Prove that PQ, RS divide each other in the same two ratios.

(Continued on page 392.)

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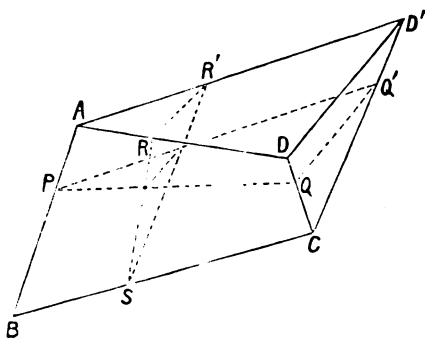
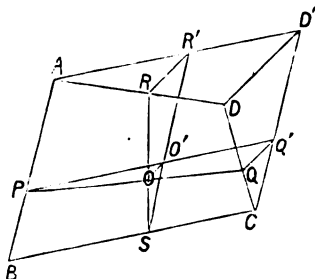
# CLERGY MUTUAL ASSURANCE SOCIETY.

Solutions (I) by Professor J. E. A. STEGGALL, M.A.;  
 (II) by PHILIP T. STEPHENSON and R. F. DAVIS, M.A.;  
 (III) by HENRY RIDDELL, M.E.

(I) There are various solutions of this geometrical theorem, e.g., the sides AB, CD and any lines dividing BC, AD in the same ratio are generators of a hyperbolic paraboloid, and therefore all cut the other system of generators derived from BC, AD by the same process, and therefore in the same ratio.

An easy quaternion solution may be found, but perhaps the best of all is the almost intuitive proof obtained by completing the parallelogram ABCD', and drawing PQ' parallel to BC, SR' parallel to BA, whence RR' is parallel to DD' parallel to QQ', and the whole theorem is obvious.\*

Of course ABCD need not be a plane quadrilateral; in fact, the proof is even more obvious if it be regarded as skew, for the parallelism of the planes



PQQ', ADD' is clearly seen. A further construction completing the wedge BCD'AA'D, AA' parallel and equal to D'D gives an interesting extension of the figure.

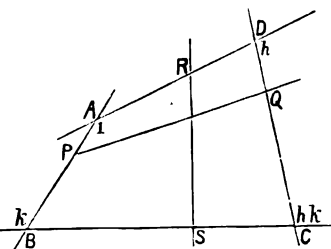
(II) Let AP/PB = k,  
 AR/RD = h.

Place masses 1, k, hk, h as in figure.

Centre of gravity of A and B is at P, of C and D at Q, and therefore of all four divides PQ in ratio

$$(h + hk)/(1 + k) = h/1.$$

Similarly it divides RS in ratio k/1; therefore, &c.



(III) Draw the parabola having AB, DC, AD, and BC for tangents. Then clearly PQ is a tangent to the same parabola, as is also RS. Hence the theorem follows at once.

Note by C. E. YOUNGMAN, M.A.

Newton (*Principia*, Cor. iv to the Laws of Motion) says:—

Si puncta duo progrediantur uniformi cum motu in lineis rectis, et distantia eorum dividatur in ratione data, punctum dividens vel quiescit vel progreditur uniformiter in linea recta. Hoc postea in Lemmate xxiii ejusque Corollario demonstratur, si punctorum motus fiant in eodem plano; et eadem ratione demonstrari potest si motus illi non fiant in eodem plano. . . .

. . . Igitur in systemate corporum quae actionibus in se invicem alisque omnibus in se extrinsecus impressis omnino vacant, ideoque moventur singula uniformiter in rectis singulis, commune omnium centrum gravitatis vel quiescit vel movetur uniformiter in directum.

This applies to 17343 also; for there, if S be the focus of the parabola enveloping PQ—as in Mr. Riddell's solution (see *Reprint*, New Series, Vol. xxiii, p. 96)—the angles of SPQ are constant, as well as those of PQR; so that R is the centroid of certain constant masses at S, P, Q.

17492. (Professor J. C. SWAMINARAYAN, M.A.)—Absolute curvature and tortuosity at a point of a curve in space are  $1/\rho$  and  $1/\sigma$

\* Other solvers also use this method.

respectively. If the length of the arc, measured from a fixed point on the curve, be equal to  $s$ , show that the co-ordinates  $(x, y, z)$  of the point are given by the formulæ,

$$x = s - \frac{s^3}{6\rho^2} + \frac{s^4}{8\rho^3} \frac{d\rho}{ds},$$

$$y = \frac{s^2}{2\rho} - \frac{s^3}{6\rho^2} \frac{d\rho}{ds} + \frac{s^4}{24\rho^3} \left[ 2 \left( \frac{d\rho}{ds} \right)^2 - \left( 1 + \rho \frac{d^2\rho}{ds^2} + \frac{\rho^2}{\sigma^2} \right) \right],$$

$$z = \frac{s^3}{6\rho\sigma} - \frac{s^4}{24\rho^2\sigma^2} \left[ 2\sigma \frac{d\rho}{ds} + \rho \frac{d\sigma}{ds} \right],$$

where powers of  $s$  higher than the fourth are neglected.

Solutions (I) by A. H. R. GOLDIE, M.A., and T. P. TRIVEDI, M.A., LL.B.; (II) by Rev. T. R. TERRY, M.A., F.R.A.S., and J. G. MADDEN.

(I) Take the tangent, normal and binormal at the fixed point from which  $s$  is measured as fixed axes, and let the tangent normal and binormal at the point P whose co-ordinates are to be found be regarded as a set of moving axes. Their motion is given by

$$p = dx, \quad q = 0, \quad r = 0,$$

$$d\phi_1 = d\tau, \quad d\phi_2 = 0, \quad d\phi_3 = d\epsilon,$$

where  $\epsilon$  and  $\tau$  are angles of contingence and torsion. Hence, if  $l, m, n$  be the direction cosines of any line fixed in space, in particular of the element of arc at P, we have

$$0 = \Delta l = dl - m d\epsilon,$$

$$0 = \Delta m = dm + l d\epsilon - n d\tau,$$

$$0 = \Delta n = dn + m d\tau.$$

Thus  $dl/ds = m \cdot d\epsilon/ds = m \cdot 1/\rho = m\kappa$  say,  
 and  $dm/ds = -l \cdot d\epsilon/ds + n \cdot d\tau/ds = -l\kappa + n\kappa'$ ,  
 where  $\kappa' = 1/\sigma$ , and  $dn/ds = -m\kappa'$ .

Also  $l = 1, m = 0, n = 0$  at fixed origin. Now assuming

$$x = f(s), \quad y = \phi(s), \quad z = \psi(s),$$

we may expand  $x, y, z$  in terms of  $s$ . Take  $y$ , for example,

$$y = \phi(0) + s\phi'(0) + \frac{1}{2}s^2\phi''(0) + \frac{1}{6}s^3\phi'''(0) + \frac{1}{24}s^4\phi''''(0).$$

But  $\phi(0)$  = value of  $y$  at fixed origin = 0,

$$\phi'(0) = \text{,,} \quad \frac{dy}{ds} \text{ (i.e. of } m) \text{,,} = 0,$$

$$\phi''(0) = \text{,,} \quad \frac{dm}{ds} \text{,,} = -\kappa = -1/\rho,$$

$$\phi'''(0) = \text{,,} \quad \frac{d^2m}{ds^2} \text{,,} = -l \cdot d\kappa/ds - \kappa \cdot dl/ds + n \cdot d\kappa'/ds + \kappa' \cdot dn/ds$$

$$= -d\kappa/ds + 1/\rho^2 \cdot d\rho/ds,$$

since  $n = 0, dn/ds = -m\kappa' = 0, dl/ds = m\kappa = 0,$

$$\phi''''(0) = \text{value of } \frac{d^3m}{ds^3} \text{ at fixed origin}$$

$$= \text{,,} \quad -l \frac{d^2\kappa}{ds^2} - 2 \left( \frac{dl}{ds} \right) \left( \frac{d\kappa}{ds} \right) - \kappa \frac{d^2l}{ds^2} + \kappa' \frac{d^2n}{ds^2}$$

$$= \text{,,} \quad -l \frac{d^2\kappa}{ds^2} - \kappa \frac{d^2l}{ds^2} + \kappa' \frac{d^2n}{ds^2}$$

$$= \text{,,} \quad -l \left( \frac{d^2\kappa}{ds^2} \right) - \kappa \left( m + \kappa \frac{dm}{ds} \right) - \kappa' \left( m \frac{d\kappa'}{ds} + \kappa' \frac{dm}{ds} \right)$$

$$= -d^2\kappa/ds^2 + \kappa^3 + \kappa'^2\kappa$$

$$= -2 \left( \frac{d\rho}{ds} \right)^2 / \rho^3 + \left( \frac{d^2\rho}{ds^2} \right) / \rho^2 + 1/\rho^3 + 1/\sigma^2\rho.$$

$$\text{Hence } -y = \frac{s^2}{2\rho} - \frac{s^3}{6\rho^2} \frac{d\rho}{ds} + \frac{s^4}{24\rho^3} \left\{ 2 \left( \frac{d\rho}{ds} \right)^2 - \left( 1 + \rho \frac{d^2\rho}{ds^2} + \frac{\rho^2}{\sigma^2} \right) \right\}.$$

Similarly  $x$  and  $z$  may be obtained.

[The  $y$  axis here is evidently taken in the opposite direction to that in the Question set.]

(II) Let suffixes denote differentials with respect to  $s$ , and let an expression enclosed in square brackets mean the value of that expression at the fixed point or origin. The tangent at the origin is the axis of  $x$ ; therefore

$$[x_1] = 1, \quad [y_1] = 0, \quad [z_1] = 0 \dots\dots\dots(A).$$

The principal normal is the axis of  $y$ ; therefore

$$[x_2] = 0, \quad [y_2] = \rho^{-1}, \quad [z_2] = 0 \dots\dots\dots(A).$$

At every point on the curve we have

$$x_1x_2 + y_1y_2 + z_1z_2 = 0 \dots\dots\dots(1),$$

$$x_2^2 + y_2^2 + z_2^2 = \rho^{-2} \dots\dots\dots(2),$$

$$x_3(y_1y_2 - y_1z_2) + y_3(z_1x_2 - z_1y_1) + z_3(x_1y_2 - x_2y_1) = \rho^{-2}\sigma^{-1} \dots\dots(3).$$

Differentiating (1) and (2) we have

$$x_1x_3 + y_1y_3 + z_1z_3 = -\rho_2^2 \dots\dots\dots(4),$$

$$x_2x_3 + y_2y_3 + z_2z_3 = -\rho^{-3}\rho_1 \dots\dots\dots(5).$$

At the origin (4), (5) and (3) give

$$[x_3] = -[\rho^{-2}], \quad [y_3] = -[\rho^{-2}\rho_1], \quad [z_3] = [\rho^{-1}\sigma^{-1}] \dots\dots\dots(A).$$

Differentiating (4), (5), and (3), we have

$$x_1x_4 + x_2x_3 + \dots = 2\rho^{-3}\rho_1 \dots\dots\dots(6),$$

$$x_2x_4 + x_3^2 + \dots = 3\rho^{-4}\rho_1^2 - \rho^{-3}\rho_2 \dots\dots\dots(7),$$

$$x_4(y_1z_2 - y_2z_1) + y_4(z_1x_2 - z_2x_1) + z_4(x_1y_2 - x_2y_1) = -(2\rho_1\sigma + \rho\sigma_1)\rho^{-3}\sigma^{-2} \dots\dots\dots(8);$$

therefore at the origin we have

$$[x_4] = [3\rho^{-3}\rho_1], \quad [y_4] = \{\rho^{-3}[2\rho_1^2 - (1 + \rho\rho_2 + \rho^2\sigma^{-2})]\},$$

$$\text{and} \quad [z_4] = -[\rho^{-2}\sigma^{-2}(2\rho_1\sigma + \rho\sigma_1)] \dots\dots\dots(A).$$

Substituting the values (A) in the expansions of  $x, y, z$  by Maclaurin's theorem, we have the required results.

17540. (F. GLANVILLE TAYLOR.)—H is the orthocentre, O the circum-centre of ABC. H' is such that O is the mid-point of HH'; AH', BH', CH' meet BC, CA, AB respectively in K, L, M. Show that the perpendiculars through O to the sides of ABC respectively pass through the mid-points of the sides of KLM.

*Solution by the PROPOSER and others.*

Draw H'X', MR<sub>1</sub>, LQ<sub>1</sub>, OD perpendicular to BC, and H'Z' perpendicular to AB. Then because O is the mid-point of HH', therefore

$$\begin{aligned} \Delta BH'C + \Delta BHC &= 2\Delta BOC \\ &= \Delta AHB + \Delta AHC \\ &= \Delta ABC - \Delta BHC; \end{aligned}$$

therefore

$$\Delta BH'C = \Delta ABC - 2\Delta BHC;$$

therefore

$$\begin{aligned} LC/LA &= \Delta BH'C/\Delta BH'A \\ &= \Delta ABC - 2\Delta BHC \\ &= \Delta ABC - 2\Delta AHB; \end{aligned}$$

therefore

$$\begin{aligned} LC &= (\Delta ABC - 2\Delta BHC) CA/2\Delta CHA, \\ LA &= (\Delta ABC - 2\Delta AHB) CA/2\Delta CHA. \end{aligned}$$

Similarly,

$$MB = (\Delta ABC - 2\Delta BHC) AB/2\Delta AHB;$$

therefore  $LC/MB = (CA/AB)(\Delta AHB/\Delta CHA) = (CA/AB)(BX/CX)$ ;

therefore  $Q_1C = (XC/CA)LC = (BX/AB)MB = BR_1$ ;

therefore

$$R_1D = DQ_1, \dots$$

We have received later the following Solution by Mr. R. F. DAVIS, M.A. :—

Let Z be the middle point of AH'; then ZO is parallel to AH and therefore passes through D the middle point of BC. Since BMCN is a quadrilateral, the middle points of the diagonals MN, BC, AH' are collinear. Hence the middle point of MN lies on ZOD.

17512. (C. M. ROSS, B.A.)—If  $a_1, a_2, \dots, a_n$  are the roots of the equation

$$x^n + p_1x^{n-1} + p_2x^{n-2} + \dots + p_n = 0,$$

find the equation whose roots are

$$a_1^2/(a_2 + a_3 + \dots + a_n), a_2^2/(a_1 + a_3 + \dots + a_n), \dots, a_n^2/(a_1 + a_2 + \dots + a_{n-1}).$$

*Solution by C. E. WRIGHT, and others.*

The required roots are  $a_1^2/(-p_1 - a_1), \dots$ . Put

$$y = x^2/(-p_1 - x) \text{ or } x^2 + xy + p_1y = 0.$$

Using this multiplied by  $x^0, x^1, \dots, x^{n-1}$ , in turn, and the original equation multiplied by  $x^0, x^1$ , and eliminating  $x$ ,

$$\begin{vmatrix} 1 & p_1 & p_2 & \dots & p_n & \dots & 0 \\ 0 & 1 & p_1 & p_2 & \dots & p_n & \dots & 0 \\ 1 & y & p_1y & 0 & 0 & \dots & 0 & \dots & p_n \\ 0 & 1 & y & p_1y & 0 & \dots & \dots & \dots & \dots \\ \dots & \dots & \dots & \dots & \dots & \dots & \dots & \dots & \dots \\ 0 & 0 & \dots & \dots & \dots & \dots & 1 & y & p_1y \end{vmatrix} = 0,$$

gives the equation required.

*Series of Alternate Sign.*

By F. TAVANI.

If  $a_n < a_{n+1}$ , we have

$$\frac{1}{a_n^2} > \frac{1}{(\rho-1)(a_{n-1}-a_n)} \left( \frac{1}{a_n^{\rho-1}} - \frac{1}{a_{n+1}^{\rho-1}} \right) > \frac{1}{a_{n+1}^{\rho}}, \text{ for } \rho > 1.$$

Hence

$$\begin{aligned} (1) \text{ upper limit of set } [a_{n+1}-a_n]_{n=1}^{\infty} (\rho-1) \sum_{\substack{\text{for all odd} \\ \text{values of } n}} \frac{1}{a_n^{\rho}} \\ > \sum_{\substack{\text{for all odd} \\ \text{values of } n}} \left( \frac{1}{a_n^{\rho-1}} - \frac{1}{a_{n+1}^{\rho-1}} \right) > \text{lower limit of set } [a_{n+1}-a_n]_{n=1}^{\infty} (\rho-1) \sum_{\substack{\text{for all even} \\ \text{values of } n}} \frac{1}{a_n^{\rho}}; \end{aligned}$$

if we make  $\rho = 2$ , we have

$$\begin{aligned} (2) \text{ upper limit } [a_{n+1}-a_n]_{n=1}^{\infty} \sum_{\substack{\text{odd values} \\ \text{of } n}} \frac{1}{a_n^2} \\ > \sum_{\substack{\text{odd values} \\ \text{of } n}} \left( \frac{1}{a_n} - \frac{1}{a_{n+1}} \right) > \text{lower limit } [a_{n+1}-a_n]_{n=1}^{\infty} \sum_{\substack{\text{even values} \\ \text{of } n}} \frac{1}{a_n^2}. \end{aligned}$$

With this relation the theory of series of alternate sign is completely reduced to that of positive series—the latter being sufficient to determine the criteria for the convergence and divergence of the former.

12827. (H. W. CURJEL, M.A.)—Show that the area of the evolute of the evolute of an ellipse whose semi-axes are  $a$  and  $b$ , is

$$[3\pi(15a^4 + 34a^2b^2 + 15b^4)(a^2 - b^2)^2]/128a^3b^3.$$

*Additional Solution by F. E. RELTON, B.A., B.Sc.*

The evolute of  $x^2/a^2 + y^2/b^2 = 1$  being

$$(ax)^3 + (by)^3 = (a^2 - b^2)^3 \dots\dots\dots(i),$$

any point on it is given by

$$ax = (a^2 - b^2)^3 \sin^3 \theta, \quad by = (a^2 - b^2)^3 \cos^3 \theta \dots\dots\dots(ii),$$

The area between the two evolutes is given by

$$\delta A = \frac{1}{2} \rho^2 \delta \psi.$$

Now

$$\tan \psi = dy/dx = y', \quad \rho = (1 + y'^2)^{1/2}/y'',$$

whence

$$\delta A = (1 + y'^2)^{3/2} dx/2y''.$$

From (i) and (ii),

$$y' = -a/b \tan \theta;$$

$$y'' = a^2/3b(a^2 - b^2) \sin^4 \theta \cos \theta, \quad a\delta x = 3(a^2 - b^2) \sin^2 \theta \cos \theta \delta \theta.$$

Hence the area between the evolutes is for the four quadrants

$$\begin{aligned} &= 4 \int_0^{\pi/2} 9(a^2 - b^2)^2 (a^2 \cos^2 \theta + b^2 \sin^2 \theta)^3 \sin^2 \theta \cos^2 \theta \delta \theta / a^3 b^3 \\ &= 9\pi(a^2 - b^2)^2 (5a^4 + 6a^2b^2 + 5b^4)/128a^3b^3 \dots = (a). \end{aligned}$$

The area of the evolute (i) is given for the four quadrants by

$$4 \int_0^{\pi/2} 3(a^2 - b^2)^2 \sin^2 \theta \cos^4 \theta \delta \theta / ab = 3\pi(a^2 - b^2)^2 / 8ab \dots (b).$$

The area of the evolute of the evolute is therefore  $(a + b)$

$$= 3\pi(a^2 - b^2)^2 (15a^4 + 34a^2b^2 + 15b^4)/128a^3b^3.$$

QUESTIONS FOR SOLUTION.

17580. (E. R. HAMILTON, B.Sc.)—Two rods of indefinite length are pivoted at O, O' respectively and intersect in P. Determine the locus of P when the rods rotate with angular velocities  $\omega, k\omega$  respectively. Also discuss the case when they are  $\omega$  and  $f(\omega)$ .

17581. (N. W. McLACHLAN, B.Sc. Eng. (Lond.), A.M.I.E.E.)—One vertical section of an oil well for a dynamo bearing is a trapezium with parallel sides 12" and 10". Another vertical section, at right angles to the former, is a rectangle 8" long. The depth of each section is 6". Find the level of the oil when the well is  $\frac{1}{2}$  full.

\* Educational Times, January 1911, General Formulæ, by the writer.

**17582.** (W. E. H. BERWICK.)—A plane is cut up into unit squares by the lines  $x = m, y = n$ , where  $m, n$  are integers, the unit of length being one inch. How must a circular disc, radius 4 in., be laid flat on the plane so that it may (i) entirely cover as many squares as possible, (ii) entirely or partially cover as many squares as possible?

**17583.** (J. J. BARNIVILLE, B.A.)—(1) Express  $(x^2 + x - 1)^2 + 6x^2$  in the forms  $A^2 - 2B^2$  and  $A^2 + 3B^2$ . (2) Express  $(x^2 + x + 3)^2 - 6x^2$  in the forms  $A^2 + 2B^2$  and  $A^2 + 3B^2$ . (3) Express  $(x + 1)^4 + 9x^2$  in the forms  $A^2 \pm 3B^2$ .

**17584.** (D. BIDDLE.)— $N = xy = H^2 - h^2$ . Let

$$y = m_1x \pm r_1, \quad H = m_2h \pm r_2.$$

Prove that  $x = \{(4m_1N + r_1^2) \mp r_1\} / 2m_1 \dots \dots \dots (1);$

and that  $m_2H - h = \{(m_2^2 - 1)N + r_2^2\}^{1/2} \dots \dots \dots (2).$

N.B.—Bearing in mind that when  $x$  and  $y$  are remote from each other,  $H$  and  $h$  are near, and *vice versa*, we can see that the successive trial multipliers of  $N$  should be 3, (2); 4, (1); 8, (1) or (2); 12, (1); 15, (2); 16, (1); 20, (1); 24, (1) or (2); 28, (1); and so on. We might have started with  $-1, (2)$ , treating  $m_2$  as zero, in which case  $r_2^2 > N$ , and  $= H^2$ . But, unless  $N$  be large, about 3 or 4 squares above each trial multiple will suffice, and, failing to find  $r_1^2$  or  $r_2^2$  as the difference, we can proceed to the next multiple

**17585.** (Professor NEUBERG.)—Eliminer  $x, y, z$  entre les équations  $xy(x + y) = c, \quad yz(y + z) = a, \quad zx(z + x) = b, \quad xyz = d.$

**17586.** (C. M. ROSS, B.A.)—The tangent plane at any point of the cubic surface  $x^3 + y^3 + z^3 - 3xyz = a^3$  cuts the co-ordinate axes  $Ox, Oy, Oz$  in the points  $A, B, C$ . Find the locus of the centroid of the triangle  $ABC$ .

**17587.** (C. E. YOUNGMAN, M.A.)—If  $A$  and  $B$  are fixed points, with  $P$  moving under the law  $PA : PB = \text{const.}$ , the image of  $PA$  in  $PB$  is normal to a limaçon. The feet of the other three normals from  $P$  form a triangle of constant area and Brocard angle, having  $B$  for centroid.

**17588.** (R. TATA, M.A.)—The centres of circles touching the parabola  $y^2 = 4ax$ , and cutting it at the extremities of a focal chord, lie on the cubic  $(x - a)^2(2x - 5a) = 27ay^2$ .

**17589.** (Professor K. J. SANJANA, M.A.)—From variable points on a conic pairs of chords are drawn in fixed directions and their other extremities joined. Find the loci of intersections of tangents and normals at the ends of the joining line. Examine in particular the case of the parabola.

**17590.** (W. N. BAILEY.)—Between two conics  $S$  and  $S'$ , the invariant relation  $\Theta^2 + 8\Delta^2\Delta' = 4\Delta\Theta\Theta'$  holds in the following cases:—(1) Questions 17536, 17555, 17570; (2) if  $S, S'$  are such that the other tangents drawn to  $S$  from the points where any tangent to it cuts  $S'$  intersect on a fixed straight line; (3) if a hexagon may be described in  $S'$  with each consecutive pair of corners conjugate with respect to  $S$ ; (4) if an infinite number of triangles can be inscribed in  $S'$  which are circumscribed to the polar reciprocal of  $S'$  with respect to  $S$ . Assuming any one of these properties, can the others be deduced without the use of invariants?

**17591.** (A. M. NESBITT, M.A.)—The tangent at  $P$  to an ellipse meets the axes at  $Q, Q'$ , and  $QQT'Q'$  is a rectangle. The perpendicular from  $C$  to  $TP$  will pass through the centre of curvature at  $P$ . Prove this by pure geometry.

**17592.** (Professor J. C. SWAMINARAYAN, M.A.)—In a triangle  $ABC$ ,  $AO, BO, CO$  join the angular points with any point  $O$  and are produced to cut the opposite sides in  $P, Q, R$  respectively. Prove that  $AO.OQ.OB + BO.ORB + CO.OP.OQ + 2OP.OQ.ORB = AO.BO.CO.$

**17593.** (E. G. HOGG, M.A.)—The difference of the squares of the distances of the Brocard points of the triangle  $ABC$  from the orthocentre of the triangle is

$$\frac{(b^2 - c^2)(c^2 - a^2)(a^2 - b^2)}{\Sigma(b^2c^2)}$$

**17594.** (Professor E. J. NANSON.)—If  $P, Q, R$  are points in the sides of a triangle  $ABC$  such that the triangles  $AQR, BRP, CPQ$  are equal in area, then  $P, Q, R$  must cut  $BC, CA, AB$  in the same ratio.

**17595.** (Professor NEUBERG.)—Étant donné un triangle  $ABC$  dont les hauteurs sont  $h, h', h''$ , on mène aux distances  $\alpha, \beta, \gamma$  des parallèles aux côtés  $BC, CA, AB$ . Ces parallèles forment un triangle  $A'B'C'$  semblable à  $ABC$ . Démontrer que

$$B'C'/BC = 1 - \alpha/h - \beta/h' - \gamma/h''.$$

**17596.** (R. F. DAVIS, M.A.)—Points  $X, X'$  on  $BC$  equidistant from the middle point of  $BC$  are defined as "isotomic conjugates" (Casey, and elsewhere). Prove that, if  $X, X'$  are any isotomic conjugates on  $BC; Y, Y'$  on  $CA; Z, Z'$  on  $AB$ ; then the triangles  $XYZ, X'Y'Z'$  are equal in area. [Suggested by Mr. W. F. Beard's Question 17539, of which it is a generalization.]

**17597.** (V. DANIEL, B.Sc.)—Show, analytically, that if the perimeter of a triangle is less than four times its shortest side (i) three pairs of isogonal conjugates can be found whose joins subtend, at the vertices of the triangle, angles  $\theta_A, \theta_B, \theta_C$ , which are either equal, or two pairs of which are supplementary;

$$(ii) \tan^2 \frac{1}{2}\theta_1 + \tan^2 \frac{1}{2}\theta_2 + \tan^2 \frac{1}{2}\theta_3 = 1;$$

(iii) a simple geometrical construction for one pair of points  $P_A, Q_A$  is to cut the circum-circle of  $IBC$  with a circle centre  $I$ , radius  $IA$ , in points  $P'_A, Q'_A$  whose joins to  $A$  meet the circle  $IBC$  again in  $P_A, Q_A$ .

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**12410.** (V. RAMASWAMI AIYAR, M.A.)— $ABCD$  is a given tetrahedron,  $X$  its circumscribing sphere, and  $Y$  the sphere described on the line joining the circum-centre  $O$  to the Lemoine point  $L_0$  as diameter, and  $S, S'$  are the limiting points of the system of spheres coaxial with  $X$  and  $Y$ . Prove that the tetrahedron  $ABCD$  inverts with respect to  $S$  or  $S'$  into an isosceles tetrahedron.

**12544.** (Professor POITIERS.)—Discuter les racines de l'équation  $x^4 + [2d(d - a) - b]x^2 + d^2[(d - a)^2 - b^2] = 0,$

où  $d$  est un paramètre variable de  $-\infty$  à  $+\infty; a, b$  sont des nombres positifs constants. Trouver la condition pour que le produit de deux racines soit égale à la somme des deux autres.

**12859.** (Professor A. DROZ-FARNY.)—Les hyperboles d'Apollonius, des divers points d'une droite perpendiculaire sur un des axes de l'ellipse, ont une asymptote en commun.

**12927.** (J. O'BYRNE CROKE, M.A.)—Solve the equations  $x^2 + yz = a, \quad y^2 + xz = b, \quad z^2 + xy = c.$

**12944.** (Professor LEMOINE.)—Je définis la fonction  $\phi(x)$  par la relation

$$\phi(x) = x + \frac{1}{2}(x - 1) + \frac{1}{3}(x - 2) + \dots + 3/(x - 2) + 2/(x - 1) + 1/x,$$

$x$  étant un nombre entier. Démontrer que la série dont le terme de rang  $n$  est  $1/\phi(n)$  est divergente.

**13059.** (H. J. WOODALL, A.R.C.S.)—If  $p$  is prime to  $l - 1$ , and  $m$  is the least number such that  $l^m - 1 \equiv 0 \pmod{p}$ , find the least  $n$  such that  $l^n - 1 \equiv 0 \pmod{p^2}$ .

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CHANGE there must always be, either growth or decay. Education is not immune from this liability. Sometimes the change proceeds so gradually that we are almost unconscious of it. Sometimes the change is fast and furious. So it has been for the last twenty or thirty years. Experiments without end have been tried; curricula have been reorganized; buildings have been revolutionized; teachers have been re-made. Yet no one is quite satisfied. Principal Griffiths, in his presidential address to Section L of the British Association, tells us that throughout the country there is a general feeling of dissatisfaction with education and a general desire for further change. We admit that there is a sense of unrest and a widespread spirit of criticism. But the criticism is not always well-founded. The employer nowadays expects the school to work miracles. Fifty years ago allowance was made for human weakness; to-day the school is required to turn out a finished tool for money-making. Schools do their best according to their respective circumstances. No one accuses them of perfection; and they are not guilty of the stagnation that results from complacency. We are still seeking better things.

Physiology and its handmaid Hygiene are pointing the way for us. Speaking at the meeting of the Summer School of the Association for the reform of the teaching of Latin, Sir Clifford Allbutt, Regius Professor of Physics at Cambridge, said: “Modern physiology is going as far to change our outlook upon life as it is in conversion of our personal habits; but it is doing more than this: it is altering our methods and systems, and, in particular, it is turning or will turn our methods of teaching inside out.” Last month, in writing on Ambidexterity, we pointed out that the muscular activities involved in writing had an important effect on the growth of the brain. Sir Clifford tells us that languages are tongues, and that no real grasp can be acquired unless speech accompanies writing and reading. The use of the muscles that control the organs of speech help the growth of the

brain. It is to the physiologists that teachers look for guidance. We want a new time-table. The old values are discredited in the light of modern knowledge. For many years we have been introducing this subject or that, in an earnest attempt to make the time-table wider, better balanced, more useful. We need now an authoritative utterance on the principles that should underlie the choice of a suitable curriculum. There are many workers in the field, and before long we may hope for agreement on the main lines.

In the meantime it may be said with some confidence that there are two directions along which immediate change will proceed. There will in future be more fresh air and more freedom. Indeed, these two reforms are already marching along a broad highway. One large London secondary day-school, at least, is arranging for open-air classrooms in the playing field. The open-air schools started for sickly children have proved so valuable that their number will rapidly increase. Writing in the *Common Cause* on Camp Schools, Miss Margaret Macmillan said: “It is growing almost impossible to doubt that later generations will give up our stuffy schoolrooms and formal curricula once and for ever. Nothing that is not associated with joy has ever been taught with dazzling and permanent success, and we cannot have exuberant joy in large classrooms.” No one knows better than Miss Macmillan the condition of our schools, and no one has done more than she to improve them.

The gospel of fresh air is preached to willing ears. Teachers now insist upon open windows; and in new schools cross-draughts are possible. But no open windows will maintain the air of a room full of humanity in a desirable state of freshness. It is an undeserved libel on our climate to say that teaching must take place in enclosed rooms. There is now plenty of experience to confute this idea. Progress in this direction can only be slow, just because it is costly. Existing buildings cannot all at once be scrapped. But they can be adapted. Whole sides of rooms may be made to open; gardens, roofs, and playgrounds may be used for school work. Wind-screens and shelters from sun and rain are easy to provide.

The demand for more freedom in the classroom will not

perhaps at first meet a ready and general approval. This feeling of hesitation is quite natural. We cannot change in a moment the habits of a lifetime. We wonder what will become of the discipline of which we are so proud. For years the word has gone round that teachers must teach, go on teaching, and do nothing but teach. The obvious method of doing this was to make the whole class listen to the same information and explanation at the same time. Discipline has been extolled at the cost of other qualities. The harassed teacher has been known to say to his class in a moment of desperation, "I can't make you learn, but I can make you keep quiet, and I will." The passivity of the pupil has too often been the goal aimed at. Physiology now comes forward and tells us that what the child does is of importance, and not what he hears. He needs to do things and not to listen to explanations about how they are to be done. It is hard for us teachers to unlearn all that training colleges, inspectors, and books have taught us of the art of teaching. But it must be done. When the better is placed before us, we cannot help but aim at it.

Dr. Montessori has at least taught us one valuable lesson: that the child is not getting the best education possible unless his activities are employed to their full extent on some occupation suitable to his age chosen by himself and that gives him joy in doing. The discipline that is valuable in the formation of character is the self-control learnt in trying to do things, and not compulsory quietude as an alternative to punishment. We believe that our present system of class teaching will have to be greatly modified. In the future the part of the teacher will less frequently be that of the lecturer standing in front of the class, with all eyes upon him, and pouring out information. His part will be to keep in the background, controlling, watching, helping the pupils in the tasks they are doing. It will not be so easy to "keep the class together," a fetish that we can abandon without regret. There will be class teaching, and there will be individual work. The latter will preponderate. The task of the teacher will, in a sense, be harder, but it will have its compensations. The weariness from which we suffer now is the result of kicking against the pricks, of endeavouring to force unwilling appetites to swallow the food we have chosen for them. With joy as a counterpoise we can stand hard work; and there ought to be, there must be, joy in the schools of the future.

## NOTES.

WE understand that the conditions of registration have now been settled by the Teachers' Registration Council, and that, unless any unforeseen delay should occur, they will be issued soon after the next meeting of the Council, which takes place this month. We believe that the permanent conditions of entry, as well as the temporary conditions for the benefit of existing teachers who have not been trained professionally, will meet with general

acceptance. Mr. Frank Roscoe, the Secretary, entered upon his duties at the beginning of this year, and when we consider the numerous and varied interests concerned, and the large amount of investigation and inquiry needed, we can recognize that the scheme has been drawn up with the utmost expedition that sound work permitted. The machinery for enrolment is in order, and applications may be made so soon as the conditions are formally issued. All that is now wanted to ensure success and the formation of a powerful professional body is for every teacher to apply at once for admission to the Register.

THE value of play as a factor in the development of healthy child life is clearly shown in the history, recently published by the Board of Education, of the playground movement in America. This movement is about twenty-five years old. It must be understood that the playgrounds spoken of are municipal and not directly attached to the schools. The interest of the report lies in the influence of the playgrounds on the lives of the scholars. In those neighbourhoods, we are told, where the Association had opened a playground, there was a double testimony to the success. The schools reported that "the children were more attentive, they came back from their holidays more diligent, and there was a decrease in the number of truancy cases. . . . The improvement in behaviour noted by the teachers was followed by the testimony of parents of children as to a general gain in physical health," and there was less mischief. In England last week a boy, nine years of age, was charged with an attempt to derail a train. His grandmother, who appeared in court, said that the boy's mischief was the result of his long holidays—that for five weeks he had had "nothing to do." The contrast is instructive.

THE Boy Scout is much to the fore at the moment. His workmanlike and picturesque uniform meets us every Saturday, in town or country; his portrait, or a paragraph about him, strikes the eye of every newspaper reader. Recently a schoolboy essay ended with these words: "The Boy Scouts will probably be some day England's last hope." But there were Red Indians in English homes before these latter days, and exaggeration is always unwise. Brinicipal Griffiths believes that "the Boy Scout movement is rendering greater service than our complicated State machinery in preparing those who are brought within its influence for the struggle of life." "I only wish it were possible," he adds, "for our political system to admit the appointment of Baden-Powell as Minister of Education, with plenary powers, for the next ten years." We are grateful to General Baden-Powell for a happy idea that has been of enormous value to the boys of this generation; but it is a pity to overstate a matter. Scouting and school lessons are complementary. Scouting for ten hours a day, all through the week, would soon end in the plaint "we have nothing to do."

THE compulsory registration of schools came under discussion at the British Association. The tendency of the speeches may be summed up in a remark contributed by Bishop Welldon that "in education, as in other professions, the age of private adventure is past." Dr. Sophie Bryant was equally insistent that private schools should be registered as part of the national provision of secondary education. Registration means, of course, a previous inspection and a certificate of efficiency. We have pointed out before that the inspection of all institutions concerned in the education of the young is necessary and imminent. There are still private schools that are opposed to inspection. The opposition is in reality based upon the fact that at present no recognized standard of educational efficiency exists. So long as the standard is vague and fluctuating we may well hesitate to call in the Inspector. It is for the profession to guide the decision as to what the standard of efficiency in a recognized school should be. When we are agreed upon that, we shall know exactly what the inspecting body has a right to require and the present uncertainty will be removed.

THE aim of all schools is to afford opportunities for the growth, development, and strengthening of character. Principal Griffiths quotes, with approval, the answer of the Head of an educational institution, when asked to summarize his aim. He said: "Character first, then agriculture." But this is the principle that all teachers practise. Character is developed by action. The action of writing a piece of Latin prose, of working out a mathematical problem, or of completing an experiment in the laboratory, may and often does provide an excellent opportunity for character-building. It appears to be assumed that the training of character is something distinct from the work in the form room, as if one lesson were devoted to the acquisition of knowledge, another to character-building, and as if the two were mutually exclusive. Character grows or dwindles, is strengthened or weakened throughout the day, at the desk, in the playground, and in the camp. Energy, self-reliance, industry, and other virtues may be practised in school hours, provided the tasks to be done are suitable to the age of the pupil and arouse his full interest.

GENERAL BADEN-POWELL writes to the *Morning Post* to explain the aim of the Boy Scout organization. "In the Boy Scout movement," he says, "our aim is, as far as possible, so to shape our syllabus as to make it a practical form of character training and to render it complementary to the scholastic training of the schools." Elsewhere in his letter he says: "Not education in the 'three R's,' but education in high ideals, in self-reliance, in sense of duty, in fortitude, in self-respect, and regard for others—in one word, in those Christian attributes that go to make 'character,' which is the essential equipment for a suc-

cessful career." Inspiring words! But it is an error to suppose that the school is concerned alone with the imparting of knowledge and that moral virtues are learnt only outside the classrooms. Whatever a boy is doing, his character is being affected for good or evil. The piece of Latin prose may prove industry, ability to face difficulties, courage, sense of duty, and high ideal, or it may denote laziness, dishonesty, and meanness. Provided a boy is using his faculties in doing something, he has an opportunity of developing the moral virtues. The teacher's business is to direct his activities to right ends.

WE are glad to learn that Principal Griffiths is on our side in a matter that we think to be of urgent importance. "Had time permitted," he said, "I should have liked to dwell on the evil effects of what I may term the conspiracy of silence regarding sexual instruction. If the proverbial visitor from Mars were engaged in a tour of inspection in our country I think nothing would strike him as more extraordinary than that a subject which so closely concerns the progress of the race and the welfare of the individual should be entirely ignored in our system of education." But—and we say it with thankfulness—the conspiracy of silence is breaking down. The discussion now centres round the dispute whether the mother or the teacher should be the instructor. The mother certainly in the early stages, and later the father. But at the present time the best hope for the rising generation is that this instruction may be given in the schools. Then it may be possible for the next generation of fathers and mothers to do their duty. The conspiracy of silence in the past has prevented boys and girls from saying what they think—viz., that on a subject of primary and ultimate importance to them their education has told them nothing. An article on this subject in the September number of the *English Review* should be read by teachers.

IN a column of the *Manchester Guardian* there are often to be found humorous stories dealing with teachers or children. For these we are grateful. There is too little humour in this strenuous world. But the story we are about to quote must surely belong to a previous generation. "Jimmy and Leo had been naughty, and the teacher had ordered them to stay indoors during playtime and to write out each his own name a thousand times. The boys started to work with energy, but after about five minutes Jimmy was observed to slacken, apparently thinking very hard. Then he stopped and burst into tears. 'What's the matter, Jimmy?' asked the teacher. 'Taint fair,' he sobbed. 'His name's Leo Ott and mine's Jimmy O'Shaughnessy.'" We cannot believe that any teacher nowadays would give so senseless a punishment, and it seems to us a little unfair that teachers should be thus misrepresented. If such tasks were given in schools to-day, there would be some ground for the criticism

that schools do not teach moral virtues. Patience under adversity and injustice is a quality of later birth.

THERE is a possibility that the elementary schools in the County of Hereford may be closed. *Low Salaries in Herefordshire.* We hope it will not be necessary for this extreme action to be taken. But the teachers in the County area feel their grievances so acutely that they have placed their resignations in the hands of the Executive of the National Union of Teachers for use at their discretion. The Education Committee of the County was to meet at the end of September, a day or two after we have gone to press: so that by the time these words appear we hope that the difficulties may have been met. The salary scales in the County are very much lower than the average for England. Not a single teacher, head or assistant, reaches the general average for the country. The *Schoolmaster* says: "The closing down of the schools of a whole county would be a disaster which we should deplore, but this seems to be the only way to bring this Authority to reason." We, too, regret the necessity for such action; but we cannot refuse to teachers the right to make use of the one weapon available for the non-capitalist classes.

THE question of compulsory continuation schools is becoming acute. No Authority makes more complete provision for evening instruction in all subjects than the County of London. No expense is spared by the Education Committee. But, so long as attendance remains voluntary, much of the provision is wasted. Not only is the attendance very irregular and unsatisfactory, but the personnel of the classes changes as the session advances and makes a continuous course of instruction impossible. It is calculated that there are about 160,000 young people between the ages of fourteen and seventeen in London who are not receiving any education at recognised institutions. About 50,000 students of these ages are enrolled. There are various reasons to account for the indifference of the ex-elementary scholars to take advantage of the opportunities afforded. The main reason probably is that the long hours of work leave no time and no energy for continued education. A strong appeal has been issued to employers to make it easy for young people to attend evening classes and to make their promotions depend upon regularity of attendance.

THE struggle must, in our opinion, end in compulsion both for employers and for young people. *Must be Compulsory.* It is necessary to raise the age of tutelage to seventeen and to compel employers to afford facilities. At the same time, we think that there should be great latitude allowed to students. It is not a sound principle to look upon continuation schools as merely making the worker a more efficient tool in the narrower sense. The rate-payer is placated for the cost by being told that the students will learn things useful in

their trades and will be better workmen; the employers are given the same argument to justify shorter hours during the school period. It is true that the nation will profit by extending the age of education to seventeen, but not directly in pounds, shillings, and pence. The workman is not merely a machine: less so to-day than a generation ago. Young people need for their further education imaginative reading to broaden their outlook on life, physical drill to strengthen their bodies, and opportunities for recreative pursuits. These the evening schools should provide, as well as subjects that are definitely technical.

THE proposal to apply the public-school prefect system to elementary schools from the infant departments onwards seems at first hearing to be slightly ridiculous; for the sufficient reason that boys go to the public schools at about the age when their less fortunate brothers in the elementary schools are beginning to earn their living. A system suitable to boys of sixteen to eighteen years of age cannot apply exactly to infants and children under fifteen. But the principle that the Warwickshire Education Authority is endeavouring to introduce is a right one; though we regret that it should have been thought advisable to use the term "prefect system." That principle is the recognition of the individuality and responsibility of every scholar. It is a movement in the direction of further freedom that we have advocated in our leading article in this issue. The reports received by the Director of Education for Warwickshire show that the principle has been carried out sympathetically by the teachers, and has had a marked and valuable effect upon the life of the schools.

COLLECTORS have now an opportunity of acquiring the special postage-stamps supplied for the British Antarctic Expedition of 1910, under Captain Scott, and at the same time of helping on the fund that is being formed to continue the scientific work of the Expedition. The late Captain R. F. Scott, R.N., was the first Postmaster of Victoria Land, under warrant from the Government of New Zealand. Paymaster Francis Drake was the assistant postmaster. There are two stamps for sale. The half-penny ones, of which there are only eight hundred left, will be sold at not less than 25s. each; the penny ones, of which a larger number remain, are to be sold at not less than 5s. each. Each purchaser will receive a guarantee that the stamps remain over from the number printed for the Expedition, and that no further reprints will be made. Permission has also been given for the reproduction of the stamps and postmarks as illustrations to books. The stereos for this purpose can be had upon certain conditions from the Secretary, Antarctic Stamp Department, 89 Farringdon Street, E.C.

SIR WILLIAM RAMSAY made a strong plea at the meeting

**Spelling Reform.**

of the British Association for a reformed spelling. He said that we were now practically the only nation that had an irregular spelling, and that he was convinced that reform was necessary. Our present system was immoral, as we were obliged to state to children a number of contradictory facts. We are also among the reformers; but we recognize the dead weight of opposition that must be removed. We are all conservatives at heart, and dislike to change our habits. It jars our ear to hear the word "heir" pronounced with an *h*; it wounds our eye to see a word in an unfamiliar dress. But such weakness can be overcome with a little determination. Probably the best way is to change a few words at a time in order that the shock may not be overwhelming. We do not believe that any moral virtues are acquired in the process of learning to spell; and if this is so, then our present system has not a single point to recommend it. Our readers might help by becoming members of the Simplified Spelling Society and by practising the reforms in their own correspondence.

WITH this issue is included a notice of considerable interest to members of the College of Preceptors. The Council have arranged a series of lectures during the winter months, to which members and their friends will have free admission. The lectures are on various subjects, not necessarily pedagogical—indeed, one only deserves this title. The desire of the Council is to give members an opportunity of meeting one another at *soirées* of a scientific or musical character.

## SUMMARY OF THE MONTH.

THE results of the Royal Society of Arts Examinations, held in April last, have now all been issued. The total number of candidates examined was 27,294 (Advanced, 4,618; Intermediate, 11,580; Elementary, 11,096). These examinations are now for the most part carried out under the supervision of the Local Education Authorities, the change from the special Local Committees who, for the past fifty years, controlled the examinations having been effected during the past two or three years. In London for this and last year the London County Council have had charge of the examinations, and this year 7,140 candidates were examined at centres under their control. The number of provincial centres was 380. The program for next year's examinations is now almost ready for issue.

REGULATIONS providing for grants in aid of Local Education Authorities in England and Wales exercising powers under the Education (Choice of Employment) Act, 1910, have been issued by the Board of Education (Cd. 7076). They provide that if the Board of Education are satisfied that a Local Education Authority is efficiently exercising powers under the Act they may contribute by way of grant to the extent of half the Authority's recognized expenditure upon the salaries of officers employed in duties under an approved scheme. The maximum annual expenditure which will be recognized for this purpose will be determined in accordance with the number of children between twelve and thirteen years of age on the registers. The following

is the maximum recognized annual expenditure on salaries:—Under five hundred children, £50; five hundred and under a thousand, £100; a thousand and under two thousand, £200; two thousand and under five thousand, £300; and five thousand and over, £400.

A CONFERENCE at Shrewsbury representing Education Authorities in Wales recently passed a resolution expressing the opinion that the time was opportune for separate treatment of Wales in education matters and expressing a hope that the Chancellor of the Exchequer would use his influence to realize this long-cherished ideal. Mr. Lloyd George, to whom the resolution was sent, has sent the following reply:—"I thoroughly agree with you that we ought to take the opportunity of the next great Education Bill for complete unity and autonomy of Wales in education."

THE London County Council, in continuation of its practice of former years, has arranged a comprehensive series of classes and lectures for teachers for the session commencing this month. Full particulars are announced in the official Handbook of Classes for Teachers. The lectures are free, upon payment of a nominal registration fee, to all teachers actually engaged in teaching in the County of London irrespective of the institutions in which they are employed. Many of the courses are purely pedagogic in character and are calculated to appeal to the professional instincts of the teacher. On the other hand, there are numerous courses which have less immediate bearing upon the training of a teacher in the narrower sense but are more expressly designed to afford an opportunity for a teacher to broaden his outlook on men and affairs by coming into contact with persons of learning and distinction in various subjects of a general as well as professional interest.

THE delegates for the Oxford Local Examinations give notice (1) that the Convocation of the University has recently altered the Statutes governing the proceedings of the Delegacy, and has (a) withdrawn the requirement that every senior, junior, and preliminary candidate shall be examined in religious knowledge, unless objection is duly made; (b) discontinued the grant of the title of Associate of Arts; (2) that in 1915 the following Local Examinations will be held—viz. in March, Higher, Senior, Junior; in July, Higher, Senior, Junior, Preliminary; in December, Higher, Senior, Junior, Preliminary; (3) that in 1915 the limit of age for honours and distinction in the Junior Examination will be lowered; (4) that in 1915 revised regulations respecting mathematics in the Senior, Junior, and Preliminary Examinations will come into force, and Welsh will be added to the list of subjects included in the Senior Examination; (5) that particulars as to a certificate for proficiency in drawing, which has been instituted in connexion with the Senior Examination, may be obtained from the offices of the Delegacy.

THE "Musicians' Holiday" of the Home Music Study Union, held at Portballintrae, on the Antrim coast, from August 30 to September 13, was in every respect most successful. The attendance was a good one and the weather perfect for picnics and excursions and for alfresco lectures and rehearsals. A great feature of the holiday was the folk-dancing, in which all took part under the direction of Miss Blanche Payling. Miss Mary Neal lectured on "The History and Revival of English Folk-dance," and Folk-song and Folk-lore were also treated of by M. M. D. Calvo-coressi, Dr. E. J. Bellerby, and Mr. Thomas Henderson. M. Calvo-coressi also gave a series of lectures on "The Musical Geography of Europe," and other lectures were given by Dr. E. C. Bairstow on "Common Sense and Voice Production," Mr. P. A. Scholes on "A Glimpse at Purcell's London," and Mr. W. A. Traill on "The Geology of County Antrim." A discussion on "Childhood and Music" was opened by Mr. David Penrith; and Miss Grace Cleveland Porter gave very interesting recitals of negro songs, stories, and games. At

the neighbouring village of Bushmills a concert was given by members of the party including Misses Porter, Hamlin, and Humphries, and Messrs. Clive Carey, E. Bullock, and R. F. Jarman, and Dr. Bairstow. Mrs. P. A. Scholes performed the duties of hostess, and Mr. J. W. Garbutt acted as guide.

NEARLY ten thousand Boy Scouts attended the Imperial Services Exhibition by special invitation last month. The newspaper reporters were struck with their orderly behaviour. The London Correspondent of the *Manchester Guardian* says: "The Boy Scout took his amusements quietly; there was no excited shouting, and even the water chute, glides, and the dips in the mountain railway did not move him to his war-cry. Sanguine spectators expected to hear the buzz of the bluebottle, the scream of the eagle, the whisper of the gnat, but the place was strangely silent. It was a great change from Eton and Harrow day at Earl's Court. The only break in the quiet, almost grim behaviour was the shouting of the Australian 'coo-ee,' but even that was not too ostentatious. The Scouts might have been going into ambush at any moment."

It is growing almost impossible to doubt that later generations will give up our stuffy schoolrooms and formal curricula once and for ever. Nothing that is not associated with joy has ever been taught with very dazzling and permanent success, and we cannot have exuberant joy in large classrooms. But the camp school is, in some respects, as gay as a family, and not only family law but family occupations are having a strange revival there. The outdoor life makes its appeal to the elder-brotherly instinct of the bigger boys, to the latent motherliness of the older girls. It is astonishing to see how they tackle the food problem—simply and with no consciousness of difficulties that cannot be overcome. The children make their own porridge now, they learn the proportions of things that go into puddings, and also how to cook vegetables and make baked dishes. And with all is associated the delightful scents of grass and flowers; also the call of duty, the call to new responsibility, and the meaning of honour. Somehow the people's children are going to get back to the deep, strong emotions and life of their forefathers. The big family, or clan, is to be reconstituted—at least for children. Through primitive forms of social education the young are actually to learn what later forms mean, or ought to mean.—Miss Margaret Macmillan, in the *Common Cause*.

It will be of interest to the heads of schools and others connected with modern language teaching to learn that the University of Oxford has recently passed a statute instituting examinations for Certificates of Proficiency in French and German. The examinations are specially designed for teachers or intending teachers of French and German who do not already possess authoritative documentary evidence of their proficiency in these languages. They will be open both to men and women of whatever nationality, and it is not a necessary qualification for admission to the examinations that men candidates must be members of the University or that women candidates must be registered women students at Oxford. The University will provide complete courses of instruction in preparation for the examinations, but candidates are not necessarily required to have resided in Oxford or to have attended the courses in order to qualify for admission to them. The examinations will be held twice in each year, viz. after the end of Full Term in the Easter and Michaelmas Terms. For full details of this new departure at Oxford, application should be made to the Assistant Registrar, University Registry, Oxford.

FROM the Annual Report of the Secretary for Public Instruction in Queensland the following points are taken. At the end of 1912 there were 1,149 State schools open in Queensland, including two schools for aborigines. The population of the State is about 625,300. The gross enrolment was 116,676, net 102,452. The average daily attendance was 75.5 per cent. of this net enrolment. Education is free and compulsory, and the police act as attendance officers, with excellent

results. The school age is fourteen. Summary proceedings are taken only in cases of neglect or carelessness on the part of the parents. Itinerant teachers travel in the sparsely settled districts where there are no schools. The children they reach are those of stockmen, boundary riders, fencers, carriers, timber getters, fossickers, and the like. The idea of the Queensland Government is that each family in these districts shall be visited at least four times a year. The seventeen itinerant teachers in 1912 travelled 55,320 miles; 1,916 children were visited, and the cost to the Department was £3. 10s. 6d. per child. There are 3,012 State school teachers employed—1,358 males and 1,654 females. In order to increase the standard of attainments, 25 special teacher scholarships are to be awarded annually to the University, 15 to be available for males and 10 for females, each scholarship to have a currency of two years. The sum of £185,283 was spent in 1912 for education—Primary, Secondary, University, Technical, and Grants in Aid of Schools of Art. The cost per head was £5. 7s. 8½d., based on the daily attendance.

DURING 1912, five courses for stammerers have been held by Miss E. Mona Clay. In all 51 boys and 9 girls have been treated: 5 boys and 1 girl received a second course. The number examined was 69, and the total reported 109. We have been again very much encouraged by parents being anxious to send to the class either a brother or sister of former pupils. During the past year we have in this way treated 5 children as second cases from the same family, and all very successfully. A boy who had been a pupil at Shakespeare Street three years ago was met by one of us in the street; he conversed freely. Two boys voluntarily called at the school to show how well they could speak, and announced that they were about to go out to work; one of them told us that he "never stammers now." His was a very bad case, but we often find it true that sometimes the milder cases are the most difficult to cure. A parent of one of our pupils called on us at Shakespeare Street to say how delighted she was at her boy's improvement. She felt grateful for what had been done, and she made us glad by coming to tell us.—From the Report of the Manchester Education Committee.

THE West Riding County Council are erecting at Highfields, a mining village near Doncaster, the first of a new type of school building. This is an "open-air school." All the rooms will be grouped around a central open quadrangle, the classroom windows on one side all looking out upon this open space, which is to be laid out with grass plots and gravel paths. The windows of the rooms are of French casement type carried down to floor level, and so hung as to open and fold outwards. Access to the rooms is given by a corridor with sliding windows from about 18 in. above the floor level running the length of the quadrangle. On the classroom side the corridor is cut off by glazed screens, the lower portions of which are formed as cupboards and museum cases, while above these are casement windows and hopped inlets to the full height of the room. All these screens and windows can be thrown open in such a way that the children will be sitting in what may be termed an open-air shelter.

## A PLEA FOR INVESTIGATION AND DISCRIMINATION.

By GERALDINE E. HODGSON, Litt.D.

COMMENTING, a short time ago, on Mr. W. P. Welpton's "Primary Artisan Education," a reviewer in the *Morning Post* brought this sweeping charge: "The truth seems to be that in England those who know the facts do not write and those who write do not know the facts." Without seeming to perceive that, if true, this dictum must destroy the worth of his own remarks, the reviewer proceeded to upbraid Mr. Welpton for not foreseeing "that the *Schoolmaster* would charge him with desiring to make the children of the poor



'hewers of wood and drawers of water to the rich.'" The critic continued: "A little experience of the National Union of Teachers should have taught him that this Scriptural phrase is invariably employed when anybody proposes to give to the young a vocational training suitable to their probable station in life"; and added a little further on these words: 'The only really effective counter to the 'hewers of wood' argument is to exalt the Dignity of Labour and the Gospel of Work in Carlylean and Virgilian language."

Doubtless Mr. Welpton and the National Union of Teachers can take care of themselves, and so attention may be concentrated on the categorical statement in the final quotation.

Need we, as a matter of fact, rely on these phrases, or even on the effective capitals, or borrow the vocabulary of the masters of the past? Can we not do a little apposite thinking, in our own simple words? Evidently there lurks in the reviewer's mind the possibility of giving offence to Democracy. Perhaps nobody quite knows what Democracy is. One hears the phrases or reads them in the papers, "the people demand this" or "the people prefer that," and, turning the thing over in one's mind, one realizes that one does not personally know a single individual who has demanded "this" or preferred "that," and that, therefore, it follows that the whole mass of one's acquaintance are excluded from "the people." The puzzle is not lessened by the reflexion that one's acquaintance is varied, differs in social class, age, religion, education—indeed, in endless ways. So it is all very difficult. But, though it may be even impossible to define Democracy, one can ask this question: "Does Democracy, whatever it be, aim at rendering every man exactly like every other, or does it aim at inducing every man to achieve his own best?" Surely, no persons of good will, however they may differ as to the means, will say, at any rate, that the former is their aim?

If, then, Democracy aim at the achievement by each man of his own best, we may get on faster if, instead of talking about the Dignity of Labour and the Gospel of Work, we turn our attention to plans for discovering: (a) the bent, where they have any, and the abilities and capacities, of whatever degree, the children of the country possess; (b) the probable future needs of the country for this, that, and the endless other sorts of workers.

Though the reviewer used glibly enough the phrase "probable station in life," our present methods of gauging that are hazy in the extreme. Very difficult it all is to discover: in comparison, it would be a child's task to compose in Virgilian language a disquisition on the Dignity of Labour and the intrinsic delight of being a hewer of wood. But it will be much more fruitful for the country and all its citizens if we invent rational ways of examining into the probable demand for "hewers of wood" and all the rest, and of estimating the probable ability and desire of the child before us of becoming such.

What the schools need is more *flair* among teachers and more leisure and scope for them to use it, a greater variety of schools and in the curricula in the schools. Though education is a matter of national concern, it is also an intensely individual thing; though children can be taught profitably in a class, they are only so taught by one who recognizes that no child before him is the precise counterpart of any other.

Incidentally, we need to get rid of the exaggeration of class pride, conspicuous in every class in England. It seems so stupid to say it is more honourable to do this than that if it all needs doing. The only things which can make dishonour are that either the thing produced is not of any value or that it was ill produced. Always, I suppose, we shall differ about the intrinsic worth, say, of pictures or pies; but, if a man be better able to make pies, how can it be more honourable for him to produce inferior pictures? This is not the same doctrine as the Gospel of Work: it is the doctrine of employing individual ability in the aptest way, which is quite a different thing, and, I venture to think, a more "effective counter" to the argument, supposed to be the *Schoolmaster's*, than any Carlylese about the Dignity of Labour.

If only we could realize it, this problem is important to England. It is often easy to prove that the methods of one race are ideally better than those of another, but it is not at all easy to show that those methods will remain better after transplantation. This doctrine of individual bent and ability is of prime importance to us, for no observant person can

doubt that the average English man or woman hates interference—and, still more, coercion—and not least in personal likings. It is, I fear, neither here nor there to most of us that the proposed compulsion may issue in our own benefit. If we will be quite truthful, we shall own that we have no taste whatever for other people's benefits rained down on us without any opportunity of refusal being afforded us. Whatever the difficulty, the present writer still believes that the exercise of tact—real tact, not chicanery—and a great deal of investigation and well applied industry would succeed eventually in restoring that belief in educating a man (or a woman) according to the needs of the country and his own ability for which Mulcaster pleaded, and which, in some directions at least, great "Patrons" and the Religious Orders once tried to carry out in this England.

It would doubtless end in some members of the aristocracy turning to manual occupations, some artisans rising to eminence in the learned professions, a phenomenon with which even now we are not wholly unfamiliar, and, still more, in the middle ways, to a very considerable shuffling of vocations. And the whole nation would gain. This plea for work appropriate to the individual is not to be confounded with any crude plan of each doing as he likes quite recklessly. A nation of absolutely selfish *arrivistes* will not make a great or a peaceable community; but, all the same, individual bent and ability deserve scope if also this individual aim be something larger than the satisfaction of a single person's desires. Life is only raised, for every one of us, above existence when our "end" includes something vaster than our own self's satisfaction. To work for the community should surely in the majority of cases be quite compatible with making the best of one's natural gifts, even if, as Mulcaster suggested, one here and there needs must yield his first choice because it chances to be that of an already too crowded occupation. It is, indeed, a dreary pessimism which would identify working for the whole community with working against the grain.

And, finally, when one is protesting against narrow unseeing class prejudice in education, may one couple with it a plea against the over-estimation of sex? What is its worth in fixing occupations finally? Who doubts that a woman can attain excellence in the Humanities or contribute to scientific discoveries? Who denies that women have ruled efficiently? Who questions the power of men to nurse with tenderness, to cook with skill, to design matchless gowns? It is not what men and women do, or can or cannot do, which gives them worth or worthlessness—it is that unanalysable thing, personality; it is the quality of being individual, of knowing their own mind, of daring, as it was said the men of the Italian Renaissance did, "to be themselves." The supreme fact is that every normal human being has something which is "his," not another's, and we value him according to what he has made of it.

Suppose, as one idles in a leisure hour, one takes up the poems of Mary Coleridge, and again presently those of Francis Thompson. As the persuasiveness of these two authors, so characteristically themselves, holds us, do we for a moment admit that the most fundamental and illuminating criticisms about them would touch on their parentage or on the fact that one was a man and the other a woman? Factors in the complete estimation of their work these would be, but not sole determining factors: the importance often attached to sex and class among us are fatal, disastrous exaggerations.

The needs of the community and the personality of individuals are the sound basis of the plea for investigation and discrimination, in a word, for "vocational" training, not talk about the Gospel of Work.

MRS. ISABELLA RIDDLE GLOVER OF CAIRD, who died in Edinburgh on September 8, widow of Principal John Caird, of Glasgow University, bequeathed to that University, in memory of the long connexion of her husband with that institution, the sum of £4,000, and directs that the same be invested and applied for the creation of two scholarships, to be called "The Principal Caird Scholarships," to be awarded annually by examination to the student in the University who is most distinguished in either classics or mental philosophy, or both, marked distinction in one subject being preferred to moderate attainments in both.

### THE HUMOUR OF THE ANCIENTS.

PEOPLE are apt to think of Latin and Greek not only in the light of dry-as-dust languages, but also as the vehicles of expression of men devoid of the sense of humour. They regard the ancient Greeks and Romans in the same way as they look upon the Scotch. But if our Northern neighbours are unjustly treated in this respect, far more untrue is it to say that those people who lived on the shores of the Mediterranean suffered from inability to see or make a joke. True, Cicero's humour was of the thinnest, but he was a lawyer, and the Romans were never quite so nimble-witted as the Greeks, who were very fond of jest and epigram, and positively scintillated at times. Rightly do we speak of a "saving" sense of humour, and if only on account of their wit ought the language of the Greeks be "saved" from neglect in schools and their works from being buried in oblivion.

In this article I have collected one or two of the finer examples of "Ancient Humour," which challenge comparison with the choicest *jeux d'esprit* to-day. Clisthenes, tyrant of Sicyon, wished to find a husband for his daughter Agarista; he therefore went to the Olympic games, and, in presence of all the Greeks there assembled, issued a general invitation to all who cared to compete for the honour, to come to Sicyon two months from that day and stay a year with him; at the end of which time he would make his choice. Some dozen or more of the noblest Greeks availed themselves of this hospitable offer. Clisthenes showed himself throughout the period an excellent host for a house party, and during the year entertained them all magnificently. At the same time he took trouble to get to know them well and to test their various qualities and accomplishments. One point to which he attached considerable importance was their behaviour at table. It reflects credit on both guests and host that they passed the whole year in good fellowship without any unpleasant incident. As the year drew to a close it was evident that Hippoclidides son of Tisander, an Athenian, was the first favourite, and it seemed practically certain that he would be declared the winner. When the day came for Clisthenes to announce his choice, he did things, as you might expect, on a grand scale. He sacrificed a hundred oxen and gave a dinner to all the inhabitants of Sicyon. At the end of the banquet there was a competition for the suitors in music and after-dinner speeches in which the young Athenian still held his own. But "as the drinking went on," to use the historian's words, Hippoclidides, resolving apparently to show his pre-eminence in an original light (or else he had seen too much of the girl), ordered the flute-player to play a dance-tune, and danced in a way which presumably satisfied himself, but was regarded by his host with grave suspicion. After a short rest, he got upon a table and danced still more extravagantly. Meanwhile, Clisthenes, though sorely displeased, maintained a courteous silence; but when his guest finished by standing on his head on the table and waving his legs in time to the music, the old king could stand it no longer and exclaimed: "Really now, son of Tisander, you have danced away *your* chances." But the gay acrobat only replied: "Hippoclidides doesn't care"—which words passed into a proverb. So Agarista was married to another Athenian named Megacles, and lived happily ever afterwards—at least, I hope so, for she was apparently not consulted on the subject and perhaps would have preferred a dancing man.

The Persian kings were often humourists in their own quiet way. Thus Darius, wishing to enforce the lesson that all mankind is enslaved by customs, called to him the Greeks who were at his court and asked them what they would take to eat the bodies of their fathers when they died instead of burning them on the funeral pyre. They answered in disgust that they would not do so at any price. The king then sent for some Indians who actually employed that simple and effective way of disposing of their dead; and asked what they would take to burn the bodies of their fathers with fire. With a loud cry the pious Indians besought him to refrain from blasphemy.

Cambyses, another Persian king, had a sense of humour more gratifying to himself than his subjects. On one occasion Croesus, ex-king of Lydia, who lived in honourable captivity at Cambyses' court, had greatly incensed the latter by presuming to offer him good advice. Seizing a bow and arrow Cambyses took a flying shot at the retiring Lydian, who was, however, too quick for him. The attendants were then ordered to put Croesus to death. They, fearing that Cambyses would repent, concealed Croesus, affirming that they had executed him. A few days later Cambyses *did* change his mind and was rejoiced to find Croesus still alive. But for the preservation of discipline he put to death the faithless retainers who had ventured to disobey his royal command.

This is not unlike the story of the Roman slave who disobeyed his master's strict orders in order that he might save his master's life. The master summoned him to appear before him, thanked the slave, and rewarded him with a munificent present, and then ordered him to have his head cut off for disobedience.

Then there was a Greek, Polycrates of Samos, a famous sea-king of antiquity. He, besides being king of a magnificent court and a great patron of art and letters, was proprietor and manager of a colossal pirate syndicate, and plundered wherever he went, indiscriminately; "for," said he, "I can show far greater favour to my friends by restoring what I have robbed them of than by never robbing them at all."

In connexion with this same Polycrates a story is told illustrating the traditional use of the word "laconic," as applied to the Spartan dislike for long speeches. Some Samians whom Polycrates had exiled went to Laconia to get help to restore them to their country. They were received in audience by the Spartan Government, to whom they set forth their wrongs in a fine but lengthy oratorical effort. The Spartans, when the end came at last, replied that they had forgotten the first part of the speech and could not understand the rest. The Samians, profiting by the lesson, came next day carrying a sack, and said only: "This sack wants meal." The Spartan answer to this was that the words "this sack" were superfluous, but that they would see what they could do.

Alcibiades, the brilliant young Athenian whose genius did more harm to Athens than all the malice of her natural enemies, was satirized by a contemporary poet in a play called "The Dippers," or, as we should say, "The Baptizers." In revenge he decoyed the author on board his yacht, and when well out at sea, tied a rope round him, threw him overboard, and towed him along, remarking: "You baptized me and I'll baptize you."

Unsuccessful effort in any direction was then, as now, considered a legitimate and suitable subject for uncharitable mirth: witness the following story of an athlete who, after all, did his best, though he was beaten by his trainer:—

Charmus ran in a steeplechase,  
Five others competed beside him;  
He didn't distinguish himself by his pace,  
But won seventh prize: the sixth was his friend,  
Who, shouting "Good man! keep it up till the end,"  
Ran in front—with his coat on—to guide him.

Of another runner we hear that on certain occasions he could do a fast lap:

On any *course* laid over open ground  
None slower than Eutychides was found;  
But he ran faster than you'd think him able  
When he saw *courses* laid upon the table.

Music, we know, hath charms, sometimes of a malignant kind, as exemplified by the following:

Simylos his harping plied  
Till on all the earth  
All but Orphantus died—  
He was deaf from birth.

Milton has told us of an uncomfortable place:

Where brooding darkness spreads his jealous wings  
And the night-raven sings.

The song of the night-raven (whoever he may be) was thought by the Greeks ill-omened as it betokened the death of the hearer; and this characteristic is gracefully used to stigmatize the vocal villainies of some amateur tenor of local celebrity or notoriety:

The night-raven sings and all mortals meanwhile  
Must perish on hearing his strain:  
Demophilus sings in his best concert style,  
And the raven dies in great pain.

The Greeks evidently knew the terrors of living next door to the girl learning the piano and the young man who has singing lessons.

Personal physical defects were sometimes rather cruelly satirized. The Greeks, as a nation, had or thought they had, straight noses, and any departure from this rule was an abnormality to be treated severely, as likewise was any undue development in that region:

Nico must be somewhere near,  
For I see his nose appear.  
Let's sit down and wait awhile—  
Surely he's within a mile.  
P'raps you'd see him, distant still,  
From the top of yonder hill.

There are in the Anthology several variations on this theme; in fact it is, if I may say so, quite a prominent *feature*, and we know that Cicero was so called instead of Marcus Tullius because of a wart, the size of a chick-pea, on his nose.

The quality of beauty is not strained, or should not be; but some of the Greek and Roman ladies seem to have resorted to devices which, I am credibly informed, are never dreamed of now, to preserve it. This reprehensible habit led to some rather ungallant remarks, as this to Nicylla:

Some say you dye your hair; they miss the mark:  
I know that when you bought it it was dark.

Or this to Lydia:

Teeth, rouge, and ringlets from the shop you bring;  
A mask, dear Lydia, were a cheaper thing.

Another poem in the same strain is:

Whether I see you with black hair,  
My dearest, or with tresses fair,  
I love you; and my love shall stay  
E'en till the *changing* locks are grey.

Domestic troubles and marital disagreements were as common then as now. A man had a tree in his garden on which his wife hanged herself. He married again and his second wife did likewise. He married a third time and again a garden catastrophe occurred. The news got abroad and his house was besieged by neighbours wishing to buy branches of that tree to plant in their own gardens. The bereaved widower sold branch after branch, weeping the while, and pocketed a fortune.

The married life of the writer of the following epitaph could scarcely have been unalloyed bliss:

Here lies my wife, and let her lie;  
She is at rest—and so am I.

Perhaps these two stray rhymes will form a fitting conclusion. The first disparages a portrait painter:

Eutychus, the artist, did twenty sons beget,  
But hasn't produced one decent likeness yet.

The second satirizes the incorrigibly lazy man:

Once, having dreamed that he was running,  
Marcus awoke all cold with fright,  
And, such undue exertion shunning,  
He kept awake all through the night.

R. S. M.

## CORRESPONDENCE.

### "A GENERAL HISTORY OF THE WORLD."

To the Editor of "The Educational Times."

SIR,—In your review of my "General History of the World," which I have received this morning, you ask "Why should a one-volume historian attempt to take the whole world for his province?" The question is answered in the preface. I was anxious that England should follow a method of teaching history which is used in every country in the world except England. In all these countries histories of the world in a single volume are as common as blackberries and, I imagine, are usually written by a single person. I wrote my book—no easy task—to fill up this gap, and I hope that it may be successful.—I am, yours faithfully,

OSCAR BROWNING.

31 Dorset Road, Bexhill-on-Sea.

September 13, 1913.

### SPELLING REFORM.

To the Editor of "The Educational Times."

SIR,—If I may once again venture to trespass on your hospitality, may I say that, if any of your readers who are interested in Spelling Reform would care to see my recently printed pamphlet on the subject, I will gladly send a copy on receipt of a postcard? The scheme is rather more drastic than that described by Miss Gavin last month; but it is, perhaps, a little more scientific, and it requires no new type though providing a letter for each sound.—Your obedient servant,

IMMO S. ALLEN.

London Institution, Finsbury Circus, E.C.

### NATIONAL HOME-READING UNION.

To the Editor of "The Educational Times."

DEAR SIR,—May we be allowed through your columns to introduce some of your readers to the National Home-Reading Union, and to remind those who are already acquainted with it that the new reading session is now beginning? The Union endeavours to help all those who wish to turn their reading to good account: (1) by recommending good books and good editions in its Book List on a number of different subjects; (2) by monthly magazines containing interesting and suggestive articles on these subjects; (3) by advising and helping readers to group themselves into Circles for mutual aid and stimulus through discussion; (4) by tutorial help, which is freely given when desired.

The Union's courses of reading are graded carefully to suit the needs of readers of every age and position, and the Book Lists and Magazines are prepared by those who have expert knowledge on the various subjects. All the privileges of membership are offered for very small subscriptions, ranging from 1s. to 4s., according to the courses taken. It would take too much space to enumerate all the advantages which those who are interested in books and reading gain by joining the Union, but full particulars will be sent to any inquirer who will write, enclosing reply postage, to the Secretary of the Union at 12 York Buildings, Adelphi, London, W.C.

Some of the subjects of the courses for the new session are specially interesting: History of Ireland, Italian Art, Social Life in Russia, The Kingsleys, Northern Mythology, The Open Air, Some Problems of Social Relief, The Peace Movement, The Romans in Britain, and General Literature.—Yours faithfully,

J. HEREFORD, Chairman of Council,

J. W. MACKAIL, Chairman of Executive Committee.

12 York Buildings, Adelphi, W.C., Sept. 1913.

THE gold medal presented annually by the King to the scholar of the King Edward VII Grammar School, King's Lynn, who passes highest in the Cambridge Local Senior Examination has been awarded to Sidney Brook, who gained five distinctions, in Divinity, English, Latin, French, and German. Sidney Brook, whose father is a retired Excise officer, is also the winner of a Norfolk Senior County Scholarship. The medal will be personally handed to him by the King at York Cottage, Sandringham, later in the year.

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**£50** In accordance with the "Normal" Prize scheme, Mr. C. F. Miles-Cadman was awarded £50 for passing the College of Preceptors examination with Seven Distinctions (Scripture, English, History, Arithmetic, Physiology, Political Economy, and Domestic Economy).

### SEVEN DISTINCTIONS AT FIRST CLASS COLLEGE OF PRECEPTORS.

Bishops Hostel, Lincoln,  
August 1st, 1913.

Dear Mr. Lyddon Roberts,

Many thanks for my **First Class Honours** at College of Preceptors. I have obtained **Seven Distinctions** and am top of the lists in four subjects, English, Political Economy, Domestic Economy, and English History. Again thanking you for your most successful tuition,

I am, yours very truly,  
C. F. MILES-CADMAN.

### FIRST PLACE IN THE KINGDOM AT FIRST CLASS COLLEGE OF PRECEPTORS.

4 Whincop Place, King's Lynn,  
January 22nd, 1911.

Dear Sirs,

I am pleased to inform you that I have obtained Honours in the First Class with **Seven Distinctions** at the College of Preceptors examination, together with the **First Senior Prize** for General Proficiency, and the Second Prize for English subjects. I thank you for your kind attention, and am extremely grateful for the interest you have taken in me.

Yours truly,  
L. C. MCKENZIE.

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19 Cricklade Road, Bishopston, Bristol,  
April 22nd, 1912.

Dear Sirs,  
Thank you very much for your kind congratulations. I feel I must acknowledge my indebtedness to you for being able to secure **First place in the kingdom** in the recent Oxford Senior Local Examination. You will notice I have obtained Five Distinctions—History (1st on list), French (1st), Mathematics (1st), Latin (6th), and Physics. The last is the only Distinction obtained in this subject. I found your work-sheets admirably adapted to meet the requirements of the examination, and consider your tuition extremely helpful. You may be sure I shall recommend your college. Thanking you for your interest, and wishing the "Normal" every success,

I am, yours faithfully,  
L. G. C. PERRYER.

### SECOND PLACE IN THE KINGDOM AT SENIOR LOCAL.

Belle Vue Lodge, Southfield Road,  
Westbury-on-Tryn,  
April 14th, 1913.

Dear Sirs,

The results of the Senior Oxford Local Examinations have just been announced and I find I have gained **Second Place** with **First Class Honours**. My success is the best testimony I can give to the excellent value of your tuition, and the help you give in different subjects.

Yours sincerely,  
D. R. COUNSELL.

**NORMAL CORRESPONDENCE COLLEGE,** 47 Melford Road, East Dulwich, S.E.; and 110 Avondale Square, London, S.E.

# CLASS LISTS

OF CANDIDATES WHO HAVE PASSED THE CERTIFICATE EXAMINATION OF THE COLLEGE OF PRECEPTORS.—MIDSUMMER, 1913.

## LIST OF SUCCESSFUL CANDIDATES AT COLONIAL AND FOREIGN CENTRES.

**N.B.**—The small italic letters denote that the Candidate to whose name they are attached was distinguished in the following subjects respectively :—  
*a.* = Arithmetic. | *d.* = Drawing. | *ge.* = German. | *l.* = Latin. | *sh.* = Shorthand.  
*al.* = Algebra. | *e.* = English. | *gm.* = Geometry. | *ph.* = Physiology. | *s.* = Scripture.  
*bk.* = Book-keeping. | *f.* = French. | *h.* = History.

The small figures <sup>1</sup> and <sup>2</sup> prefixed to names in the Second and Third Class Lists denote that the Candidates were entered for the First and Second Classes respectively.

In the addresses, Coll. = College, Conv. = Convent, Gram. = Grammar, Inter. = Intermediate, S. = School, Sec. = Secondary.

[Bracketing of names denotes equality.]

### BOYS.

#### FIRST CLASS [or Senior]. Pass Division.

Curry, A. R. Queen's Coll., Nassau  
 Rathnam, A. *a.* Norris Coll., Rangoon  
 Amoury, E. J. Queen's Coll., Nassau  
 Ponnambalam, C. *a.* Eton Coll., Colombo  
 Pe, M. O. Eton Coll., Colombo  
 (Haniha, N. M. M. *a.* Norris Coll., Rangoon  
 (Vadivalgiammbi, P. S. Private tuition  
 Lee, T.

#### SECOND CLASS [or Junior]. Honours Division.

Pobee, J. M. S. *s.al.bk.* Private tuition  
 Davidson, A. *s.al.f.* St. Joseph's Inter. S., Georgetown, B. Guiana  
 Mayne, J. H. *h.* S.P.G. Gram. S., Cape Coast Castle  
 de Benigny, C. E. Wei-hai-wei School

#### SECOND CLASS [or Junior]. Pass Division.

1Luck, J. C. Private tuition  
 Leighton, K. G. The Richmond Coll. of W. Africa, Cape Coast Castle  
 Berenger, E. K. Eton Coll., Colombo  
 Fernando, E. A. Eton Coll., Colombo  
 (Senaratne, O. L. F. Eton Coll., Colombo  
 Luncke, F. *ph.sh.* Main Street Boys' S., Georgetown, Demerara  
 Monng, B. Norris Coll., Rangoon  
 Kanagalingam, S. Eton Coll., Colombo  
 Hammond, F. T. The Richmond Coll. of W. Africa, Cape Coast Castle  
 (Cole, J. K. Queen's Coll., Nassau  
 (Nagalingam, A. Eton Coll., Colombo  
 Addison, E. M. *a.* The Richmond Coll. of W. Africa, Cape Coast Castle  
 Sands, N. D. Queen's Coll., Nassau  
 Thin, W. Norris Coll., Rangoon  
 (Abbott, G. C. Queen's Coll., Nassau  
 (Young, P. J. Norris Coll., Rangoon  
 Ragaviah, R. Norris Coll., Rangoon  
 Fry, J. S.P.G. Gram. S., Cape Coast Castle  
 Arthur, B. S. The Richmond Coll. of W. Africa, Cape Coast Castle  
 Lawrence, A. F. St. Joseph's Inter. S., Lacytown, B. Guiana  
 (Beharee, K. C. Norris Coll., Rangoon  
 Fernando, A. M. Eton Coll., Colombo  
 Senaratne, W. T. F. Eton Coll., Colombo  
 (Madappully, C. D. M. Eton Coll., Colombo  
 (Po, L. K. *d.* Norris Coll., Rangoon  
 1Markin, B. A. The Richmond Coll. of W. Africa, Cape Coast Castle  
 Vinden, C. Eton Coll., Colombo  
 (Grant, F. C. F. The Richmond Coll. of W. Africa, Cape Coast Castle  
 Williams, P. N. Plaisance Sec. S., Plaisance P.O., B. Guiana  
 1Fernando, E. A. Eton Coll., Colombo

(Roberts, A. Emilian S., Johannesburg  
 Weeraratna, H. C. Eton Coll., Colombo  
 Marasinche, B. S. Morris, T. Kitty E. School, Kitty Village, B. Guiana  
 Man-son-Hing, W. Private tuition  
 Quayson, F. S P.G. Gram. S., Cape Coast Castle

#### THIRD CLASS. Honours Division.

(Ricketts, H. *h.al.gm.bk.* The Richmond Coll. of W. Africa, Cape Coast Castle  
 Rosenfeld, J. *a.gm.ge.* Wei-hai-wei School  
 Hanmond, J. *e.h.a.al.* The Richmond Coll. of W. Africa, Cape Coast Castle  
 Bart Plange, H. *s.h.a.gm.* The Richmond Coll. of W. Africa, Cape Coast Castle  
 (Amonoo, R. *s.a.gm.* S.P.G. Gram. S., Cape Coast Castle  
 (Bower, W. H. *a.al.gm.* Wei-hai-wei School  
 Beer, W. L. M. *gm.* Wei-hai-wei School  
 Aaku, F. N. *h.al.gm.* The Richmond Coll. of W. Africa, Cape Coast Castle  
 Appiah, J. F. *a.gm.* The Richmond Coll. of W. Africa, Cape Coast Castle  
 Sackey, A. M. *gm.* The Richmond Coll. of W. Africa, Cape Coast Castle  
 Butler, S. *gm.d.* The Richmond Coll. of W. Africa, Cape Coast Castle  
 Bertes, L. F. *al.gm.* Wei-hai-wei School  
 Fernandes, C. *a.* Main Street Boys' S., Georgetown, Demerara  
 Mullen, L. A. *s.h.gm.d.* S.P.G. Gram. S., Cape Coast Castle  
 Macfarlane, R. A. *a.d.* Wei-hai-wei School  
 Nelson, R. M. A. *s.* The Richmond Coll. of W. Africa, Cape Coast Castle  
 Wood, J. E. *a.gm.* The Richmond Coll. of W. Africa, Cape Coast Castle  
 Cameron, R. H. *al.* Agricola Wesleyan S., East Bank, Demerara

#### THIRD CLASS. Pass Division.

2Judah, J. E. Wei-hai-wei School  
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## THE COLLEGE OF PRECEPTORS PROFESSIONAL PRELIMINARY EXAMINATION.—SEPTEMBER, 1913.

### PASS LIST.

The Supplementary Examination by the College of Preceptors was held on the 9th, 10th, and 11th of September in London and at ten other local centres — viz., Birmingham, Blackburn, Bristol, Cardiff, Edinburgh, Leeds, Liverpool, Manchester, Newcastle-on-Tyne, Nottingham. The following candidates obtained Certificates:—

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Worledge, J. L.

#### SECOND CLASS (or Junior).

##### Honours Division.

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 Field, G. W.

Hesselberg, A. *e.a.f.*  
 Joye, L. J. *H. f.*

Lavine, L. *e.al.f.ge.*  
 Watkins, A. B. *K. al.*

##### Pass Division.

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 Aubin, E. H.  
 Bakewell, E.  
 Banks, H. K.  
 Barker, D.  
 Barnard, W. G. *e.*  
 Bartle, A. F. *a.*  
 Barton, J. A.  
 Bell, A. W.  
 Bernhardt, Miss B. C. *e.*  
 Bird, J. B. *a.al.*  
 Boothman, A. G. *a.*  
 Boulanger, F. A.  
 Brown, L. A.  
 Chadwick, H. S.  
 Challis, J. H. T.  
 Collis, L. J. *al.*  
 Cooper, C. R.

Cooper, F.  
 Curtis, G.  
 Cuthbert, H. E.  
 Davies, G. *a.*  
 Dawes, H. B. *e.*  
 Day, C. B.  
 de Silva, J. P. *e.*  
 Dinjian, G. L.  
 Douglas, J.  
 Fahim, M. H.  
 Fielding, F.  
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 Kirby, A. H.  
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 Mack, A. S.  
 Maingot, E. L.  
 Mandell, J.  
 Marsden, Miss F. E. *e.f.*  
 Marshall, H. M.  
 May, R. C.  
 McDonnell, C. E.  
 Meldrum, N. F.  
 Montague, F.  
 Moore, J. S.  
 Norrington, R.

Morris, O. G.  
 Neckles, A. R.  
 Nunn, E. A.  
 Packwood, W. H.  
 Painter, O. F. R. *al.*  
 Panchen, F. C. *e.*  
 Penley, R. J. B.  
 Powell, J. H.  
 Prince, C. M.  
 Ridsdale, R. T.  
 Roberson, A. R. G.  
 Roberts, S. T.  
 Robinson, G. W.  
 Robinson, O. F. W.  
 Roe, R. H.  
 Rowat, F. H.  
 Sandler, Miss G. C. *f.*  
 Shaw, Miss H.

Snowdon, R. H. *e.a.al.*  
 Stearn, H. A.  
 Stocken, L. C.  
 Tateson, A. K.  
 Theed, T. E.  
 Wachter, J. S.  
 Warren, J. W. E.  
 Westmoreland, R.  
 Wilberforce, Miss O. M.  
 Wildman, F.  
 Willis, G.  
 Wilson, H. H. L. *a.*  
 Wilson, J. A. *e.*  
 Woodward, W. A.  
 Worth, H. M.  
 Wyncoll, A. W.

N.B.—The small italic letters denote that the Candidate to whose name they are attached was distinguished in the following subjects respectively:—

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### EDUCATION AT THE BRITISH ASSOCIATION.

By F. SMITH, B.A., B.Sc.

THE meetings of the Educational Science Section of the British Association, held at Birmingham in September, varied considerably both in usefulness and liveliness, and several of the subjects discussed were very far removed from the teacher's everyday interests and problems. The claim made at Dundee last year by Prof. Adams that we have now entered into a science of education was hardly justified by the recent conference, for some of the debates were maintained on the very *a priori* plane which was so strongly condemned at one of the meetings. Perhaps the founding of a sub-section of Psychology was partly responsible for this result, for, although the two sections united for a whole day's discussion, there were other days when one remembered with something of envy that the psychologists downstairs were debating fascinating educational problems, while the educationists were treading the old ruts with a stolidity and evenness of pace that sometimes bordered on boredom. There was no lack of speakers: the list, if anything, was over rich; yet eminent speakers and scholars do not always rescue a well-worn topic from dullness.

The program was long, and extensive arrangements had been made to occupy the delegates. In addition to five morning and one afternoon sessions and a day of general excursions, the members of the section were invited to visit the Studley Agricultural College for Women, Malvern College, and the Open Air School, the Dental Clinic and Adenoid Clinic of the Birmingham Education Committee. The Central Care Committee also arranged a meeting, at which Prof. Findlay spoke on the problem they were attempting to solve—the guidance of and provision for boys and girls between the ages of fourteen and eighteen.

#### REPORTS OF COMMITTEES.

Not the least important of the activities of the Educational Section is the preparation, by different Committees, of reports on certain problems. The Report on the Relation of School Books to Eyesight, originally presented at Dundee a year ago,

has been revised, and issued in better form. It is the most important contribution to the problem ever made in this country, and deserves to be read by everybody who has any concern with education. Copies may be purchased from the offices of the British Association at a cost of 4d. each.

A Report was also presented by the Committee appointed to inquire into the number, distribution, and value of scholarships held by University undergraduates, and of funds, private and open, available. The Committee has obtained much information, but has not yet completed the investigation.

There were two other reports from Committees, each providing a topic for discussion at one of the meetings.

#### THE PRESIDENT'S ADDRESS.

Principal Griffiths was frankly pessimistic in his presidential address, stating that it was difficult to find evidence of improvement in knowledge, intelligence, character or manners at all commensurate with the sacrifices we have made in education. Various authorities were reviewed as evidence of the prevailing sentiment of discontent. This dissatisfaction had led him to send out a *questionnaire* to the Directors of Education in England and Wales, and a large part of the address was a review of the answers he had received from the 121 Directors who had replied.

The questions were eleven in number, and were concerned mainly with administrative problems and the effect of the Act of 1902. Directors were asked whether centralization of authority in the hands of County Councils had caused any decay of interest in education; whether an educational authority should be elected *ad hoc*; how far members of education committees were co-opted; whether the local committees or school managers had the right of appointing teachers; whether authorities had established Training Colleges; whether teachers were restricted to certain localities; whether curricula were overcrowded; whether an increase in the number of vocational schools was desirable; what was the average size of classes; whether the task of finding the greater portion of the money for additional buildings worked to the disadvantage of educational progress; and whether Councils had delegated full powers to the Education Committees. Special criticisms and suggestions were asked for.

After studying the replies the President thus summarized his impressions: (1) The Act has given most satisfaction in the counties, though even there the position of smaller rural schools is unsatisfactory. (2) The boroughs, on the whole, are decidedly in favour of an *ad hoc* authority, or more liberal co-option. (3) The appointment of teachers should be in the hands of the Local Education Authority. (4) There is a tendency to restrict the choice of teachers to those who have received their education locally, and this is detrimental. (5) Greater freedom in educational matters is advisable. (6) No increase in vocational schools is desirable, unless care is taken to give first a good general education. (7) The size of the classes is one of the greatest hindrances to progress. (8) Greater delegation of power to Education Committees is desirable. (9) A Redistribution Bill, specially to adjust the relation of urban areas to their rural districts, is required. (10) Increased emoluments and more rapid promotion are required to make the profession sufficiently attractive. (11) There is a consensus of opinion that the Treasury should bear a greater proportion of the cost of education. The local burden of rates makes the subject unpopular.

Turning again to general considerations, the President declared that the main weakness of our system is the excessive prominence given to the acquisition of knowledge rather than to the development of character, and he reviewed with much approval the recent experiment of the Warwickshire County Council to establish a perfect system in the elementary schools, and its marked influence for good on the characters of the scholars, a movement whose real originator was Sir Robert Baden-Powell, "the greatest educator of our time," and he regretted that it was not possible for that gentleman to be appointed Minister of Education, with plenary powers, for the next ten years. "Let us devise," he said, "some kind of universal Junior Scout System which may so brighten the intelligence that the boy will *want to know*. Let him also discover that the paths to knowledge are Reading, Writing, and Arithmetic; he will then gladly follow his guides and gather

more by the way than when he is pushed along those paths in a perambulator. . . Freedom for Local Authorities to adopt their own methods, to experiment—and often to fail—is the system, if system it can be called, by which alone advance is possible."

The address was well received, though several speakers at later meetings declared that they did not share the President's pessimism. The obvious criticism that might be made against it is that, while fault is found with the *practical* results of school work, and a suggestion is given towards the close as to how improvement may be made, yet the *questionnaire* was largely concerned with administrative problems, wholly distinct from the work of the teacher himself. Surely there are two problems here, it may be, without any vital connexion. Furthermore, the value of the evidence of 121 Directors of Education cannot be uniform, and one would require to know something of the *personnel* of the witnesses, especially in the boroughs and urban districts, before being convinced of their conclusions.

#### THE EDUCATIONAL USE OF MUSEUMS.

The joint discussion with the Anthropological Section was largely a waste of time, for, although there were eleven museum experts speaking, they had little to say that was of educational value. Rather were they inclined to discuss museum problems: how to write effective labels, and how much museum officials are overworked! There was general agreement that fewer objects should be exhibited to the public, and that these should be available for handling whenever possible. Teachers were also urged to give more of their lessons inside the museum.

Rev. Prof. H. Browne described a plan whereby small collections of exhibits dealing with classical studies are sent round from school to school. The plan has been found to work well in Ireland, and an attempt is about to be made to do the same with a group of thirty English schools.

#### THE FUNCTION OF THE MODERN UNIVERSITY.

The debate on Universities was able and vigorous, and Sir Alfred Hopkinson's opening speech was full of sound principles, enlivened by genial flashes of wit. His suggestion that degrees were invented as a stimulus to young people at an age when corporal punishment was no longer practicable gave great delight, and was a neat set-off to his sound view that the modern University should be a social and intellectual centre whose threefold object is to raise up men qualified to take office in Church and State, to spread learning and culture, and to make important additions to knowledge. He traced the relationship of the State to the modern University and, while acknowledging the urgent need of financial assistance, spoke strongly against the possibility of any restriction or limitation of freedom being laid on the University as a condition of such aid.

The subsequent eight speakers were never dull. Principal Hadow, after recapitulating the diverse and antagonistic views that are held, found consolation in the reflection that "he who steers for both Scylla and Charybdis is in danger of missing both." He emphasized the fact that the modern University is showing that public service is an ever-widening area. Sir James Yoxall criticized previous speakers because of their omissions, and pointed out the changed factor in University education in that more and more it is the really able student who receives it, irrespective of wealth and social standing, and such men and women, "qualified to take office in Church and State," would soon refuse to give up their claims to the social prestige of a "cultured mediocrity." Dr. Fisher (Sheffield) reviewed the part played by the modern University in the education of the workers and in the higher education of women, and also declared that the greatest disaster in the history of education was the creation of training colleges which were not in touch with a University.

#### SCIENTIFIC RESEARCH IN EDUCATION.

The joint meeting with the Psychologists occupied a morning and an afternoon session. Dr. Kimmins made a strong plea for research in education. After recapitulating the changed attitude towards research and the investigations

which psychologists are attempting to carry out in the school and laboratory, he urged that greater co-operation was advisable, and to this end suggested the formation of advisory committees in large centres of population, consisting of teachers and psychologists, under the control of the University.

Dr. Myers insisted that the teacher would be best trained for his work by laboratory experiments and demonstrations, rather than by the history and philosophy of educational systems. The immediate need was to get a trained psychologist on to the staff of every training college, who should have time to further the progress of the science. Education would be best advanced by those who could combine the teachers' practical skill and the psychologists' scientific knowledge.

Prof. Findlay agreed with Dr. Kimmins's plea, but criticized the assumption which is commonly made that educational research is the same as experimental pedagogy. The danger to which educationists are peculiarly liable is that of following fashion, and just as, fifteen years ago, all the training colleges were strongly Herbartian, so to-day some were willing to be labelled Montessorians, or Vocationalists, or Experimental Psychologists. Yet education deals with character and the larger issues of life, and there are limits to the possibility of producing a new theory of education from experimental data. He would like to see a wider recognition of the various attempts at research made by practical teachers up and down the country, and suggested the establishment of a clearing house where such work could be dealt with.

Prof. Green attributed the lack of professional status to the lack of professional knowledge, and declared we should never have the power and prestige of a profession until we had lifted educational theory from its present *a priori* plane to that of scientific knowledge and fact. Although the teacher is at the mercy of the latest fad and the newest official, yet he is not convinced of the value of professional knowledge. The result of educational research will be freedom from official and inspector, but the country will never be convinced of its need until the profession recognizes its value.

The Report of the Committee on Mental and Physical Factors involved in Education was confined to the problem of spelling, but it was incomplete. Dr. Myers described some unfinished experiments now being conducted at Cambridge, and Miss Suddards, of the Fielden School, Manchester, gave the results of an investigation there. She regarded bad spelling as an acquired disease, the formation of a bad habit, due to the child's expanding vocabulary outside the teacher's control, and suggested the delay of "free" written compositions and the use of small dictionaries by the children. Prof. Green described observations made on two hundred children in Sheffield, where an attempt had been made to classify the errors into types. He insisted that the motor factors were of first importance in learning spelling. Sir Oliver Lodge introduced a note of levity into the discussion by declaring that spelling was largely a matter of providence, and therefore children should not be bothered too much by a convention that had never troubled our ancestors.

Sir William Ramsay spoke on Spelling Reform, and in vigorous terms condemned our present inconsistencies of spelling, pleading that support should be given to the reform movement in England.

In the afternoon no less than five papers were read on various topics. Dr. Valentine claimed the superiority of the Phonic method of teaching reading over the Look-and-Say method, though he conceded that the latter might be better for dull children. This brought up the Bishop of Birmingham, who made a humorous appeal for the dull child on the ground that his own progress was owing to the care which his teacher had had for the dull scholar.

Mr. Burt spoke on the mental differences between the sexes, arguing they were probably less than had been supposed, and Mrs. Meredith presented a paper making a useful protest against the wrong use of suggestion in teaching, and the tendency to make the child accept unreasoned convictions without criticism.

#### MANUAL WORK IN EDUCATION.

Three exceptionally good papers were read on Manual work.

Mr. Ballard presented the results of an inquiry he had made as to the probable effects of handwork in schools, and his paper was most suggestive as showing a method of investigation which might be applied to many educational problems. His conclusions, admittedly tentative, were that Handwork seems to reduce the necessity for corporal punishment, that certain academic branches of study are best taught practically, that Handwork probably raises the level of attainment in other branches of study, and that it possibly develops intelligence. Mr. Fortune Fowler described experiments made with Handwork as a means of discovery and expression in several school subjects. Children were led to a position of independence of the teacher's control, and developed remarkable ability in solving new problems. Mr. Usherwood dealt with the problem in secondary schools, making a plea for the fuller recognition of Handwork and for an elasticity of treatment that would ensure its enhanced value.

#### THE COMPULSORY REGISTRATION OF SCHOOLS.

This discussion really arose from the Committee appointed to inquire into the Curricula and Educational Organization of Industrial and Poor Law Schools. Last year stress was laid on the large number of schools outside all public authority and management, and since the President of the Board of Education, in July last, made the statement that he was unable to say how many secondary schools there were in this country, but that the Government intended to make a comprehensive survey of all educational institutions, the Committee arranged for a discussion on compulsory registration.

Bishop Welldon read the first paper, and laid down the two principles that in education the age of private adventure is past, and the unity of the profession is desirable. Hence all schools should stand in some definite relation to the State and to each other. The formation of a Registration Council was a matter for satisfaction, but Registration implies also inspection of schools and examination of teachers, since unsatisfactory buildings and unqualified teachers are equally impossible. Denominationalism must never be made a pretext for lowering the standard. The danger was the enforcement of a stereotyped uniformity, but the State ought to be satisfied with a minimum of efficiency and allow freedom for experiment.

Dr. Sophie Bryant said she thought that, even if a compulsory system is finally established, a preliminary period of voluntary registration has much to be said for it. Bishop McIntyre (Roman Catholic Bishop of Birmingham) also spoke, and showed that there are possible dangers ahead. After agreeing with the two principles laid down by Bishop Welldon, he drew a distinction between "catholic psychology" and "secular psychology" (to which Bishop Welldon objected), on the ground that psychologists ignore the spiritual nature of the individual. Hence, if qualified teachers were compelled by the State to study "secular" psychology as a part of their qualification, Roman Catholics would have serious conscientious objections.

#### THE WORKING OF THE ACT OF 1902.

The last discussion produced a chorus of blessing, so that if the week began in cloud it ended in sunshine. Speaker after speaker claimed fresh points of progress made since 1902, and even suggestions for reform were claimed as a proof of advance. Sir George Fordham (Chairman of the Cambridgeshire County Council) and Mr. Brockington (Director of Education for Leicestershire) were the main speakers, and both were lavish in their praise of the Act, the latter stating, in connexion with the improvements of secondary education, that a lustre had been shed on the reign of Edward VII similar to that shed on the reign of Edward VI. Later on, Mr. Norman Chamberlain caught up the strains of praise and merrily attacked the pessimism of the President's address. Boys were better and more intelligent, though he conceded they might not be able to spell impossible words that they might never have to use.

The President gravely replied that the pessimism was rather that of others than his own. He had pointed out that the discontent was largely in the boroughs and rural districts.

So it ended, with the good wine reserved for the finish of the feast, and the clouds of despair vanishing as though by witchcraft.

## THE SIGNIFICANCE OF NUMBER.

By the Rev. J. O. BEVAN, M.A., F.C.P., F.S.A.

THIS paper is intended to illustrate the significance of number in various departments—physical, literary, mystical, and theological. This significance is due to divers causes, some relating to the existence or recurrence of natural facts or phenomena, some to accident or sentiment, some to religious (or supposedly religious) conceptions. In part, it may be due to deep design, and may have a serious meaning so as to exert a dominant influence on thought and action—in part, the coincidence may be merely fortuitous and may have but an amusing and indifferent side, interesting, but unimportant—word-play, with nothing beyond.

The author has endeavoured, wherever possible, to discover a reason for the significance. He is conscious, however, that in some cases—as in our weights and measures and in grammar—that reason may be difficult to find, and, indeed, that the numbers are entirely unrelated and that their choice was due to mere chance. The same may be said of many instances herein adduced: but it may be that the mere setting them forth may lead to the discovery here and there of a connexion independent of accident.

Probably it would be correct to say that the significance of number was first realized and appreciated in a physical or material sense. Next would come the mystical or allegorical. In due time, numbers and position indicated by numbers would be used to great effect in astrology, alchemy, necromancy, conjuring, and divination of all kinds.

Various dicta and superstitions are extant, even as between *left* and *right*, as to *odd* and *even* numbers; also as to zero, the characteristic and position of which tend materially to alter the value of other figures. The saying "God delights in odd numbers" is an ancient belief, but difficult to trace as to its origin. The notion that there is luck in *odd* numbers may be founded upon the following facts. A major chord consists of a fundamental or *tonic*, its major *third*, and its just *fifth*, *seven* notes and one going to complete the octave. According to the Pythagorean system all Nature is a harmony, man being a full chord. All beyond is deity, which is, therefore, represented by the number *nine*. Thus, the *odd* numbers being realized as the fundamental notes of Nature, the *last* of which represents Deity, it is easy to see how they came to be considered the great or *lucky* numbers. As Shakespeare puts it: "They say there is divinity in odd numbers, either in nativity, chance, or death" ("Merry Wives of Windsor").

In the same way, the Normans regarded an *even* number as unlucky, inasmuch as, since it could be divided equally, it became the emblem of death and dissolution; but, in truth, it may be said that *odd* numbers actually come more into prominence than *even*. *Two* was the evil principle of Pythagoras. Accordingly, the *second* day of the *second* month of the year was sacred to Pluto and was esteemed unlucky.

It is astonishing to notice how misfortunes appear to have accumulated on the head of sovereigns *second* of their line. Certainly, 2 is an unlucky number in our dynasty—witness Ethelred II, the Unready, forced to abdicate; Harold II, slain at Hastings; William II, shot in the New Forest; Henry II, who had to fight for his crown, whose wife was alienated, whose children were insubordinate; Edward II, murdered in Berkeley Castle; Richard II, deposed and murdered; Charles II, driven into exile; James II, forced to abdicate. Neither does it seem much more lucky in cases abroad, as instances could be adduced to prove from France, Germany, Spain, &c.

### Two.

Originally the number 2 would stand for the opposing personalities of the Creator of Good and the Creator of Evil, and for Good and Evil in the abstract. In respect of human beings, there are 2 sexes. As to the human body, the number 2 is well marked. There are 2 arms, 2 legs, 2 eyes (with 2 eyelids to each), 2 ears, 2 lungs, 2 lobes of the brain, 2 divisions of the heart, and the same with reference to numerous other parts of the frame; one mouth, but with

2 lips; one nose, but with 2 divisions; one heart, but with right and left auricles and ventricles.

### THREE.

The number 3\* would set forth the possible tripartite nature of man; amongst some nations, the division of a lunation into 3 parts; the 3 forms assumed by matter—solid, liquid, and gaseous; the 3 dimensions of space; the 3 kingdoms of Nature—animal, vegetable, and mineral; the 3 zonal terms—arctic, temperate, and torrid; the 3 primary colours—blue, red, and yellow; the 3 arms of the Service—horse, foot, and artillery; the 3 Estates of the Realm—Lords spiritual, Lords temporal, and Commons: the 3 masts of a ship—fore, main, and mizzen; the grand climacteric of human life, viz.  $63 = 3 \times 3 \times 7$ . An Irishman would not fail to refer to the 3-leaved clover, and, of course, there are many other botanical analogues.

### FOUR.

The number 4 would tend to represent Creation, seeing that the earth was supposed to be a rectangular flat surface, bounded by lines of latitude and longitude. (Thus, we have the 4 living creatures employed in the Revelation to represent Creation and its 4 corners.) The human body has 4 members.

There are 4 chief winds, the initial letters of which spell NEWS. There are 4 letters respectively in the two parties in the State—Whig and Tory. There are 4 kinds of every creature—fish, fowl, beast, and creeping thing. There are 4 leaves for *luck* in the clover.

### FIVE.

The number 5 and its multiple by two, would enter into the practice of Numeration, by reason of the naturalness of counting on the fingers. Hence 10 is accepted as the general Radix of Notation, although, mathematically, other numbers, such as 2 or 6, would better serve. Again, our body has 5 senses; in physical geography there are 5 continents and 5 zones; amongst the ancient Greeks a pentathlete was one who excelled in 5 distinct gymnastic exercises.

### SIX.

The number 6 is well marked in Nature, a large number of animals of the lower orders having 6 legs; in a regular hexagon the side equals the radius of the circumscribing circle; the sextant is an indispensable instrument for taking observations of latitude at sea. It is probable that the equilateral triangle led to the span of the heavens being divided into three angles of  $60^\circ$ . The middle one would naturally be bisected, giving the southern point; then the others being bisected would give 6 divisions. To divide each into two was the next step, hence the 12 hours of the day; the larger divisions (being 12 for the whole heavens) give the 12 months. The angle  $60^\circ$  is the easiest of all angles to observe, easier than  $90^\circ$ , for it requires only three equal sticks jointed together.

### SEVEN.

The number 7 is determinable as the fourth of a lunation, and as the quadrature of the periodicity of one of the sexes. It also represents the heavenly bodies as known to the ancients, viz. the Sun, Moon, Mercury, Venus, Mars, Jupiter, and Saturn.† There are also 7 prismatic colours.

\* "Mad—mad—mad? Heavens! what a word it is! How terrible to look at with its three little letters which mean so much! All the words that mean much are monosyllables: God, love, joy, hate, fear, glad, sad, mad, bad, hell, home, wife, child, house, song, wine, feast, kiss [also eye, ear, nose, mouth, hand, foot, leg, head, heart, lung, &c.]. Everything: they are the oldest words, you see; they have been used from time immemorial, by prehistoric man as well as by ourselves."—"The Ivory Gate," by Sir Walter Besant.

† A friend writes: "It may interest you to know that in 1908, I think it was on February 15, I saw all the seven planets at one *coup d'œil*. Of them, the Sun was below the horizon, but its glow was visible; then came Mercury. I have seen Mercury only five times; Copernicus complained on his deathbed that he had never seen it. Venus, then—I forget in what order they came—Mars, Jupiter, Saturn, and, in the far East, the Moon, just rising. I fetched a number of people to see them, and told them that possibly it would be 300,000 years before they got another chance. Mercury was a singularly beautiful object. Of course, all were visible, at that time, to the naked eye."



As has been said under number 3, it is also involved in the grand climacteric  $63 = 7 \times 3 \times 3$ .

EIGHT.

The number 8 implies the full gamut, there being the fundamental or tonic, its major third, its just fifth, closed by the octave. Note too, under Grammar, the number of Parts of Speech.

NINE.

The number 9 is marked as the square of 3, but its chief significance will be discussed under the second head.

TEN.

Ten came into vogue from the number of digits on the members of the human body.

TWELVE.

Twelve roughly represents the number of lunations in a solar year—i.e. 360 divided by 30. It is also involved in our duodecimal system of reckoning. Numberless articles are sold by dozens.

OUR TABLES.

It is of interest to note the repetition of the simple numbers in the formation of our otherwise very haphazard system of weights and measures. Illustrations follow, together with notes as to the derivation of most of the terms employed.

Angular Measure.

- $2^2 \times 3 \times 5$  seconds = 1 minute.
- $2^2 \times 3 \times 5$  minutes = 1 degree.
- $2^3 \times 3^2 \times 5$  degrees = 1 circumference.

Second, *L. secunda*, secondary minute, i.e. minute of minutes; minute, *L. minutus*, very small; degree, *L. gradus*, a step; circle, *L. circus*, a ring; circumference, *L. ferre*, to bear; diameter, *Gk. diámetros*, measuring across; radius, *L. radius*, a ray or spoke.

Time.

- $2^2 \times 3 \times 5$  seconds = 1 minute.
- $2^2 \times 3 \times 5$  minutes = 1 hour.
- $2^3 \times 3$  hours = 1 day.
- $2 \times 3 \times 5$  days = 1 month.
- (approx.)  $2^3 \times 3^2 \times 5$  ,, = 1 year.

Hour, year, *Gk. hora*, season; day, *O.E. dag*, season; month, from Moon, the measurer.

In this table 60 recurs. The month is the extent of a lunation, and, approximately, twelve lunations constitute a year. The day has been divided differently at different times by different nations—sometimes into ten parts. Perhaps our division into twelve is suggested by the number of lunations in a year, as worked thus:— $360 \div 30 = 12$ , supplemented by the fact that  $12 = 3 \times 4$  (both being sacred numbers). It also  $= 1 \times 2 \times 3 \times 4 = 24$ , for the day and night together—i.e. the multiple of the first four natural numbers. For the number 60 *vide* what is said under 6. It is by no means clear why this number should have been selected. It appears reasonable to believe that it has some connexion with the easily and correctly obtainable angle of  $60^\circ$ .

According to the ancients, the sun marked off 360 equal spaces on the ecliptic in a year. According to us, the earth's orbit is divided into the same number of fairly equal spaces. Hence the adaptation of this unit—360—for the number of divisors of every circle. It forms the basis of our trigonometrical calculations, whereas the French have been forced by their metric system to adopt an artificial unit—viz. 400.

The *Trigon* was the junction of three signs. The Zodiac was partitioned into four trigons, named respectively after the (supposed) four elements. The *watery* trigon included Cancer, Scorpio, and Pisces; the *fiery*, Aries, Leo, and Sagittarius; the *earthy*, Taurus, Virgo, and Capricornus; and the *airy*, Gemini, Libra, and Aquarius.

In astrology, a planet distant from another *one-third* of the circle was said to be in *trine*; *one-fourth*, to be in *square*; *one-*

*sixth*, or two degrees, would be *sextile*; but when *one-half*, it was said to be *opposite*.

In sextile, square, and trine, and opposite  
Of noxious efficacy.

—Milton, "Paradise Lost," X, 659.

Linear Measure.

- 3 barleycorns = 1 inch.
- $2^2 \times 3$  inches = 1 foot.
- 3 feet = 1 yard.
- $2 \times 3$  feet = 1 fathom.
- $5\frac{1}{2}$  yards = 1 rod, pole, or perch.\*
- $2^3 \times 5$  poles = 1 furlong.
- $2^3$  furlongs = 1 mile.
- 3 miles = 1 league.
- $2^2 \times 5^2$  links = 1 chain.

Barleycorn, originally taken literally; inch, *L. uncia*, a twelfth part; foot, like unto cubit, palm, digit, nail, span, hand, fathom, ell, pace, stride, would be derived from measurements originally relating to the human body; fathom, *O.E. fæthman*, to embrace; yard, rod, rood, reed, pole, perch, acre, stone, bushel, pound, formerly all somewhat indefinite measurements; yard, *O.E. gyrd*, stick; furlong, *furrow-long*; mile, *L. millia*, a thousand; league, *L. ligare*, to bind; link, i.e. of a chain.

Square Measure.

- $2^3 \times 5$  sq. poles = 1 rood.
- $2^2$  roods = 1 acre.
- $2^3 \times 5 \times 11^2$  sq. yards = 1 acre.
- $2^7 \times 5$  acres = 1 sq. mile.

Rood, cognate with rod; acre, tilled land.

Avoirdupois Weight.

- $2^4$  drams = 1 ounce.
- $2^4$  ounces = 1 pound.
- $2^3 \times 5^3 \times 7$  grains = 1 pound.
- $2^2 \times 7$  pounds = 1 quarter.
- $2^2$  quarters = 1 cwt.
- $2^2 \times 5$  hundredweight = 1 ton.
- $2 \times 7$  pounds = 1 stone.
- $2^2 \times 5^2$  pounds = 1 cental.

Avoirdupois, *L. habere pensum*; *O.F. havers*, goods in general, and *poise*, weights; dram, *G. drachma*, a small silver coin; grain was originally defined to be the average weight of a grain of corn from the middle of the ear, well dried (a definition that would hardly appeal to a Whitworth scholar!); ounce, *L. uncia*, one-twelfth of a pound; pound (= *libra*), *L. pondus*, weight; quarter, hundredweight—self-explanatory, but the 100—112; ton, variation of tun, *O.E. tonne*, any big measure.

Troy Weight.

- $2^3 \times 3$  grains = 1 dwt.
- $2^2 \times 5$  pennyweights = 1 oz.
- $2^2 \times 3$  ounces = 1 lb.
- $2^7 \times 3^2 \times 5$  grains = 1 lb.

Troy Weight means "London weight." London used to be called *Troy-novant* (really *Tri-nou-hant* = *Civitas Trinobantum*). Avoirdupois Weight was brought over by the Normans. Dwt, *O.E. pening*.

Measure of Capacity.

- $2^2$  gills = 1 pint.
- 2 pints = 1 quart.
- $2^2$  quarts = 1 gallon.
- 2 gallons = 1 peck.
- $2^2$  pecks = 1 bushel.
- $2^2$  bushels = 1 sack.
- $2^3$  bushels = 1 quarter.
- $2^2$  quarters = 1 chaldron.
- $2 \times 5$  ,, = 1 last.

\* The awkwardness of this number proclaims it at once as an interloper. In fact, it was originally a Norman measure adapted to the original table—coming out, unfortunately, in a fractional form, also affecting injuriously, in the same sense, our Square Measure. We can restore the old English measure thus:

- 13.22 inches = 1 foot,
- 3 feet = 1 yard,
- 2 yards = 1 fathom,
- 10 fathoms = 1 chain,
- 10 chains = 1 furlong,
- 10 furlongs = 1 mile,

where multiples of 2, 3, and 5 are alone concerned.

*Ale and Beer Measure.*

- 2 pints = 1 quart.  
 4 quarts = 1 gallon.  
 $3\frac{1}{2}$  gallons = 1 pin or keg.  
 3<sup>2</sup> gallons = 1 firkin (G. *vierde*, fourth, i.e. of barrel).  
 2 × 3<sup>2</sup> gallons = 1 kilderkin.  
 2<sup>2</sup> × 3<sup>2</sup> gallons = 1 barrel.  
 2 × 3<sup>3</sup> gallons = 1 hogshead.  
 2<sup>2</sup> × 3<sup>3</sup> gallons = 1 butt.  
 2<sup>3</sup> × 3<sup>3</sup> gallons = 1 tun.

Gill, O.F., *gille*; pint, F. *pinte*, etym. dub.; gallon, F. *jale*, bowl; peck, M.E. *pek*, etym. dub.; bushel, L. *barcellus*, box.

*Carat.*

Carat, Gk., *keras*, a horn (fruit of carob tree).

Gold vessels, plate, or any manufacture of gold may be wrought of any of the standards of 18, 15, 12, or 9 carats of fine gold in every pound Troy. Thus, when any article of gold plate or jewellery is spoken of as being 18 *carats fine* it is to be understood that of the gold used in its manufacture 18 parts were pure gold and 6 parts copper, all alloyed gold being considered as divided into 24 equal parts. The relative value of the carat of gold is 10 dwts. The standard gold coin of England is made of a metal consisting of 22 parts of pure gold and two parts of copper. The alloy is added in order to impart hardness to the gold, so that it may suffer the less from deterioration by reason of the wear in circulation.

*Wool Weight.*

- 7 lb. = 1 clove.  
 2 cloves = 1 stone.  
 2 stones = 1 tod.  
 6½ tods = 1 wey.  
 2 weys = 1 sack.  
 2<sup>2</sup> × 3 sacks = 1 last.

Clove, E. *cleave* (the act of separating small bulbs, making up compound bulbs, as of garlic); tod, O.N. *toddi*, wool; wey, O.E. *wege*, weight; last, O.E. *hlest*, load.

*Money, Sterling.*

- 2<sup>2</sup> farthings = 1 penny.  
 2<sup>2</sup> × 3 pence = 1 shilling.  
 2<sup>2</sup> × 5 shillings = 1 pound.  
 3 × 7 shillings = 1 guinea.

Sterling, etym. dub. *Easterling* is unlikely, the word being formed before those people began to trade to England; perhaps = a little *star* or = *starling* with reference to *star* or *bird* depicted on coins—similar to *sovereign*, *angel*, *tester*, *mark*, *carolus*, *jacobus*, *crown*, *florin*, &c. Farthing = a fourth part; shilling, O.E. *scilling*, a slice; guinea, first coined for the West African (*Guinea*) trade.

*Apothecaries' Fluid Measure.*

- 2<sup>2</sup> × 3 × 5 minims = 1 drachm.  
 2<sup>3</sup> drachms = 1 ounce.  
 2<sup>2</sup> × 5 ounces = 1 pint.

Minim, L. *minimus*, smallest.

*Hay.*

- 2<sup>2</sup> × 3<sup>2</sup> lb. = 1 truss.  
 2<sup>2</sup> × 3<sup>2</sup> trusses = 1 load.

Truss, L. *thyrsus*, compact terminal flower or other cluster.

*Cloth Measure.*

- $(\frac{3}{4})^2$  inches = 1 nail.  
 2<sup>2</sup> nails = 1 quarter.  
 2<sup>2</sup> quarters = 1 yard.  
 $\frac{5}{4}$  yards = 1 ell.

Nail, L., *unguis*; ell, L., *ulna*, the elbow.

*Paper.*

- 2<sup>3</sup> × 3 sheets = 1 quire.  
 2<sup>2</sup> × 5 quires = 1 ream.

Quire, F. *cahier*, L. *quaterni*, four sheets folded to form eight leaves; ream, Arab. *rizmah*, bundle.

Although only indirectly concerned, the mode of graduation of the thermometer may be here introduced. Fahrenheit placed 0° at his absolute zero—the temperature of a mixture of ice and salt, then believed to be the greatest possible cold. He divided the space between that and the warmth of the human body into 24 degrees. The freezing-point of water thus became 8°. For convenience these long degrees were divided into quarters, which were afterwards termed degrees. Thus, the freezing point became 32° and blood heat 96°. A mercury thermometer graduated in this way, with

divisions of equal length continued above blood heat, registered 212° in boiling water. Thus, we have

$$2^3 = 32^\circ.$$

$$2^3 \times 3 = 96^\circ.$$

$$2^2 \times 53 = 212^\circ.$$

This graduation is thus marked out as being largely arbitrary.

*Sundry Derivations.*

Barrel, L. *barru*, bar, hoop; hogshead, etym. dub.; kilderkin, D. *kindeken*, a small thing; pottle, F. *potel*, pot; scruple, L. *scrupulus*, a sharp stone; strike, self-evident as to mode of measuring grain, &c.

*Grammar.*

In grammar there are or may be: 2 numbers; 2 classes of verbs—transitive and intransitive; 2 kinds of conjunctions; 3 genders (objects having no sex being classed as *neuter*); 3 (or 2 × 3) cases of nouns; 3 degrees of comparison of adjectives and adverbs; 3 voices of verbs—active, passive, and middle; 3 principal tenses or times; 3 principal parts of a sentence—subject, predicate, object; 3 concords; 4 departments—orthography, etymology, syntax, and prosody; 4 moods; 5 vowels; 5 classes of adverbs; 8 parts of speech; 8 classes of pronouns.

(To be continued.)

## THE MONTESSORI SYSTEM APPLIED TO THE TOYS OF A VERY LITTLE CHILD.

THE work of Dr. Montessori has certainly set the educational world thinking, whole-hearted enthusiasts and opponents alike. It has awakened many a mother from her peaceful satisfaction with the ways of the last generation. Unfortunately, it has brought with it a definite and crystallized system which many teachers are thrusting on their children without further thought. If the work is to have a permanent value it must beware of anything approaching finality at this early stage; it must be a spirit, an underlying idea which permeates and informs all our relationship with children. Each mother must study the principles on which the system is built, and must herself make the applications which her particular circumstances demand. It is as much in playtime as in school hours that the spirit must be followed; in fact, there is scarcely a field in which the Montessori system has more to teach us than in the devising of children's toys. Dr. Montessori herself would be surely the last to wish that we should take her apparatus as final; it represents the working of one mind seeking to supply the needs of the children of one nationality and class.

The system actually worked out by Dr. Montessori applies only to children above the age of three, but the possible application of her line of thought begins far earlier. The experience gained by one mother, with children from their earliest infancy, may at least suggest some ideas to others who are working on these lines.

In many children the imaginative games usurp a large part of the play-time, and these need little or no help from us. Their very essence is that they are almost independent of material. But in every child there is the very noticeable desire to help and to construct, and it is in the satisfaction of these needs that middle-class homes are apt to fail. We must face this problem conscientiously, and inquire what are a child's wants and how far our homes can be made to supply them.

The first need of a toy seems to come at about three and a half to four months old, when the little hands begin to fumble and grasp with purpose. A little thought convinces us how much the working of the hands must aid in a child's comprehension of what he sees; the interpreting of the appearance of surface, texture, weight, distance, and solidity require the repeated evidence of the sense of touch. How can those eyes, so new to their work, distinguish at first the difference between a circle and a sphere, a square and a cube unless little hands feel round objects and send their message to the brain? The woolly animals and rattles usually thought suitable for this tender age are not nearly varied or definite enough in shape. A visit to the wood-turner's shop will provide a far better set of toys—wooden pegs, balls, squares, cubes, and cones. These can be bought for a few pence, and, as they are made of good white wood, they are much more

wholesome than the painted shop toy. A difficulty at this age is that toys so easily get out of reach. This can be avoided if the toys are hung from a T-shaped piece of wood which is fixed on a firm stand and made the right height for a child playing on the floor. The next definite step comes at about nine months when the desire to do appears, and fumbling no longer satisfies. A collection of various boxes is a great joy; a baby cannot yet replace lids but loves to remove them. A supply of some small objects is always appreciated, dried beans and chestnuts being two excellent materials. A baby will be quiet for a long while picking up one tiny thing after another and dropping it deliberately into a box. A most successful toy is a supply of wooden curtain rings which will slip easily over a peg of wood secured on to a stand; there is endless scope in this simple game for acquiring deftness of fingers and hand.

Solid insets, such as Dr. Montessori uses for teaching perception of size, are very welcome at about one year old, provided they are made large and fit easily. But we must not altogether discard our old toy-shop friends. What child can get on without a ball and a toy animal to love and to push about; and do not bricks come first and foremost among our treasured possessions? Graded, wide-mouthed bottles with corks to fit can prove a delightful occupation, particularly when provided with dried peas or rice which will pour from bottle to bottle; a funnel adds much to the joy. Empty reels that can be threaded on to small bamboo sticks make a grand toy—in fact, they are the forerunners of beads. Dr. Montessori's geometrical insets and her colour cards should be included in the toy box of the tiny; they will both be appreciated by children of two and a half years old. Kitchen patty-pans and wooden clothes-pegs are two domestic objects that may well be pressed into the service; the latter requires the complement of a line stretched between two trees in the garden, some scraps of material cut roughly into the shape of garments, and a box or bowl to pretend to wash in.

Some little care is required in choosing the first drawing outfit if we wish to keep safe from niggedly work and consequent eye-strain. A roll of very fine, smooth cork carpet and coloured chalks form one way of avoiding this evil. If a sand-pit is possible, it should most certainly be included: there is no joy to rival it, and the possibility of new games is endless. The sand-heap is appreciated much younger than one is apt to think—from ten months old and onwards.

Where space allows out of doors, a most delightful baby gymnasium can be fitted out at very little expense. It may consist of a swing made low and safe, two rings suspended at the right height for the child, a narrow plank raised three inches from the ground, and six or seven feet in length, along which a child can just run, balancing with care; lastly, small parallel bars proportionate to the child's size. These bars are much improved if one side is constructed with three length-way bars up it. On this a child learns how to climb a gate; he has a step which helps him to swing from the top bar, and he can practise walking sideways along it. It is amazing how strength of arm and general deftness of balance will develop if the child is left to himself to practise feats over and over again, and to acquire gradually courage and skill for new adventures.

We all know the request "Let me help." How shall we satisfy this desire to share in real work? Little boys and girls alike love to possess a dustpan and brush, a duster, a rolling-pin and pastry-board, a wheelbarrow and spade. They should be allowed really to work with grown-ups at house and garden tasks; they learn a surprising amount of useful knowledge, about cooking, cleaning, and gardening, and they learn the right way to set about doing this work; they realize themselves, without our teaching, the dignity of work and the value of co-operation.

Is not this provision for activity true to the spirit of Montessori?

All those possibilities of dexterity of hand and limb lie dormant in the tiny child, and we must be alive to those developing wants and ready to provide material for their growth.

It is the well-to-do and rich parents who need take this most to heart; poor children find readier access to real things for toys. If these mothers would turn to the over-full toy box, and replace the mechanical motor-cars, rattles, too

numerous dolls, by such simple toys as the spirit of the Montessori system suggests, they would find the listless "Mother, what shall I do now?" giving way to perseverance, keen interest and contentment, and the little ones would turn of their own accord to the real task of growing.

ALYS LUCAS.

## CURRENT EVENTS.

MR. GERALD HANKIN, the Hon. Secretary of the Assistant Masters' Association, has been appointed Inspector in the Secondary Branch of the Board of Education. Mr. Hankin is now an assistant master at the King's College School, Wimbledon.

THE Governors of the Imperial College of Science and Technology have appointed Prof. Ernest William MacBride, LL.D., D.Sc., F.R.S., to the Chair of Zoology in the Imperial College of Science, at South Kensington, in succession to the late Prof. Adam Sedgwick.

MR. ERNEST YOUNG, Head Master of the County School, Harrow, has just returned from a tramp of two hundred miles in Switzerland. He was accompanied by Mr. Edmund Lightley, the mathematical master, and eight of the schoolboys, whose ages varied from fourteen to sixteen. The itinerary included Berne, Interlaken, Grindelwald, Meiringen, and Lucerne. Each boy carried a weight of 14 or 15 lb., which included his share of the sleeping equipment. The cost of the tour was £43 for the ten travellers.

SIR SIDNEY LEE, who was lately appointed by the University to the Professorship of English Language and Literature at East London College, will deliver his inaugural address at the college on Thursday, October 2, at 5.30. Sir Sidney's subject will be "The Place of English Literature in the Modern University." Admission is free by ticket, on application to the Registrar.

AFTER a fortnight the "strike" of the hundred and sixty children of the Haslington Council School, Crewe, whose parents objected to the Head Master being superseded on the opening of a new school, has ended. The Education Authority declined to recede from their position, and many of the scholars returned to school. The parents of forty-two children, however, sent them to the Church school instead of to the Council school.

PREMISES in Gower Street have been secured for the new London University Club, for membership of which all graduates (but not undergraduates) of the University are eligible; and the building will be opened very shortly. The annual subscription for town members is two guineas and for country members one guinea. Communications should be addressed to Mr. T. Ll. Humberstone, B.Sc., University of London, S.W.

THE ancient cottage at Griff (Warwickshire), in which ninety years ago was held the first school attended by George Eliot, is having new roof timbers put in. The cottage is situate two miles from Nuneaton, exactly opposite the entrance gates of Griff House, which for twenty years was the residence of George Eliot's father, Robert Evans, the original of Adam Bede, and subsequently tenanted by Isaac Evans, the Tom Tulliver of "The Mill on the Floss."

TEACHERS in London who wish to attend any of the numerous courses of lectures arranged by the London County Council should write to the Education Officer, Education Offices, Victoria Embankment, W.C., for a copy of the Handbook.

AN inaugural lecture on "Liberal Education: Ideals and Possibilities" will be delivered at Westfield College by the Very Rev. the Dean of St. Paul's, at 4.30 p.m., on Wednesday, October 15. For cards of admission apply to the Secretary of the College, Finchley Road, N.W.

MR. T. E. JACKSON, Master of the Rossendale Grammar School, has been appointed Head Master of the new joint Secondary School and Technical Institute to serve the boroughs of Bacup and Rawtenstall.

MISS COOK, M.A., has been appointed Head Mistress of the new County School for Girls at Aberdare.

MR. W. J. BATCHELDER has been appointed H.M. Inspector of

Schools in Cornwall. He is a novelist, and has been Head Master of Aldersbrook Council School, Wanstead.

EDUCATIONAL Pamphlet, No. 27, issued by the Board of Education at the cost of 4d., gives an interesting account of "The Playground Movement in America and its Relation to Public Education."

Two girls at Uplands School have passed the London University Examination, 1913, for the Senior School Certificate—one with Distinction in History—and have gained Matriculation Certificates. In the Senior Oxford Examination one girl has gained Second Class Honours, with Distinction in Botany; two have gained Third Class Honours—one with Distinction in Botany—and three girls have gained Pass Certificates.

## REVIEWS.

*Principia Mathematica*. Vol. III. By Alfred North Whitehead, Sc.D., F.R.S., and Bertrand Russell, M.A., F.R.S. (21s. net. Cambridge University Press.)

The long and laborious, but useful, task which the authors of "*Principia Mathematica*" imposed upon themselves when they undertook the preparation of this treatise is approaching its conclusion, for the third of the four large volumes in which we are told the work is to be complete has now issued from the press. The publication endows mathematical students—using the term in its broadest sense—with a most valuable gift, though the exact extent of the service the writers are rendering by its production can only be estimated with any approach to accuracy as time goes on. It will be as well to recall to the notice of students the material with which the earlier volumes deal, so that they may be in a position to form for themselves a clear conception of the nature of the work as a whole, and of the ground over which the treatise ranges. Vol. I is naturally occupied with mathematical logic as its central theme, but important and interesting discussions of an introductory and general character claim attention in the opening pages, whilst the second half of the volume is devoted to preliminary matter leading up to the investigations connected with cardinal arithmetic. The hierarchy of types, which plays a striking part in the logical scheme of the authors, is discussed in its place in the course of the section of the volume set apart for the consideration of mathematical logic. Arithmetic—namely, cardinal arithmetic, and also what the writers style relation-arithmetic—holds the predominant position in the second volume. The latter branch includes within it ordinal number, in the popular acceptance of the term. The subject of series is commenced in the same volume, but to a great extent this last forms one of the main themes of the volume which has just been issued. Vol. III treats also of quantity, more especially in its relation to the theory of ratios and to measurement. The preface to this latest section of the work provides interesting reading on points of great significance, and states concisely what it contains of novelty in idea, both from a negative and a positive point of view. It is pleasing to note, in the course of reading, that the authors, in their treatment of the theory of ratio and measurement, develop the ideas which underlie that of Euclid, as seen in the fifth book of the "Elements"; and touching their method of considering mutual ratio relations as they exist between real quantities of similar kind, and not merely as they exhibit themselves between integral numbers, that course, to our thinking, affords an attractive feature. The theory of ratios leads up to the theory of measurement, and this in its turn will be met with again when, in their final volume, the authors devote themselves to the discussion of geometry. In the newly published volume, as in its predecessors, interesting summaries—set down in everyday English, and not in the symbolic notation necessary for the main text—are placed in front of each chapter or section of the work. They serve a twofold and excellent purpose—namely, that of furnishing to the intending reader a concise preliminary survey of the discussions immediately to follow, and that of providing sufficient insight into the contents of the section for the requirements of the student not specially concerned with the particular branch of the subject there to be considered in greater detail.

*The Demonstration School Record, No. II*. Edited by J. J. Findlay. (5s. net. Manchester University Press.)

This handsome volume of 285 pages must warm the heart of everyone interested in the study of education. It is much to the credit of the Great Northern University that its Education Department undertakes, and carries out so successfully, self-denying work of this kind. In this matter Manchester leads the way. The sub-title runs "The Pursuits of the Fielden School," which gives us warning that the book is to be of a practical character. In point of fact, of the fifteen chapters that make up the book proper twelve are taken up with the treatment of various school subjects. The first three chapters deal respectively with "Corporate Life," "Work," and "General Review of the School Pursuits." The practical chapters are the work of many hands. They represent selections from the results of the seminar treatment of the methodology of the various subjects. Wherever possible credit is given to individuals, but the editor is careful to point out that in corporate work of this kind it is not always in the power of a collator to allocate to each contributor his exact share in the result.

Clearly this is not a book to be read right through by almost anyone but a professional master of method; but it may be safely said that no teacher of whatever grade can fail to find something of value within its pages. The time-honoured complaint about books on school methods is that they fail to combine theory and practice. The theoretical sections usually come first, and are well treated; then come the practical sections, also well treated. *But they do not mix.* This objection cannot be raised against the volume before us; indeed, it is not at all unlikely that critics will now arise to point out that theory and practice are so inextricably blended that it is impossible to separate them so as to give a critical estimate of each. Practical teachers in search of fresh ideas on the teaching of their subjects will find here exactly what they want, and they need have no fear of adopting the suggestions, since all of them have either justified themselves by success in the classroom or have been tried and found wanting, and are labelled accordingly. What is of special value in the book is the liberal supply of schemes of work. Nothing could be more useful to teachers than these specimens of what can be and has been done in actual classes. The sectional bibliographies are also excellent. All the help that an isolated teacher so often seeks for in vain is here supplied. Of the two appendixes, the longer and more important gives an admirable account of some experiments made in the school to test the Montessori principles. The editor, aided by Miss K. Steel, gives an excellent general criticism of this much discussed method. The book is provided with an index and eight full-page illustrations.

*Trees and How they Grow*. By G. Clarke Nuttall, B.Sc. (6s. net. Cassell.)

Trees form highly interesting objects of study, and they are accessible to almost anyone. Even in large towns they are to be found lining the roads, or in parks. Their appearances, changing with the changing seasons, give them an additional interest, and several years would hardly be too long to enable the amateur naturalist to know well the various phases of our few native, and many naturalized, trees. To such a one the book now named could hardly fail to be a source of help and pleasure, enabling him to verify his past observations and suggesting additional things to look out for. It is certainly the most complete and best illustrated of any of its kind that we have seen at the price. The photographic illustrations and the details of seedlings are features of special excellence. One must not rely too implicitly on the theoretical information supplied to him. For instance, Ginkgo has long ceased to be regarded by scientific botanists as a member of the Taxaceae, though in this book it is stated to belong to that family. One would have liked to see more folk-lore included; and an interesting piece of information about the wood of the lime might have been given, viz. that it is called "bass wood," and when stained forms a large part of the "mahogany" of shop counters, &c. But, where so much excellence is to be found, it is perhaps carping to ask for more. The book would be very useful for a school library or as a prize.

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## GENERAL NOTICES.

### EDUCATION.

*The Diary of a Free Kindergarten.* By Lileen Hardy. With an Introduction by Kate Douglas Wiggin. (2s. net. Gay & Hancock.)

An interesting record of the early and, it need hardly be added, struggling days of the Edinburgh Free Kindergarten, which is closely connected with the oldest Episcopal Church in Edinburgh. All who love children will be glad to read how they are being helped and made happy in the Child-Garden, and all who wish, in addition, to do their share in similar work, whether in school or in the less formal manner here set out, will be glad to read the suggestions this book unobtrusively offers. It is well illustrated from actual photographs, and the fact that the profits go to help the work should be an additional reason for buying it.

"The Nation's Library."—*Modern Views on Education.* By Thiselton Mark. (1s. net. Collins.)

It is a hopeful sign for education when a book like this finds its way to the bookstalls, for it makes its appeal not to the professional teacher but to the plain man. As its author modestly says, it "is a very slender treatment of a great theme," but it is encouraging to find that even a slender treatment is not too much for the patience of the general reader. Mr. Mark is a recognized authority on his subject, and in his 264 pages of excellent type he does much to clear up misunderstandings and to present the elements of his problem in their true proportions. Manchester University deserves well of education; the other day Prof. Findlay's masterly little "School," then the second "Demonstration School Record," and now this sound and solid epitome.

### RELIGION.

"Studies in Theology" Series.—*An Outline of the History of Christian Thought since Kant.* By Prof. E. Caldwell Moore. (2s. 6d. net. Duckworth.)

The student who reads Prof. Moore's synopsis will find sketched for him in helpful manner the lines along which thought, and particularly Christian thought, has proceeded during rather more than the past century. The modern attitude towards the religious and Christian problem is only to be accounted for, in the light of the eighteenth century and previous religious thought, by the intervening philosophical revolution inaugurated by Kant, by the growth of historical

criticism, and by the spread of scientific thought. The author devotes a chapter or more to the presentation of each of these three main movements of nineteenth-century thought, with a sketch of the life of their greatest exponents. His final chapter traces the reflection, among English-speaking races, of German philosophic and religious thought of the period. The book includes a bibliography and index. Prof. Moore promises us in his preface a fuller work on the same subject.

### HISTORY.

"Oxford County Histories."—*The East Riding of Yorkshire.* By J. L. Brockbank, M.A. (1s. 6d. net, or, superior binding, 2s. 6d. net. Clarendon Press.)

Mr. Brockbank is an enthusiast of the useful type—he knows thoroughly well and appreciates his subject. If local readers—and readers generally—fail to find interest in the history of the East Riding, the blame certainly does not lie with him. This history he traces in main lines from East Yorkshire in the making downwards to the County Council of to-day—the land and its inhabitants, the successive swarms of invaders, the prowess of lords and knights and common folk, the Church and monastic life, the changes of manners and customs. In a word, he makes the people live and recreates their surroundings. This is one of the very best volumes of the large and valuable series. There are sixty-nine most useful illustrations and maps.

*A Social History of England.* By George Guest, B.A. (1s. 6d. G. Bell.)

This is Part I of "a new concentric history course," constitutional history and political, military, and Imperial affairs being reserved for two following parts. It is intended as a historical reader for upper elementary and middle secondary classes, and will prove a valuable companion to the ordinary history book. The aim is "to trace briefly the gradual emancipation of the worker from a state of slavery to his present position of power which gives him a share in the government of his country." The manorial system and Domesday Book are very clearly and simply explained and illustrated. The Guilds, the mercantile system, the agrarian revolution of the sixteenth century, the growth of manufactures, the industrial revolution, the factory system—these are but large headings in a very careful and lucid description of the changing social conditions. Summaries of the chapters are appended. There are numerous (some fifty) illustrations. An excellent and timely volume.

*Documents of British History, 1815-1900.* With Problems and Exercises. By M. W. Keatinge, M.A., and N. L. Frazer, M.A. (8d. Black.)

The first five sections of "Documents of British History," by the same authors, are reprints from their "History of England for Schools," and this volume, constituting Section 6, has been specially compiled to bring the history down to 1900. The selection is useful as far as it goes, but, of course, the space is very limited. The get-up is substantial and attractive.

"Oxford Supplementary Histories."—*Scenes of Stuart Times.* (6d. net. Henry Frowde; Hodder & Stoughton.)

The little volume consists of a series of illustrative "passages (carefully edited, modernized, and occasionally simplified) mainly from the histories, diaries, memoirs, and other writings of men who lived in the times that they described, and occasionally from the works of the great historians which are based directly on original sources." There are numerous illustrations, including a number of portraits. A very serviceable and attractive compilation.

*A Digest of British History.* By S. H. McGrady, M.A. Cantab. Introduction by Oscar Browning. (2s. 6d. net. Ralph, Holland.)

A very intelligent outline of the principal facts, with sufficient dates, but not a mere datebook: rather a superior student's notebook. "Movements, historical trends, tendencies, and developments, have claimed attention rather than details concerning the lives of court favourites and crowned heads." The volume will be very helpful in showing the important things of each period in their due relation, and in guiding the student in revision. The work is markedly accurate. The first Indian National Congress, indeed, met in 1885, not 1886; Van Tromp should drop the "Van"; but such little matters can readily be set right in an early new edition, which is sure to be required.

*A Guide to British Historical Fiction.* By J. A. Buckley, M.A., and W. T. Williams, B.A. (2s. 6d. net. Harrap.)

There will be room for this book alongside of Mr. Jonathan Nield's more comprehensive work, to which our authors make no reference. The list is "representative and not exhaustive," and the distinctive feature is a short analysis of each work, or at least a general indication of its contents and treatment. The list will be a serviceable guide to collateral reading from the earliest period down to 1900.

*Noble Pages from German History.* By F. J. Gould. (1s. 6d. net. Williams & Norgate.)

Mr. Gould has written a charming little book, telling in simple language and in clear outline the story of many Germans eminent in many walks of life: men of thought and men of action, philosophers and reformers, poets and story-tellers, scientists and artists. In his last chapter he points the moral—the waste and the wickedness of a conflict between this country and Germany. "Shall these two great nations stoop to spitfire quarrels and the ghastly tearing of each other's hearts?" Surely not, we should say. But the question depends on other answers than ours; it has aspects that Mr. Gould does not regard. In any case, the book is well worth reading. There are numerous interesting illustrations.

*The Romance of British History: or, Britain's Rise from Savagery to Civilization.* By Josiah Turner. (1s. 6d. Methuen.)

Mr. Turner's "romance" is not the selection of romantic episodes, and the civilizing process is but very incidentally narrated till we come to steam and electricity in final chapters. The volume is simply an elementary history, the meaning of which is obscured by inevitable omission and compression. It is very well written, and the author seems to have an unusually good knowledge of the facts. Still, Wellington's army at Waterloo was not "mainly composed of our countrymen"—in point of numbers; and, although "one hundred thousand men are said to have marched north with Edward to crush Bruce and finally conquer Scotland," it is long time that writers of history had ceased to repeat the wildly extravagant story. Besides a frontispiece, there are eight illustrations, mostly after famous historical pictures.

*Georgian England (1714-1820).* By Susan Cunnington. (1s. 6d. Harrap.)

This is a painstaking account of the period, with special attention to social developments, education, religion, and literature, and a separate chapter on Scotland and Ireland. The political grasp is less firm, and there is occasional indefiniteness of both opinion and statement. "The native lieutenant, Surajah Dowlah, an avaricious tyrant," is a curious description of the twenty-year-old Nawab; and, when we are told that this tyrant seized people and confined them in the Black Hole of Calcutta, we seem to receive the wrong impression that the Nawab was personally responsible. Why say "nearly 150 persons were shut in," when it is just as easy, and far more effective, to say 146? Really Nelson's famous signal was not "England expects every man to do his duty"; and, that being so, why perpetuate a misstatement? There are numerous illustrations, many of them trifling and poor.

"Historical Readers."—*The Growth of Modern Britain.*

By B. H. Sutton. (2s. Methuen.)

The volume is "an outline history of the British people from 1830 to 1910"; and the outline includes explanation of the organization and work of the principal departments of Government, as well as of the working of Parliamentary institutions. There is a lack of grip on Indian history; the rights and the wrongs of the wars with China and South Africa are glossed over or misapprehended. "Sir Alfred (afterwards Lord) Milner did his best to bring Kruger to reason, and, as Kruger would not listen, British troops were sent to South Africa." But what if Kruger had listened? Would it have made any difference? The author evidently does not see beyond the outside of things. "The constitution," we are told, "is the collection of national laws which lay down the rules for the government of the country." Here is a sentence that no man can understand, just because the writer does not see the ambiguity of expression; but, take it in any possible sense, and it is glaringly incorrect. The book is written with unconventional vigour, but (like so many others of its kind) it does not rise above the merit of diligent compilation.

#### SCIENCE AND TECHNOLOGY.

*The Wandering of Animals.* By Hans Gadow, F.R.S., Lecturer in Advanced Morphology in the University of Cambridge. (1s. net. Cambridge University Press.)

This number of the Cambridge Manuals is perhaps a shade more technical than some others of the same series that we have seen, but nevertheless gives much interesting information concerning the many and vast changes that have marked the distribution of animal life over the surface of the earth. It should be much appreciated by the reader who has a good general acquaintance with geology and geography.

*A Systematic Course of Practical Science.* Book II: Experimental Heat. By A. W. Mason, B.A., B.Sc., Senior Science Master, Municipal High School, Tynemouth. (2s. 6d. net. Rivingtons.)

This book maintains the standard of excellence set by the author in his first book on Introductory Physical Measurements. An excellently arranged set of experiments covers all the ground that is necessary for secondary-school purposes. In addition to the experiments, numerous exercises are given on all sections of the work to emphasize the importance of a correct and intelligent application of theory to practical problems, and to demonstrate the use of the numerical data obtained by actual experiment. The instructions for carrying out the work are exceptionally clear, and the diagrams of apparatus are excellent. It is in every way a decidedly sound book, and one on which the author is to be congratulated.

*Preliminary Chemistry.* By H. W. Bausor, M.A. (1s. 6d. University Tutorial Press.)

A number of simple experiments calculated to give a general idea of the properties of the commoner elements and their simple compounds. The inferences that may be drawn from the result of each experiment are concisely indicated and are intended to be used as a foundation on which the chief principles of chemical theory may be built up. The book is written to cover the syllabuses for such examinations as the Preliminary Cambridge Local.

*Laboratory Engineering.* By Herbert G. Taylor, M.Sc., A.M.I.M.E., Demonstrator of Civil and Mechanical Engineering, King's College, London. (7s. 6d. net. University of London Press. Published by Messrs. Hodder & Stoughton.)

This book gives a well selected number of experiments on Engineering science, and, in the hands of an advanced student working in a thoroughly well equipped laboratory, should afford the means of clearly establishing the important fact that there is an intimate relationship between theory and practice. The theory of each experiment is concisely given, and no attempt has been made to avoid the use of the calculus. A very suitable book for use in most University and technical colleges.

*Practical Drawing.* By R. M. Metcalfe, A.R.C.Sc., Lecturer in Engineering, Drawing, and Design at the Wigan and District Mining and Technical College. (2s. net. Arnold.)

An elementary book, giving those principles of geometrical drawing which form a necessary preliminary to any branch of technical drawing. The examples given are numerous, and a feature is the introduction of a chapter on geometrical problems as applied to simple surveying. The use of oblique and isometric projection as an aid to orthographic projection is well emphasized.

*Elementary Workshop Drawing.* By Henry A. Darling, A.M.I.C.E., Lecturer on Drawing and Geometry at the Municipal Technical Institute, West Ham. (1s. 6d. Blackie.)

Gives a general idea of the rules and conventions that are necessary for the proper application of geometrical principles to technical drawing. Work of a quantitative nature is introduced to demonstrate the advantages attached to an appreciation of both graphical and arithmetical methods of solution. The book is of a very elementary type

(Continued on page 422.)



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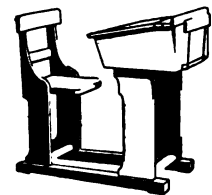
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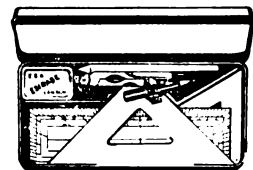
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*Light Woodwork.* By W. G. Alderton, Head Master of the Abbey School, St. Albans, and J. T. Baily, Superintendent of Manual Training, Rochester, Chatham, and Gillingham Higher Education Sub-Committee of the Kent Education Committee. (2s. 6d. net. Arnold.)

This is a course of handwork correlated with practical arithmetic, drawing, and composition. It details a scheme of manual training applicable, in cases where no properly equipped training centre is available, to those students who, having passed the paper and cardboard stage of instruction, require something of a more advanced nature. The idea is a distinctly good one and the book should meet with the appreciation that it deserves. The diagrams throughout are excellent.

#### NATURE STUDY.

*Wild Flowers as they Grow.* Fourth Series. By H. Essenhigh Corke, F.R.P.S. Descriptive text by Clarke Nuttall, B.Sc. (5s. net. Cassell.)

This is the fourth volume of a series of descriptions of British wild flowers, illustrated by coloured plates. At first sight it appears to be a mere picture book, but careful reading shows that it is much more than this. The descriptions give many interesting items of folk lore relating to the flowers, and also very conveniently bring together facts about their pollination which are otherwise only to be found in more technical publications. Some of these facts are comparatively little known—as, for example, that one of the hover flies (*Rhingia rostrata*) visits the heartsease. It is a pity that the name “hover fly” is not used. Many people to whom the words as given (“a certain fly, *Rhingia rostrata*”) would convey little or nothing, might know what to look out for if they were told it was a hover fly. *Rhingia* is also mis-spelt, as are one or two other Latin names. As it stands, this volume is of the “gift book” type, and certainly the price of the complete set fits it for the use of students. The descriptions, revised—for it must be admitted their accuracy is not always unimpeachable—would make a very desirable book of reference for a Nature Study library. As it stands it will undoubtedly give much pleasure to recipients interested in the subject.

*Flowerless Plants: how and where they Grow.* By S. Leonard Bastin. (6s. net. Cassell.)

The name “Cryptogam,” intended to imply that the reproductive processes of the plants designated by it are obscure, has become for the scientific botanist a misnomer, since it has been discovered that with the microscope these supposed hidden processes are especially easy to follow. But the amateur, unaided by a microscope, unless he collects ferns, seaweeds, or perhaps mosses, commonly neglects the study of cryptogams altogether. This book makes the subject so fascinating and easy that more people should be attracted to it. The whole is very readable and excellently illustrated from original photographs. The sole defect of the work is the lack of a bibliography. It would have been difficult to compile, but would have helped the eager student very much, for, although Mr. Bastin has described a good selection of the non-flowering plants, it is naturally impossible in a small and popular handbook to give the reader enough help to enable him to identify all the plants he may easily collect, and he is sure quite soon to be at a loss where to turn for further help. In spite of this lack of completeness, the book is likely to be not only highly interesting, but extremely useful.

*The Seashore I Know.* Edited by W. Percival Westell, F.L.S., and Henry E. Turner. (8d. in cloth. Dent.)

Like many minor Nature Study publications at the present day, this book is remarkable for its astonishingly good pictures and the great lack of originality of its letterpress. As it is only said to be edited, not written, this is presumably forgivable, but it would have been well for the editors to have verified the statements made, and so have saved themselves, for instance, from such a mistake as that of saying of Hound's Tongue “that the leaves of this plant bear an additional resemblance to a dog's tongue in so far as they are rough,” when it is surely a matter of common knowledge that dogs' tongues are smooth. Foolish mistakes of this kind are copied from book to book in a perfectly thoughtless manner, which is unfortunately characteristic of much so-called “study” of Nature, which resolves itself into reading about natural objects.

#### MATHEMATICS.

*Elements of Trigonometry.* By Prof. J. C. Swaminarayan, M.A., Bombay. (Rs. 1½. Ahmedabad: R. M. Shah.)

A small, but generally interesting and valuable textbook, which has been prepared more particularly for first-year students at the University of Bombay. Subject to the new regulations for the examinations of that University, mathematics now takes its place amongst the optional subjects in the Intermediate curriculum; hence

the necessity for some first-year instruction in trigonometry, and for a suitable class manual such as the present one. But, though the above gives the direct reason why the little treatise was written, it is to be expected that so suggestive a course in elementary trigonometry will attain to a wider sphere of usefulness. In some respects the work is open to adverse criticism. It cannot be held to be satisfactory to ignore the property of *sense* when discussing the terms of the trigonometrical ratios of acute angles, seeing that a disregard of the property involves nomenclature which must be condemned even with reference to acute angles directly the angle greater than a right angle claims consideration. To teach at an earlier stage and contradict at a later one cannot be good from an educational standpoint. The style in which the textbook is brought out also leaves much to be desired as regards general finish and the quality of the reproduction of the diagrams.

*A Treatise on Hydromechanics. Part II: Hydrodynamics.* By A. S. Ramsey, M.A., Fellow and Lecturer of Magdalene College, Cambridge. (7s. 6d. G. Bell.)

Dr. Besant's “Treatise on Hydromechanics” first appeared in one volume in 1859, but a subdivision of the book was made in 1883, when Part I, on Hydrostatics, was published. Seven editions of this volume have been brought out since that date, the last two appearing under the joint authorship of Dr. Besant and the author of the present work, who, at the former's suggestion, undertook the task of completing the second volume on Hydrodynamics. The materials collected by Dr. Besant were put at his disposal, but, as he states in his preface, owing to modes of expression and analysis having altered in the course of thirty years, it seemed desirable to write a new book *ab initio*. The result is certainly an admirable one, and, although the book must not be regarded as so exhaustive a treatise as Prof. Lamb's, yet it includes all that is important from the standpoint of the beginner in the study of advanced hydrodynamics. The range of the work extends to vortices and wave motion, with additional chapters on string vibrations and sound waves. The question of viscosity has not been touched, as being beyond the scope of introductory treatment. Copious foot-notes enable the reader to refer readily to the best research work bearing on the subject. Numerous examples, mostly taken from examination papers of Cambridge University and its colleges, are appended at the end of each chapter.

*Elementary Physical Optics.* By W. E. Cross, M.A., Head Master of King's School, Peterborough. (3s. 6d. Clarendon Press.)

Some difficulty is occasionally experienced in commencing the study of optics with students whose knowledge of mathematics is slight, on account of the fact that, although the more usual Ray method of treatment is better for experimental demonstration, it demands some mathematical skill to interpretate results correctly. The wave method of treatment, on the other hand, while not perhaps so suitable experimentally, is especially adaptable to graphical treatment, and has the advantage that, to a large extent, it avoids mathematics. By combining the most important features of both methods, the ray being interpreted as a narrow cone which would form part of a larger wave series, this book puts the whole problem in a remarkably neat way, and the general treatment is such as to allow of an easy and clear explanation of optical phenomena. The usual lens and mirror formulae have been replaced by the terms “incident,” “impressed,” and “final” curvatures—a notation which avoids the necessity for plus and minus signs, and which enables a clear conception to be gained of the important phenomena associated with reflexion and refraction. The diagrams are numerous and mostly original. They are excellently drawn, and render the text perfectly conclusive. Considerable use is made of experimental observation, and a list of suitable demonstration apparatus is given in an appendix.

#### MISCELLANEOUS.

*Germanic Philology.* By Dr. Richard Loewe. Translated by J. D. Jones, Ph.D., B.A. (170 pp. 4s. 6d. net. Allen.)

The appearance of Dr. Loewe's scholarly work in an English dress will be welcomed by all those who are interested in tracing the descent of our language. The reconstitution of the Primitive Germanic tongue has an important bearing on the whole of Indo-Germanic philology, but it has a special significance for the Teutonic peoples—for the Englishman, the Scandinavian, and the Dutchman, as much as for the German. This work offers some fresh points of view as to the relation of the Germanic tongue to its European and Asiatic congeners which command attention, though they may excite controversy. The phonology and accidence of the reconstituted mother language are very exhaustively dealt with. The work of the translator has been done in a thoroughly competent fashion.

*The Fate of Empires.* By Arthur John Hubbard, M.D. (6s. 6d. net. Longmans.)

In this book Dr. Hubbard states what he takes to be the causes of the fall of past civilizations, and gives us his theory of the motive force that is essential to the continued existence of any civilization.

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He explains that, in the lower orders of life, the "method of instinct" resulted in enormous wastefulness of the individual, but preservation of the racial life. He maintains that this supersession of the "method of instinct" by the "method of reason" in the case of man has resulted in racial distinction in the interest of society; and his solution of the problem lies in the superimposition of the "religious motive" on a combined method of instinct and interest. Dr. Hubbard's reasoning is not very convincing; for many pages "pure reason" is discussed as a motive force, as if it could exist completely divorced from instinct, and false conclusions are consequently drawn (cf. the statement, "The history of the growth of reason is the history of the overthrow of instinct"). Again, to postulate the "religious method that comes with external authority" is really to beg the whole question; and to say that *carpe diem* as the rule of life is the work of pure reason might make Kant turn in his grave.

*Character in the Making.* By Abel Jones, M.A., B.Sc., Ph.D.  
 (142 pp. 2s. net. Murray.)

Those who write on Character do not always realize that they are virtually dealing with the whole of human life in its widest aspects, and that only the possession of exceptional insight could justify the assumption of such a task. The author of this little volume meant well, but he has neither a new point of view to present nor definite practical guidance to offer. Most of what he says is sound enough, but it is somewhat trite, and therefore not particularly helpful.

*Greek Divination.* By W. R. Halliday, B.A., B.Litt.  
 (275 pp. 5s. net. Macmillan.)

To readers of ancient history who are not also students of sociology the divination believed in and practised by the Greeks, with its attendant rites, must seem nothing more than an unreasoning and inexplicable superstition. It is the purpose of this learned and interesting work to show its intimate relation to the faith in magic which is a universal phase of primitive religion. The author applies a strictly scientific method to an examination of the various forms which divination assumed among the most intellectual of ancient peoples; and, though his conclusions may not command assent in every particular, they will stimulate thought in all who find the subject attractive.

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### EDUCATION.

- Pedagogical Anthropology. By Maria Montessori. Translated into English by Frederic Tabor Cooper. Heinemann, 14s. net.  
 Report of the Commissioner of Education for the year ended June 30, 1912. Two volumes. Washington: Government Printing Office.  
 The Scottish Education Department and the Deputation on Higher Education in Rural Schools: a Criticism. By John Macleod, I.S.O. Aberdeen: The Rosemount Press, 3d.  
 Types of Schools for Young Children. The "Dewey" School: reprinted from the Elementary School Record published by the University of Chicago in 1900. Froebel Society, 1s. net.

### CLASSICS.

- Rivingtons' Graded First Latin Books. In six books. Book I, 1s.

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- La Belle-Nivernaise. Alphonse Daudet. Edited by R. R. N. Baron, M.A. Mills & Boon, 1s. 6d.  
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 Preliminary French Course. By H. J. Chaytor and H. E. Truelove. Clive, 1s. 6d.

## GERMAN.

- German Epics Retold. Edited, with Notes, German Questions, and Vocabulary, by M. Bine Holly. Harrap, 2s. 6d.  
Blackie's German Texts.—Die Vierzehn Nothelfer. Riehl, 6d.  
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- The Cambridge Medieval History. Vol. II: The Rise of the Saracens and the Foundation of the Western Empire. Cambridge University Press, £1 net, including maps in separate portfolio.  
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- (1) To write on one side only of the paper.
- (2) To avoid putting more than one piece of work on a single sheet of paper.
- (3) To sign each separate piece of work.

17454. (C. M. ROSS, B.A.)—Find the value of the multiple integral

$$\iiint \dots \int \frac{dx_1 dx_2 \dots dx_n}{[1 - (x_1^2 + x_2^2 + \dots + x_n^2)]^{\frac{1}{2}}}$$

the integral being extended to all positive values for which

$$x_1^2 + x_2^2 + \dots + x_n^2 > h.$$

[See Williamson, *Integral Calculus*, p. 320.]

Solutions (I) by C. E. WRIGHT; (II) by Rev. T. R. TERRY, M.A., H. WILLIAMS, B.Sc., F.C.P., and the PROPOSER.

(I) First consider the integral

$$\iiint \dots \int dx_1 dx_2 dx_3 \dots$$

under the conditions  $x_1^2 + x_2^2 + x_3^2 \dots \leq 1$ ,

and put  $x_1^2 = hy_1, x_2^2 = hy_2$ .

Then the condition becomes  $y_1 + y_2 + y_3 + y_4 + \dots \leq 1$ , and the integral is

$$\begin{aligned} u &= \iiint \dots \left( \frac{1}{2} \sqrt{\frac{h}{y_1}} dy_1 \right) \left( \frac{1}{2} \sqrt{\frac{h}{y_2}} dy_2 \right) \\ &= \frac{h^{\frac{1}{2}n}}{2^n} \iiint y_1^{-\frac{1}{2}} y_2^{-\frac{1}{2}} \dots dy_1 dy_2 dy_3 \\ &= \frac{h^{\frac{1}{2}n}}{2^n} \frac{\{\Gamma(\frac{1}{2})\}^n}{\Gamma(\frac{1}{2}n+1)} \quad (\text{by Dirichlet's Theorem}); \end{aligned}$$

therefore  $\frac{du}{dh} = \frac{1}{2}n \frac{h^{\frac{1}{2}n-1}}{2^n} \frac{\{\Gamma(\frac{1}{2})\}^n}{\Gamma(\frac{1}{2}n+1)} dh$ ,

and the required integral is

$$\int_0^1 \frac{du}{dh} dh \frac{1}{\sqrt{1-h^2}} = \int_0^1 \frac{h^{\frac{1}{2}n-1}}{2^n} \frac{\{\Gamma(\frac{1}{2})\}^n}{\Gamma(\frac{1}{2}n)} \frac{dh}{\sqrt{1-h^2}}$$

Putting  $h^2 = \xi$ , this reduces to

$$\begin{aligned} \frac{\Gamma(\frac{1}{2})^n}{2^{n+1} \Gamma(\frac{1}{2}n)} B\left(\frac{1}{2}n, \frac{1}{2}\right) &= \frac{\Gamma(\frac{1}{2})^n}{2^{n+1} \Gamma(\frac{1}{2}n)} \cdot \frac{\Gamma(\frac{1}{2}n) \Gamma(\frac{1}{2})}{\Gamma[\frac{1}{2}(n+2)]} \\ &= \left(\frac{\sqrt{\pi}}{2}\right)^{n+1} \frac{\Gamma(\frac{1}{2}n)}{\Gamma(\frac{1}{2}n) \Gamma[\frac{1}{2}(n+2)]} \end{aligned}$$

N.B.—The integral in Williamson is

$$\iiint \dots \int \frac{dx_1 dx_2 \dots dx_n}{\sqrt{1 - (x_1^2 + x_2^2 + x_3^2 + \dots + x_n^2)}}$$

and by the above method is

$$\begin{aligned} \frac{\{\Gamma(\frac{1}{2})\}^n}{\Gamma(\frac{1}{2}n)} \int_0^1 \frac{h^{\frac{1}{2}n-1}}{2^n \sqrt{1-h}} &= \frac{\{\Gamma(\frac{1}{2})\}^n}{2^n \Gamma(\frac{1}{2}n)} B\left(\frac{1}{2}n, \frac{1}{2}\right) \\ &= \frac{\{\Gamma(\frac{1}{2})\}^n \Gamma(\frac{1}{2}n) \Gamma(\frac{1}{2})}{2^n \Gamma(\frac{1}{2}n) \Gamma[\frac{1}{2}(n+1)]} = \frac{\pi^{\frac{1}{2}(n+1)}}{2^n \Gamma[\frac{1}{2}(n+1)]} \end{aligned}$$

which is Williamson's result.

Both the above are simple cases of Liouville's extension of Lejeune Dirichlet's theorem on Multiple Integrals.

(II) If we put  $y_r = x_r^2, r = 1, 2, \dots, n$ , and if I be the given integral

$$2^n I = \int \dots \int y_1^{-\frac{1}{2}} \dots y_n^{-\frac{1}{2}} \frac{dy_1 \dots dy_n}{\sqrt{1 - (y_1 + \dots + y_n)^2}}$$

where  $y_1 \dots y_n$  have all positive values for which the sum  $> 1$ . By a well known theorem of Lejeune Dirichlet (given in Todhunter's *Integral Calculus*, and elsewhere),

$$\int \dots \int y_1^{-\frac{1}{2}} \dots y_n^{-\frac{1}{2}} dy_1 \dots dy_n$$

extending over all positive values of the variables, so that their sum lies between  $h$  and  $h + \Delta h = [\Gamma(\frac{1}{2})]^n / \Gamma(\frac{1}{2}n) \cdot h^{\frac{1}{2}(n+1)}$ . For the same values of the variables  $\sqrt{1 - (y_1 + \dots + y_n)^2}$  differs from  $\sqrt{1 - h^2}$  by a small quantity of the order  $\Delta h$ .

Hence, since  $\Gamma(\frac{1}{2}) = \sqrt{\pi}$ ,

$$\frac{2^n \Gamma(\frac{1}{2}n)}{\pi^{\frac{1}{2}n}} I = \int_0^1 \frac{h^{\frac{1}{2}n-1}}{\sqrt{1-h^2}} dh = \int_0^{\frac{1}{2}\pi} \sin^{\frac{1}{2}n-1} \theta d\theta = \frac{\Gamma(\frac{1}{2}n) \Gamma(\frac{1}{2})}{2 \Gamma[\frac{1}{2}(n+2)]};$$

therefore  $I = (\frac{1}{2}\pi)^{\frac{1}{2}(n+1)} \Gamma(\frac{1}{2}n) / \Gamma[\frac{1}{2}(n+2)] \Gamma(\frac{1}{2}n)$ .

[When  $n = 2$ , this result is  $\frac{1}{2}\pi^2$ . Also the integral taken over a unit circle  $= \int_0^{2\pi} \frac{2\pi r dr}{\sqrt{1-r^2}} = \frac{1}{2}\pi^2$ . These results agree, since the integral all over the unit circle is obviously four times the integral over the quarter of the circle where  $x$  and  $y$  are positive. The case, when  $n = 3$ , is also easily verified.]

17482. (C. W. T. HOOK.)—If a cubic curve have three real inflexions, L, M, N, the tangents at any two of them meet on the polar harmonic of the third, and, further, these polar harmonics are concurrent.

Solution by R. TATA, M.A., and C. E. WRIGHT.

The following solution is copied from Basset's *Cubic and Quartic Curves*, §§ 105, 106.

The equation of the cubic is

$$a\beta\gamma + (la + m\beta + n\gamma)^3 = 0.$$

If LMN are the points where  $la + m\beta + n\gamma = 0$  cuts the sides of the triangle of reference, BC, CA, AB are the tangents at these points. The co-ordinates of M are given by  $\beta = 0, la + n\gamma = 0$ .

Hence the polar conic of M is  $\beta(n\gamma - la) = 0$ . The second factor equated to zero is the harmonic polar of M, which obviously passes through the intersection of the tangents at L and N.

Since the harmonic polars of the three points are

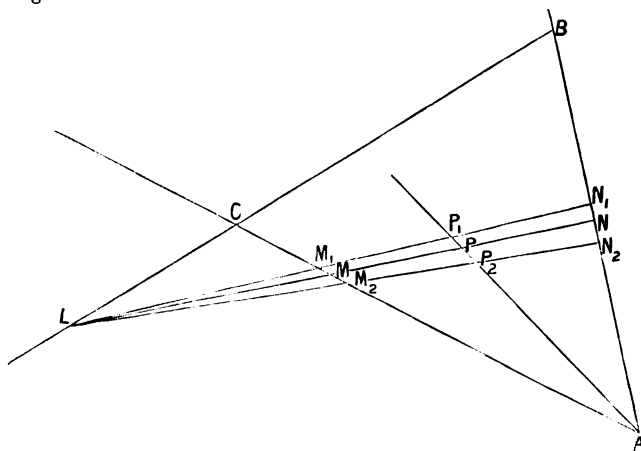
$$m\beta = n\gamma, \quad n\gamma = la, \quad la = m\beta,$$

it is plain that they are concurrent at the point

$$(1/l, 1/m, 1/n).$$

The PROPOSER solves thus:—

Let  $M_1M_2, N_1N_2$  be points in which two lines through L cut the tangents at M and N close to M and N respectively. As  $M_1, M_2$



approach  $M, N$ , and  $N_2$  will approach  $N$  until ultimately  $M_1, M_2, N_1, N_2$  will be the tangents at  $M$  and  $N$ . Now, if the polar harmonic of  $L$  cuts  $LMN$  in  $P, P_1, P_2$  be the corresponding points on  $LM, N_1, LM_2, N_2$ , the ranges  $LMPN, LM_1P_1N_1, LM_2P_2N_2$  are each harmonic; therefore  $P, P_1, P_2$  pass through  $A$ . Similarly, the other two polars will pass through  $B$  and  $C$ ; let them be  $BQ, CR$ . It follows that  $AP, BQ, CR$  must be concurrent, for projecting  $LMN$  into the line at infinity we see that this involves the theorem that the medians of a triangle are concurrent.

17548. (F. MAYOR.)—Prove that, if  $\alpha, \beta, \gamma, \delta$  be all different,

$$\Sigma \frac{\cos 2\alpha}{\sin \frac{\alpha-\beta}{2} \sin \frac{\alpha-\gamma}{2} \sin \frac{\alpha-\delta}{2}} = 8 \sin^{\alpha+\beta+\gamma+\delta}.$$

Solution by T. P. TRIVEDI, M.A., LL.B., and Professor K. J. SANJANA, M.A.

We have the algebraical identity

$$\begin{aligned} \frac{1}{a(a-b)(a-c)(a-d)} + \frac{1}{b(b-c)(b-d)(b-a)} + \frac{1}{c(c-a)(c-b)(c-d)} \\ + \frac{1}{d(d-a)(d-b)(d-c)} + \frac{1}{abcd} = \end{aligned}$$



therefore  $\sqrt{abcd} \sum \frac{1}{a(a-b)(a-c)(a-d)} + \frac{1}{\sqrt{abcd}} = 0 \dots\dots(1)$ .

Put  $a = \cos \alpha + i \sin \alpha$ ,  $b = \cos \beta + i \sin \beta$ ,  $c = \cos \gamma + i \sin \gamma$ ,  
 $d = \cos \delta + i \sin \delta$ ;

$$a - b = 2i \sin \frac{1}{2}(\alpha - \beta) \left\{ \cos \frac{1}{2}(\beta + \alpha) + i \sin \frac{1}{2}(\beta + \alpha) \right\};$$

therefore  $\frac{1}{a-b} = \frac{\cos \frac{1}{2}(\beta + \alpha) - i \sin \frac{1}{2}(\beta + \alpha)}{2i \sin \frac{1}{2}(\alpha - \beta)}$ .

Thus  $\frac{1}{a(a-b)(a-c)(a-d)}$   

$$= \frac{\cos \left[ \alpha + \frac{1}{2}(\beta + \alpha) + \frac{1}{2}(\alpha + \gamma) + \frac{1}{2}(\alpha + \delta) \right]}{-8i \left\{ \sin \frac{1}{2}(\alpha - \beta) \sin \frac{1}{2}(\alpha - \gamma) \sin \frac{1}{2}(\alpha - \delta) \right\}}$$

$$\sqrt{abcd} = \cos \frac{1}{2}(\alpha + \beta + \gamma + \delta) + i \sin \frac{1}{2}(\alpha + \beta + \gamma + \delta)$$

or  $\frac{\sqrt{abcd}}{a(a-b)(a-c)(a-d)} = \frac{\cos 2\alpha - i \sin 2\alpha}{-8i \sin \frac{1}{2}(\alpha - \beta) \sin \frac{1}{2}(\alpha - \gamma) \sin \frac{1}{2}(\alpha - \delta)}$ .

Thus (1) becomes  

$$\sum \frac{\cos 2\alpha - i \sin 2\alpha}{-8i \sin \frac{1}{2}(\alpha - \beta) \sin \frac{1}{2}(\alpha - \gamma) \sin \frac{1}{2}(\alpha - \delta)} + \left\{ \cos \frac{1}{2}(\alpha + \beta + \gamma + \delta) - i \sin \frac{1}{2}(\alpha + \beta + \gamma + \delta) \right\}.$$

Multiplying by  $-8i$  and equating the real parts, we get the result in question. We can also infer

$$\sum \frac{\sin 2\alpha}{\sin \frac{1}{2}(\alpha - \beta) \sin \frac{1}{2}(\alpha - \gamma) \sin \frac{1}{2}(\alpha - \delta)} = -8 \cos \frac{1}{2}(\alpha + \beta + \gamma + \delta).$$

[Rest in Reprint.]

**12961.** (ARTEMAS MARTIN, LL.D.)—A catenary is revolved about its axis. If the solid thus formed be cut by a plane making a given angle with its axis, find the equation to the curve bounding the section.

Solutions (I) by W. N. BAILEY and E. R. HAMILTON, B.Sc.;  
 (II) by C. W. ADAMS and C. E. WRIGHT.

(I) Let AO be the axis of revolution, OrP the plane which makes an angle  $\theta$  with the axis. Take P any point on the curve, and through P draw a plane perpendicular to OA which cuts the surface in a circle centre C, and cuts the given plane in the line PN which is perpendicular to Or.

If ON = x, PN = y,

$$AO = h,$$

then AC = h + x cos  $\theta$ ,

$$CN = x \sin \theta.$$

But AC = c cosh CP/c,

since the original curve is a catenary. Therefore

$$h + x \cos \theta = c \cosh \sqrt{(x^2 \sin^2 \theta + y^2)/c}$$

is the equation of the curve.

(II) If the equation of the catenary be

$$z = c \cosh (x/c),$$

the equation of the surface of revolution is

$$z = c \cosh \left[ \sqrt{(x^2 + y^2)/c} \right].$$

Let the cutting plane be  $x = (z-a) \tan \alpha$ .

Then transforming by the relations

$$x = x' \sin \alpha - z' \cos \alpha, \quad y = y', \quad z = x' \cos \alpha + z' \sin \alpha + a,$$

and putting  $z' = 0$ , we get as the equation of the curve of section

$$x \cos \alpha + a = c \cosh \left[ \sqrt{(x^2 \sin^2 \alpha + y^2)/c} \right].$$

**17457.** (J. HAMMOND, M.A.)—The number of regular star-shaped  $n$ -gons is  $\frac{1}{2}\phi(n) - 1$ , where  $\phi(n)$  is the totient of  $n$ . In particular, when  $n$  is prime the number is  $\frac{1}{2}(n-3)$ . A proof is required.

Solution by N. SANKARA AIYAR, M.A.

Starting from a vertex  $A_1$  of the figure, the star-shaped  $n$ -gon may have for side  $A_1A_2, A_1A_3, A_1A_4, \dots$ . Of these  $A_1A$  will not give a unicursal figure if  $n$  is divisible by  $(r-1)$ . For after  $n/(r-1)$  sides we return to  $A_1$ . If  $n = ak$  and  $r-1 = bk$ , we return to  $A_1$

after  $bn/(r-1)$  sides. Hence, to have a unicursal regular star-shaped figure, we should take  $A_1A_r$  where  $r-1$  is prime to  $n$ . Again,  $A_1A_r$  and  $A_1A_{n-r}$  give the same type of figure. Hence we

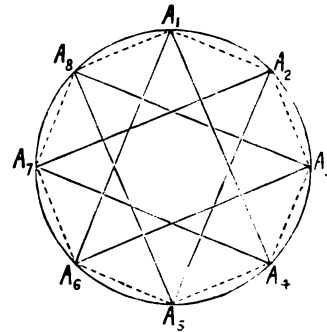


Fig. 2.

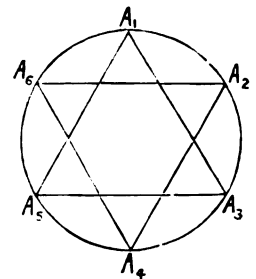


Fig. 3.

get for regular  $n$ -gons  $\frac{1}{2}\phi(n)$ . Of these the ordinary figure of the type fig. 2 is excluded. Hence we get the number of required  $n$ -gons is  $\frac{1}{2}\phi(n) - 1$ . When  $n$  is prime  $\phi(n)$  is  $(n-1)$  and the number is  $\frac{1}{2}(n-3)$ . Fig. 3 shows a non-unicursal regular star-shaped hexagon.

The following solution is due to the PROPOSER :—

1. Imagine the circumference of a circle divided into  $n$  equal parts at points marked 0, 1, 2, ...  $(n-1)$ .

Then each side of the polygon (which will be called A), whose angular points are 0,  $\alpha, 2\alpha, \dots (n-2\alpha), (n-\alpha)$ , subtends an arc  $2\pi\alpha/n$ , this arc being less than half the circumference  $\alpha < \frac{1}{2}n$ .

It is easy to see that A is a regular star-shaped  $n$ -gon when  $\alpha$  is prime to  $n$  and greater than 1.

And so the number of such  $n$ -gons is the same as that of the numbers, 1 excluded, which are less than  $\frac{1}{2}n$  and prime to  $n$ ; or, what is the same, this number is  $\frac{1}{2}\phi(n) - 1$ .

2. When  $\alpha$  is not prime to  $n$ , let  $\mu$  be their greatest common measure; then A has  $n/\mu$  (instead of  $n$ ) sides. In this case,  $\mu$  such polygons combined form a symmetrical  $n$ -rayed compound star.

Ex.—When  $n = 6$  and  $\alpha = 2$ , A is the triangle 0, 2, 4, which, combined with the triangle 1, 3, 5, forms a symmetrical 6-rayed star.

3. In the case of  $n = 15$  there are three 15-rayed compound stars; viz., the pentagon 0 3 6 9 12, combined with two other ordinary pentagons, the triangle 0 5 10 combined with four other triangles, and the pentagon 0 6 12 3 9 combined with two other star-shaped pentagons.

**17544.** (N. W. McLACHLAN, B.Sc., A.M.I.E.E.)—A right elliptical cone of copper weighs 5 lb. The ratio of the major axis to the minor axis is 3.57 : 1.39. A line, from the centre of the base to the circumference, at  $45^\circ$  to the major axis, makes an angle of  $\tan^{-1}\sqrt{2}$  with the line joining the circumferential point to the vertex. Find the major and minor axes and the height of the cone. 1 cubic inch of copper weighs 0.32 lb.

Solutions (I) by W. N. BAILEY and others; (II) by F. G. W. BROWN, B.Sc., L.C.P.

(I) Let  $a, b$  be the semi-major and semi-minor axes of the base, and  $h$  the height of the cone (measured in inches).

Then  $a/b = 3.57/1.39 \dots\dots\dots(1)$ ,

$$h = \sqrt{2} \sqrt{\left( \frac{a^2 b^2}{b^2 \cos^2 45^\circ + a^2 \sin^2 45^\circ} \right)} = 2ab/\sqrt{(a^2 + b^2)} \dots\dots(2).$$

Hence  $h = 2a \frac{1.39}{\sqrt{[(3.57)^2 + (1.39)^2]}}$  from (1).

The volume of cone =  $\frac{1}{3}\pi ab \cdot h$ , so that  
 $\frac{1}{3}\pi abh \times .32 = 5 \dots\dots\dots(3)$ .

Substituting in this equation for  $b$  and  $h$ , we get

$$\frac{1}{3}\pi a^3 \frac{1.39}{3.57} \cdot \frac{2 \cdot 1.39}{\sqrt{[(3.57)^2 + (1.39)^2]}} \times .32 = 5;$$

therefore  $a = \left[ \frac{15 \times 3.57 \times \sqrt{(14.677)}}{3.1416 \times .32 \times 2 \times (1.39)^2} \right]^{\frac{1}{3}}$ .

Using logarithms, we find that  $a = 3.753$  inches;  
 then from (1)  $b = 1.461$  inches,  
 and from (3)  $h = 2.723$  inches.

Hence the major axis = 7.506 inches,  
 minor axis = 2.922 inches,  
 and height = 2.723 inches.

[Rest in Reprint.]

**17251.** (M. T. NARANIENGAR, M.A.)—PSQ is a focal chord of a parabola. If circles be described through the focus to touch the parabola at P and Q respectively, find the locus of their second point of intersection.

Solutions (I) by R. F. DAVIS, M.A.;  
 (II) by M. D. GOPALACHARI, B.A., L.T.

(I) It is shown in Wolstenholme's Problems (No. 1127) that the polar equation of the parabola being  $2a = r(1 + \cos \theta)$ , those of the two circles may be taken to be

$$r \cos^2 \alpha = a \cos(\theta - 3\alpha), \quad r \sin^2 \alpha = a \sin(\theta - 3\alpha),$$

from which  $\alpha$  is to be eliminated. Writing these equations in the form

$$r(3 \cos \alpha + \cos 3\alpha) = 4a \cos(\theta - 3\alpha) \dots\dots\dots(i),$$

$$\text{and} \quad r(3 \sin \alpha - \sin 3\alpha) = 4a \sin(\theta - 3\alpha) \dots\dots\dots(ii),$$

if we square (i) and (ii) and add

$$r^2(10 + 6 \cos 4\alpha) = 16a^2 \dots\dots\dots(iii).$$

Again, if we multiply (i) by  $\cos 3\alpha$ , (ii) by  $\sin 3\alpha$ , and subtract

$$r(3 \cos 4\alpha + 1) = 4a \cos \theta \dots\dots\dots(iv).$$

Eliminating  $\cos 4\alpha$  from (iii) and (iv),  $r^2 + ar \cos \theta = 2a^2$ , the equation to a circle.

(II) Let the circles described intersect at T. Draw the tangents PO, QO intersecting at right angles at O on the directrix. Since OP is a tangent to the circle round STP,

$$\angle OPS = \angle STP;$$

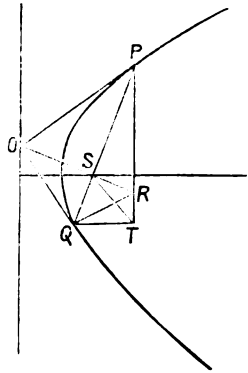
similarly  $\angle STQ = \angle OQS$ ;

therefore  $\angle PTQ$  is a right angle. Join OS and produce it to meet PT at R. Join QR. QSRT is a cyclic quadrilateral; therefore

$$\angle SQR = \angle STR = \angle OPS;$$

therefore QR is parallel to OP. QR is therefore the normal at Q. The co-ordinates of P are  $(a/m^2, 2a/m)$ , of Q  $(am^2, -2am)$ , and of O are

$$(-a, -am + a/m).$$



The equations of QR and OSR are given by

$$y = mx - 2am - am^3 \quad \text{and} \quad 2y = (x - a)(m - 1/m).$$

Any straight line passing through the intersection of these, viz., through R, is given by

$$(y - mx + 2am + am^3) - \lambda [2y - (x - a)(m - 1/m)] = 0.$$

The equation of PRT is derived by substituting  $(a/m^2, 2a/m)$  for  $(x, y)$  in this equation, and  $\lambda$  is found to be equal to  $m^2$ , and the equation of PT is

$$y(1 - 2m^2) + mx(m^2 - 2) + 3am = 0.$$

The equation of QT is therefore

$$(y + 2am)(m^2 - 2m) - (1 - 2m^2)(x - am^2) = 0;$$

therefore the point T is

$$\left\{ \frac{3am^2}{m^4 - m^2 + 1}, \frac{[3am(m^2 - 1)]}{(m^4 - m^2 + 1)} \right\};$$

therefore  $x/y = m/(m^2 - 1)$ ,  $x^2(x^2 + y^2) = m^2/(m^4 - m^2 + 1)$ ;

therefore  $x^2 + y^2 = 3ax$  is the equation of the locus, a circle.

[Rest in Reprint.]

**QUESTIONS FOR SOLUTION.**

**17598.** (Professor E. J. NANSON.)—Indicate in what manner Charpit's process leads to the ordinary solution of the Lagrangean equation  $Pp + Qq = R$ .

**17599.** (Professor R. SRINIVASAN, M.A.)—Show that

$$\sum_{n=0}^{\infty} \frac{\Gamma(n+1)}{(2n+1)\Gamma(n+\frac{3}{2})} = \sum_{n=1}^{\infty} \frac{4}{\sqrt{\pi}} (-1)^n \frac{1}{(2n+1)^2}$$

**17600.** (Professor K. J. SANJANA, M.A.)—In what sense can the infinite series  $\{1^{n-1} - 2^{n-1} + 3^{n-1} - 4^{n-1} \dots\}/n!$  be said to have a sum? Find such sum for  $n = 2, 3, 4, 5$ .

**17601.** (T. MUIR, LL.D.)—Without departing from the determinant form, show that the skew determinant

$$\begin{vmatrix} ax + by + cz & ay - bx & az - cx \\ bx - ay & ax + by + cz & bz - cy \\ cx - az & cy - bz & ax + by + cz \end{vmatrix}$$

is equal to the axisymmetric determinant

$$\begin{vmatrix} ax - by - cz & ay + bx & az + cx \\ ay + bx & by - cz - ax & bz + cy \\ az + cx & bz + cy & cz - ax - by \end{vmatrix},$$

and generalize the result.

**17602.** (C. M. ROSS, B.A.)—If

$$A = \begin{vmatrix} a & b \\ c & d \end{vmatrix} \quad \text{and} \quad A' = \begin{vmatrix} a' & b' \\ c' & d' \end{vmatrix},$$

prove that

$$A^2 A'^2 = \begin{vmatrix} ab' & cb' & ba' & da' \\ ad' & cd' & bc' & dc' \\ bb' & db' & aa' & ca' \\ bd' & dd' & ac' & cc' \end{vmatrix}.$$

**17603.** (J. J. BARNVILLE, B.A.)—(1) Reduce  $(x^n + 1)(x + 1^8 + x^8)$  to the form  $y^2(y^3 - 2z^2)(y^3 - 6z^2)$ .

(2) Reduce  $(x^2 + x + 1)^{11} - (x^{11} + 1)(x + 1)^{11} + x^{11}$  to the form  $11y^2z^2(y^3 - z^2)(y^3 - 2z^2)$ .

**17604.** (D. BIDDLE.)—

$$N = 150809 = S^2 + A = SQ + R = xy, \quad Rm \pm 1 = gx.$$

(1) Find  $m, g$ , and  $x$ , from the following table:—

$$\begin{aligned} a &= 1, \\ b &= 5, \quad b' = 9, \\ 9b + a &= m = 5b' + a, \\ g &= m + b, \quad 5m + b' = x. \end{aligned}$$

(2) Explain the process, and thence formulate a method of factorizing bicomposite numbers of form  $6n \pm 1$ . N.B.—The parallel values, before  $m$  is reached, are often more numerous.

**17605.** (W. E. H. BERWICK.)—If  $A_n, B_n, C_n$  are any three real or complex quantities which do not all vanish, and

$$A_{n+1} = B_n - 2A_n, \quad B_{n+1} = C_n + A_n, \quad C_{n+1} = A_n,$$

prove that when  $n$  tends to infinity, the roots of the equation

$$A_n \omega^2 + B_n \omega + C_n = 0$$

tend to limits which differ by less than a millionth from  $\cdot 801938$  and  $- \cdot 554958$ .

**17606.** (H. FREEMAN, B.A.)—Find an algebraical solution for the number of isomerisms of the Paraffin series  $C_n H_{2n-2}$ .

**17607.** (F. G. W. BROWN, B.Sc., L.C.P.)—Solve the equations

$$\begin{aligned} (y+z)^2(yz-a^2) &= x^2yz, \quad (x+z)^2(xz-b^2) = xy^2z, \\ (x+y)^2(xy-c^2) &= xyz^2, \end{aligned}$$

and test the solution when  $a = \frac{1}{2}\sqrt{5}$ ,  $b = 2\sqrt{3}$ ,  $c = 2^{\circ}$ .

**17608.** (A. M. NESBITT, M.A.)—The formula for the volume of a tank or dam having a rectangular top and bottom, and sloping sides, is "add top area, bottom area and four times mean area, and multiply by one-sixth of the depth." In space of four dimensions prove that the formula is the same, "area" meaning what in ordinary parlance would be a solid; and "top and bottom" being to right or to left along one of the four "rectangular" axes.

**17609.** (C. E. YOUNGMAN, M.A.)—When a limaçon is traced as an epicyclic (the deferent not passing through the node), the epicycle cuts the curve at the tracing point M and at other points PQR; prove that the chords QR, RP, PQ subtend at the node angles  $2P, 2Q, 2R$  or their supplements, and that the centre of the deferent is the orthocentre of PQR. Also, for two opposite positions of the epicycle, the eight points MPQRM'P'Q'R' lie on a conic which subtends  $60^{\circ}$  at its centre (sometimes, in looped limaçons,  $120^{\circ}$ ).  $r = a + b \cos \theta$ .

**17610.** (C. E. M'VICKER, M.A.)—Taking, as centre of an inscribed conic, any point on the diameter of a given quadrilateral, construct the foci of the conic, and show from the construction that the axes of all conics touching four given straight lines envelope a parabola, provided that one conic of the system is a circle.

**17611.** (W. N. BAILEY.)—Show that the line joining the feet of the perpendiculars from a fixed point (a focus) on the tangent and normal at any point of a central conic passes through another fixed point (the centre), and that the conic is the only curve for which this is true.

17612. (Lt.-Col. H. W. L. HIME.)—If the sides of an obtuse-angled triangle are so related that  $8\sum a^4 = 11\sum a^2 b^2$ ; then the two real common tangents of Brocard's ellipse and circle concur on the circum-circle.

17618. (Professor NEUBERG.)—Calculer l'angle de Brocard d'un triangle ABC dont les côtés sont les trois racines de l'équation  $x^3 + Ax^2 + Bx + C = 0$ .

17614. (Professor R. W. GENESE, M.A.)—If O, the circum-centre of a triangle ABC, be taken as origin, and  $u, v, w$  denote the vectors OA, OB, OC, the vector of N (the nine-point centre) is known to be  $\frac{1}{2}(u + v + w)$ ; prove that the vector of the in-centre I is  $(au + bv + cw)/(a + b + c)$ , and hence that the modulus of NI is  $\frac{1}{2}R - r$ .

17615. (Professor J. C. SWAMINARAYAN, M.A.)—Prove that each of the expressions

$$(a) \tan^{-1} \left[ \frac{1 + ez - \sqrt{(1-e^2)(1-z^2)}}{z + e} \right] + \tan^{-1} \left[ \frac{\sqrt{(1-e^2)(1-z^2)}}{(1+e)(1+z)} \right],$$

and

$$(b) \tan^{-1} \left[ \frac{1 + ez - \sqrt{(1-z^2)}}{z \sqrt{(1-e^2)}} \right] + \tan^{-1} \left[ \frac{\sqrt{(1-e^2)(1-z^2)}}{(1+e)(1+z)} \right]$$

is independent of  $z$ .

OLD QUESTIONS AS YET UNSOLVED (IN OUR COLUMNS).

10876. (Professor SCHOUTE.)—Show how to cut a given square by  $2(m + n - 1)$  right lines into pieces out of which can be formed  $m^2 + n^2$  equal squares. [See *L'illustration*, July 26th, 1890.]

11115. (W. J. GREENSTREET, M.A.)—ABC is a triangle, vertices on an ellipse  $E_1$ ; it is also tangential at D, E, F to an ellipse  $E_2$ . Find the condition for concurrence of AD, BE, CF, and the locus of the point of concurrence. [N.B.—Some slight corrections to the original setting of the type have been made.—ED.]

12081. (J. HAMMOND, M.A.)—A and B, who are partners at whist, have neither of them a card of higher value than a nine; find the chance of the occurrence of such an event, and the number of hands that must be played before there is an even chance of its recurrence.

12291. (Professor SYLVESTER.)—If

$$x = a \cos(\theta + \alpha) + b \cos(2\theta + \beta) + \dots + l \cos(n\theta + \lambda),$$

$$y = a \sin(\theta + \alpha) + b \sin(2\theta + \beta) + \dots + l \sin(n\theta + \lambda),$$

prove that (1) the curve whose co-ordinates are  $x, y$  is the inverse of a unicursal curve of the order  $n$ ; also, (2) more generally if

$$\tan \phi = e \tan \psi = e' \tan \omega = e'' \tan \theta,$$

and, if  $m, n, p, q$  be integers,

$$x = \sum a \cos(\alpha + m\phi + n\psi + p\omega + \dots),$$

$$y = \sum b \sin(\alpha + m\phi + n\psi + p\omega + \dots).$$

12407. (Professor HAUGHTON, F.R.S.)—A circular gold medal is suspended by a string in a cylinder filled with water for the purpose of testing its specific gravity, and the torsion of the string makes it revolve; your eye is placed on a level with its centre. Describe the appearance of its image during a revolution.

12465. (S. TEBAY, B.A.)—If

$$x = 8mn(m^4 - n^4), \quad y = 2mn \{10m^2n^2 - 3(m^4 + n^4)\},$$

$$z = (m^2 - n^2)(m^4 + n^4 - 14m^2n^2),$$

it is known that  $y^2 + z^2, z^2 + x^2, x^2 + y^2$  are squares. Are there any other forms which fulfil these conditions?

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III. (Oct. 9.) *Preparation of Schemes of Work.*—Contrast with former plan of prescribed courses: internal v. external control: the teacher's opportunity of independence: selection of basis: degree of detail—exoteric and esoteric: need for elasticity: place for rigidity: correlation with other subjects: co-operation of specialists and ordinary class teachers: class unit and school unit: relation to capacity and attainments of teacher.

IV. (Oct. 16.) *Home-work and Corrections.*—Spheres of the parent and the teacher in relation to school work: parent as teacher: parent as "preparation master": "causing another to learn": special characteristics of home-work: principles on which amount and kind of home-work should be determined: unit of home study: dangers of home study with special reference to the nature of the home: marking written work: misdirected energy in correction: the pupil's responsibility, the class teacher's, and the head teacher's.

V. (Oct. 23.) *How to Study.*—Learning from the pupil's point of view: absence of desire to know: how to rouse it: even when desire is roused there is difficulty enough: pupils naturally ignorant of how to study: teacher usually takes too much for granted: prescription of work to be done: kinds of learning: reproduction test: the dynamic test: constructive learning: rhythm of learning: concentration and diffusion: fallacies about thoroughness: temporary and permanent learning.

VI. (Oct. 30.) *Textbooks.*—Teacher's relation to textbook: nature of textbook: authority of textbooks: dangers of the use of textbooks: correlation of textbooks with work of class: tests of a good textbook: print and illustrations: pupil as his own textbook maker: advantages and dangers of note-taking by pupils: the note-book as textbook: edition difficulties and difficulties with publishers: the economic question: ownership of textbooks.

VII. (Nov. 6.) *The Teacher's Reading.*—The reproach of publishers teaching "the inarticulate profession": urgent need of *general* reading to counteract the narrowing tendency of the profession: special reading of two main kinds, (a) the literature of the teacher's "subject," *i.e.* his speciality, (b) the literature of education generally: possibility of excess of educational theory: newer class of literary presentation of educational problems: practical help to be had from such books: suggested minimum professional library for the teacher.

VIII. (Nov. 13.) *The Pupil's Charter.*—Demand for perfect naturalness of pupil: self-expression v. self-realization: demand for absolute freedom: Madame Montessori's system: Count Tolstoy's anarchic school: Froebel's "a passivity, a following": these different but not irreconcilable views: caprice v. freedom: self-imposed restrictions involved in freedom: subjective limitations of freedom increase with the aid of the pupil: corresponding regulation of school control: from educand to educator.

IX. (Nov. 20.) *Artifices in the Schoolroom.*—School an artificial society based on recognized convention deliberately adopted: distinction between education and pedagogy: M. Boutroux' attack on pedagogy: manipulation of the school environment: Rousseau: interference with the ordinary laws of development: school stage-management: the teacher as actor: nature and human nature: various grades of truth: parallel restrictions of liberty in school and in world: the schoolmaster and the World Spirit.

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## The Educational Times.

### CIRCULAR 826.

"ORGANIZATION alone, however perfect, cannot make a good school. The real success of the work depends on the harmonious activity of a well equipped staff and also—a fact not always sufficiently taken into account—on the co-operation of parents. But, if a good organization cannot make a good school, bad organization, an unsuitable curriculum, and an unsatisfactory time-table will go far to render unavailing the best efforts of the teaching staff."

With these words, Mr. Bruce ends the introduction to a Memorandum on "Curricula of Secondary Schools" recently issued by the Board of Education. The Memorandum is largely concerned with questions of organization; but the Board are careful to point out that they are fully alive to the importance of other factors that tend to make a successful school. The Board's Regulations are of interest not only to grant-earning schools which undertake to submit their time-tables to the inspector, but also to other secondary schools which are naturally inclined to follow an example based on carefully considered authority. The cardinal subjects that must be taught in recognized secondary schools are: English Language and Literature, at least one language other than English, geography, history, mathematics, science and drawing. In addition to these cardinal subjects of instruction, the present Memorandum lays it down that no curriculum can be considered complete unless it includes music and manual instruction; and we are also informed that the Board attach the greatest importance to the physical welfare of the pupils, and that "it is the duty of secondary schools to secure this by formal physical training and in other ways."

There are few secondary schools now that do not include all these subjects upon the time-table, and the fact that it is so speaks both for the wisdom and influence of

the Board. Thirty years ago the work in boys' schools was almost entirely confined to languages and mathematics; the wider curriculum insisted upon in the Board's Regulations has gradually become accepted by all schools, whether or not they are under the Board's inspection. We believe that real progress has been made, and that the wider range of subjects has been of great value both to boys and to girls. The physical and emotional natures need as careful training as has in the past been given to the intellect. But, though progress has been made, we do not one moment suppose that finality has been reached. The Memorandum we are considering "is not intended to contain any dogmatic exposition of educational doctrine." It distinctly states that "the Board could do no greater disservice to education than by attempting to check the spirit of exploration, experiment, and inquiry which should exist in every school."

Throughout the Memorandum it is abundantly clear that the Board have no wish to dogmatize and no wish to check the initiative of schools. Where the regulations have seemed too rigid, the fact is, perhaps, that they have not been fully understood; and one object of this Circular is to remove misapprehensions. Where a second language other than English is taught, it has been thought that the Board insisted upon Latin; but the regulation really means that provision must be made for the teaching of Latin to those pupils who are likely to require it for purposes of University study, and not that the language must be taught to all. Again, of the cardinal subjects that should be included in every secondary school, not every subject need be taught to every pupil during every term. Manual instruction, for instance, may appear in the first two years only. Geography might be replaced by history. At the age of fifteen, say, French might give way to Latin. There are many variations in the curriculum possible under the Regulations, and the Board definitely expect that each school should be strong in some particular subject.

A secondary school has to meet two separate demands, and therein lies the first difficulty of deciding upon a curriculum. There are the pupils who will proceed to a

University or other place of higher learning, and there are the pupils who will leave school at about the age of fifteen, in order to take up at once some paid employment. The Board desire that the education of the second class shall not be sacrificed to the needs of the first. They do not advocate a large amount of subdivision in the higher section of the school. They think that one of three courses will be found in practice to meet the needs of almost every student. The three courses are: (1) Classics, including Ancient History and the Greek Testament; (2) Science and Mathematics; (3) Modern Humanistic Studies. The third alternative is not yet commonly adopted as a separate branch of the school work, and the Board explain at some length what is desired. Put briefly, it comes to this, that the school should organize an advanced course in modern languages, history and English literature, aiming at as high a standard of work as has been done in the case of classics and science. This would react favourably on the lower work in these subjects throughout the school.

The Board are quite sure that the attempt to give a sound secondary education sometimes fails because the pupils begin too late, and do not stay or intend to stay beyond the age of fifteen. Such pupils "never reach that stage in the course which is most fruitful and interesting, and the organization of the work of the schools is hampered by the late age of their entry and the short duration of their school life." The function of the secondary school is to prepare for the Universities and for such vocations as commerce, industries, farming, and retail trade. In this connexion the Memorandum points out that it is especially important that "secondary schools should not further complicate the problem of organization by attempting additional work of a kind which lies outside their proper sphere." We are not quite sure of the meaning of this sentence, unless it refers to the establishment of the "commercial class" for pupils who at the age of fourteen wish to learn shorthand and type-writing. For on the same page it is indicated that there is naturally a close connexion between the secondary school and the technical institute, and, further, the possibility of giving a vocational bias to the curriculum is hinted at, though no attempt is made as yet to determine how far this may be wisely done.

We have dealt with a few of the points raised in this Memorandum, and we believe we have said enough to convince every Head of a school who has not yet seen it, to decide to get it at once and carefully study its pages. Time-table difficulties are very real to most people who have to draw them up. Circular 826 not only gives valuable help on this point, but, more important still, indicates how each school may preserve its individuality within the four corners of the regulations.

---

THE next combined examination for fifty-six Entrance Scholarships and a large number of Exhibitions at Pembroke, Gonville and Caius, Jesus, Christ's, St. John's, and Emmanuel Colleges, will be held on Tuesday, December 2, 1913, and following days, commencing at 9 a.m. on Tuesday, December 2.

## NOTES.

WE are informed that the Registration Council, at the meeting on October 17, formally approved the conditions of entrance to the Register of Teachers. And we are further informed that the conditions will be issued after the next meeting of the Council on November 21. It will be remembered that the Order in Council establishing the Registration Council lays it down that the Regulations, when approved, must be referred to the technological committees for their consideration. These committees, ten in number, have been meeting for some time past, and are, of course, familiar with all the points. The Council is formally bound to submit the regulations to them after they have been passed, and to await their replies before publication. But the committees have no further powers beyond asking the Council to consider their views. As these views are already known, and have been considered, the reference is merely formal, so that we can confidently expect the issue of the Regulations immediately after the Council Meeting.

MORE than two thousand inquiry forms have been sent out from the College of Preceptors to the heads of private schools. The information derived from the replies to these will be very valuable, but it will be far from complete. We print the inquiry form in another column, and we urgently press upon our readers the duty of bringing it to the notice of private schools of which they have knowledge and whose addresses are unknown to the College. The inquiry was undertaken by the College in response to the proposals of Sir Lewis Selby-Bigge when he received at the Board of Education a deputation from educational bodies representing private schools. He said that the Board had no knowledge of such schools, and he intimated that it was the function of the associations to have full information of those schools at least that were represented on their respective membership rolls. It may be thought that the Board is in a better position than the College to undertake this inquiry; but the Board declines and puts the responsibility on the associations.

MR. PEASE estimates the number of private schools at about twelve thousand, and the College has the addresses of about two thousand. Where, then, are the other ten thousand? Hard and persevering work will find them. Everyone who watches the currents of opinion must be convinced that the ancient policy of hiding one's head in the sand is no longer possible for private schools. In the past the principal of a private school needed only to win the approval of his or her own conscience and to gain the confidence of a group of parents, in order to carry on a successful and useful school. Things are changed.



Private schools may choose one of two alternatives. They may continue their present policy of seclusion until they grow weaker, and are finally crushed out of existence by the increasing competition of schools financed by public moneys; or they may come out into the open and combine in order to convince the public, as they easily may, of the value of their work to the community and the necessity of their protection from unequal competition. We appeal to them to take the latter course. They have nothing to lose, but everything to gain, from publicity and the formation of a strong association.

WE offer our readers in another column the views of *Mr. Sadler on Private Schools.* Mr. Michael Sadler on private schools, which we have reprinted from *Indian Education.* No more disinterested and powerful supporter could be found, and this article will repay careful study. Ever since the Report of the Bryce Commission the feeling in favour of private schools has been steadily growing. Few people wish to see the country completely covered by a system of secondary schools absolutely controlled from the County and Municipal offices. Most people fear that, if such a state of affairs occurred, secondary education would lose some part of its elasticity and initiative. We need to keep our private schools; but, in order that we may do so, they must come out of their retirement, show themselves, and boldly proclaim the part they are prepared to play in the national provision of education. They must look to their resources, and decide what their equipment and staff enable them to offer towards the supply of education in their area. The accommodation, the age of the pupils, the qualifications of the staff, must be known. To some it may seem a hard alternative, but it is so—publicity or death.

WE understand that arrangements are being made which will ensure a successful Conference Week at the University of London in the early part of January. Led by the Teachers' Guild, a large number of Associations will combine to hold their annual meetings at that time. It is true that some of the stronger associations hold aloof; that is because the individual meetings are important enough to secure a good attendance apart from the general Conference. The College of Preceptors has its own building and organizes its own meetings; but in order to show a desire to unite with other bodies the Council have arranged two meetings during the Conference Week. On January 6 there will be a meeting to discuss the Teachers' Register, at which important speakers are being invited to be present. This is a subject that the College has greatly at heart; indeed its foundation more than sixty years ago was mainly for the purpose of establishing a profession of teachers. The second meeting, on January 8, will discuss "The Position of Private Schools in a National System of Education." The College has always maintained that private schools form an essential part of secondary edu-

cation. Mr. M. E. Sadler has promised to speak at this meeting.

NEWS comes from Rome of the disappointment of hundreds of tourists because Mme Montessori will not spare indefinite hours for vague educational gossip, or because she will not give show lessons all through the day. The appearance of a new volume from her pen, entitled "Pedagogical Anthropology," no doubt partly explains the Doctor's withdrawal from active work in the schools. We also hear of another book on the stocks, which is being translated into English as the writing proceeds. As to "Pedagogical Anthropology," we will not anticipate our reviewer beyond saying that, upon a cursory perusal, it appears to support the view that, when a child seems to be naughty, its state of health should receive investigation. This was the practice of a well known head mistress in England. When, at a staff meeting, complaints were made about a pupil, she would turn to the Secretary and tell her to look up the weight and medical record of the delinquent. Mme Montessori is not a teacher; she has other work to do. It is for teachers to carry out the methods, the value of which she has by her own work proved.

WE can imagine no better aid to the study of Psychology in training colleges than the first volume of the Autobiography of George Tyrrell. Father Tyrrell describes his own childhood with a rare honesty and a convincing fidelity. It would be possible to quote extracts to indicate that he had anticipated Mme Montessori. But this is not wonderful. The welcome received by the Montessori method is due to the fact that we were all vaguely beginning to understand that the real secret of education is to discover a child's natural activities and to guide them. Mme Montessori has explained and answered our uncertain inquiries. To go back to Father Tyrrell, in one point we think he was misled by his individual circumstances. He speaks of the possibility of lying as coming with the child's use of speech, and adds that lying is usually the child's first moral offence. We believe that this is only the case when the child is brought up under a regime of fear. Then he learns to lie to escape punishment. Under conditions of loving encouragement and help a child has no need to lie, and, we believe, does not do so. Of course, we are speaking of deliberate lies to escape blame, and not of fanciful stories woven by children before they learn to separate the real world from the world of fairy tale.

THE Association of Head Mistresses held last month a meeting to consider the proposals that have been put forward advocating a change in the present system of assessing State grants. Miss Gadesden proposed a resolution in support of the change, to the effect that grants should be

based on salaries and not on attendances. The resolution was not carried, but a large majority voted in support of Mrs. Bryant's amendment, that additional grants were desirable, but that the present basis of assessment should be maintained. The argument in favour of a grant based on staff is, in our opinion, overwhelming. It is the only method that is fair to large and small schools alike. The cost of a school varies with the number of the staff. A small school needs often a staff nearly as large as a school with 50 per cent. more pupils. On the staff basis girls' schools would receive more than at present, but less than boys' schools would receive. No better starting-point than this inequality of grants could be desired for a movement in favour of raising the salaries of mistresses. For, when the State provided the salaries of both men and women, the unreasonableness of lower grants and lower salaries in the case of girls' schools would soon be apparent.

We dealt very fully with this question of the State grant taking the form of the payment of salaries in the leading articles of our July and August numbers; and in the numbers of July, August, and September we printed a valuable series of articles written by Mr. R. F. Cholmeley, dealing with the same subject. We do not propose to recapitulate all the arguments there used, but we remind our readers that they contain a full treatment of the matter. We said that no one would find in these pages the suggestion that women do less good work than men, or that they merit lower salaries. We wish to see equal salaries for equal work; and we are convinced that an indirect result of the State grant taking the form of payment of salaries would be to raise materially the salaries paid to women. Under the proposed change teachers would be Civil Servants no more than they are at present. Appointments would remain with the governing body. United the profession can carry its views. We hope the Association of Head Mistresses may yet be induced to take a different view of the situation.

On October 11 a meeting of representatives of educational associations was held at the College of Preceptors to discuss the proposals for a change in the basis of grants. The following resolutions were carried:—(1) That, in the opinion of this Conference, it is advisable that a deputation representing National Organizations of Teachers should wait upon Ministers of the Crown to urge that substantial proportions of any further grants of public money to Local Education Authorities, whether in connexion with the forthcoming Education Bill or otherwise, should be definitely assigned to the specific purpose of improving the staffing of schools, and increasing the stipends of teachers. (2) That the said deputation should consist of the Presidents of the several organizations (or their deputies). (3) That Sir John McClure be requested to act as convener and leader of the said deputation.

We welcome without reserve the indications shown in the preceding Note that associations of elementary and secondary teachers are willing to combine for educational purposes. The Conference may perhaps be described as consisting in the main of representatives of the National Union of Teachers and of the Federal Council of Secondary School Associations. Mr. Dakers was in the chair. The resolutions were introduced by Sir James Yoxall, moved by Canon Swallow, and seconded by Mr. Bentliff. The Government can hardly decline to receive a deputation from a Conference so widely representative. We suppose that the primary object of the deputation is to convince the Treasury that more money must be spent on education. In public elementary schools the number of children in a class must be reduced, and this means more teachers. In secondary schools money for salaries is wanted. These two points of view were combined in the resolution we have quoted above.

PROF. JOHN ERSKINE writes in the October number of the *Hilbert Journal* on "The Moral Obligation to be Intelligent." It is a message that we of this generation appear to need. English literature witnesses to the fact that, in the general consciousness of the nation, goodness is allied with stupidity, or, at any rate, with moderate intelligence, while the clever man is not expected to show strength in moral qualities. A thousand years ago in England physical valour was the best asset; in later days care was taken to develop moral qualities. The time has now come to reconsider our position and to inquire if we have not belittled the intelligence. In the case of our public schools we find that their apologists often say that their first duty is the training of character, and that intellectual studies must take a second place. We forgive almost anything to the well meaning man of blameless life, but we do not ask him to be intelligent. It would seem that we have allowed a false valuation of virtue to mislead us. Virtue, or moral goodness, is acquired by effort. In so far as school studies are without effort, they fail in moral training.

VIRTUE can only be acquired by effort. In the old regime of boys' schools, there was a text, a dictionary, and a grammar. Construe had to be made out, compositions had to be written. The moral training was excellent for those who had leanings towards linguistic studies. Such boys received a splendid moral training in the form-room as well as in the playground and in the chapel. The method became discredited because it was found to leave many boys untouched. In its place we have put the teacher, whose duty it now is to smooth away all difficulties, to make the work "interesting," and in fact to peptonize the mental food. Instead of the raw, unpeeled apple, or the hard-shelled nut, on which a boy can grit his teeth, we offer

him spoon meat: the teeth, unused, decay. The parallel is a reasonable one. Real moral qualities have to be learnt outside the classroom, just as the boy after his breakfast of soft food will delightfully crunch an apple in the playground. In the classroom the main moral quality too often needed is patience in listening to the teacher who does all the work and often leaves the class mentally idle. We want more individual effort in school work, and more appreciation of the moral value of intellectual struggle.

SINCE writing the above Note we have seen the report of an address given by Dean Inge to the students of Westfield College, in which he expresses with great vigour the idea we endeavoured to indicate in the preceding Note. The greatest enemy, he said, to the idea of a liberal education "was the ingrained contempt of the intellectual life in England." Most Englishmen, he added, are incapable of understanding how anyone's mind can be his kingdom. The fact, of course, is that education in England has become commercialized. That is to say, the committees who control education in the interests of rate-payers and tax-payers feel themselves bound to take what they call a business view, to estimate the results that will come from the expenditure. And, as the results of a liberal education are not to be expressed in money terms, they are apt to be overlooked. We do not on this account argue that the Local Authorities are unfit to be entrusted with education. On the contrary, the Local Authorities are virtually ourselves, and represent the view of the nation. The present commercial phase will pass; and it is for teachers to assist it in passing by holding up the true ideal of a liberal education.

MR. PEASE naturally took an early opportunity of replying to severe strictures on the Board of Education, for which Dr. Griffiths, at the meeting of the British Association, made himself responsible. In opening a new school at Tottenham, Mr. Pease quoted Mr. Sadler in defence of the Board. Mr. Sadler recently said that "so far from having to hang our heads in the educational world at present, there was no country that during the last ten years had taken more trouble than England had." In his own defence Mr. Pease said: "By all means in our power as a Board of Education, through our regulations, through our circulars, and through the advice given to teachers, both oral and written, we do everything we can to encourage variety, to prevent uniformity, and to encourage experiment." We are glad to be able to endorse these words with full confidence. We are sure that they express the real mind of the Board; and this mind of the Board is diffused through the country both by the printed sheet and also by the spoken word of the Inspector. We do not think the regulations are at fault, but of course the perfect teacher cannot be created by regulation. A regulation says: "The formation of character must always be one

of the main aims of elementary education." A sound remark, and under its shelter an ingenious teacher could do many things.

PROF. JOHN ADAMS has spent his holidays in lecturing to the Summer Schools organized by the Universities of Colorado and Illinois, and he has given to the *Morning Post* some account of his impressions of education in the United States. In the schools he finds the conditions that were noted by members of the Mosely Commission. "Freedom," he says, "between teacher and child is one of the main characteristics of education in the States. The pupils are always more prominent than with us, the teacher is seldomer in the limelight." A similar state of affairs is beginning to develop in English schools, and from all quarters the teacher is being advised to stand in the background. But every reaction has a tendency to advance too far. In America, observers think that it has passed beyond its proper limits, and Prof. Adams says that "perhaps a little more restraint, a wholesome strain of austerity would be better for the nation." We suppose the difficulty lies in developing the individuality of the child without at the same time producing an exaggerated egoism which makes the child too self-centred and insufficiently alive to the claims of others for consideration and respect.

MANY speakers and writers find it no difficult matter to criticize examinations; and we are confronted with the curious position of the ever-growing popularity of examinations combined with the ever-increasing bitterness of the attacks upon them. The criticisms are in reality ill directed and therefore fail to hit the mark. Examinations we must have. The fault lies in the attitude of the public mind towards examination results. It is like Mr. Punch's young lady who said: "I must have some of that: the advertisements speak so well of it." And so, when an examining body has put its hall-mark upon a pupil, we are apt to expect from that pupil every desirable quality; and when we are disappointed we blame the examination. We ought to blame our want of discernment. An examination claims to test certain aptitudes and certain powers. It does not claim to estimate all the moral, physical, spiritual, or even all the intellectual qualities of an examinee. It is not at examinations that we need to direct our criticisms, but at the popular worship of examination results, to the exclusion of other means of assessing worth.

WE especially welcome Sir William Lever's generous endowment of the secondary schools of Bolton, because it is a sign that the wealthy benefactor is beginning again to turn to education as a natural channel for the relief of his superfluity. When secondary schools received a partial support from the taxes and the rates, it was prophesied that

the stream of private munificence would run dry. And such indeed seemed to be the immediate result of giving grants of public money to secondary schools. We hope many rich men will follow the example set, and, like the pious founders of bygone generations, relieve from financial anxiety the schools of the towns with which they are connected. Sir William Lever's gift is munificent. It consists of the capital sum of £50,000, invested in Lever Brothers and bringing an annual income of £10,000. New buildings are to be erected to house both the boys' and the girls' schools, which will be under the same Board of Governors, but which otherwise will be kept distinct.

*The Kinema for Children.*  
 PATHÉ FRÈRES, undeterred by the cold water of the London County Council, have proceeded to develop "The Pathé Educational Course by means of the Kinematograph."

They have prepared a large number of films suitable for young children. These include animal and reptile life, insect and pond life, marine life, bird life, plant life, industries, travel and geography, science, and, a final section, the jam after the powder, recreative, humorous and trick films. They have organized in several districts special *matinées* for children. The teachers in the neighbouring schools will be supplied beforehand with the necessary information as to the program, and will therefore be able to prepare the children for the visit, and to make the films a part of the school work. We wish the experiment every success. Our criticism of existing entertainments was based largely upon the facts that most films shown now are not specially suitable or interesting to children, and that late hours are unwholesome. Special *matinées* for children, not oftener than once a week, ought to prove a valuable educational aid.

*Hard Work.*  
 MR. CLOUDESLEY BRERETON, reading a paper before the Sociological Society, remarked that in France the teachers were comparatively well off, and the boys were overworked," while in England rather the contrary was the case." One of our professors of education has told us that the boys ought to come out of school mentally fatigued and ready for games, while the teacher proceeds quietly to his study, in order to do some real brain-work. This may be the ideal, but it is not the actuality. In some way or other we need to make the children work harder, though perhaps for shorter hours. Speaking at Sowerby Bridge recently, Mr. M. E. Sadler urged the same point of view. He said that, in order that the will of the pupil may be won over to accuracy and hard work, the task must appeal to him as being really and permanently worth doing. It must not be an easy task. Hard things were more bracing than easy ones. But it must be a task that the boy or girl knew in their innermost minds to be of permanent value and importance for their future life. This is the problem: to find the task that arouses the will to do.

DR. MARY SCHARLIEB, at the Mansion House, and Mr. J. L. Paton, at Hull, have during the last month spoken on the duty of this generation to teach children about the care of their bodies. These are things that need frequent repetition until the nation is convinced of their truth. Dr. Scharlieb said that "there had been a conspiracy of silence to teach children nothing of that which it most concerned them to know, namely the care of their own bodies, and how to have the mastery over their inclinations and feelings." She blamed parents for spoiling their children. Children, she said, "who had been allowed to have their own way up to the age of fourteen would not then learn how to choose the good and eschew evil." Mr. Paton said that "a boy ought to be told about himself. He wanted to know how he came into this world. There was nothing wicked about this desire. The boy was surrounded with mysteries, and the greatest of all these mysteries was life." "Ever since he had sat upon his mother's knee," he added, "they had told him about his soul, but nothing about his body." Mr. Paton also blamed the pampering of parents as undermining self-control.

## SUMMARY OF THE MONTH.

SIR PHILIP MAGNUS, President of the College of Preceptors, in response to a request from the editor of the *Evening Standard* for a "message" on the occasion of his seventy-first birthday, sent some inspiring words, from which we quote the following:—

Neither culture nor success is the aim of education. The learning that counts is that which best fits us to move and work among our fellows, so that they and we are better for what we do. The national ideal is found in the collective expression of the individual ideal, and hence the need of training each child as if on him alone depended the future well-being of the State. The failures in life are largely due to the attempt—by ignoring individuality—to fix square pegs into round holes. We are what we are largely by the efforts of our forebears to grapple bravely with difficulties—to overcome obstacles that block the way. To-day we are ever more and more encouraged to throw our burdens on the State. The discipline of life—the art of taking trouble, the habit of obedience—is too often missing from our schools. For that and much besides we look to the personal influence of the teacher.

THE Head Master of Harrow, in opening the new building of a preparatory school, spoke of the value of inspection. He expressed his admiration of the head mistress's action in voluntarily inviting the approval by authority of the plans for the new buildings. He looked forward to the day when other preparatory schools would voluntarily invite the Educational Authorities, even though represented by a Government Department, to inspect their doings. They needed the consolidated experience of all scholastic institutions in the perfecting of education, instead of working independently of one another as they did in the time of Book of Judges, when every man did that which was right in his own eyes. Public and preparatory schools were simply parts of a great whole. He liked to think they were co-trustees in a great charge committed to their care.

"THE modern examination system constitutes a vast network extending all over the civilized world, serving to hold back from nearly all the higher walks of life, and from many of the superior lower walks, all those young people who fail to exhibit a certain decidedly mechanical type of intel-

lectual ability, no matter how rich they may be in other mental, moral, and practical qualities, some of them of the utmost value to the community. This system has the deplorable effect of causing both teachers and parents to concentrate upon one narrow form of intellectual development rather than upon moral and spiritual training. The influence of the examination is responsible too, perhaps, to some extent for the over-valuation of brainwork in general throughout the whole community, so that we have the spectacle of a nation in which two hundred and fifty men will apply for a vacant post as a clerk at a poor salary while large tracts of land are uncultivated for lack of capable workers."—Rudolf Eucken: "His Philosophy and Influence," by Meyrick Booth.

THE governors of Bolton Grammar School have received a magnificent endowment from Sir William Lever. A scheme has been completed for the amalgamation of the Grammar School and the High School for Girls in the town, and Sir William has now endowed them as from January next with £50,000 Lever Brothers Twenty per Cent. Cumulative Preferred Ordinary shares, producing an income of £10,000 per annum. The funds are placed at the discretion of the trustees, and it is proposed to use the first five years' income to build a new school with an administrative block. Land has also been bought for additional playing fields, a private chapel, swimming baths, and a gymnasium for the girls. The area covered by the amalgamated school will be 30 acres. There is not to be co-education.

THE twenty-first anniversary of the founding of University College, Reading, has been commemorated by the issue of an interesting pamphlet printed by Mr. Horace Hart at Oxford. It contains a plan showing the arrangement of the College buildings, which has received the general approval of the Council. Other articles in the pamphlet are "A University in the Making," "A Residential University," "The Proposed Curriculum for Arts Degrees at Reading," "The Proposed Curriculum for Science Degrees," and "A Note on the Proposed Curriculum for Degrees in Agriculture." The three last-named were written before the final adoption of the proposals outlined in them, but in almost every instance official approval has been secured for the principle, and in certain cases for the detail also. The Principal, Mr. W. M. Childs, says, in a prefatory note, that there is still opportunity for criticism and amendment, and the articles are included "in the hope of eliciting the opinion of our friends and of interesting them in our task of shaping the curriculum of the proposed University."

REFERRING to the education problem, in his sermon at the Church Congress, the Archbishop of Canterbury said Churchmen were resolved that the religious character of English education should be maintained and that those who gave the religious instruction should be qualified to give it genuinely as well as effectively. They were eager to have the basis of Christian faith laid in the minds of the children in the manner which would give the best foundation for a life of corporate service within the Church, and they wanted, with equal earnestness, to secure for those whose Church membership differed from their own a similar opportunity. The problem, he went on, is not insoluble. A combination of Christian forces on the part of those who care might solve it speedily if it be handled with large enough sympathy, with mutual loyalty, and with a determined resolve to let no mere local or sectional interests dominate us in a task which, for the sake of the whole future of the country, calls for the loyal and public-spirited co-operation of all who profess and call themselves Christians.—*Manchester Guardian*.

IN the past, the introduction of an Education Bill has been the signal for the outbreak of hostilities between various theological factions; and in this *mêlée* of the churches educational interests and the well-being of the child have alike been either overlooked or sacrificed. The country will not tolerate a repetition of past experience in this respect. The man in the street has no interest in these sectarian controversies; nor will he, at this late day, permit the theologian to block the way

to education reform. Sectarian partisans should take warning that the parents are far more concerned that their children should have the advantage of an unobstructed educational highway than that this denomination or that should score a temporary victory. If the churches obstruct educational progress in the alleged interest of religious teaching in the schools, then they must not be surprised if, from sheer weariness of their feuds, the general public say that religious teaching shall be left entirely to the churches, and the responsibility of the State be limited to the giving of secular education.—Dr. W. T. Kenward at the National Federation of Class Teachers.

THE Ealing Education Committee have rejected by a large majority a recommendation that the scholars of St. John's Elementary School should be allowed to attend the Friday lectures at the British Museum and the Natural History Museum during school hours. It was explained that the scholars would be absent the whole day, half of the time being spent at each institution. A letter from the Government Inspector was read stating that he was prepared to sanction the visits, but for the afternoons only. The members considered that the lectures would be of very little practical use for the children of an elementary school. One member complained that a boy who was about to leave an elementary school for an office was asked to take a fuchsia to school in order to make a water-colour drawing of it. That boy could not do an addition sum properly, and it was absurd to waste his time over painting flowers.

RETURNS to hand show that the cost of the Bradford School Clinic in 1912 was, roughly, £2,000. Towards this the Government made a grant of £1,000. By means of the clinic, ringworm in the school children of the city has been stamped out, and this achievement alone has resulted in improved attendance to an extent which has increased the attendance grant by £800 a year. Of the remaining £1,200, it is generally admitted that that has been more than liquidated by the general improvement in attendance of young children who have been treated for many other ailments. So satisfied are the Bradford municipal authorities with the result of the work of the clinic that the school medical and nursing staff has recently been increased fivefold.

THE Governors of the Leys School, Cambridge, have decided to make an important addition to the buildings of the school, which, in most respects, is already as well equipped as any of the large public schools of this country. Those who know the school will remember that, as one stands outside facing it, the chapel, the great hall, and the north block form three sides of a quadrangle, leaving at present the fourth side—that parallel with the main road—open. It is now proposed to complete the quadrangle by erecting on this open side a fine building, comprising an ornate gateway, which will become the main entrance to the school, with commodious classrooms on either side, while above these, forming the upper floor, will be a lofty library and a reading-room extending the whole length of the building, which will be surmounted by a turret and clock tower. Sir Aston Webb, R.A., is the architect, and Messrs. George Corderoy & Co. are preparing the quantities and specification.

AT the recent quarterly meeting of the Derbyshire County Council at Derby, Councillor C. F. White asked what control the Education Committee had over its head masters. He knew of a large Council school where the head master was a large farmer, a milk seller, a greengrocer, a water rate collector, a land speculator, and was now seeking to become the local sewage contractor. The Chairman (who is also Chairman of the Education Committee) said it was news to him, and he asked for particulars, which Councillor White promised to supply privately.

THE President of the Board of Education has appointed Mr. J. W. Dulanty, of the Manchester School of Technology, to a post on the staff of the Board of Education.

# Clough's Correspondence College,

TEMPLE CHAMBERS, LONDON, E.C.

## A.C.P. and L.C.P. Courses.

**SPECIAL CLASSES** are now being formed for the **January 1914** and **September 1914** Examinations. Names of intending students should be entered **as soon as possible**.

Students who intend to take the **January 1914** Examination should enter their names at once.

### At the JAN. 1912 A.C.P. EXAM.

**TWO** of the **Three** MOST DISTINGUISHED CANDIDATES were Members of **CLOUGH'S A.C.P. CLASS.**

### At the JAN. 1913 EXAM.

A Clough's Student was the MOST DISTINGUISHED CANDIDATE on the A.C.P. List. Another Clough's Student for January 1913 completed the **L.C.P. Diploma** with **Three Honours.**

### At the SEPT. 1913 EXAM.

**THREE** of Clough's A.C.P. Students gained **DOUBLE HONOURS.**

The only Candidate to obtain Honours in Science (Sept. 1913) was a Clough's Student.

### A FEW TYPICAL LETTERS FROM RECENTLY SUCCESSFUL A.C.P. AND L.C.P. STUDENTS.

G. B. CLOUGH, Esq.,  
Dear Sir,  
I have great pleasure in reporting to you that I was successful in the recent A.C.P. Examination. (**Honours in English and Geography**)  
I wish to thank you for your great help especially in Geography which in the past was a weak subject with me.  
Yours faithfully,  
H. PALPHRAMAND.

G. B. CLOUGH, Esq.,  
Dear Sir,  
I heard the result of the A.C.P. Examination this morning, and was delighted to find that I have passed in everything with **Honours in History and Botany**. My sister wishes me to tell you she has also passed in all the L.C.P. subjects she took.  
Yours sincerely,  
MARIA CURLING.

N.B.—A third student of Clough's A.C.P. Class for September, 1913, gained **Honours in English and History.**

G. B. CLOUGH, Esq.,  
Dear Sir,  
I have great pleasure in informing you that I have been successful in Higher English and French at the recent L.C.P. Examination.  
My thanks are specially due to my Tutor in Old English, who very kindly answered my numerous queries in that subject. But for his assistance, I should not have been successful, as my knowledge of Old English eight months ago was practically nil.  
Yours faithfully,  
B. S. TAYLOR.

Withdean, Towcester Road,  
Northampton,  
October 2nd, 1913.  
Dear Mr. CLOUGH,  
I am pleased to say that I heard from the College of Preceptors this morning to the effect that I have been successful in passing in all three groups for the L.C.P. Diploma.  
I feel that I owe you many thanks for the help afforded me in your papers. As I had barely six months' work in preparation, and as I was limited greatly for time for study by evening school work, I was obliged to confine my attention to the essential points in the books studied, and these points your papers showed most clearly.  
I return herewith under separate cover your papers, solutions, &c. Once more thanking you for your assistance.  
Yours faithfully,  
E. R. PIGROME.

"Ellesmere," Cavendish Road,  
Felixstowe,  
October 2nd, 1913.  
G. B. CLOUGH, Esq.,  
Dear Sir,  
I am glad to be able to inform you that I have to-day received intimation that I have passed in the Education Group of subjects for the L.C.P. Diploma and am now eligible for the full Diploma. My thanks are due to you.  
I cannot speak too highly of the papers and tuition generally that you provided me with for this Examination, and without your valuable help I could not have done so well.  
This is the third examination for which you have coached me, and success has each time resulted—viz., First Class King's Scholarship, Matriculation (London), and L.C.P.  
I shall continue to recommend your Classes to teacher friends.  
Yours faithfully,  
W. J. JENKIN.

For full particulars of any of CLOUGH'S CLASSES—

**PUPIL TEACHER PRELIMINARY CERTIFICATE, CERTIFICATE, MATRICULATION, OXFORD and CAMBRIDGE LOCALS, A.C.P., L.C.P., L.L.A., HIGHER FROEBEL, and all PROFESSIONAL PRELIMINARY and COLLEGE OF PRECEPTORS EXAMS.**

Write to—

**THE SECRETARY, CLOUGH'S CORRESPONDENCE COLLEGE, TEMPLE CHAMBERS, LONDON, E.C.**



## THE COLLEGE OF PRECEPTORS.

## TEACHERS' DIPLOMA EXAMINATION.—SUMMER, 1913.

THE Summer Examination commenced on the 1st of September, and was held in London and at the following Local Centres:—Belfast, Birmingham, Bristol, Dublin, Glasgow, Leeds, Liverpool, Manchester, Newcastle-on-Tyne, Plymouth; Bangalore, Dehradun, Indore, Jubbulpore, Lucknow, Mussorie (India); Lagos, Konakry (West Africa); Calitzdorp (South Africa); Zagazig (Egypt); Hong-Kong (China); Taiping (Perak); Georgetown (British Guiana).

The total number of candidates examined was 231.

## LIST OF CANDIDATES WHO PASSED IN THE VARIOUS SUBJECTS.

(*hon.*) attached to a name, or to a letter denoting a subject, indicates that the candidate obtained Honours in the subject.

**Theory and Practice of Education.**

## LICENTIATESHIP.

Barnes, H. C.  
Bell, A. G.  
Brammer, D.  
Cahalan, Miss K.  
Chaplin, F. K.  
Curtis, Miss N. A.  
Dearing, C. A.  
Dhaze, F. C. J.  
Earnshaw, J. W.  
Ewart, A. T.  
Ferraro, R.  
Glaister, J. B.  
Griffiths, E. T.  
Grimshaw, H. A.  
Hamilton, J. M.  
Ivon, J. F.  
Jenkins, W. J.  
Lal, B. B.  
Lewis, J. W.  
McAlpin, J. M.  
Morley, F. J.  
Paul, T. P. N.  
Pigrome, E. R.  
Raychaudhuri, L.  
Reid, G.  
Skinner, A.  
Wilson, R. O.  
Wright, J. E.

## ASSOCIATESHIP.

Alderson, M.  
Anderson, J. B.  
Ballinger, A. E.  
Barrington, G. F.  
Blakemore, T.  
Bottrill, S. N.  
Brashier, W. E.  
Brickell, H. E. C.  
Brittain, Miss E. N.  
Buckley, W.  
Carr, F.  
Carter, G.  
Chandler, J.  
Clarke, C. T.  
Claxton, A. E.  
Cocks, W. P.  
Coudry, Miss N. M.  
Conradie, A. F.  
Cooper, W.  
Cridland, Miss E. S. B.  
Cropper, J.  
Edwards, D. T.  
Edwards, Miss V. K.  
Elliott, J.  
Elson, J. A.  
Elson, E. J.  
Fox, H. E.  
Gale, L.  
Gardner, H. E.  
Gleeson, D.  
Godivier, Miss A. E. L.  
Guest, W.  
Gunton, T. P.  
Harper, Miss M. A.  
Harris, C. A.  
Harris, E.  
Hassall, Miss H.  
Hazlewood, E. B.  
Heighway, S. J.  
Higgins, F. J. T.  
Hirst, E.  
Hoare, E. T. R.  
Hoare, W. B.

Hobley, Miss L.  
Hudson, D. R.  
Jones, B.  
Jubb, A. B.  
Kavanagh, B.  
Law, J. B.  
Lawrence, F. W.  
Ley, Miss M. I.  
Madden, A. C.  
Mann, C.  
McDyer, A.  
Metcalf, Miss E. E.  
Michell, F. C.  
Millard, G. H.  
Murphy, Miss H. A.  
O'Callaghan, W. P.  
O'Keefe, Miss M.  
Oliver, Miss I. B.  
Oudin, Miss J. M. L.  
Palphramand, H.  
Preece, C. J.  
Quadr, M. M.  
Richards, C.  
Roberts, A. J.  
Rodda, W. J.  
Scott, J.  
Sherratt, C. E. S.  
Singleton, Miss M.  
Skinner, P. A.  
Stevens, A. G.  
Stott, S.  
Sutton, C. H.  
Thomasson, J.  
Toll, T. W.  
Tonks, Miss H. A.  
Trerise, W. T. L.  
Turner, A. V.  
Wade, H. J. C.  
Walker, Miss A.  
Walker, W.  
Waring, G.  
Wehner, Miss M. M.  
White, B. S.  
Woolcock, H. G. R.

**English Language.**

Adams, Miss J. L.  
Alexander, A. K. S. (*hon.*)  
Anderson, J. B.  
Aspinwall, W.  
Ballinger, A. E.  
Bottrill, S. N.  
Buckley, W.  
Carr, F.  
Chandler, J. (*hon.*)  
Clarke, C. T.  
Cooper, W. (*hon.*)  
Criticos, J. M.  
Curling, Miss M.  
Dhaze, F. C. J.  
Edwards, Miss V. K.  
Elliott, J. (*hon.*)  
Elson, J. A.  
Elson, E. J. (*hon.*)  
Fox, H. E.  
Gale, L.  
Gunton, T. P.  
Harris, C. A.  
Hazlewood, E. B. (*hon.*)  
Hobley, Miss L.  
Hudson, D. R.  
Ivon, J. F.  
Jones, F. H. (*hon.*)  
Jones, H. C.

Kavanagh, B.  
Latchem, R. W.  
Madden, A. C.  
Mann, C.  
Marling, Miss K. A.  
McDyer, A.  
Metcalf, Miss E. E.  
Millard, G. H.  
Murray, P.  
O'Callaghan, W. P.  
Page, J.  
Palphramand, H. (*hon.*)  
Rigney, J.  
Rungary, Miss F. E. M.  
Rutter, Miss E.  
Scott, T. (*hon.*)  
Silk, W. E.  
Sindall, G. A.  
Slee, A. H.  
Smith, Miss R. B.  
Spiers, Miss L. C. E.  
Swanson, C.  
Telfer, E.  
Telfer, F.  
Thomasson, J.  
Trerise, W. T. L.  
Turner, A. V.  
Varley-Tipton, P. J.  
Waring, G.  
Weaver, J. R.  
Wehner, Miss M. M.  
Williams, Miss R. C. M.  
Wright, J. E.

**English History.**

Adams, Miss J. L.  
Alexander, A. K. S.  
Anderson, J. B.  
Ballinger, A. E.  
Bearder, J. E.  
Bottrill, S. N.  
Carr, F.  
Chandler, J.  
Checksfield, Miss C. A.  
Clarke, C. T.  
Coudry, Miss N. M.  
Cooper, W.  
Crampton, Miss E.  
Cridland, Miss E. S. B.  
Curling, Miss M. (*hon.*)  
Dhaze, F. C. J.  
Edwards, Miss V. K.  
Elliott, J. (*hon.*)  
Elson, J. A.  
Elson, E. J.  
Evans, Miss A. T.  
Fox, H. E.  
Gale, L.  
Gregory, Miss D. J.  
Gunton, T. P. (*hon.*)  
Harris, C. A.  
Hazlewood, E. B. (*hon.*)  
Hirst, E.  
Hoare, W. B.  
Hudson, D. R.  
Ivon, J. F.  
Jackson, C. E.  
Jackson, H. A.  
Jones, F. H. (*hon.*)  
Kavanagh, B.  
Latchem, R. W.  
Latham, S.  
Madden, A. C.  
Mann, C.  
Marling, Miss K. A.

Millard, G. H.  
Morgan, D. R.  
Mundy, H. H. (*hon.*)  
Murray, P.  
O'Callaghan, W. P.  
Page, J.  
Palphramand, H.  
Rees, E. W.  
Rigney, J.  
Rungary, Miss F. E. M.  
Rutter, Miss E.  
Scott, T. (*hon.*)  
Shannon, Mrs. F. M.  
Silk, W. E.  
Slee, A. H.  
Smith, Miss R. B. (*hon.*)  
Spiers, Miss L. C. E.  
Stott, S.  
Swanson, C.  
Tapley, Miss L. E.  
Taylor, G. E.  
Telfer, F.  
Thomas, R.  
Thomasson, J.  
Trerise, W. T. L.  
Varley-Tipton, P. J. (*hon.*)  
Walker, W.  
Waring, G.  
Weaver, J. R.  
Wehner, Miss M. M.  
Weller, Miss C. A.  
Williams, Miss R. C. M.  
Woolcock, H. G. R.  
Wright, J. E.

**Geography.**

Adams, Miss J. L.  
Alexander, A. K. S.  
Anderson, J. B.  
Bagnall, W. (*hon.*)  
Ballinger, A. E.  
Blanchett, A. R.  
Bottrill, S. N.  
Carr, F.  
Chandler, J.  
Clarke, C. T.  
Cooper, W.  
Crabbe, Miss L.  
Cridland, Miss E. S. B.  
Criticos, J. M.  
Curling, Miss M.  
Dhaze, F. C. J.  
Earnshaw, J. W.  
Elliott, J.  
Elson, J. A.  
Elson, E. J.  
Ferguson, T. H.  
Fox, H. E.  
Godivier, Miss A. E. L.  
Gregory, Miss D. J.  
Grudgings, W.  
Gunton, T. P.  
Harris, C. A.  
Hazlewood, E. B.  
Hirst, E.  
Hoare, W. B.  
Hudson, D. R.  
Ivon, J. F.  
Jones, F. H. (*hon.*)  
Latham, S.  
Leicester, Miss E.  
Madden, A. C.  
Mann, C.  
Marling, Miss K. A.  
Millard, G. H.  
Mundy, H. H.

Murphy, Miss H. A.  
O'Callaghan, W. P.  
Page, J.  
Palphramand, H. (*hon.*)  
Rigney, J.  
Rutter, Miss E.  
Scott, T.  
Silk, W. E.  
Slee, A. H.  
Smith, Miss R. B.  
Stott, S.  
Taylor, G. E.  
Trerise, W. T. L.  
Varley-Tipton, P. J.  
Walker, W.  
Waring, G.  
Weaver, J. R.  
Wehner, Miss M. M.  
Welburn, Miss K. E. M.  
Woolcock, Miss E. J.  
Woolcock, H. G. R.  
Wright, J. E.

**Arithmetic.**

Ballinger, A. E.  
Chandler, J.  
Crabbe, Miss L.  
Curling, Miss M.  
Daniel, D.  
Dhaze, F. C. J.  
Elliott, J.  
Gale, L.  
Gergawi, N.  
Hazlewood, E. B. (*hon.*)  
Hirst, E.  
Hudson, D. R.  
Jones, F. H.  
Latchem, R. W.  
Law, E. F.  
Millard, G. H.  
Mundy, H. H.  
Nolan, W. L.  
Palphramand, H.  
Shaw, H. L.  
Skinner, P. A.  
Turner, A. V.  
Varley-Tipton, P. J.  
Walker, W.  
Waring, G.  
Wright, J. E.

**Mathematics.**

## LICENTIATESHIP.

Ayliffe, R. G.  
Entwistle, W. C.  
Hall, E. C.  
Little, E. R.  
Pigrome, E. R.  
Skinner, A.  
Worrall, C. H.

## ASSOCIATESHIP.

Ballinger, A. E.  
Clarke, C. T.  
Elliott, J.  
Gale, L.  
Gunton, T. P.

Mathematics.	Languages.	ASSOCIATESHIP.	Science.	
ASSOCIATESHIP ( <i>continued</i> ). Hazlewood, E. B. ( <i>hon. algebra</i> ) Hudson, D. R. ( <i>hon. algebra</i> ) Jones, F. H. ( <i>hon. algebra</i> ) Latchem, R. W. Marling, Miss K. A. O'Callaghan, W. P. Palphramand, H. Rigney, J. Slee, A. H. Smith, Miss R. B. Stott, S.	<i>e.</i> = Higher English. <i>f.</i> = French, <i>g.</i> = German, <i>l.</i> = Latin. LICENTIATESHIP. Ayliffe, R. G. <i>e.</i> ( <i>hon.</i> ) <i>f.</i> Bates, A. D. <i>e.f.</i> Curling, Miss M. A. <i>f.l.</i> Johnson, J. <i>e.f.</i> McCartney, Miss M. C. <i>e.f.</i> Pigrome, E. R. <i>f.l.</i> Taylor, B. A. <i>e.f.</i> Wilson, R. O. <i>f.</i> ( <i>hon.</i> ) <i>g.</i> ( <i>hon.</i> )	Alexander, A. K. S. <i>f.</i> Aspinwall, W. <i>f.</i> Buckley, W. <i>l.</i> Conton, C. B. <i>l.</i> Elson, E. J. <i>l.</i> Kavanagh, B. <i>f.</i> Madden, A. C. <i>f.</i> ( <i>hon.</i> ) Metcalfe, Miss E. E. <i>f.</i> Millard, G. H. <i>f.</i> Murphy, Miss H. A. <i>f.</i> Rutter, Miss E. E. <i>f.</i> Telfer, F. <i>f.</i> Walker, W. <i>f.</i> Wehner, Miss M. M. <i>f.</i>	<i>a.</i> = Astronomy. <i>b.</i> = Botany. <i>ch.</i> = Chemistry. <i>m.</i> = Mechanics. <i>p.</i> = Experimental Physics. <i>ph.</i> = Animal Physiology. LICENTIATESHIP. Barnes, H. C. <i>ch.b.</i> Curling, Miss M. A. <i>ph.b.</i> Girling, T. W. <i>a.ph.</i> Green, H. W. <i>a.ph.</i> Ludford, Miss A. H. <i>ch.ph.</i>	Morgan, D. R. <i>p.m.</i> Skinner, A. <i>ch.b.</i> Wilson, R. O. <i>ph.b.</i> ASSOCIATESHIP. Carr, F. <i>ph.b.</i> Curling, Miss M. <i>ph.b.</i> ( <i>hon.</i> ) Harvey, Miss M. <i>ph.b.</i> Jackson, H. A. <i>ph.b.</i> O'Keefe, Miss M. <i>ph.b.</i> Rodda, W. J. <i>ch.ph.</i> Sherratt, C. E. S. <i>ch.ph.</i> Skinner, P. A. <i>p.ph.</i> Swanson, C. <i>p.ph.</i> Waring, G. <i>ph.b.</i>

## LIST OF CANDIDATES TO WHOM DIPLOMAS WERE AWARDED.

Licentiate-ship.			
Bell, A. G. Brammer, D. Chaplin, F. K. Dearing, C. A. Ferraro, R.	Girling, T. W. Griffiths, E. T. Grimshaw, H. A. Hall, E. C.	Johnson, J. Lewis, J. W. McAlpin, J. M. Morley, F. J.	Pigrome, E. R. Reid, G. Skinner, A. Wilson, R. O.
Associate-ship.			
Adams, Miss J. L. Alderson, M. Bagnall, W. Ballinger, A. E. Barrington, G. F. Blakemore, T. Blanchett, A. R. Bottrill, S. N. Brickell, H. E. C. Carter, G. Claxton, A. E. Cocks, W. P. Cooper, W.	Crabbe, Miss L. Cropper, J. Daniel, D. Edwards, D. T. Elliott, J. Ferguson, T. H. Gardner, H. E. Gleeson, D. Godivier, Miss A. E. L. Harper, Miss M. A. Harris, E. Harvey, Miss M. Hoare, E. T. R.	Hudson, D. R. Jones, B. Jubb, A. B. Law, E. F. Law, J. B. Leicester, Miss E. Ley, Miss M. I. Michell, F. C. Millard, G. H. O'Keefe, Miss M. Oliver, Miss I. B. Oudin, Miss J. M. L. Palphramand, H.	Preece, C. J. Richards, C. Roberts, A. H. Rodda, W. J. Scott, J. Scott, T. Shaw, H. L. Singleton, Miss M. Toll, T. W. Trerise, W. T. L. Walker, Miss A. Walker, W. Waring, G.

The Prize for **Theory and Practice of Education** was awarded to John William Lewis.

Detach here and post.

## GUARANTEED APPOINTMENTS

Dear Sir,

Please send me an **Illustrated Souvenir** of the **21st Anniversary of Kensington College**, a copy of the **Illustrated Prospectus**, and of the **Chartered Accountants' Certificate** stating the number of appointments offered each Pupil from which to select a career.

Please also let me have your advice as to—

- (a) HOW LONG THE TRAINING WOULD TAKE.
- (b) HOW MUCH IT WOULD COST.
- (c) THE NATURE OF THE APPOINTMENTS GUARANTEED.
- (d) THE APPROXIMATE INITIAL SALARY.

*This is merely a request for information, and does not involve me in liability of any kind.*

Yours faithfully,

Name .....

Address .....

Date .....

To Mr. JAMES MUNFORD, F.R.C.I., M.R.S.A.,

E.T. 11.13.

Director, Kensington College, Bayswater, London, W.

**A.C.P. and L.C.P. Results Just Issued (October, 1913).**

# HONOURS IN FOUR SUBJECTS

ONCE AGAIN  
OBTAINED BY A DIPLOMA PUPIL OF THE

# NORMAL

Corr. College.

**A few of the many Letters just to hand.**

(To print all the testimonials already received from pupils of the Normal who have passed would require many pages of this paper.)

40 Sylvester Street, Bolton.  
Oct. 3rd, '13.

Dear Sir,  
I have just received a communication from the College of Preceptors informing me that I have been successful in the recent Diploma Examination, having obtained the full Diploma of **Associate with Honours in English**. As it is my first attempt, the result is testimony to your tuition. All your notes and papers are really very useful.

Yours truly,  
WILLIAM COOPER.

Middleton Road,  
Pickering, Yorks.  
2/10/13.

Dear Sir,  
I am pleased to inform you I have obtained the **A.C.P. Diploma**. That I was successful at the first effort was due largely to your splendid papers. I thank you for your careful coaching and excellent lesson papers.

Yours truly,  
GEO. WARING.

175 Abingdon Road,  
Middlesboro',  
2/10/13.

Gentlemen,  
I take this early opportunity of informing you that I have been notified of my success in the August College of Preceptors' Examination. I have qualified for the **full Diploma of A.C.P.** I again beg to express my thanks to your College for the splendid papers and notes which you sent me.

I am,  
Yours very sincerely,  
MATTHIAS ALDERSON.

**A.C.P. Honours in FOUR subjects.**

56 Folkestone Road, Dover.  
2/10/13.

Dear Sir,

I have much pleasure in informing you that I have just received the result of the Examination for Associate of the College of Preceptors, in which Examination I was successful in passing in all the subjects for which I sat. I have to thank you for your course of instruction, the best way of testifying to its excellency being to state that I have gained four honours out of the six subjects. Needless to say, I am delighted both personally and with the knowledge that this result adds another name to the list of Normal Students who have been so successful. Several of my friends have intimated to me their intention of becoming Normal Students in preference to others.

I beg to remain, Gentlemen, yours truly,  
F. HARRY JONES.

**£20** In accordance with the Normal Prize scheme, Mr. F. H. Jones wins £20 and Gold Medal for passing A.C.P. with Honours in four subjects.

26 Croft Road,  
Wallingford, Berks.  
Oct. 3rd, '13.

Dear Sir,  
I am very pleased to state that I was successful in "**The Theory and Practice of Education**" at the recent A.C.P. Examination. As I was exempt from Examination in all other subjects, the full Diploma will be awarded. Let me take this opportunity of thanking you for the kindly interest you took in me when preparing me for the Examination. It is a significant fact that, although most of the work was quite new to me, I succeeded in passing the Examination after only one term's tuition with your College. I feel sure that your earnest and untiring efforts will secure for your various classes in the future (as they have done in the past) the success which I so sincerely wish them.

Yours faithfully,  
C. J. PREECE.

54 Dyne Road,  
Brondesbury, N.W.  
Oct. 5th, '13.

Dear Sirs,  
I am glad to be able to report a success in the recent examination for **Licentiatehip of College of Preceptors**, and I am now awaiting the award of the Diploma. Thanking you for your excellent notes.

Yours truly,  
CHAS. A. DEARING.

Bryngola, Holmeliffe Road,  
Blackpool.  
Oct. 4th, '13.

Dear Sir,  
I am pleased to inform you that I have passed in the Education group of **Associate** and so obtained full Diploma. Will you please send me your Froebel and L.L.A. Guides. Thanking you for your tuition.

Yours truly,  
MARY SINGLETON.

Strathmore, Lilleshall Street,  
Loughton,  
Stoke-on-Trent.

Dear Sir,  
I have just heard that I am successful in all the subjects taken, i.e., Teaching, &c., and Science at **A.C.P.**, for which many thanks for your splendid notes.

Yours thankfully,  
CHAS. SHAW SHERRATT.

"Roslyn," Rampart Road,  
Bitterne Park,  
Southampton.  
5/10/13.

Dear Sir,  
I have just heard result of **A.C.P. Exam**. Glad to tell you I have been successful in obtaining a pass.

Thanking you for your kind attention,  
I am,  
Yours very truly,  
EDW. HOARE.

## PRIVATE SCHOOLS.

(By M. E. SADLER in *Indian Education* for September.)

UGHT all private schools to be inspected by the State? Ought the State to have the power of closing any private school which, in its judgment, fails to give a good education under suitable conditions? These are questions raised by the speech of the President of the Board of Education in the House of Commons on July 22. In one of his novels, Mr. H. G. Wells describes "Cavendish Academy," a battered private school to which Kipps was sent by his mother in her fine sense of social distinctions. Her boy was not to be sent to a common school, but to a middle-class academy, with mortar-boards, and the added advantage of low fees. It was in a shabby private house, on the edge of Hastings which is furthest from the sea. It was called an Academy for Young Gentlemen, and, says Mr. Wells, "many of the young gentlemen had parents in 'India' and other unverifiable places. Others were the sons of credulous widows anxious to get something a little 'superior' to a board school education as cheaply as possible; and others again, were sent to demonstrate the dignity of their parents and guardians. And, of course, there were boys from France." Mr. Wells describes the Principal of Cavendish Academy as "a lean, long creature of indifferent digestion and temper, who proclaimed himself on a gilt-lettered board in his front area, George Garden Woodrow, F.S.Sc., letters indicating that he had paid certain guineas for a bogus diploma. A bleak whitewashed outhouse constituted his schoolroom, and the scholastic quality of its worn desks and forms was enhanced by a slippery blackboard and two large out-of-date maps—one of Africa and the other of Wiltshire—that he had picked up cheap at a sale. There were other maps and globes in his study, where he interviewed inquiring parents; but these his pupils never saw. And in a glass cupboard in the passage were several shillingsworth of test-tubes and chemicals, a tripod, a glass retort, and a damaged Bunsen burner, manifesting that the 'scientific laboratory' mentioned in the prospectus was no idle boast."

Mr. Wells describes the dignified but incorrect English of the prospectus, how it laid stress on the sound preparation for a commercial career which was given in the Academy, and glanced at the Army, Navy and Civil Service in an ambiguous sentence. The prospectus vaguely referred to "examinational successes" and announced that the curriculum included art, modern foreign languages and a sound technical and scientific training. Then it dwelt upon the "moral well-being" of the pupils and boasted of the excellence of the religious instruction, "so often neglected nowadays even in schools of wide repute." The attention of the inquiring parent was directed to the "motherly care of Mrs. Woodrow," who was in reality "a small, partially effaced woman, with a plaintive face and a mind above cookery." The concluding phrase of the prospectus was tempting, but indefinite. "Fare unrestricted, and our own milk and produce." Mr. Wells must have described this school from his own vivid memories. "The solid work varied according to the prevailing mood of Mr. Woodrow. Sometimes that was a desponding lethargy, copy-books were distributed, or sums were set. . . . and beneath these superficial activities lengthy conversations and interminable games with marbles went on, while Mr. Woodrow sat inanimate at his desk heedless of school affairs, staring in front of him at unseen things. At times his face was utterly inane; at times it had an expression of stagnant amazement, as if he saw before his eyes with pitiless clearness the dishonour and mischief of his being. At other times the F.S.Sc. roused himself to action and would stand up a wavering class and teach it, goading it with bitter mockery and blows through a chapter of a 'First French Course'; or, France and the 'French,' or through a dialogue about a traveller's washing or the parts of an opera house. His own knowledge of French had been obtained years ago in another English private school, and he had refreshed it by occasional weeks of loafing and mean adventure in Dieppe."

Mr. Pease said that he had recently read reports from the officers of his Department which made him think that, in our

present system of intermediate education, Cavendish Academy was the outstanding fact. Nothing, he went on to say, was further from his mind than to speak slightly of men or women who did their duty honourably to children committed to their care, though their methods might be old-fashioned and their equipment defective. Many private schools were excellent, and he had not the smallest doubt that in the immense field of education there was, and perhaps always would be, room for the private school. The State, having made education compulsory, ought, however, to be in a position to give parents some guarantee that the education which their children received was not positively harmful to their minds or their bodies.

But, after all, the State has not made education compulsory up to an undefined age. It can require attendance at school, in the case of a normal child, up to fourteen, or such earlier period as may be fixed by local by-law. The by-laws require that the parent of every child of not less than five and not more than fourteen years of age shall cause such child to attend school, unless there is a reasonable excuse for non-attendance. One of the reasonable excuses for non-attendance is that the child is under efficient instruction in some other manner. The Local Authority may satisfy itself as to the fulfilment of this condition by means of the examination of the child. This power, if exercised, would go a long way towards removing the inefficiency of the inferior sort of private school.

Whether the State should go beyond this is a very difficult question. Everything depends on the reasonableness of the temper in which the inspection is conducted. Private initiative, though it often shows itself in undesirable forms, is a vitally important factor in education. But certain kinds of private initiative might be stamped out if a too exacting standard of material equipment and of buildings were insisted upon. It is impossible for those who conduct private schools (except in the limited number of cases where very high fees are charged) to compete, in the way of buildings at any rate, with public bodies which can draw upon public funds. If the Board of Education is prepared to offer, without charge, opportunities of inspection to private schools, there is no reason to doubt that a very large number of private schools will avail themselves of the guidance which such inspection would give and of the guarantee which it would afford. It seems to be in Mr. Pease's mind to encourage the private schools to avail themselves of such inspection. A liberal offer of this kind would bring the Board of Education into a close relation with many private schools all over the country. Many of these schools fully deserve to be reckoned as part of the efficient provision of secondary education in their district.

It is very difficult to combine public and private effort in national education. There is a certain jealousy between the two types of school. They represent different ways of dealing with the subject. The public school is responsible to public authority: the private school is much more dependent on the goodwill of the parent. Each method has its defects, and each its advantages; but it is hard to combine them. In a few cases they can be combined. Denmark succeeds in this, and so do Norway and Sweden. In those countries there is no hard-and-fast line between the public school and the private. There is a considerable intermediate class of schools which, though under private management, are under public regulation and in receipt of some measure of public funds. This is an economical system. It saves building. It makes use of the energy and goodwill of individual private-school masters. It gives stability to private enterprise. It encourages people to put their capital into a school which they have reason to hope may be permanent. It is possible that, at any rate in a limited number of cases, this intermixture of private management with public supervision and aid may be found practicable in this country. The present law allows a Local Authority to make grants to private secondary schools. Very little, if any, use is made of this power, but the power exists. The regulations of the Board of Education forbid State money being paid to any schools except those under public management; but a change in these regulations could be made, if the Government thought fit. What we need next is more published information about private schools. There is no reason why the Board of Education should not set itself to investigate the matter more closely.

## MUSIC AS AN EDUCATIONAL FORCE.

By HERBERT ANTCLIFFE.

Music as a means of education—that is, the manner in which it may be employed to help in the teaching of the facts a knowledge of which is necessary or desirable for the performance of our daily work—is a subject we cannot afford to ignore. But it is well we should from time to time look deeper, and consider music as a force in education; that we should look at music as the power itself, not merely as the medium through which we may put in motion that power. We have all long since ceased to look upon education merely as a matter of teaching certain rules and formularies. We realize that it is a development of our mental and spiritual powers for which tuition is only one of the means, though possibly the principal and most direct one. We go even further than the old Danes, who said that a man is not educated till he has forgotten all he ever learnt; for we realize that much of our education comes not only from things we do not learn, but from things we have never known, or at least never consciously known. Even the strongest opponents of the systems of such reformers as Dr. Maria Montessori seem to be agreed on this point. And it is in this respect that music as an educational force is most real and effective.

Music is frequently most educative when intellectually we know least about it, and always when we are least conscious of the manner of its influence. When it produces an immediate and obvious sentimentality—whether its sentiments be virile or effeminate, morose or cheerful—it is least educative. When its influence is more subtle, it is always deeper and more lasting. Yet even the more obvious and shallow influences of music make an ineffaceable mark on our characters, and for that reason it is as dangerous when misapplied as it is helpful when applied rightly. Of course, all æsthetic exercise or study has resultant educational influences which are frequently of a most subtle character; and upon the methods of application as well as upon the subjects themselves depend to some extent the good or evil results of such education.

But it is important we should realize what the character of the influence exercised is. Without a knowledge of this it is quite possible to employ music in various ways in education; but it is not possible to use it to its greatest extent or in the most effective and economical manner. As a matter of fact, it is to-day used very largely by many different schools of educationists whose methods of employing it vary to a very great extent. Yet in the majority of cases it is used in such a manner as to cause a great waste not only of the time and energy of the pupil and of the teacher, but of the force of the music itself.

That force is mainly an emotional one and hardly touches the intellect at all. The intellect comes in only as an aid to teaching the subjects necessary to set the force in motion, not as having any direct power in assisting the force. The intellectual side of music, therefore, has its place, but it does not make music itself any greater an educational force than it would be without it. Some of those upon whom music has the greatest power for good, in submitting themselves to its influence have acquired no knowledge of even the elements of musical notation or musical statement; much less likely are they to know anything of the science of music.

The inherent qualities of music seek for response in the soul—in the character—rather than in the mind. This is why the Greek philosophers condemned certain modes and commended others for the education of youth. This is also the reason why the continuing melodies of the centuries are the best adapted for teaching purposes, and why the restless passing melodies of the day serve so ill for these purposes. It is so difficult to tell which of those of to-day contain the everlasting and always beneficial emotional force, that it is usually better we should not employ them at all. Those that have lasted, even though it be but for a single generation beyond that of their creation, have proved to contain within themselves some of the better qualities that make for continuous appeal to the emotions which is of a worthy nature. And the longer the endurance, provided always it is a real and not merely a theo-

retical endurance, the greater the proof of the possession of those qualities.

Yet it may also be said that the educational force of music is not necessarily diminished, even though it be not increased, by the development of its intellectual side. The intellectual musician—the musical scientist—is often as profoundly moved for good or ill by the music itself as is the person in whom this side is totally neglected. We might just as well say that a knowledge of medicine makes the physician less susceptible to its action as contend that a knowledge of the science of music deadens its emotional effect. Such knowledge neither enhances nor decreases such effect, except that a thorough knowledge of the whole subject enables the one who possesses it to choose that which is most beneficial. As with other subjects, it is the little knowledge, the knowledge which creates an ill-considered confidence, that is dangerous.

Music is educative in the same manner, and generally speaking to the same degree, as is oratory—and there are few who will not gladly admit the force of the latter in this respect. The term “oratory” used in this connexion has, of course, a wide application, and is not restricted to public speech or the addressing of large numbers. The persuasive accents of the class teacher are as much oratory, though a different type, as is the passionate appeal of the politician or the preacher.

One great reason why music frequently appears to be less educative than oratory is that we are so often content with a standard of music that we would not tolerate for an instant in oratory. It is unfortunately true that in the pulpit we get the weakest specimens of oratory; yet the worst preacher is more easily understood, more tolerable to the educated listener, than are the large majority of amateur and quasi-professional musicians who sing and play for the benefit of others. He is, consequently, more forceful and effective.

And both music and oratory are alike in this respect, that when presented in their most forceful and striking manners they have a greater effect on a large body of hearers than on a small one. Similarly also the bad speaker and the bad musician are more effective in the presence of a small company than in the presence of a large one.

Some of the effectiveness of music as an educational force depends, as does that of all other subjects, upon the manner of its employment. It cannot be a power for good, it cannot stimulate the mental and moral powers, if it is employed in an improper way. Of itself music is quite unmoral; it has not the same direct moral or immoral force as have words or phrases. At the same time nothing is more suggestive, not so much of thought as of feeling, as is music. Herein lies its power as a force in the moral education of youth, especially at the most susceptible ages. More than half the task of the educator is the education of the feelings. Man is by nature a sensuous animal: he lives by his feelings. It is perfectly true that the difference between man and the beasts is that man employs his reason in his actions. But reason is only the controlling medium of the feelings. Action is life, and inaction the cessation or suspension of life. By the indulgence or restraint of our feelings, each in a greater or less degree, we act; that is, we live.

Music thus has a moral or an immoral tendency which is no less powerful because it is indirect. That which encourages feelings of energy and of nobility has a moral tendency, while that which encourages those of sloth, or the indulgence of the sensual appetites, has an immoral tendency. Some music excites tendencies which at their proper time and in their proper place are entirely good. Such for instance is the feeling of lassitude, which in the schoolroom or workshop is out of place, but in the home may be beneficial to every part of our natures. Therefore when we say that the effectiveness of music as an educational force depends upon the manner of its employment, we imply also the choice of music to be employed and the time for its employment.

The responsibility attending the choice of music to be employed in education is a great one, for the simple reason that the power of music is so great. One reason for this is that the effect of music is always provocative; it is never restrictive. Indirectly it may have a restrictive influence; as in the favourite type of story for sensational melodrama, where the hearing of a hymn or song recalls to the villain's mind the memory of his mother and so restrains his evil intentions. But its direct force on the emotions is to encourage to action

and in this way alone it can be employed with any certainty of result.

The educational force of music is always subtle because music itself is one of those forces that frequently make an impression of which we are not cognizant at the time, and it always makes one greater than that of which we are conscious. The immediate exhilaration of a good march quickly passes, but it leaves in the subconsciousness of the hearer the sensation of regular rhythm which forms a criterion not only of other sounds, but of sights and physical sensations of all kinds. With music of a more emotional but less sensuous type the effect is not merely mental, it is in the strictest sense psychological: it is impressed on that part of us which is so very real, but is yet undefined and unlocateable—on the soul.

Contravening such arguments as these in support of the educational power of music, obvious and well known cases are often quoted. Musicians, it is said, have frequently a low outlook on life, a lack of general culture, and a depraved taste in matters not directly referable to their art. This statement is one that is essentially and entirely true. It is one that is true also of those engaged in every other art, every science and every profession; and it is one that is less true of musicians than of any other class. Other things being equal, the musician in the majority of cases is the best educated and most cultured man of his class, and not infrequently one whose life compares favourably in other respects with those with whom he is most in contact. This state, too, usually arises from the sheer educative force of music itself, and is found among all grades of musicians and in every class of society. Beethoven, to take as an instance the greatest genius in the art, was born in the humblest circumstances and received little schooling in a general way. When his genius had developed, however, he was able to take a place among men of considerable culture and intellectuality, and to meet them on terms very nearly of equality; and this notwithstanding the uncouthness of his manners and his lack of self-control which arose partly from his nature and partly from the rough character of his upbringing.

In a totally different social caste we have the instance of Mendelssohn. All the evidence goes to show that he was every whit as well educated and as highly cultured as the other members of his family and social circle, and he was certainly most versatile in matters of ordinary social and artistic interest. In other words, the development of his musical character did not interfere with his receptivity in matters of general education, while it gave him a wider and fuller appreciation of the tastes and characters of people in stations different from his own. Moreover, the moral characters of these two, Beethoven and Mendelssohn, were unimpeachable.

The same thing happens in our own day and our own country. Among the working classes of England the proportion of those who raise themselves to a higher intellectual status from that of their earliest days is certainly as large among those who cultivate their musical powers as among others, if it is not larger. It often happens that the least cultured person in certain circles is the musician; but the reason is, not that he has failed to take advantage of his education to the same extent as the others, but that he has raised himself, through his music, into a position among those who have had superior educational advantages. So that the "practical" examples of the effect of music on the mind and character support entirely the theory as to the educational value of the art.

MONSIEUR JACQUES DALCROZE, assisted by pupils, will give lecture-demonstrations in Great Britain on the following dates: Wednesday, November 12, 8.15 p.m., in the King's Hall, King Street, Covent Garden, London; Friday, November 14, 3 p.m., in the King's Hall, Armstrong College, Newcastle; Saturday, November 15, 3 p.m., in the Hall of George Heriot's School, Edinburgh; Monday, November 17, 5 p.m., Town Hall, St. Andrew's, Fife, under the auspices of St. Leonard's School; Wednesday, November 19, 3 p.m., in the Assembly Rooms, Great Malvern; Thursday, November 20, 3 p.m., in the New Masonic Hall, Oxford; Saturday, November 22, 3 p.m., at the Goldsmiths' College, New Cross, London; Monday, November 24, 4 p.m., in the Dome, Brighton. General inquiries may be addressed to Mr. P. B. Ingham, the London School of Dalcroze Eurhythmics, 23 Store Street, W.C.

## CURRENT EVENTS.

THE next Evening Meeting for members of the College of Preceptors is fixed for Wednesday, November 19, at 8 p.m. Miss Madeleine O'Connor will lecture on "Irish Life and Song."

AN address will be given to the London Centre of the Teachers' Guild by Mr. W. Poel on "A People's Theatre" in University Hall, Gordon Square, at 9 p.m., on Thursday, November 20.

MR. CYRIL ASQUITH, fourth son of the Prime Minister, has been elected by examination to a Fellowship at Magdalen College, Oxford.

THE head masters, assistant masters, and boys of Farnborough School, in which Prince Arthur was educated before going to Eton have presented him with a book of views.

CANON S. R. JAMES has informed the Council of Malvern College that he intends to resign the Head Mastership of the school at the end of the Lent term, 1914. Canon James's resignation is due to the fact that he considers sixteen years' tenure of such a post to be long enough.

MR. HUGH LATTER, M.A., of Cheltenham College on the military and civil side, has been appointed Head Master of the Collegiate School of Wanganui, New Zealand.

DR. F. ARTHUR SIBLY will lecture to the British Constitutional Association at Caxton Hall, S.W., on Thursday, November 20, at 8.15 p.m., on "Educational Well-being and State Control." Sir Philip Magnus, M.P., will preside over the meeting.

THE Committee of the Investiture of the Prince of Wales have placed at the disposal of the Carnarvonshire Education Committee a sum of £200 for the purpose of encouraging the study of rural and domestic science in the elementary schools of the county. It has been decided to call the fund "The Prince of Wales Prize Fund."

IN furtherance of the scheme for raising University College, Reading, to the status of an independent University, the sum of £200,000 has been given as an endowment fund by Lady Wantage, Mr. G. W. Palmer and Mrs. Palmer, and Mr. Alfred Palmer.

A MEETING of Elementary Teachers at Sunderland, addressed by Prof. Rippmann, passed the following resolution on the subject of simplified spelling: "That this meeting expresses its disapproval of the method employed in schools, causing a needlessly longer time to teach English children to read, as compared with those in Germany and Italy, and retarding their educational progress; and calls upon the Board of Education to institute an inquiry into the subject."

MESSRS. BLACK are shortly adding to their "Beautiful Britain" Series a little volume on Girton College, by the Mistress, Miss E. E. Constance Jones. The book contains an account of the origin, growth, and present working and condition of the first University College for Women which aimed definitely, from the beginning, at University rank.

MESSRS. JACK announce "The French Revolution," from the age of Louis XIV to the coming of Napoleon, by Harold F. B. Wheeler editor of *History*.

THE Cheshire Education Committee have adopted a scheme to enable its University students to complete their course at a foreign or Colonial University. In revising the scholarship scheme for the coming year the committee decided to offer, as usual, nine University scholarships, and inserted the following new clause: "County University or technological scholarships may be held, for the whole or part of the three years for which they are awarded, at approved Universities other than those in the United Kingdom—e.g. in the case of engineering students at McGill University, Montreal."

THE trust settlement of Dr. Gavin Paterson Tennent, of Bath Street, Glasgow, dated July 3, 1913, has been lodged in the Register House, Edinburgh. He bequeaths £25,000 to the governing body of the University of Glasgow, to be applied for such objects or object in connexion with the faculty of medicine as the trustees may determine.

THE Creighton Lecture for 1913-14 will be delivered at the University of London during the second term by Lord Haldane.



THE West Ham Town Council have passed unanimously a resolution protesting that the constantly increasing charge on the rate-payers in respect of elementary education and the decreasing amount of the special grant from the Government might render it impracticable for the Council to continue to fulfil their obligations under the Education Acts.

THE Governors have appointed Mr. Shirley Goodwin, M.A., to the Head Mastership of Emanuel School, Wandsworth, in succession to the Rev. H. B. Ryley, resigned. Mr. Goodwin is Rector of the Glasgow High School.

FOR the appointment of Head Master for the new Secondary School and Technical Institute at Wallsend 117 applications were received, and the Governors have appointed, subject to the confirmation of the Education Committee, Mr. Walter McBretney, Head Master of the Storey Institute, Lancaster.

A NEW volume in the "Home University Library" is entitled "Euripides and his Age," and is written by Prof. Gilbert Murray.

## CORRESPONDENCE.

### CONFERENCE OF TEACHERS OF ENGLISH AT STRATFORD-ON-AVON.

To the Editor of "The Educational Times."

SIR.—A new project in which the co-operation of all who are interested in the teaching of English is needed is being started at Stratford-on-Avon. The Summer Shakespeare Festival is to be held as usual in August, and it is proposed that a conference on the teaching of English literature be arranged in conjunction with it.

The time seems to be ripe for a conference on the subject, so many reforms are being advocated and so many experiments in method are being tried; and surely it would be difficult to find a better centre than Stratford during the Shakespeare Festival.

To see different Shakespearean plays acted each evening for a week is in itself a valuable experience for the teacher of literature; and besides the plays there are always lectures and discussions on a great variety of subjects connected with literature and the drama, history, heraldy, folk-lore, &c., so that the "festival pilgrim" becomes, for a season, a student once again.

Among the many activities which have come of recent years to centre in the festivals there are some which are full of educational promise, and one of the chief aims of the proposed conference is to bring teachers into touch with these enterprises; they include schools of handicraft, Mr. Cecil Sharp's school of folk-song and dance, and performances by children of masques, pageants, and historical plays. It was one of the first aims of the founders of the festival to render some service to students of Shakespeare and English literature, and the present governors of the Memorial would be glad to extend the educational value of the festival in the way suggested.

The proposed conference would last for a week. The first week of August has been selected as probably the most convenient to teachers. During this week every facility would be given to members of the conference to take a full share in the festival, and to hold meetings each morning to consider the educational significance of the various activities. During these meetings papers on the teaching of English would be read, and demonstration classes given by teachers who are working with success on original lines, and these papers and classes would be followed by discussions. It is felt that such a conference in conjunction with the festival could not fail to be very interesting and stimulating, and it is hoped that by this means a real service might be rendered to the Stratford work and to the work of the schools.

The project is now submitted to the consideration of educationists, on whose goodwill its success depends. The committee earnestly hope that those who are interested in the scheme and who would welcome its fulfilment will co-operate with them by helping to make it known and by communicating as early as possible with the Secretary. Should a sufficiently

encouraging response to this tentative notice be received to justify the initiators of the project in proceeding with the work of organization, a meeting will be held in London shortly after Christmas, and circulars giving full particulars will be issued during the Lent term. The Committee would welcome any expression of approval of the project and any suggestion that might help in the work of organization, and would be most grateful for offers of support and co-operation. Further particulars of the project will be sent on application.—I am, Yours very truly,

THE HON. SECRETARY,  
Conference of Teachers of English.  
Shakespeare Memorial Theatre, Stratford-upon-Avon.  
October 15, 1913.

### SIMPLIFIED SPELLING: A STEP FORWARD.

To the Editor of "The Educational Times."

SIR,—Your leaderet on the discussion of Spelling Reform at the British Association is captivating. When a high-class educational journal comes to the conclusion that the best way to advance the cause of Simplified Spelling is to go forward by stages, it gives those who have been advocating a Reformation of English orthography for the last thirty years a little hope that there is a prospect of something being done. This is the course recommended by the Poet Laureate in his booklet on "English Pronunciation." Dr. Bridges avers, we editors and publishers to adopt even the small modifications of dropping the silent *e* in "hav," "giv," "gon," &c., in a very few days the device would commend itself, that no man would ever think of returning to the old fashion of writing useless letters.

As an indication of the progress of the reform movement in America, the Chicago *Evening Post* has adopted the twelve abbreviated forms—"tho," "altho," "thru," "thoro," "thorofare," "demagog," "pedagog," "catalog," "prolog," recommended by the National Educational Association several years ago, and devotes almost a page, weekly, to the discussion of spelling problems. Cannot the *E.T.* follow?—Yours, &c.,

Brook Villa, Hetton-le-Hole. H. DRUMMOND.  
October 10, 1913.

To the Editor of "The Educational Times."

DEAR SIR,—In your note on Spelling Reform, you suggested that your readers might become members of this Society. We welcome them all. They are not comited to a scheme by joining us—our scheme is a basis of discussion—that is all. The cause is greater than a scheme. To all lovers of the language we appeal to help us in bringing about a reform which, the Poet Laureate suggests, will safeguard the purity of that treasure and heritage which is ours in English speech.—Yours faithfully,

SYDNEY WALTON, Secretary.  
Simplified Spelling Societi, 44 Gt. Russell Street, W.C.  
October 3, 1913.

### UNIVERSITY OF LONDON CLUB ORGANIZATION COMMITTEE.

To the Editor of "The Educational Times."

DEAR SIR,—I have seen in your issue of October, 1913, a statement to the effect that premises in Gower Street have been secured for the new University of London Club. This statement is not correct. The question of premises for the proposed club is still under consideration by the club organization committee, and no premises have yet been secured. I shall be obliged if you will publish a correction in the next issue of your magazine.—Yours faithfully,

October 16, 1913. T. L. HUMBERSTONE, Secretary.

### GRAMMATICAL TERMINOLOGY.

To the Editor of "The Educational Times."

DEAR SIR,—As I frequently receive letters of inquiry as to where the Report of the Joint Committee on Grammatical Terminology can be procured, may I be permitted through your columns to say to all who are interested in this movement that the Report may be purchased from the publisher, Mr. John Murray, 50A Abemarle Street, London, W., at the price of 6d.?—Yours faithfully,

E. A. SONNENSCHEIN.  
The University, Edmund Street, Birmingham,  
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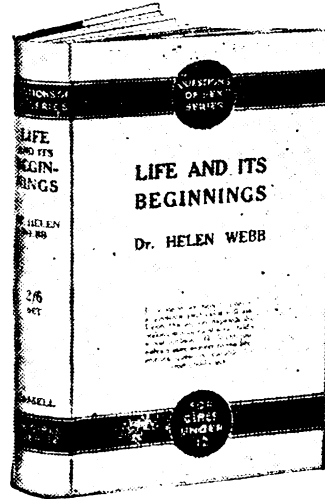
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**THE SIGNIFICANCE OF NUMBER.**By the **Rev. J. O. BEVAN, M.A., F.C.P., F.S.A.***(Continued from page 422.)*

## PART II.

We reach now the second part of our subject. When one comes to consider the literary, mystical, allegorical, or religious meaning attachable to certain numbers we are struck by the sum total, as well as by the variety, of the applications.

## ONE.

The number One naturally occupies the first place. It stands for our own Ego—the "I"—the smallest, yet most important, letter of the alphabet. But it stands for far more than this, seeing that man is God's vicegerent on earth; and (alike in the Jewish and Christian religions) the unit, the One, marks the Supreme, the Creator, the Preserver, the Ruler, of all things and of all men. Jews are monotheists in a special sense. Christians worship as unmistakably the Unity in the Trinity. This primal number distinguishes the unity of Nature, and that unity to its furthest bounds in evolution, development, composition, movement, revolution, and destiny. It indicates One law with reference to man's personality, life, affection, approach to his Maker, faith, subjection to the Saviour, domination by One Spirit, admission into One Ark of Refuge by One Rite—baptism; sustentation by One spiritual meal—the Holy Eucharist.

## Two.

To this number there are multiplied references in the Scriptures. "God made 2 great lights"; "male and female created he them"; "2 of every sort shalt thou bring into the ark"; "2 nations are in thy womb"; "I am become 2 bands"; "2 cherubim above the ark of the covenant"; "2 tables of stone"; 2 Testaments—the Old and the New; 2 witnesses—"The Law and the Prophets"; "2 pence" and the 2 commandments of the Gospel—Christ and the Holy Spirit, or

Death to Sin and Life to God, or Redemption and Blessing; "in the mouth of 2 or 3 witnesses shall every word be established."

Furthermore, the following are significant texts in which *twice* is involved:—"And for that the dream was doubled unto Pharaoh *twice*"; "And with his rod Moses smote the rock *twice*"; "The Lord God of Israel had appeared unto Solomon *twice*"; "For God speaketh once, yea *twice*, yet man perceiveth it not" (Job); "Once have I spoken; but I will not answer: yea *twice*; but I will proceed no further" (Job); "*Twice* have I heard this, that power belongeth unto God" (Psalms); "Yea, though he live a thousand years *twice* told, yet hath he seen no good" (Eccles.); "The Lord gave Job *twice* as much as he had before"; "Before the cock crow *twice*, thou shalt deny me thrice"; "I fast *twice* in the week"; "Trees . . . *twice* dead."

Thus we find that reiteration more than duplicates, even as, in stamping on the ground with the foot, we could hardly stamp once only, even if we tried. So in other ways we have duplication, as pa-pa, ma-ma, ta-ta, bye-bye; and, by sympathetic repetition, shilly-shally (shall I? shall I?), willy-nilly, hoity-toity, heave-ho, skibble-skamble, yea-nay, by hook or by crook, nimini-pimini, pom-pom, beri-beri, &c., &c.

### THREE.

Above all other things, the number Three is bound up in the mind of the Christian with Jehovah, the God of the Three—Abraham, Isaac, and Jacob; with the conception of the Trinity as Creator, Redeemer, Sanctifier, corresponding respectively with the 3 elements of his own nature—body, soul, and spirit. There is Creation, as applied to 3 entities—the earth, the heavens, and the sea; there are also 3 states involved in man's existence and destiny—earth, heaven, hell. Jonah was 3 days in the body of the fish, Christ was 3 days in the tomb. (The Jewish belief was that the soul lingered but for 3 days near the body it had left. Note also the Egyptian idea and practice as to the Ka.)\* There are 3 divisions of the Scriptures—the Old Testament, the Apocrypha, the New Testament; 3 divisions of the Old Testament—the Law, the Prophets, and the Psalms; the *Ter Sanctus* to the Trinity; 3 *tessera-decads* (2×7) in the genealogy of our Lord. Our Saviour said: "The *third* day I shall be perfected."

It is to be observed that this number had assumed a mystic significance long before the Christian era. *E.g.*, Pythagoras (570–500 B.C.) calls 3 the perfect number, expressive of beginning, middle, and end; wherefore he makes it a symbol of *deity*. So with past, present, and future; with childhood, maturity, and old age. In classical mythology, Jove is represented with 3-forked lightning, Neptune with a trident, Pluto with a 3-headed dog.

Many nations and philosophers have evolved a *trinity* of divine persons, *e.g.*—Brahmins: Brahma, Vishnu, Siva (represented as a body with 3 heads). Persians: Oromasdes, Mithras, Arimanes. Egyptians: Eicton, Cneph (the Demiurgus), Phtha; also Osiris, Isis, and Horus. Pythagoras: The Monad, or One; Nous, or Mind; Psyché, or Soul. Plato: τὸ ἀγαθόν, or Goodness; Nous, Eternal Intellect, or Architect of the World; Psyché, the Mundane Soul. Greeks: Phanes, Uranos, Kronos. Romans: Jupiter, or Divine Power; Minerva, or Divine Logos; Juno, Amor ac Delicium (aut Deliciae) Jovis, *i.e.* the Energizing Spirit. Scandinavians: Odin, who gave the breath of life; Haenir, who gave sense and motion; Lodur, who gave blood, colour, speech, sight, and hearing. American Indian: Otkon, Messou, and Atahuata.

Our Lord's 3 appellations—the Son of Man, the Christ, the Son of God—may refer to the 3 stages regenerated man passes through—*viz.*, Man in the Flesh, Man Redeemed, Man Blessed. There were said by the ancients to be 3 spirits in our animal bodies, resident respectively in the brain, the heart, and the liver. The Fates are 3, the Furies 3, the Graces 3, the Muses 3 times 3; Hecate was feigned to be endowed with 3-fold power. There were 30 Tyrants appointed by Sparta over Athens at the termination of the Peloponnesian War. The Service Hours of the Christians' Church were in 3's—Tierce, Sext, Nones, &c.; Daniel prayed 3 times a day; there are 3 Orders of the Christian Ministry. The "beg ler-beg" (or "Prince of Princes" among the Turks) had a standard

\* *Vide* the author's work entitled "Egypt and the Egyptians."

borne before him with 3 horse-tails. In Heraldry, the number 3 occurs *usque ad nauseam*.\* There were 3 tongues of flame (= the Holy Spirit) in the French *Oriflamme*.

There are various public-house signs involving the number 3—*viz.*, the Three Kings (the Three Wise Men), the Three Tuns, the Three Black Crows.

Strong beer is distinguished as XXX, indicating that it is thrice as strong as that which pays only an X shilling duty.

Certain common sayings are: "If a thing be said 3 times, it must be true"; "he is 3 sheets in the wind"—*i.e.* drunk. If quite free the sheet, or rope, of a sail would be "in the wind." If the 3 sails were thus simultaneously loosened, the ship would stagger like a drunken man.

Note the proclamation of the bell-man, or town-crier: "Oyez! Oyez! Oyez!" In truth, most calls or summonses or proclamations are *thrice* repeated.

It is said that crows can count up to 3, and no more; but why investigations on the subject should have been confined to crows deponent sayeth not.

### FOUR.

The Tetragrammaton is the name given to the 4 letters which compose the name of the deity among the Jews—*viz.* JHVH. The precise meaning—as, indeed, the pronunciation—of this word, is undetermined. Probably it includes complete existence—self-being, self-creating, self-determining. In like manner, Pythagoras called deity a Tetrad, or Tetractys, referring to the four sacred letters, the same idea being also symbolized by 4-square creation.

It is significant that a host of words relating to Deity are transliterated tetragrams:—Greek, Zeus; Latin, Deus; Persian, Soru; Assyrian, Adad; Arabian, Alla; Egyptian, Amon, θω̄θ; German, Gott; Spanish, Dios; French, Dieu; Danish, Godh; Swedish, Goth; English, Lord, King; Welsh, Celi.

There are 4 Evangelists. Rev. xxi, 16: The Holy City of God lieth 4-square, its length, breadth, and height being mystically equal, and perfect in all its *three* dimensions. In the Parable of the Sower our Lord divides all mankind into 4 classes. In the case of Peter's vision the sheet is let down, knit at its four corners, containing 4 kinds of beasts, amongst them 4-footed beasts. Herein, the 4 is the Creation's symbol intensified.

The ring finger is the 4th, the thumb and other fingers being touched with the ring by the officiating minister as he repeats the words: "In the name of the Father, the Son, and the Holy Ghost." He concludes with the word *Amen* as he reaches the 4th finger, on which he then places the ring—the symbol of finality and eternity—to signify the woman being made over to the man, who "is the image and glory of God."

There are 4 suits of playing cards, and 4 honours in each suit. *Four* is much involved in the folding of paper: hence we have 4to, 8vo, 16mo, 32mo, &c., &c. There are 4 spirits—essences—in alchemy, *viz.* quicksilver, orpiment, sal-ammoniac, and brimstone.

### FIVE.

The number 5 is a semi-complete number owing to its significance in relation to parts of our body—5 fingers, 5 toes, 5 senses. In the scriptures, 5 alone, or in combination, occurs nearly three hundred times. We have the Pentateuch, 5 loaves, 5 wise and 5 foolish virgins, 5 talents. It occurs amongst others in the following passages in the New Testament:—"Elisabeth hid herself 5 months"; "Are not 5 sparrows sold for two farthings?"; "There shall be 5 in one house divided"; "I have bought 5 yoke of oxen"; "I have 5 brethren"; "Thy pound hath gained 5 pounds"; "Be thou also over 5 cities"; "Thou hast had 5 husbands"; "Bethesda, having 5 porches"; "Which hath 5 barley loaves"; "Many of them which heard the word believed: and the number of the men was about 5,000"; "Came unto them to Troas in 5 days"; "After 5 days Ananias the high priest descended with the elders"; "I had rather speak 5 words with my under-

\* In England the Heralds' College consists of 3 Kings-at-Arms, 2×3 heralds, and 2×2 pursuivants. In Scotland the Heraldic College consists of the Lyon King-at-Arms, 2×3 heralds, and 5 pursuivants. In Ireland it consists of the Ulster King-at-Arms, 2 heralds, and 2 pursuivants.

standing"; "They should be tormented 5 months"; "Their power was to hurt men 5 months"; "5 kings are fallen"; "Of the Jews 5 times received I forty stripes save one."

The opening of the 5th seal in the Apocalypse reveals the souls of those that were slain for the *Word of God* (represented by 5, the Pentateuchal number).

The following are Greek words in which the number 5—*pen*te—is introduced: Pentacle, pentagram, pentagon, pentapolis, pentateuch, pentecost, pentachord, pentadactyl, pentagynous, pentahedron, pentamerous, pentandrous, pentapetalous, pentapody, pentastich, pentatomic, pentatonic, pentad, pentameter, pentane.

Five years represents a wooden wedding anniversary, 5 × 5 a silver, 5 × 5 × 2 a golden, 5 × 3 × 2<sup>2</sup> a diamond.

In our history we have the *Fifth* Monarchy men, a sect of fanatics in the days of Cromwell, who maintained that Jesus Christ was about to come a second time to the earth and establish the fifth universal monarchy, their four preceding monarchies being the Assyrian, Persian, Macedonian, and Roman.

## SIX.

The following are some Scripture references:—"In 6 days the Lord made heaven and earth" (closed by the *seventh* day to constitute the perfect period). "In the 6th month the angel Gabriel was sent." "After 6 days Jesus taketh Peter, James, and John." "There were set there 6 water-pots of stone." "Jesus came 6 days before the Passover." "The four beasts had each of them 6 wings." "He went out about the 6th hour." "From the 6th hour there was darkness." "Peter went . . . to pray about the 6th hour." The opening of the 6th seal marks the outpouring of the wrath of God against all flesh (represented by the number 6 = the fullness of the Creation day).

The "Hexapla" is a book containing the text of the Bible in Hebrew and Greek, with 4 translations—viz. the Septuagint, with those of Aquila, Theodotion, and Symmachus. The whole is printed in 6 columns on the page. It was compiled by Origen (185–253), who also added notes.

## SEVEN.

Seven is the complete number, inasmuch as it is the sum of the numbers 3+4, appropriated to Deity and Creation. There are more than six hundred references in the Scriptures to 7, 70, 77, 7,000; there are 7 days in Creation and rest, 7 days in the week (a quarter lunation), 7 × 52 days in the year; 7 spirits before the throne of God; 7 is largely involved in the deluge story; Jacob served Laban for thrice 7 years; 7 divisions in the Lord's Prayer; 7 ages in the life of man; the just fall 7 times (Prov. xxiv, 16); there are 7 phases of the moon; every 7th year was sabbatical: 7 × 7 years constituted a jubilee\*; 7 times 70 years constituted the grand jubilee. The three great Jewish feasts lasted 7 days apiece. Between the first and second (= Pentecost) of these feasts was an interval of 7 weeks. Levitical purifications lasted 7 days. The Deacons numbered 7. In the Apocalypse are introduced 7 churches of Asia and their 7 angels, 7 candlesticks, 7 stars, 7 angels of doom, 7 trumpets, 7 spirits, 7 horns, the Lamb with 7 eyes; 70 Israelites go down into Egypt; the exile lasts 70 years; there were 70 peripatetic teachers chosen by Christ as, in Moses' day, there were 70 elders. In his dream Pharaoh saw 7 kine and 7 ears of corn. According to the Psalmist, 10 × 7 years is the ordinary limit of human life.

There are said to be 7 bodies in alchemy, corresponding to the 7 planets; there were 7 champions of Christendom; there are noted the 7 years' war (1756–1763); the 7 days' war (1866); 7 openings to the head, 7 gifts of the Holy Ghost, 7 heavens; we have the 7 joys and 7 sorrows of the Virgin; the 7 wise men of Greece; the 7 wise masters of Rome; the 7 senses, compounded of the properties which are under the influence of the planets—viz. animation, feeling, speech, taste, sight, hearing, and smelling; the 7 sisters, or culverins (mentioned in "Marmion"); the 7 Sleepers; the 7 ancient and 7 modern wonders of the world; and 7 pre-natal months is the earliest period recognized for the formation of a human personality.

\* The jubilee is really 7 × 7 (a week of weeks) of years, the extra day being only due to counting each end. Thus the French week is *huit jours*, the fortnight *quinze jours*.

The 7th son of a 7th son is supposed to be always a very remarkable individual.

The Septuagint was translated by 70 scribes. Jesus commands us to forgive our brother until 70 times 7; \* He spake 7 times from the cross. Daniel says (xii, 7) that "the prophecy shall be for a time, times, and an half," i.e. 3½, the half of 7. So we speak of "days and days" and "years and years," when we mean an indefinite number. Throughout his prophecies Daniel brings out several mystical numbers. Another instance in which a fraction occurs is in Revelation viii, 1: "And when the angel had opened the 7th seal, there was silence in heaven about the space of half an hour"—i.e. the time taken by the Temple sacrifice and, mystically, the beginning of Eternal Rest.

In German history there were 7 electors; in English records we have the Heptarchy. A noted centre in London was The *Seven* Dials; a column, railed in, formerly stood at the ancient limits of St. Giles's parish, 7 dials being affixed to it, facing the 7 streets which radiated from the column as a centre.

To be at *sixes* and *sevens* represents a state of confusion, the phrase arising from the fact that 7 is a *limiting* number.

## EIGHT.

Concerning the next number, we find it recorded that 8 souls were saved in the Ark; that the 8th day after birth was appointed for the administration of the rite of circumcision.

## NINE.

Nine, five, and three are mystical numbers—the *diapason*, *diapente*, and *diatriton* of the Greeks; 9 consists of a trinity of trinities. As before remarked, according to the Pythagorean numbers, Man is a full chord, or eight notes on the scale, deity coming next. Three, being the trinity, represents a perfect unity; twice three is a perfect dual; and thrice three is the perfect plural. This explains the use of 9 as a mystical number; also, as an exhaustive plural, and consequently in this sense no definite number, but a simple representative of plural perfection.

Mention is made of 9 cities of Troy. Deucalion's Ark was tossed about for 9 days. There are 9 earths—Hela being goddess of the 9th. Milton speaks of "9-enfolded spheres." There are 9 worlds in Niflheim, 9 fays of Armorica, 9 heavens. Normally, 9 pre-natal months are appointed for each child of man. Macaulay makes Porsenna swear by the 9 gods. There are 9 Muses; 9 orders of angels; 9 heads of the hydra; 9 virgin priestesses of the ancient Gallic oracle; 9 serpents of Southern Indian worship; 9 worthies; 9 worthies of London; 9 diamond jousts of King Arthur; 9 rivers of Hell; 9 gates of Hell, with 9 folds, 9 plates, 9 linings. For 9 days fell the angels cast out of Heaven; 9 days was Vulcan in falling; 9 crowns are there in heraldry and ecclesiology; 9 days were required for the weaving of the spell Abracadabra.

There follow various references involving this number:—"Dressed up to the nines" = to perfection, *nine* being the number of the Muses in ancient mythology. "As nimble (or nice) as ninepence" (silver ninepences were common until the year 1696 when all unmilled coin was called in). Three strokes on the passing bell indicate the death of a child, 6 of a woman, 9 of a man. Hence: "9 tailors—i.e. tellers, tollers—make a man." "A cat has 9 lives"—hence, perhaps, "a cat o' nine tails." "A 9 days' wonder." "Possession is 9 points of the law"—i.e. several points, or every advantage a person could possibly have short of actual right.

Leases used to be granted for 999 years—i.e. the triad of a trinity of trinities. (It was supposed that 1,000 years would constitute a freehold.) Even now they sometimes run for 99 years, the dual of a trinity of trinities. Further, short leases usually run by *sevens*, from the ancient notion of what was termed *climacteric* years, in which life was supposed to be in special peril. As has been said, 7 × 3 × 3 years was accounted the *grand* climacteric.

At the Lemuria, held by the Romans on the 9th, 11th, and 13th of May, haunted persons threw black beans over their heads, pronouncing 9 times the words: "Avant, ye spectres, from this house!"

\* *Seven* removes the limit of relationship, or family tie, amongst the Jews, and, as kinship could stretch no further, 7 thus became the figure of extreme forbearance. Hence Peter's question: "How oft shall my brother sin against me, and I forgive him? Till 7 times?"

To see 9 magpies together is most unlucky. The following is a well known Scotch rhyme in reference to this:—

One's sorrow, two's mirth;  
Three's a wedding, four's a birth;  
Five's a christening, six a death;  
Seven's heaven, eight is hell;  
And nine's the devil his ain sel.

Odin's ring dropped eight other rings every 9th night. In the ordeal by fire 9 hot ploughshares were laid lengthwise at unequal distances. It is feigned that, if a maid find 9 green peas in a pod and lay them on the lintel of the kitchen door, the first man who then enters will be her cavalier. The people of the Faroë Isles say that the seal casts off its skin every 9th month, and assumes a human form to sport about the land. The river Styx encompassed the infernal regions in 9 circles. We drink a toast with three cheers, or three-times-three to those most highly honoured. "Thrice to thine, and thrice to mine, and thrice again to make up 9." So spake the witches in "Macbeth," according to the accepted black-magical formula. In some districts 9 knots are made on black wool (the wresting-thread) as a charm for a sprained ankle. Niobe's children lay 9 days in their blood before they were buried. Official rank in China is marked by 9 buttons of different values. The 9 of Diamonds is called "the curse of Scotland," concerning which fact there are various explanations.

The followers of Jaina, a heterodox sect among the Hindus, believe that all objects are classed under 9 categories. In Luke xv we have the *one* sheep lost set against the *ninety and nine* preserved, and the *one* piece of money set against the *nine*. The earliest religious texts prove that Egyptian theologians distinguished 9 elements in the economy of man—viz., the material corruptible Body, the Ka or Double, the Shadow, the Soul, the Heart, the Vital Power, the Spirit, the Name, the Spiritual Body.

#### TEN.

The number 10 (Gothic *Tai-hun* = two hands) has manifold significance. With its immediate compounds, it occurs about 250 times in the Scriptures. If we also take 100's and 1000's the number is considerably enlarged. 10 is the basis of our numeration and arithmetical systems. It is said that every 10th wave is the biggest. We have the 10 plagues; the 10 Commandments—although they are not so designated as to number in the Scriptures; the 10 virgins; the 10 pieces of silver; the 10 talents; the 10 pounds. Also, in combination, we have the 10×7 years of the Captivity; the 10×7 elders; the 10×7 preachers of the Gospel; the 10×7 of the Septuagint; the 5×10th year of the Jubilee; the 10×10 Years' War; the 3×10 Years' War.

*Ten* signifies *totality*. Hence a tithe of the Israelites' substance was to be given back, as a recognition that *all things* came from God. The 10 lepers indicate that *all men* are sinners; the 10 talents and 10 pounds point to *completeness of the trust*.

The number 4×10 occurs in relation to the Deluge; to the wilderness sojourn; to the history of Moses, Samuel, David, Solomon, Elijah, Jehoash; to the temptation of our Saviour; to His post-resurrection life on earth.

The number of stripes awarded to the malefactor under the Mosaic Laws was not to exceed 4×10. To be on the safe side, the Jews stopped short at 40 save 1. That is also the number of the Articles of Religion of the Anglican Church.

"A *tenpenny* nail." Penny is here used in the sense of pound, 1,000 of these nails weighing 10 pounds; or, perhaps, such a nail as would cost 10 pence a 100.

#### ELEVEN.

*Eleven*, being an awkward prime, does not much lend itself to special use, but we note that the number of letters in the Hebrew Alphabet is 2×11. That is interesting in relation to the fact that several Psalms are alphabetical—i.e. the first letter of the lines or stanzas constituting the alphabet in order. (The poems in the Old Testament which are directly alphabetical are the following:—Psalms ix, x, xxv, xxxiv, xxxvii, cxii, cxix, cxlv; Prov. xxxi, 10–31; Lam. i, ii, iii, iv.

#### TWELVE.

*Twelve* is a significant number—hence 6, the half of 12, is significant, being also the double of 3. The Greeks and Romans

used to play with three dice. Thus the highest throw was three sixes and the lowest three aces. The aces were left blank, the three aces being called *three dice*. Hence the phrase, "Either six-thrice or three dice," i.e. "Everything or nothing"—in other words, "Aut Caesar aut nullus." Historically, we have the 6 articles (33 Henry VIII), the expulsion of the 6 members by Charles I; the parliamentary motion, "I move that the Bill be read again this day six months"—i.e. when the House would no longer be sitting; the phrase, the declaration of identity, "six of one, and half-a-dozen of the other." This number, alone or in composition, occurs about 225 times in the Scriptures.

Theologically, 6 is one short of the perfect number 7. Thus we have the 6 days of Creation, to be completed only by the day of rest—the final Sabbath; the triple 6—666—the mark of the Beast in the Revelation, equivalent to the perpetual coming short of perfection by man in his 3-fold nature under the 3 dispensations of God. (It is only fair to say that this number has been applied to divers persons assumed to fill the rôle of Antichrist—viz., Mohammed, The Pope, Julian the Apostate, Trajan, Diocletian, Luther, Evanthas, Titan, Lampetis, Niketes, Napoleon I: also to certain phrases supposed to be descriptive of the Man of Sin, as—in the original—"I renounce," "Bad guide," "Our holy father, the pope," Lateinos—and many others.)

This number—the multiple of 3 and 4—comes before us in various forms. The months are 12, the Signs of the Zodiac are 12. There is the duodecimal method of notation. *Twelfth* Day, or the Epiphany, is 12 days after Christmas. The latter festival was transferred from January 6 to December 25 by Pope Julius I (337–352). The 12 tables constituted the earliest Code of Roman Law, compiled by the Decemviri and cut on 12 bronze tables. An English archer carried 12 arrows in his quiver, whilst a Jewish archer was provided with but 4. "Happy is the man that hath his quiver full of them"—but only up to the limit mentioned above!

It has been said that the whole force of English law has been concentrated in the effort to bring together 12 men into a jury box. It is somewhat amusing to reflect that this number was determined by the purely accidental circumstance that a certain Hebrew patriarch had 12 sons born to him nearly four thousand years ago. How many other important allocations have been determined by this fact? We have thus the 12 sons of Jacob, the 12 tribes, the 12 Apostles, and the 24 Elders of the Revelation, the latter combining 12 representatives respectively of the Old and New Dispensations.

The number occurs in the following quotations from Scripture:—"When He was 12 years old"—the legal age for admission to the floor of the synagogue. "They took up of the fragments . . . 12 baskets."\* "She had an issue of blood 12 years." "He had one only daughter, about 12 years of age." "Upon her head a crown of 12 stars." We are given in the Apocalypse 12 gates, 12 angels, 12 tribes, 12 foundations, 12,000 paces, 12 pearls, 12 manner of fruits. So, when the number of the elect is to be made up, it is represented that 12,000 are sealed from every tribe. Thus, 144,000 is the mystical and symbolical completed number of the redeemed, just as (Revelation v, 11) a mystical and indefinite number is spoken of in so many other parts of Scripture—viz. "ten thousand times ten thousand, and thousands of thousands."

Here we must stop, though a long disquisition might be written about the superstitious and meanings attached to 13 and other well marked numbers. It is acknowledged that the examples brought forward in this paper to illustrate the subject must appear, in many cases, heterogeneous and unrelated. This, however, is due partly to the nature of the investigation. Even so it frequently happens, in cases of this kind, that a related explanation comes up smiling, and the inquirer finds, all unexpectedly, that he has turned up a trump card. Witness the results of investigations of explorers—like Prof. Piazzini Smith and others—in regard to the Pyramids, Stonehenge, &c., and the correspondences thus revealed.

\* In Matt. xiv we have noted 5,000 men, 5 loaves, 2 fishes, 12 baskets; in Matt. xv, 4,000 men, 7 loaves, a few fishes, 7 baskets. Mystical meanings may be attached to these several numbers, but we will pass them over.



**PRIVATE SCHOOLS INQUIRY.**

THIS form, which we print below, has been sent out to all private schools known to the College of Preceptors. Any school that has not received a copy should write for one to the Secretary of the College.

*(All information supplied on this form will be treated as strictly confidential and will be used for statistical purposes only.)*

1. Name and Address of School .....
2. Name of the Local Education Authority }  
in whose area the School is situated }
3. Number of pupils in the School on September 30, 1913:—

	Boarders.	Day Pupils.	Totals.
Boys .....			
Girls .....			
Totals ...			

4. Ages of pupils in the School on September 30, 1913:—

	Under 8.	8 and under 9.	9 and under 10.	10 and under 11.	11 and under 12.	12 and under 13.	13 and under 14.
Boys .....							
Girls .....							
Totals...							

	14 and under 15.	15 and under 16.	16 and under 17.	17 and under 18.	18 and under 19.	19 and over.	Totals.

It is suggested that the above table could easily be filled in by a show of hands.

5. Fees charged per annum for Day Pupils and Boarders respectively:—

	Fees for Day Pupils (tuition fees only).	Fees for Boarders (exclusive of extras).
Maximum .....		
Minimum .....		

6. Number (approximately) of pupils who during the last three years have left the School:—

- (a) to go to other schools .....
- (b) to proceed to Universities or other places }  
of higher education, such as Hospitals, }  
Technical Institutions, &c. }
- (c) to go into professional or business life .....

7. Number of pupils who have left your School:—

In the year—	Under the age of 12.	Over 12 and under 15.	Over 15 and under 16.	Over 16.
1912-13 ...				
1911-12 ...				
1910-11 ...				
Totals ...				

8. Number and academic qualifications of the teaching staff:—

	Full-time Teachers.	Visiting Teachers.
Holding Teaching Diplomas or Certificates.....		
Holding a University Degree ...		
Passed University Intermediate Examination .....		
Totals .....		

Holding other qualifications, which should be named.

9. Indicate by means of the sign X any of the following activities for which arrangements exist in connexion with your School, adding others if necessary:—

Cricket ...	Gymnasium ...	Debating Society..
Football ...	Swimming .....	Natural Hist. Soc.
Hockey ...	Rifle Shooting.	School Garden ...
Tennis .....	Cadet Corps ...	Workshop .....

Principal's Signature .....

Date .....

**SUPPLEMENTARY INFORMATION.**

You are invited to state what difficulties you have experienced in the development of your School owing to recent legislation or to the action of the Board of Education or the Local Education Authority.

Any information you may care to give on the above points will be of value, but no details will be communicated to any other body except with your express permission.

*It is requested that a copy of the School prospectus may be sent with this form.*

**THE COLLEGE OF PRECEPTORS.**

**MEETING OF THE COUNCIL.**

A MEETING of the Council was held at the College, Bloomsbury Square, W.C., on September 27. Present: the Rev. Dr. Scott, Vice-President, in the chair; Prof. John Adams, Dr. Armitage Smith, Mr. Bain, Mr. Barlet, Mr. Brown, Mr. Eagles, Mrs. Felkin, Rev. R. Lee, Mr. Longsdon, Mr. Maxwell, Mr. Ritchie, Mr. Rushbrooke, Mr. Starbuck, Mr. Thornton, and Mr. Vincent.

The Secretary reported that the Summer Examination of Teachers for the Diplomas of Licentiate and Associate of the College had been held on September 1 to 6 in London and at ten provincial and fourteen Colonial and Indian centres, and that the total number of candidates examined was 231.

He reported that the Professional Preliminary Examination had been held on September 9, 10, and 11, in London and at ten provincial centres, and that the total number of candidates examined was 276.

The Diploma of Associate was granted to Miss Lydia Maria Bunker, Miss Catherine Keane, Mr. Walter Line, and Mr. George Arnold West.

The Council accepted with sincere regret the resignation of Mr. Barrow Rule, who for upwards of fifty years had been a member of their body.

A letter was read from Mr. John Bayley stating that he was engaged in making representations to Cabinet Ministers and other Members of Parliament on behalf of efficient private schools.

The Council requested the Dean, Mrs. Felkin, Mr. Longsdon, and the Secretary to make the necessary arrangements.

for meetings of the College in connexion with the Conference of Educational Associations in January 1914.

On the recommendation of the Finance Committee it was resolved that the Library Committee be authorized to incur the expense incidental to the issue with *The Educational Times* of a quarterly list of books added to the College Library after the completion of the new library catalogue, and that a contribution of £10 be paid to the Federal Council for the current year.

On the recommendation of the House Committee, it was resolved (a) that every life member and subscribing member of the College be entitled to attend the new series of winter meetings and to bring one friend without charge; (b) that members be allowed to obtain further tickets for their friends on payment of 1s. for a single meeting, or 2s. 6d. for the whole series; (c) that holders of the Diplomas of the College receiving certain privileges under Section II, clause 5, of the By-laws be admitted on the same terms as the friends of members; (d) that the thanks of the Council be given to the College solicitor (Mr. H. W. Rydon) for his able and zealous conduct of the negotiations in connexion with the Post Office (London) Railway Bill.

A report of the By-laws Committee, recommending certain amendments in the College By-laws, was adopted, and it was resolved that the amendments be submitted to the members of the College at the next General Meeting.

The following persons were elected members of the College:—

Mr. W. E. Braun, The Grammar School, Ealing, W.  
Miss C. A. Chandler, Oxford House, Woodbridge, Suffolk.  
Mr. C. Reddie, B.Sc. Edin., Ph.D. Göttingen, Abbotsholme, near Rochester, Derbyshire.

The following books had been presented to the Library since the last meeting of the Council:—

By the AUTHOR.—Ellis's The Diocese of Jamaica.  
By Miss TOPPIS.—Report of the Commissioner of Education for the United States of America, 1890-91 and 1891-92.  
By A. & C. BLACK.—Black's Sentinel Readers, Book III; Ancien and Magee's Recits et Compositions (Après l'Image); Boardman's Scott's Guy Mannering; Glover's Tales from Morris's Earthly Paradise, Book I; Keatinge and Frazer's Documents of British History, 1815-1930, and Introduction to World History; Nightingale's Visual Geography, Book II.  
By BLACKIE & SON.—Britain and Her Neighbours, Books III and IV; Rambles among our Industries (Paper and Printing, The Seaman and his Craft, Wool and the Weaver); Bedford's De Pressense's Brunette et Blondinette; Goldschild's Delavigne's Louis XI; Horne's Age of Machinery; Milton's Principles of Educational Handwork; Norman and Robert-Dumas' Arène's Contes de Paris et de Provence, and Six Contes de Coppée; Oswald's Riehl's Die Vierzehn Nothelfer; Owen's Brief History of Greece, and Brief History of Rome; Warner and Marten's Groundwork of British History, Sections I-III.  
By HACHETTE & Co.—Berthon's Du Camp's La Dette de Jeu; Ceppi's Contes Faciles; Duhamel's Easy French Poems.  
By MACMILLAN & Co.—Frazer's Victor et Victorie; Hall's Examples in Algebra; Jones's Junior Course in Arithmetic; Latham's Dramatic Scenes in Easy French.  
By METHUEN & Co.—The Romance of Nature, and Some Secrets of Nature.  
By MILLS & BOON.—Baron's Daudet's La Belle Nivernaise; Deakin's New School Geometry, Part II; Jones's Shakespeare's Tempest.  
By the OXFORD UNIVERSITY PRESS.—Appleton and Jones's Puer Romanus; Bowley's General Course of Pure Mathematics; Brockbank's School History of the East Riding of Yorkshire; Hallows's De Ségur's Innocent an College; Lowe's Tales of Great Generals; MacMunn's The Upper Thames Country, and the Severn-Avon Plain; Marvin's The Living Past; Morris's Eliot's The Mill on the Floss; Mortlock's Key to Robeson's Precis Writing; Romilly's Lytton's The Last of the Barons; Treble's English Prose Passages for Repetition; Wheeler's Tompkinson's End, &c.  
By RIVINGTONS.—Borchardt's Junior Practical Arithmetic Examples.  
By the UNIVERSITY TUTORIAL PRESS.—London Matriculation Directory, June 1913 and September 1913; Chaytor and Truelove's Preliminary French Course; Crucknell's School Algebra; Dunville's Child Mind; Goggin and Allen's Shakespeare's Much Ado About Nothing; Hodgkinson's Preliminary Geography; James's Erckmann-Chatrian's Le Blois; Parry's Certificate Hygiene; Richards's Virgil, Aeneid, II; Richards and Walker's Gospel of St. Luke (Preliminary Edition); Shoosmith's Spelling and Punctuation; Walker and Richard's Gospel of St. Luke; Walmisley's Preliminary English Course; Weekes and Allen's Shakespeare's Tempest; Wyatt and Low's Intermediate Textbook of English Literature.  
Calendar of the Birkbeck College.  
Calendar of the Glasgow University.  
Calendar of the London School of Economics.  
Calendar of the National University of Ireland.  
Calendar of the St. Andrews University.  
Calendar of the University of Bristol.  
Calendar of the Royal College of Surgeons of England.  
Calendar of the University College, London.  
Calendar of the Victoria University of Manchester.  
Calendar of the University of Leeds.  
Calendar of the Edinburgh University.  
Calendar of the Armstrong College, Newcastle-on-Tyne.

A meeting of the Council and the Half-yearly General Meeting of the members of the College were held at the College on October 25. Reports of the proceedings will appear in the next number of *The Educational Times*.

## A STANDARD SPEECH OF ENGLISH.

By WALTER RIPPIMANN.

MR. PEPYS in his Diary tells of a certain gentleman who was "dead of eating cowcubbers," and John Walker in his Dictionary, which was regarded as authoritative a century ago, sadly remarks about "cucumber" that "it seems too firmly fixed in the sound of 'cowcumber' to be altered." Walker regrets the pronunciation of "gold" as "gould," but despairs of its ever yielding to the pronunciation he favoured—the usual one now. The poet Rogers in his old age said plaintively, "The now fashionable pronunciation of several words is to me at least offensive. 'Contemperate' is bad enough, but 'bálcony' makes me sick."

Such quotations might be multiplied almost indefinitely. They suffice to show how dangerous it is to prophesy about pronunciation and how likely it is that what "makes" one generation "sick" will be accepted as correct by the next. Such a warning is needed, for there are many who seem convinced that their way of speaking is the only right way and who are quick to designate divergencies as "affected" or "slipshod." When they are asked their reason for thinking any particular pronunciation right they will answer, "Every educated person pronounces the word in this way," implying that if you pronounce differently you must be uneducated. Now no two persons pronounce exactly alike, and therefore the man who believes that no other way of pronouncing words than his can be correct implies that he is the only educated man.

This idea of infallibility is not very old. In the sixteenth century there was doubtless a good deal more variety in "polite speech" than now—though not so much as the spelling of that age suggests. There were no pronouncing dictionaries in those days. Dr. Johnson, in 1755, only indicated which syllable was stressed. James Buchanan, in 1757, was (as he maintained) "the first who endeavoured to make the proper pronunciation of our language of easy acquisition to foreigners, and to introduce an uniform one for the sake of the natives; amongst whom it is still so notoriously vague and unstable." A little later appeared his "essay towards establishing a standard for an elegant and uniform pronunciation of the English language," with a list of 27,000 words in double columns, spelled as written and as pronounced.

But the Scotchman Buchanan was severely criticized; the chief review of the time maintained that he did not appear to understand "how English is pronounced by polite and just speakers." Nor did the Irishman Sheridan escape adverse comments when his dictionary appeared (1780). John Walker was a Londoner, with a great reputation as actor and later as lecturer on elocution, and with some confidence in his own infallibility. His dictionary was issued in 1791 and widely sold; but we have only to look at Smart's revision of it in 1836 to see that the glamour had worn out. And so dictionary follows dictionary, each professing to give the correct pronunciation; some recent ones, however, show greater caution, and supply the anxious seeker with two or even three pronunciations of the same word.

What are we to do in such a case? Are we to say "eether" or "iether"? to give "launch" the sound of *aw* or of *ah*? to make the vowel of "off" long or short? to utter the *t* of "often" and the first *d* of "Wednesday"? to pronounce the *l* in "falcon" and in "golf"? to distinguish between "which" and "witch"? to stress "laboratory" on the first or on the second syllable? It would be easy to add many more alternative pronunciations.

In every case men will argue keenly on both sides. Their arguments are often curious enough, especially when they draw upon their knowledge of Latin and Greek. The word "decorous" has shifted its stress many times in the dictionaries, some preferring what may fairly be called the English stress, others remembering the Latin accentuation. There has been bitter contention about the pronunciation of "illustrate." Usage troubles little about derivation in such matters; we say "démonstrate" but "remónstrate," "sójourn" but "adjóurn." "July" once had the first syllable stressed; we have quietly changed that, in defiance of the Latin original.

Again, are we to agree with certain Scotchmen in pro-

nouncing "leisure" so as to rhyme with "seizure," or in stressing "inquiry" on the first syllable? Are we to articulate the *r* in "arm," "bird," &c.? Are we to follow certain Americans in adopting "dooty," "introdoost," &c.?

It is no solution of the difficulty to say "pronounce as you please," any more than we can get over the difficulties of our chaotic spelling by saying "spell as you please." In both respects we are at a great disadvantage as compared with some other nations. Before we can definitely establish a spelling that is a guide to the pronunciation instead of a will-o'-the-wisp that lures into the bog of speech blunders, we must determine what is the best form of English speech.

What has been said about divergencies should not be allowed to conceal the fact that there is substantial agreement on most points. When we attend the performance of serious drama we expect a certain form of speech. It is true there are variations in minor details; but on the whole the pronunciation is fairly well established. To attain uniformity would be a distinct gain; we should then be spared the mannerisms of certain actors and actresses which often interfere with our enjoyment. The need was felt in Germany some years ago, and as the result of a conference a standard was established. Supported by a good spelling, it is sure to have important effects.

It is by no means only for the drama that we require a standard. In our schools we cannot teach dialect, and no one consciously does so; otherwise we ought simply to abstain from correcting pronunciation altogether. We feel that for the proper appreciation of our literature our boys and girls should learn to read aloud and to recite in a speech free from dialect features. We have to teach our fellow subjects whose mother tongue is not English; again we must teach by means of a speech that is better than any one dialect. The foreigner too may well ask us what we consider the best English, so that he may learn it.

In the absence of a standard, the existing differences are bound to become accentuated. Our spelling is useless as a check to changes in the development of English speech, and change is by no means inevitable or desirable. There may be no harm in a dialect changing, and it will doubtless continue to change; but if we once decide what is the best form of English, and set it before our teachers as the ideal, and train them so that they are keenly interested in the sounds of the living language and learn to discriminate them, then, in these days of compulsory education, change will be much retarded, and may indeed be arrested. Then we shall enable every child to possess, in addition to its local dialect, a form of English speech that is clear and musical. That a rational spelling will go hand-in-hand with it cannot be doubted for a moment.

It is not maintained that this "best form of speech" will be identical with any existing form of speech. Like standard German, it will probably be a compromise. As a Londoner I am fond of the educated speech of Londoners; but I can well believe that in a standard speech it might be advisable to reinstate the *wh* which is no longer a natural element of London speech, and even to reintroduce the *r* which has in so many cases disappeared. We do not round our lips to any great extent; it is quite likely that more lip-rounding would be recommended as productive of finer vowel sounds.

To establish a standard of English speech is a difficult task, but it is not impossible. Much can be learnt from the usage of the best public speakers, drawn from the stage as well as from the pulpit, from the law courts as well as from Parliament. Let our phoneticians continue to record this, as they have been doing for some time; their work will supply a sound basis for the deliberations of a representative Conference on Standard Speech.

THE London County Council, in continuation of its practice of former years, has arranged a comprehensive series of classes and lectures for teachers for the session commencing this month. Full particulars are announced in the official Handbook of Classes for Teachers. The lectures are free, upon payment of a nominal registration fee, to all teachers actually engaged in teaching in the County of London, irrespective of the institutions in which they are employed.

## THE GIRL GUIDES.

(From a Correspondent in the *Manchester Guardian*.)

THE Girl Guide movement is not, as some people think, a kind of outbreak of militarism, nor is it a feminine imitation of the Boy Scout movement. It is true that some girls, after the Scouts came into existence, seeing how nice and interesting scouting was, took it up too and tried to enrol themselves as Scouts (about six thousand did so), but there has always been a difference in the training and a certain difference in the aim of the two movements. And now that the Girl Guides are a regular recognized body, with their own handbook and rules and so on, the difference is more marked.

The aim of the movement is to teach girls to be useful and self-reliant, and to be healthy, happy, and good citizens. It is, I am sure, though of course unconsciously to itself, a part of the worldwide movement which is making women of all nations and all classes, whether they be suffragists or anti-suffragists, see that they must become citizens, useful working citizens, instead of remaining merely drudges or uninteresting ornaments.

It is true that the indispensable work of the world—i.e. the domestic work—has always been done by women, and therefore women have always been useful citizens, yet they have not been taught that when they work, wash and sew and nurse, they have been doing the world's work, but they have been praised for doing the work required by their own particular homes. If they had been made to realize that to make shirts is quite as much world's work as to make steam engines, the work would have been more interesting to them and would have been better done, and women would have understood the meaning of citizenship as they do not yet.

Now the Guide movement aims at making every girl feel that she is, as much as a boy is, a citizen, a really important bit of this big world. She is taught to cook, to wash, to sew, to render first aid, to garden, to make a fire both indoors and out of doors and light it with only two matches, to signal, to understand something about plants and flowers and trees, to swim, to be a really intelligent nurse, to do bits of carpentering, and many other things. But she is taught that she must learn these things because the world needs intelligent women citizens and that no one has a right to be stupid and ignorant if they can possibly avoid being so. Consequently the pride and joy with which the girls undertake their tasks is perfectly delightful to see.

The moral side of the training is most excellent. Not to be a snob is insisted on, and the word "snob" is clearly defined. For our nation this is a very necessary thing to learn.

Comradeship, without which we can have no true citizenship, is the underlying motive of it all—comradeship with all other Guides, regardless of rank or caste, and with all fellow-creatures, both human and animal. Comradeship has not been generally taught to working-class girls. On the contrary, the competitive industrial system makes wage-earners into enemies; each fights to undersell the other. Trade unionism amongst women would not have been so backward if the Guide movement, with its ideal of comradeship as the basis of citizenship, had begun long ago. This teaching of comradeship has in many cases brought a new happiness into the lives of girls too poor and therefore too busy to make friendships. Saturday afternoon walks together and camping together in Bank Holiday week produce, too, a better kind of friendship than can be made whilst strolling up and down the streets at night.

The Guide law, which every Guide must learn by heart, sets a very high moral standard before each girl, which she must do her best to live up to. She must be truthful, honourable, and reliable, and she must also have good manners, for courtesy in small things as well as in great is insisted on, especially good street manners.

In England and Scotland nearly seven thousand Guides are enrolled. There are Guides in Holland, France, Germany, and Russia, and several other countries are beginning the movement. In Canada, South Africa, New Zealand (where the girls are called Peace Scouts), India, and China the work is going on. Everywhere, in all classes, the "monstrous regiment of women" is stirring, learning the great lesson of citizenship, which they will teach to their sons and daughters—or, in other words, women are learning at last to be human beings.

## REVIEWS.

*Pedagogical Anthropology.* By Maria Montessori. Translated by Frederic T. Cooper. (14s. net. Heinemann.)

Dr. Montessori was not only the first woman to receive the degree of M.D. from the University of Rome, but she has also achieved the rare distinction of having given her name to a system of education. As Erasmus stands for the educational tendencies of the Renaissance at the Universities, as Pestalozzi represents the birth of the idea that the child must be studied as well as the subject to be taught, as Froebel is associated in our minds with the kindergarten—so Montessori suggests the modern training of the child before it leaves the nursery, and of those who, as defectives, may be classed with these. But, besides her work in the Casa del Bambini, which commenced in 1906, Dr. Montessori holds a post as lecturer on anthropology, and, as such, gives lectures to students of medicine and natural science in the University of Rome. She has now published a four years' course of these lectures under a somewhat misleading and unwieldy title.

The book is much more than a textbook of anthropology for teachers or a guide to biometrics in the schoolroom. The lectures were, the preface states, preserved by one of the students, Signor Franchescetti, and they suffer, as most lectures do, from publication in book form without a rigorous editing and recasting at the hands of the author. The lecturer's method is clearly laid down: "I shall repeat myself three times in these lectures—first, by setting forth the scientific content; secondly, by expounding the methods of investigation; and, thirdly, by applying in practice what I have already taught in theory." This is, no doubt, an excellent method of fixing in the minds of students the principles of an applied science, but it is doubtful whether a person occupied in teaching may not feel that a book of five hundred pages might be more useful if it dealt only with general principles, or was content to be a manual of the art of anthropology as applied to children.

It is not that the subject-matter is not interesting, but, to take an example, the principles of Mendelism and the laws of heredity of dominant characteristics are hardly to be taught in fifteen pages, nor can the racial peculiarities of the Chinese be summed up in a few lines; and though the chapter on "Certain Principles of General Biology" occupies 140 pages, it can hardly be considered to teach these principles to the non-scientific reader, and its compression leads to the inclusion of statements which the advanced student will hesitate to accept. The desire of scientific educationists for a handbook of this nature is, however, a very real one. It will enable them to make observations on the physical condition of their scholars comparable to those made by others elsewhere. The life of many teachers is a very isolated one, and it is hard to feel how much of a man's hardly acquired knowledge perishes with him for want of a channel of communication by which his few facts may be added to the total knowledge of the world. There are, in addition, a number of fields of observation which are neglected alike by the psychologist, the teacher, and the physician, and in practice the adjustment of education to slight defects, such as errors of accommodation, deafness of slight degree, abnormal slowness of comprehension, stammering, and twitchings, has only to be experienced to find out how little is known about it except by the specialists.

Dr. Montessori, after an introduction, which shows how much she has been influenced by Lombroso and her experience of degenerates, and the chapter on biological general principles, goes on to describe the external characteristics of men, normal and abnormal, under the headings of Craniology, the Thorax, Pelvis, Limbs, Skin, &c., then adds a technical part in which methods of record are dealt with both as measurements and as statistics, and ends with a chapter on biographical history as it is, or may be, recorded for each child in a school.

The book contains much both interesting and suggestive. Too few, perhaps, realize when making records of height and weight how much more important is the index of stature. The "essential stature" is the height of the sitting trunk from the level of the seat to the top of the head, and the "index of stature" expresses the percentage relation of this to the whole

height. It is possible to distinguish three principal divisions: the brachyscelous, short-legged and long-bodied, whose index is above 53; the mesatiscelous or normal, between 53 and 52; and the macroscelous, below 52, who are comparatively short-bodied and long-legged. The changes in the index of stature which occur during growth are very suggestive of the lines along which the child will develop, not only physically, but in morals and temperament. We have not yet reached the stage, foreshadowed by Prof. Spearman, when children's abilities can be measured to several places of decimals, but at least we may hope to get less haphazard in our choice of their careers.

The use of technical methods and terms may constitute a danger through its tendency to make the scientific educator, who thinks in terms of classes, incomprehensible to the parent, who thinks in units, but it is a comfort to find that even in the squalor of Rome it is possible to say that "the most salient symptoms in regard to the child-intelligence, conduct, character, endurance, &c., are for the most part expressed with great clearness by the mothers." It will be seen how useful the study of this book may be to a teacher, and we can only regret that it is not in a rather more accessible and assimilable form.

*Everyday Problems in Teaching.* By M. V. O'Shea. (4s. 6d. net. Longmans.)

Prof. O'Shea has given us here a book that is admittedly unsystematic. The matters dealt with are of a severely practical character. Beginning with the fundamental problems of discipline, the author proceeds to "Fairplay in the Schoolroom." Two valuable chapters then treat of the problem of getting pupils to think, and two other chapters show how to get them to execute. The arts of Communication get a chapter to themselves. Then follows a general treatment of the "Tendencies of Novices in Teaching," and a chapter on "The Education of Girls" completes the book.

We are told that the volume owes its origin to the notes taken on the spot by the author in his supervision of his students while doing actual teaching work in schools. There could be no better basis for a book intended to be of practical use to its readers. The lack of system is more than compensated by the directness and convincingness of the illustrations given. Sometimes these accounts of what actually took place in the classroom lack somewhat of the dramatic. The reader cannot but feel that Prof. O'Shea could have improved them greatly on the artistic side. But it is this very lack of artistic effect that wins the reader's confidence. We are made to feel that we are dealing with genuine bits of school experience, and we allow ourselves to be influenced accordingly. No practical teacher can fail to benefit by reading these annotated extracts from the note-book of an expert teacher who has not only the philosophy of his subject at his finger-ends, but has a long period of actual teaching experience to balance his theories. It is true that all teachers will not agree with him in everything. His views on the distribution of the teacher's time, for example, are not likely to meet with the cordial approval of those who have a wholesome liking for reasonably long holidays. For the author has gone determinedly on his way to his one goal, the best interests of the child, whatever may happen to the teachers. But if his contention here is right—and he certainly has made out a very strong case—means will, no doubt, be found to secure the highest good of the pupils without jeopardizing the interests of the teachers. Occasionally the English reader will have a difficulty in translating American conditions into their English equivalents. He will wonder, for example, what is meant by "the sixth age" on page 260.

A valuable feature of the book is to be found in the valuable Exercises and Problems that are set in connexion with each of the chapters. This commendable feature is becoming common in American books of this class, and some of our own English writers are following the excellent example. In the present volume the exercises are particularly good. They extend to nearly fifty pages of smallish print, so that the author is able to state his problems fully and clearly without the restraint that lack of space so often imposes, greatly to the detriment of the usefulness of the problems. Mr. O'Shea has evidently learnt the same lesson as those who have to set problems in practical teaching at the various examinations for teaching diplomas. Anyone who has watched these papers

for the past few years must have noticed how much longer they have become through the need to state accurately the conditions of each problem. One of Mr. O'Shea's problems, for example, covers no fewer than six pages; and his use of this space is quite justifiable. Another excellent feature is the addition of twenty-six pages of References for further reading on the subjects discussed. There is a satisfactory index to the book.

*Variations in the Grades of High School Pupils.* By Clarence Truman Gray. (1 dol. 25. Baltimore: Warwick & York.)

Mr. Gray's little book (120 pages) forms No. 8 of the "Educational Psychology Monographs," edited by Guy Montrose Whipple. It consists of a statistical study of the variations of the teachers' estimates of the progress of pupils in High Schools. In America "grade" appears to be the technical name for the mark given to a pupil's work. At end of terms or sessions this mark determines whether the pupil is to be promoted or not. The lack of uniformity in this marking is so striking that Mr. Gray set out to make an investigation first to determine the amount of the variation, and then to discover what makes such variation possible. The book is in fact another of the many indications that show the groping of the profession after that objective standard that Prof. Adams so much desires.

The study is based upon material acquired in eight high schools in Indiana and two of the public schools in Chicago. The schools differ widely in all respects, so that they may be accepted as representative. The thesis is worked out by the aid of a large number of graphs, and the general result is a depressing sense of insecurity in accepting teachers' estimates of the progress of their pupils. The table found on page 109 gives the results of a not unfamiliar experiment in which the same set of examination papers are marked by a number of different teachers each unacquainted with the estimates of his fellows. The wide discrepancy in estimating values cannot be attributed to the nature of the subject, for one of the papers was in Mathematics, where one would think the element of opinion might be almost eliminated. Some explanation of the variation in grading must be found, and our author tells us that "the only plausible explanation is that teachers' marks are essentially unreliable." In view of this flattening conclusion it may not be amiss to add that the word "teachers" must in this connexion be held to include all manner of examiners, inspectors, and others who set and mark examination papers. One important and somewhat unexpected result of Mr. Gray's investigations is that "some of the causes usually given for variations, such as home conditions, deportment, application, social tendencies, &c., play very little part in the variations." The general effect produced on the mind by the perusal of this book is an impression of unsettledness and a longing for certainty. The investigation is practically only begun by Mr. Gray, but it is well begun. Mr. Gray by this service has deserved well of his profession.

*An Introduction to the Mathematical Theory of Attraction.* Vol. II. By Francis A. Tarleton, Sc.D., LL.D. (6s. Longmans.)

After a long period of enforced silence on the subject, Dr. Tarleton has now given to students of the Theory of Attraction the completion of a work of which the earlier volume appeared as long ago as the year 1899. The primary purpose for which the treatise as a whole has been written is excellent, namely, to enable the student without undue difficulty to get into touch with the rapid present-day progress of scientific investigation for the full comprehension of which a knowledge of the Theory of Attraction is advantageous. Such knowledge is directly useful in connexion with the sciences of Electricity and Magnetism. It is seen to be indirectly of the highest value when account is taken of the broad parallelism that exists from a mathematical standpoint between the problems with which the Theories of Attraction, of Fluid Motion, and of Stress and Strain in Elastic Solids are respectively concerned. The chapters of the new volume are devoted to discussing, first of all, Spherical and Ellipsoidal Harmonics. A treatment of subjects connected with the properties of Magnetized Bodies next occupies the attention of the reader, and this in turn is followed by a consideration of Electric Currents and Dielectrics. In the original scheme the author contemplated a

chapter on Conjugate Functions, but he has abandoned it in favour of an account of Maxwell's Theory of Light, and we owe the change to the writer's belief that the latter is more suitable and equally interesting; it is, moreover, a useful introduction to a study of the latest researches in connexion with the electromagnetic theory of light.

*Phonetic Spelling.* By Sir Harry Johnston, G.C.M.G., K.C.B. (3s. 6d. net. Cambridge University Press.)

There is no more fascinating diversion than alphabet-making, and it is not easy to decide whether in the interests of linguistic progress fresh proposals are to be welcomed or discouraged. On the one hand, it is desirable that reformers should concentrate their efforts in favour of some widely adopted scheme, such as that of the International Phonetic Association; on the other hand, it is equally desirable that until rational spelling comes definitely into the sphere of practical politics there should be a wide liberty of suggestion and criticism. The matter and tone of Sir Harry Johnston's little volume entitle him to a hearing no less than his qualifications as a philologist and as a traveller who has studied diverse living languages in many lands. His book is a plea for an alphabet that will be fitted for the transcription not only of the chief European tongues but of every known form of speech throughout the world. The author is impatient of all half-way houses, such as the scheme of the Simplified Spelling Society, and he is not wholly satisfied with any of the purely phonetic alphabets that have hitherto been devised. The alphabet which he himself puts forward is not beyond criticism, but his innovations seem to follow the right lines, and his defence of them is certainly plausible. He is wise in paying much heed to facility in cursive writing and in avoiding the use of diacritics, but it seems strange that in going so far in this direction he should not have gone the whole way and proposed new symbols for all the sounds not yet recognized in this way. It is interesting to note that he anticipates as a result of the general adoption of some such alphabet that English would become the universal language in preference to any purely artificial tongue such as Esperanto. This book deserves the attention of all linguistic students.

*Maps and Survey.* By Arthur R. Hinks, M.A., F.R.S. (6s. net. Cambridge University Press.)

A work which will be of the very greatest value to many teachers of practical geography, and also, incidentally, to candidates for the University of Cambridge Geography Diploma. The book is sharply divided into two sections, and possibly Mr. Hinks may consider the suggestion here put forward that the first sixty pages be issued separately for use with his recently published "Map Projections." Chapters I and II deal with Maps and Map Analysis, and the subjects are handled in a masterly manner, though the author's slightly hypercritical scrutiny may foster a feeling of dissatisfaction with regard to the present level of development of world cartography. This may be Mr. Hinks's intention. The remaining chapters deal with Route Traversing, Simple Land Survey, Compass and Plane Table Sketching, Topographical Survey, Geodetic Survey and Survey Instruments. It is impossible to replace field work by mere reading, but these chapters should enable the student to eliminate most of those errors due to an imperfect conception of the limitations of any particular instrument. In reading the manual we are reminded constantly that it is a practical man who has compiled it, and who has incorporated with it many of the "tricks of the trade" which are indispensable for efficiency. The plates are excellent, comprising half-tone illustrations from photographs of actual standard instruments and coloured maps which are masterpieces of reproduction. We strongly advise teachers to get the book, which meets a long-felt want in this direction.

## GENERAL NOTICES.

### EDUCATION.

*The Tragedy of Education.* By Edmond Holmes. (2s. 6d. net. Constable.)

This overgrown lecture makes an undersized book. It is well under twenty thousand words, and runs to exactly a hundred pages. It

falls into three parts: "The Poison of Dogmatism," "The Malady," and "The Remedy." Mr. Holmes adds little here to what he has already given us, and we might be inclined to wonder why he published this book at all were it not that we appreciate the power of repetition. Mr. Holmes has the advantage of being a personality that interests the public. He is, therefore, able to get people to read what might be passed by if it appeared under a less well known name. All who have an interest in what is best in education will be grateful to Mr. Holmes for his powerful help in directing public attention to the things that matter.

*Differentialism: a New Method of Class Self-Teaching.* By Norman MacMunn. (2d.; in cloth, 1s. Shakespeare Press.)

"This pamphlet was dashed off in considerably less than a day," its author ingenuously informs us, but it does not need the implied apology. It expounds the plan adopted by an assistant master to combine individual with class teaching. We welcome what Mr. MacMunn has given us, and we look to him for more.

*The Way to the Heart of the Pupil.* By Hermann Weimer. (2s. 6d. net. Macmillan.)

This is an American translation of a German book that appears to have had rather a vogue in the Fatherland. Its appearance in its present form is significant, as it implies that the publishers believe that there is room for such a book among English readers. The leading idea in the book is the power of love, but the author is emphatic in his protests that he is no sentimentalist, and no favourer of a soft pedagogy. The view he takes of love is quite different from what one would naturally expect in a book with this title. He does not share Hamann's view that "the real teacher is blindly in love with the children, and loves them without knowing why." According to Dr. Weimer, the true teacher loves his pupils rationally—loves them for their good; does not spare them for the sake of a momentary gratification, but keeps their ultimate advantage ever before him as goal. The book strikes us as likely to be of more service in Germany than in England, where most of Dr. Weimer's views are accepted—in theory at any rate. His chapter on "Uniformity and Individuality," however, deals with a problem that is at present vital in English theory, and, since it is treated from the point of view of a practical teacher, it should prove a valuable counter-irritant to some recent English publications.

*John Smith of Harrow.* By E. D. Rendall and G. H. Rendall. (3s. 6d. net. Smith, Elder.)

This is a pious work in memory of a distinguished teacher who was for twenty-five years assistant master at Harrow. The impression he made on his pupils was strikingly manifest at one of the triennial Harrow dinners, by the spontaneous and enthusiastic applause that met the somewhat casual mention of his name. This memoir is said to be "a response to the spirit of that applause." The tone of the book is excellent, and the technical execution all that could be desired. To old Harrovians it will prove very attractive, and even to those who have never had any connexion with Harrow it is not without charm.

*Steps Towards Educational Reform.* By C. W. Bailey. (1s. net. Cambridge University Press.)

Inspired by the promise in the King's Speech this year of a Bill for a National System of Education, the author of this little book of 109 pages has given the public the benefit of his somewhat varied experience of educational work and educational administration. The fact that the Bill has been postponed in no way diminishes the value of Mr. Bailey's contribution. He makes a powerful plea for co-ordination, and emphasizes the need for a sense of vocation on the part of teachers. As a professional man, it is only natural that he should resent bureaucratic control of the actual processes of teaching, and hostile critics of his book will find some difficulty in getting under his guard in his attacks on the purely office spirit that is having such a damping effect upon the ordinary intelligent practical teacher. His chapter on "A Better Scheme of Examinations" deserves the attention of all who have the real interests of the pupils at heart. There is nothing impracticable in the suggestions offered at the end of the chapter to the Board of Education and other responsible bodies. Indeed, the great value of the book is the reasonableness of the suggestions. Teachers will all wish a wide circulation to this little volume.

#### CLASSICS.

*The Peace of Aristophanes.* The Greek Text revised, with a Translation into corresponding metres, Introduction, and Commentary. By B. B. Rogers. (10s. 6d. G. Bell.)

This book is a sample of the sumptuous edition of the comedies of Aristophanes which Mr. Rogers is bringing out. He has revised the text, and gives us an interesting introduction and copious notes, and on the opposite page from the text an English verse translation, which reads well and naturally. The whole edition, which is to be completed in six volumes, will indeed be worthy of Aristophanes.

*Theocritus, Bion, and Moschus,* translated into English Verse by A. S. Way, D.Litt. (5s. net. Cambridge University Press.)

One can no longer complain that the classical writers are accessible only to the few: for here we have another translation of the Greek bucolic poets, following closely on that of the Loeb Library. Mr. Way does not give us the Greek text, but simply a verse translation of Theocritus, Bion, and Moschus, and, though his anapaestic hexameters are a little inclined to drag, we always welcome translations from his scholarly pen.

*Tibullus: The Elegies.* By Kirby Flower Smith. (American Book Company.)

As stated in the preface, "this edition contains the first detailed commentary in English upon the entire text of Tibullus, Sulpicia, and the anonymous elegies of the fourth book"; "the Introduction is the result of a thorough revision in the interests of brevity and simplicity." The text has been revised, and the notes are copious and well supplied with parallelisms from other classical authors. There is also an interesting section composed of *testimonia antiqua* concerning Tibullus and his poetry. Mr. Smith's is a scholarly work, which may be confidently recommended.

*The Rhesus of Euripides.* Translated into English Rhyming Verse by Gilbert Murray. (Cloth, 2s. net; paper, 1s. net. Allen.)

It is always a pleasure to have another play of Euripides translated by Gilbert Murray, and we welcome this addition to the number, for his previous high standard is well maintained. Prof. Murray has not been deterred by the fact that the authenticity of the play is disputed, but has taken it on its merits "as a stirring and adventurous piece, . . . always full of movement and life, and possessing at least one or two scenes of great and penetrating beauty." The book contains a few explanatory notes in addition to the Introduction.

*Sermo Latinus.* Key to Selected Passages. New Edition, enlarged. By J. P. Postgate, Litt.D. (6s. net. Macmillan.)

Classical teachers will welcome this new edition of Dr. Postgate's admirable collection of Latin proses. In the preface it is stated that "each fair copy is printed on a separate page for the convenience of those teachers who have not time to dictate it to their pupils"; but surely teachers ought to make time for dictation: a fair copy loses half its value if not dictated and commented on. It is also interesting to note that "those who use this book are kindly asked to adopt the Reformed Pronunciation of Latin."

*A Greek Vocabulary.* For the use of Schools. By T. Nicklin, M.A. (2s. 6d. net. Cambridge University Press.)

Mr. Nicklin is certainly to be admired for the labour he must have expended in compiling this vocabulary of the words most commonly used in the best Greek authors, but it is doubtful whether it was worth while. If the vocabulary is meant to be learnt by heart in doses, prior to embarking on the translation, the method is a bad one; if it is to be used concurrently with the translation, then one cannot help thinking that the pupils would be better with a small lexicon or a good vocabulary bound up with the text.

*Tales of Great Generals.* Selections from Cornelius Nepos. Edited, with Notes, Vocabulary, and English Exercises, by W. D. Lowe, Litt.D., M.A. (1s. 6d. Clarendon Press.)

Mr. Lowe has given us another of his useful little books of easy pieces of translation from Latin authors, which ought to be welcome to junior form masters, as the selections are just such as to interest boys and quite simple. There are ample notes and a vocabulary of proper names as well as the ordinary vocabulary.

"The Poetry and Life Series."—*Horace and his Poetry.* By J. B. Chapman, M.A. (10d. Harrap.)

The dominant idea in this series—that a true appreciation of a poet's work cannot be attained without a knowledge of the poet's life and surroundings—seems essentially sound, and in this little book Mr. Chapman has made Horace's life and poetry explain each other in a most interesting way. His biographical account of Horace's life is illustrated by carefully selected pieces from his writings, and the book should be a great help to the study of Horace.

#### MATHEMATICS.

*Examples in Easy Practical Mathematics.* Books I and II. By E. Sankey. (6d. each net. Edward Arnold.)

Many teachers will welcome this useful and attractive publication, which provides a large and varied collection of exercises in the subjects of a preliminary technical course, and at the same time leaves the individual teacher free to follow his own methods of instruction. A small number of notes, and the necessary tables for reference, are included in the little volumes. The answers to the exercises are issued separately.

*The Modern Geometry of the Triangle.* Second edition. By William Gullatly, M.A. (2s. 6d. net. Francis Hodgson.)

From the demand for a second edition of the above-named little work, it may reasonably be inferred that appreciation has rewarded the author's endeavour to present in compact form the results of



recent researches in the subject. The new issue is not simply a reprint of the previous edition. The earlier form of the publication has undergone both rearrangement and revision. The original text has, moreover, been considerably enlarged, and now, for the first time, the writer has provided a table of contents, with a brief synopsis of the material dealt with in each chapter, and an index. Both the fresh features add greatly to the utility of the volume.

#### FRENCH.

*Œcits et Compositions après l'Image.* Illustré de 14 Planches en Couleurs. By M. Anceau et E. Magee. (6d. Black.)

This little book will be a useful addition to the tools of the modern language teacher according to the Direct Method. Some will object to the bilingual vocabulary at the end of the book, others will agree with the authors that they enable the pupils to prepare the exercises without help. The publishers are fortunate in the possession of illustrations which they can reissue for school purposes at so moderate a price. The details of some are hardly clear enough for school purposes, and compare unfavourably with others we have seen selected for geography teaching.

(1) *Cours de Français d'après les Textes.* By M. Anceau et E. Magee. Pp. 123. (1s. 6d. Blackie.) (2) *La Grammaire en Histoires.* By R. Guerra and C. Chicoteau. (Pp. 137. 2s. Dent.)

These two books are examples of the new development in the application of the Direct Method in what may be called the second stage. They are both concerned with grammar; the pieces are chosen (Blackie) or written (Dent) to illustrate certain grammatical points, and are mostly excellent. Some of the points, e.g. the plurals of nouns, should not require special exercises, if the work has been done properly in the first stage. Both books contain some simple illustrations which the teacher will find helpful. In neither is the grammar quite satisfactory nor quite "reformed." In Blackie's volume we find our old friends "régals," "carnavals," &c., and in Dent's "pronoms disjonctifs." Neither brings the grammatical forms into relation with the pronunciation.

(1) *Little French Plays.* (Pp. 68. 1s. Macmillan.) (2) *Dramatic Scenes in Easy French.* (Pp. 87. 1s. Macmillan.)

These two volumes by Mrs. A. G. Latham are very attractive. Some may regret that the first volume contains so much editorial apparatus: it is issued in "Siepmann's Primary French Series." The second volume is based on Part I of "Siepmann's Primary French Course," with reproductions of Mr. Brock's illustrations, "which speak with so admirable a French accent." The little plays contain much the same vocabulary, and illustrate the same grammatical points. They are all ingenious and lively.

*Les Aventures de Maître Renard.* By Marc Ceppi. (Pp. 88, Text 74, and Vocabulary. 1s. Arnold.)

It is a good text for the second year. The tenses used have been carefully limited. It is really simple and the illustrations add to the reader's gaiety.

*Les Premiers Français.* By E. Alec Woolf. (Pp. 88. 2s. Dent.)

This is the first volume of a history of France for, we may say, young pupils. The history is correct. The author has not the light touch required to make the book first-class. The New Method exercises are sound and the illustrations good.

(1) *Manuel Pratique de Prononciation et de Lecture Françaises.* By L. Bascan. (Pp. 228. 2s. 6d. Dent.) (2) *Lectures-Dictées de Phonétique Française.* By L. Bascan. (Pp. 63. 1s. Dent.)

The author states that the first of these volumes is intended for pupils especially. He probably over-estimates the English pupils' appetite for phonetics. But everyone will find valuable comparisons of sounds often confused, valuable hints for pronunciation, and plenty of exercises. The second volume contains valuable exercises and warnings. The phrases are sometimes too tricky for common use.

(1) *De la Terre à la Lune.* By Jules Verne. (Pp. 207.) *Cinq Semaines en Ballon.* By Jules Verne. (Pp. 209.) Both edited by Eugène Pellissier for "Siepmann's French Series." Elementary Section. (2s. each. Macmillan.) With Word- and Phrase-books, 6d. each; and Key to Appendixes, 2s. 6d. net each.

(2) *Les Contrebandiers.* By Gustave Aimard. Edited and adapted by E. M. Fielding. (Pp. 46.) *Le Riquissiminaire.* By Balzac. Edited by C. W. Bell. (Pp. 48.) Two volumes in "Blackie's Little French Classics," (4d. each.) (3) *Louis XI et Charles le Téméraire (Extraits).* By Jules Michelet. Edited by S. A. Richards. (Pp. 55.) *Histoire d'un Conscrit (Episode du Tirage).* By Erckmann-Chatrian. Edited by P. W. Rawes. (Pp. 47.) *La Cour des Miracles ("Notre Dame").* By Victor Hugo. Edited by H. M. O'Grady. (Pp. 45.) *Le Château de Ghismondo.* By Nodier. Edited by P. W. Rawes. (Pp. 36.) *Légendes Normandes.* By M. Louis Bascan. Edited by A. H. Leigh. (Pp. 48.) All volumes in "Dent's Short French Readers," (4d. each.) (4) *Histoires Merveilleuses.* By Grimm. Edited by F. B. Kirkman. (Pp. 32. 4d.) An example of

"Black's Simplified French Readers." (5) *Lettres de Mon Moulin.* By Alphonse Daudet. (Rivingtons. 1s. 6d.) An example of "Massard's Series of French Readers," Junior Series. (6) *L'Histoire des deux Frères du Barbier, etc.* By Galland. Adapted and edited by F. W. M. Draper. (Pp. 96.) (7) *Innocent au Collège.* By Mme de Ségur. Adapted and edited by R. W. Hallows. (Pp. 95. 1s. Clarendon Press.) Examples of "The Oxford Junior French Series." With or without vocabularies.

The above are recent additions to well established series. Some volumes contain new and attractive material.

#### ENGLISH.

*Plays.* By Boys of the Battersea Polytechnic Secondary School. (1s. net. Simpkin, Marshall.)

From an educational point of view it is undoubtedly an excellent thing, as Mr. Arnold Smith points out in his "foreword" to this little volume, that the boys and girls in secondary schools should be encouraged to fashion plays for themselves on historical subjects which they have been studying, and to help in enacting them for their own gratification and that of their friends. It is very doubtful, however, whether any good purpose is served in bringing these immature efforts before a wider audience by means of publication. If the plays were presented in their original form, they would supply documentary evidence of what could be done; but when they have been revised by the Master who superintended the task, as in the present case, this value is absent. The play on Lady Jane Grey reaches a very respectable level, but has no exceptional merit. The curtain-raiser on the death of Queen Anne, which was written entirely by one of the boys, is rather pointless.

*Shakespeare's Hamlet: a New Commentary.* By W. F. Trench, M.A. (6s. net. Smith, Elder.)

The riddle of "Hamlet" is a perennially attractive theme for critics, and, in spite of all that has been written about it, one opens a volume that promises a new solution with no little interest. It must be frankly said that in the present case the reader is likely to be disappointed. Mr. Trench really offers us nothing but a rather meticulous and sometimes rudimentary running commentary on the play, act by act and scene by scene, which leads us only to a somewhat "lame and impotent conclusion." The upshot of it all would seem to be that the complexity of Hamlet's character and the subtlety of Shakespeare's portrayal of him defy all analysis, and that every student of the play must be left to read his own interpretation into it.

#### ENGLISH LITERATURE.

"The Poetry and Life Series."--(1) *Tennyson and his Poetry.* By R. Brimley Johnson. (2) *Byron and his Poetry.* By William Dick, M.A. (3) *Longfellow and his Poetry.* By Oliphant Smeaton, M.A., F.S.A. (10d. each. Harrap.)

This series follows the excellent plan of introducing the student of literature to the works of the great poets in association with the life and character of each. The poems and extracts of poems which are supplied in illustration are hung on a thread of biographical narrative and are used as the texts for whatever criticism it is held advisable to suggest. The series would seem to be addressed mainly to the upper forms of secondary schools and to private students, who are likely to find the various volumes thoroughly interesting as well as useful. The three specimens named above have been very carefully prepared; the general plan has been well carried out and the illustrative material judiciously chosen. It is a praiseworthy feature of all three volumes that they are not over-loaded with criticism, the writers contenting themselves with suggestions which the readers may follow out for themselves. Mr. Brimley Johnson offers a thoroughly sane estimate of Tennyson's place in the history of English poetry, and Mr. William Dick steers successfully through the difficulties that beset every writer on Byron. If Mr. Oliphant Smeaton's contribution has a less lively interest, this must be set down to the comparative poverty of his subject. The work of Longfellow that possesses permanent interest of a high order is small in amount, and it was not easy to fill the requisite space without descending to lower levels. The mistake has not been made, however, of magnifying the poet unduly. Mr. Smeaton makes the interesting suggestion that the greater fastidiousness of expression, shown by Longfellow in his later work, was due to the discipline he had undergone in translating Dante.

*The Vision of Piers the Plowman.* Translated into Modern Prose, with an Introduction, by Kate M. Warren. (2s. 6d. Edward Arnold.)

The reissue of this modern version of the famous fourteenth-century poem, which has been generally attributed to William Langland, will be welcomed by all students of Early English literature, and especially by those who have difficulty in reading Middle English. Miss Warren's prose rendering, which is avowedly based on the language of the Authorised Version of the Bible, conveys the spirit of the original with excellent effect, and she has wisely retained as much

of the alliteration as fell naturally into her scheme. The introduction, which is new, throws a vivid light on the conditions that gave birth to the poem, and an interesting appendix traces the course of the recent controversy as to the unity of authorship.

*Ralph Roister Doister.* With Introduction and Notes by C. G. Child. (1s. 6d. Harrap.)

The care with which Prof. Child has edited the earliest regular English comedy is fully justified by its historical interest and importance, though it must be owned that for modern readers the intrinsic value of the play is not great. Indeed, it seems less remarkable for the advance it showed on previous dramatic efforts in this country than for its crudeness in contrast with the productions of the Elizabethan dramatists which appeared only a generation or so later. Students of literature will read with much profit the illuminating introduction, which outlines the whole course of the early development of English drama. The notes and glossary offer valuable help to the reader.

*Outlines of Victorian Literature.* By Hugh Walker, LL.D., and Mrs. Hugh Walker. (Cambridge University Press.)

This volume, which is a simplified abridgment of a more extended work, would seem to have been intended largely for youthful students, but it cannot be recommended as a textbook for schools. It follows too closely the discredited plan of supplying young learners with the titles and dates of publication of many books which they have not read and may never read, and of furnishing them with cut-and-dried criticism of works which they should read first and be led to criticize for themselves. From their preface the authors would seem to be not wholly unmindful of the advantage of emphasizing the biographical element in a history of literature, but the promise they make in this direction is somewhat scantily fulfilled. The estimates of the numerous authors named seem to be sound on the whole, though in some cases they are inadequate and undiscriminating.

*Literary Selections from Newman.* With Introduction and Notes by A Sister of Notre Dame. (1s. 6d. Longmans.)

Though the claim made by the compiler of this volume for Cardinal Newman as a powerful and permanent force in English thought and literature may seem to many to be rather exaggerated, a useful purpose has certainly been served by presenting a volume of selections from his writings. Apart from the interest of his somewhat unique position in his own generation, Newman undoubtedly deserves recognition as a writer of singular purity and grace. It is well that young students should have an opportunity of becoming acquainted with examples of his style, but it is doubtful whether time could be spared in a secondary curriculum even for the limited study which the use of this volume as a class-book would imply. The selection has been judiciously made so as to appeal as widely as possible to the general interest while illustrating the various sides of the author's mental activity.

"Home University Library."—*Dr. Johnson and his Circle.* By John Bailey. (1s. net. Williams & Norgate.)

This recent addition to an excellent series illuminates one of the most interesting epochs of our literary history. The volume is thoroughly readable and the criticism it offers is sound; but it may be doubted whether its scope is comprehensive enough to justify its inclusion in a series of so formative a character as the "Home University Library."

#### ENGLISH COMPOSITION TEXTBOOKS.

(1) *Exegesis of English Composition* (3s. 6d. net); (2) *Lessons in Prose and Verse Composition* (1s. 4d.). By W. J. Addis. M.A. (Dent.)

In the larger of these two volumes Mr. Addis offers an exhaustive examination of the principles of the whole art of literary composition, including even the subsidiary arts of elocution and calligraphy. The analysis is ably and, on the whole, judiciously conducted. No teacher or student of style could read it without gaining many useful suggestions, but, apart from the exercises, it does not seem eminently suitable as a textbook to be put into the hands of pupils. There is too much elaboration and too systematic a presentation of theory in advance of practice. In the smaller volume—which is intended for the middle forms of secondary schools and the higher classes of elementary schools—the same faults are present, and in addition there is some tendency, both in the nomenclature and in the illustrations, to soar above the heads of those for whom the book is meant. Mr. Addis wisely attaches much value to the practice of verse composition.

*Elements of Composition for Secondary Schools.* By H. S. Canby and J. B. Opdycke. (4s. 6d. net. Macmillan.)

Of the making of books on composition there is no end, but in most cases it is difficult to discover their *raison d'être*. The compilation of suitable exercises is, of course, always a useful service, but the theoretical advice which is almost always superadded, however sound it may be, is from the nature of the case bound to be superfluous. If it is a mistake to tell boys and girls things they can be led to find

out for themselves, it is equally a mistake to instruct teachers on matters in regard to which they should either be already equipped or in a position to discover from their experience of conducting a class. This transatlantic example of such a type of textbook has no specially redeeming features except the abundance and variety of its illustrative exercises and the straightforward and unpretentious character of its method and style.

*Composition from English Models.* By E. J. Kenny. Book I, 1s. Book II, 1s. 6d. (Edward Arnold.)

These two little volumes offer very useful material for exercises in composition. The selection of passages for study and imitation has been very carefully and judiciously made, and a good deal of ingenuity is shown in the suggestion of exercises that may be based on them. The teacher of English will find them of great service.

*Composition through Reading.* The Direct Method of Teaching English. By Frederick Pickles, M.A. (1s. 4d. Dent.)

This book is something of an *omnium gatherum*; it is at once a prose reading book, a selection of poetry for recitation, a compendium of grammar, and a manual of composition. In none of these aspects, however, does it offer much to be recommended. The choice of passages may be approved, but there is little freshness in it. The suggestions for the writing of essays are not particularly helpful. What is new in the proposed course of reading is rather doubtful: Hewlett's "Richard Yea and Nay" seems a strange book to prescribe for children between the ages of twelve and fourteen.

*A Progressive Course of Précis Writing.* By F. E. Robeson, M.A. (2s. 6d. Oxford University Press.)

If the precepts offered in this volume seem to aim somewhat too definitely at the preparation of candidates for public examinations to be considered wholly satisfactory from an educational standpoint, the excuse may be made that *précis*-writing is a special art for which precise rules are almost necessary. The guidance here offered is thoroughly purposelike and the exercises are well varied and graduated. The book should be found very useful.

*Dent's Second English Book for Boys and Girls whose Mother Tongue is not English.* By Walter Rippmann. (2s. net. Dent.)

The wide vogue which Prof. Rippmann's first English Book has gained, not only throughout Europe but in countries beyond the seas, has led to the issue of this sequel, which should be found no less helpful than its predecessor. The method adopted is well calculated to impart a knowledge of our difficult tongue while demanding a minimum of irksome labour. The reading of well chosen and carefully graduated narratives is made the basis for building up not only a serviceable vocabulary but an understanding of the principles of our word-formation and the grammatical structure of the language, while a phonetic transcription of all the new words introduced secures a correct pronunciation.

*The Mother Tongue.* Book I. By S. L. Arnold and G. L. Kittredge. Part I, 6d.; Part II, 6d.; Part III, 9d. (Ginn.)

Arnold and Kittredge's manual has proved so acceptable in this country as well as in the United States that its reissue in this convenient form, adapted for British boys and girls by Prof. Adamson, will be generally welcomed. No better plan could be found for introducing young learners to a command of their own language in all its aspects, while at the same time stimulating their interest and mental activity.

#### GEOGRAPHY.

"The Oxford Geographies." Edited by Prof. A. J. Herbertson.—

(1) *The Clarendon Geography.* Vol. II, Part IV, *Asia*; Part V, *Africa and Australasia*; Part VI, *America.* By F. D. Herbertson, B.A. (3s., or in separate parts, 1s. 4d. each). (2) *A Commercial Geography of the World.* By O. J. R. Howarth, M.A. (2s. 6d.) (3) *An Elementary Geography of Scotland.* By Marion I. Newbigin, D.Sc. (1s. 6d.) (4) *Animal Geography: the Faunas of the Natural Regions of the Globe.* By Marion I. Newbigin, D.Sc. (4s. 6d.) (Clarendon Press.)

(1) The present volume of nearly four hundred pages completes the Clarendon Geography and continues the valuable features of the earlier parts. One hundred and ten boldly drawn figures and numerous questions accompany the text, which is both instructive and interesting.

(2) More than an ordinary commercial geography, in that numerous causal relations are carefully traced out, particularly in the case of climatic areas and their products. The long chapter on Transport is a model of the scientific treatment of a geographical topic.

(3) A Junior introduction to the region, useful alike to Scottish and other children. The main geomorphological facts are clearly and attractively stated, and the relations of the railways to the physical features are duly emphasized. Perhaps the treatment of political divisions is rather scant in some respects, though the local patriotism which we are told (page 114) exists far more in Scotland than in England may be responsible for the dismissing of one county at least after merely mentioning its name.

(4) Dr. Newbigin's recent addition to the "Oxford Geographies"

is a very good reference book. Zoogeography is much less popular in Britain than plant geography, and this may make the present volume appear rather technical in character and more zoological than geographical; nevertheless the book contains many cleverly worked-out correlations which will repay study. Its sub-title states its contents, though the fauna of sea, lake, and river are included, together with a chapter on geographical regions. Many sectional bibliographies are given and an outline classification of animals is appended to assist the non-zoological geographer.

*Questions and Exercises in Geography.* By Robert J. Finch.  
(2s. 6d. net. Ralph. Holland.)

These questions, which are based on "Heaton's Scientific Geographies," have previously appeared in eight separate books. They are now bound in one cover, though the original pagination has been retained. The compilation represents a vast amount of work, and teachers will appreciate the fact that the thousands of questions covering all branches of the subject appear to be either carefully devised or well chosen. The collection contains statistical appendixes for purposes of reference.

*A Comparative Geography of the Six Continents.* By Ellis W. Heaton, B.Sc., F.G.S. (1s. 9d. net. Ralph, Holland.)

An intermediate book up to the standard of the "Junior Local Examinations." It is quite equal to previous books by this author, and is written in the distinctive style which we have learnt to associate with Mr. Heaton. The material is good, the deductions are safe, and the method of treatment should yield satisfactory results when used by a capable teacher. The absence of an index is to be regretted.

"Useful Knowledge Series."—*Geographical Discovery: How the World became Known.* By Joseph Jacobs. (1s. net. Hodder & Stoughton.)

A revised and enlarged edition of a thoroughly sound popular history of geographical discovery; cheap but good. The very complete chronological table, which is also to some extent a bibliography, is a good feature.

"The Romance of Travel."—(1) *In the Forests of Brazil.* By H. W. Bates. (2) *Days in the Golden East.* By Eliot Warburton. (3) *A Trip Up the Nile.* By Eliot Warburton. (4) *A Cruise in Northern Seas.* By Lord Dufferin. (Each 6d. Frowde.)

Excellent regional studies extracted from actual accounts of voyages written by travellers whose names afford a guarantee of interesting material. Limp cloth, upwards of one hundred pages each, well illustrated, and carefully annotated, these books represent the first batch of a series of human geography readers which should prove deservedly popular.

"Cambridge County Geographies."—*Lincolnshire.* By E. Mansel Sympson, M.A. (1s. 6d. Cambridge University Press.)

Full justice is done to a very interesting county. The sections on architecture are particularly good; that on climate much less so—e.g. cyclones are described as eddies. It should also be noted that the Meteorological Society does not now collect and tabulate station statistics.

*Dent's Practical Notebooks of Regional Geography.* By Horace Piggott, M.A., Ph.D., and Robert J. Finch, F.R.G.S. (6d. net. Dent.)

Book VII, "British Empire in Africa and Australasia," completes the series which forms a cheap and educational method of revision for examination purposes. The numerous, clearly printed outline maps are themselves well worth the money charged for the notebook.

"The Atlas Geographies."—Part I, *Physical Geography.* By Thomas Franklin, A.C.P., and E. D. Griffiths, B.Sc., F.R.G.S. 1s. 6d. net. Johnston.)

The idea of combining a visual atlas and a geography textbook is a good one, particularly when the whole is placed on the market at a reasonable price and is of a convenient size: but the first example of the series possesses several blemishes. The maps reflect credit on Messrs. Johnston and the figures are good, but the descriptive text, particularly in regard to climate, needs careful revision. We note such statements as the following and the list is by no means complete: "In the Himalaya (?) the boiling-point of water is 180°F."; "An anticyclone is a wind blowing, &c."; "The air which is blown into the centre of a cyclone is drawn upward and rising into colder air condenses and falls as rain." "Coral is obtained from the skeleton of an animal." It should also be noted that rain-gauge glasses are not usually divided into eighths of an inch, while the plane table is seldom used as described in the book.

#### SCIENCE.

*Mechanics and Heat.* An Elementary Course of Applied Physics. By J. Duncan, M.I.M.E. (3s. 6d. Macmillan.)

The aim of this book is to assist in the cultivation of an easy facility to apply scientific principles to practical problems, and consequently only those portions of the subject that are of practical

importance are specially emphasized. The application of principles is well explained, not only by a number of mathematical and experimental examples, but also through the medium of some good descriptive work. The book is well illustrated, and as a supplement to the more theoretical textbooks on the same subjects will serve a useful purpose.

*The Story of the Atmosphere.* By Douglas Archibald, M.A. (1s. net. Hodder & Stoughton.)

A little book of a popular nature containing a mine of information concerning the principal features of atmospheric conditions and phenomena. Written in a most interesting and attractive manner.

*Experimental Science. Part I, Physics.* By S. E. Brown, M.A. (3s. 6d. Cambridge University Press.)

An excellent little book of elementary practical work on measurement, hydrostatics, mechanics, and heat. The mode of expression and illustration is most satisfactory. A book that teachers should make a special note of.

*The Alphabet.* By Edward Clodd. (1s. net. Hodder & Stoughton.)

Describes the many intermediate stages that have marked the evolution of the present forms of alphabet from the earliest known forms of picture writing. The book is well illustrated, and, without dipping too much into technicalities, provides some very attractive reading.

*Zoology.* By E. Brucker. *Chemistry.* By Georges Darzens. (2s. net each. Constable.)

Two books belonging to a new series ("Thresholds of Science") which may be confidently expected to help the beginner over initial difficulties and create a desire for fuller information. They are well illustrated; the subject-matter is clearly explained, and there is no superfluity of technical detail. They have already been published in France, and we anticipate that the success met with in that country will be continued in this.

*Makers of British Botany.* A Collection of Biographies by Living Botanists. Edited by F. W. Oliver. (9s. net. Cambridge University Press.)

In 1911 a course of ten lectures on "Famous Botanists" was given at the University of London by lecturers whose qualifications enabled them to deal with the several branches of their subject in a most efficient way. The popularity of the course has resulted in these lectures being issued in book form; and, in order to make the scope of the work wider and more representative, six additional chapters have been added. Each chapter, with two exceptions, deals with a single botanist. The first chapter, however, finds Morison and Ray (1620-1705) linked together, and the last chapter gives an account of the Professors of Botany in Edinburgh from 1670 to 1887. The work is arranged as nearly as possible in chronological order—a sequence which demonstrates the continued, though perhaps varied, progress in botanical thought and research in a remarkably clear manner. Apart from mere botanical detail there are many little personal touches which are bound to arouse additional interest. We feel convinced that those interested in botany cannot fail to find the book full not only of instructive but also of interesting information.

#### MORAL INSTRUCTION.

*Moral Instruction: its Theory and Practice.* By F. J. Gould. (2s. 6d. Longmans.)

Those who believe that morality can and should be taught in schools by means of set lessons will welcome Mr. Gould's methodical exposition of the aims of the Moral Education League, and even those who have little sympathy with the procedure it advocates may be interested to find it clearly set forth in these pages. The author is a well known exponent of what may be called the "direct method" of moral instruction, and he has succeeded in recommending it with considerable persuasiveness, but his advocacy is not likely to stem the objections of those who believe that, just because morality is co-existent with life, it is inadvisable to encourage children to think of it as a special subject of instruction to be ranked among their other tasks.

#### MUSIC.

*A Practical Guide to Violin Playing.* By Hans Wessely. (Pp. 119. 3s. net. Joseph Williams.)

Although primarily intended for teachers of the violin, this well planned little work will prove of great service to all students of the violin, whether professional or amateur. It is concerned chiefly with matters of technique, giving words of advice and warning on many important points in violin playing. The numerous and clearly printed examples add not a little to the value of the book, as do the two well considered lists of pieces and the remarks on violin schools and studies. Altogether a good book, and one every violinist of any pretensions ought to buy and read. Written by one of the professors at the R.A.M., who is also a great quartet leader, and dedicated "to my friend Kreisler," it is brought out in Joseph Williams's series under the general editorship of Stewart Macpherson.

*The Successful Music Teacher.* By Herbert Antcliffe.

(Pp. 36. 1s. net. Augeners.)

This small but thoughtfully written book makes its appeal to all teachers of music, be they specialists in any branch or "general practitioners." It is written by a practical teacher, and offers words of advice on many matters which, we are sure, have occasioned much thought on the part of every teacher at some period in his or her career. It does not deal with technical details, but touches on the training and qualification of the teacher, temperaments of pupils, and relations with parents of pupils. The book concludes with hints on concerts, advertising, and the question of fees.

"Novello's School Song Series."—(1) *Springtime*. By Robert McLeod. 3d. (2) *The Old Boys' Song*. By C. Lee Williams. 2d. (3) *The Summer Morn*. By Percy E. Fletcher. 1½d. (4) *Minnie and Winnie*. By Emil Kreuz. 1½d. (5) *Snowdrop and Lamb*. By Colin Taylor. 1½d.

(1) A good unison song that children will delight in. (2) Another stirring unison song, in march time, admirably suited for boys. (3) Mr. Fletcher has made for himself a name as a composer of really first class music. This good unison song detracts in no way from his reputation. (4) A dainty and attractive setting, in two parts, of Tennyson's words. (5) A truly musicianly setting of words by Christina Rossetti. These five new songs have just come to hand. Not one of them is too difficult for ordinary school singing. We particularly like the first four.

*Novello's School Songs*. Book 232. Arranged by R. Vaughan Williams. (9d.)

This book of eleven folk songs, tastefully arranged by Dr. Vaughan Williams, should prove useful to all teachers who wish to introduce folk songs to their classes.

*A Manual of Music for Use in Training Colleges and Secondary Schools*. By T. Keighley, Mus.D. (75 pp. Sewed, 1s.; cloth, 1s. 6d. Longmans.)

The well known Professor at the Royal Manchester College of Music has here written a book that should prove a useful introduction to both Staff Notation and Tonic Solfa. It also contains some notes on the teaching of singing. There are two points in the latter in which we cannot agree with Dr. Keighley. First, experience tells that much better results are obtained by teaching tune by the well known Tonic Solfa "Steps" rather than by scale-like passages. Secondly, Dr. Keighley surely does not wish us to take it literally when he says "The trebles of one day are to be the altos of the next." It is extremely rare to find a real alto in children, and when found the voice must be most carefully treated. If he had said "second trebles" instead of "altos" we could agree.

*Novello's Classical Songs*. Vol. III. Edited by W. G. McNaught. (38 Songs. 1s. 6d. Novello.)

One usually expects the publications of Messrs. Novello to be high in quality and well produced. This volume is no exception, and Dr. McNaught has carried out the editing in his usual able and conscientious manner, quite in keeping with the two previous volumes of the same series. The selection of songs is admirable; all are good classical items in both notations and extremely useful to teachers of singing classes who desire something in quite good taste. The majority of the songs are also obtainable separately at prices from one penny to twopence.

"Novello's School Songs."—Book 233.—*Fun and Fancy*. Words by Harold Simpson and Music by Myles Birket Foster. (6 Songs. 6d. Novello.)

These songs are sure to obtain a vogue in children's singing classes. They are extremely well written and really good. We especially like the jolly one, "Rounders," and the last one, called "If." They only need to be known to be in great demand.

## MISCELLANEOUS.

*British Boys: their Training and Prospects*. By M. J. King-Harman. (2s. net. G. Bell.)

This little book has a narrower scope than its title would imply. It really deals only with boys of the working class, who may, in the writer's view, properly have their destiny arranged for them by the wisdom of those in the higher ranks of life. Mr. King-Harman means well, but he is full of old-fashioned prejudices which detract from the value of his counsels. Some of his criticisms of present-day education are reasonable enough, but there is nothing new in them, and it cannot be said that his book as a whole contributes materially to solve the difficulties of the situation.

*The Economics of Everyday Life*. Part I. By T. H. Penson, M.A. (Cambridge University Press.)

The object of this book is to state clearly and simply the main facts of economics—to provide such a knowledge of the subject as is essential to the fulfilment of the ordinary duties of citizenship. It is intended to serve as a textbook for schools, where, as the author

rightly observes, a foundation in economic study might well be laid, or as a primer for older readers who are taking up the subject for the first time. The book achieves its object well. Only the commonest technical terms of economics are employed, and they are carefully explained. Much use is made of heavy type to emphasize important statements; there are numerous illustrative diagrams and excellent summaries in tabular form. Moreover, the author has not been afraid to give a careful explanation of such matters as the principles of exchange and the relation of supply and demand, which are apt to seem self-evident to the beginner. In discussing the different agents of production, a somewhat untenable distinction is made between enterprise and organization and capital. Enterprise enters into both organization and capital, and cannot well be divorced from either; and this becomes more evident when the author discusses the distribution of the product of industry, where rent, wages, profit, and interest must correspond with land, labour, organization, and capital. Again, the author does not appear to recognize that the law of diminishing returns may apply to commercial and business undertakings as well as to agricultural. But these are small points, and the book may well be recommended as an excellent primer of economics and one likely to induce beginners to carry their studies further afield.

## PUBLICATIONS RECEIVED.

## EDUCATION.

- L'Année Pédagogique*. Publiée par L. Cellérier et L. Dugas. Deuxième Année. 1912. Paris: Felix Alcan, 7 f. 50 c.  
 School Clinics, at Home and Abroad. By Lewis D. Cruickshank, M.D. With Introduction by W. Leslie Mackenzie, M.D. Illustrated. The National League for Physical Education and Improvement, 2s. 6d. net.  
 Fourth Report of the Deptford Health Centre. King, 3d.  
 A Syllabus for the Clinical Examination of Children. By Edmund B. Huey. Baltimore: Warwick & York.  
 The Mental and Physical Life of School Children. By Peter Sandiford, Lecturer in Education, University of Manchester. Longmans, 4s. 6d.  
 Educational Psychology Monographs.—(1) Backward and Feeble-minded Children. By Edmund B. Huey. 1 dol. 40 c. (2) How I kept my Baby Well. By Anna G. Noyes. 1 dol. 25 c. (3) Inductive versus Deductive Methods of Teaching: an Experimental Research. By W. H. Winch. 1 dol. 25 c. Baltimore: Warwick & York.

## CLASSICS.

- An Elementary Latin Grammar. By Arthur Sloman. Cambridge University Press, 2s. 6d.  
 Dialogues of Roman Life. Written and adapted by S. E. Winbolt. Bell, 2s.  
 Salamis in Easy Attic Greek. With Introduction, Notes, and Vocabulary. By G. M. Edwards. Cambridge University Press, 1s. 6d.

## HEBREW.

- Materials for Hebrew Composition. Adapted and arranged by M. A. Canney. Manchester University Press, 1s. net.

## FRENCH.

- Collection Gallia.—(1) Blaise Pascal: Pensées. (2) Alfred de Musset: Poésies Nouvelles. (3) Maurice Barrès: L'Ennemi des Lois. (4) Balzac: Contes Philosophiques. Dent, 1s. net per vol.  
 French Pronunciation. By James Geddes, Jun. Oxford University Press.  
 Poèmes et Chants de France. Recueillis par W. M. Daniels et René Travers. Harrap, 1s. 6d.  
 Victor et Victoline. Par Mme J. G. Frazer. Macmillan, 1s.  
 Ursule Mirouët. Par H. de Balzac. Edited, with Notes, Exercises, and Vocabulary, by T. H. Bertenshaw. Longmans, 1s.; Teacher's edition, 1s. 3d.  
 Une Cinquantaine de Morceaux de Poésie Française. Choisis par Alex. Ed. Delépine. Murray, 1s.  
 Aventures Merveilleuses d'après Nathaniel Hawthorne. Elementary. Par W. M. Poole et E. L. Lassimonne. Murray, 1s.

## GERMAN.

- A Classbook of German Conversation and Free Composition. By Taylor Dyson. Harrap, 1s. 3d.  
 Peterli am Lift. Von Niklaus Bolt. Edited, with Notes, Vocabulary, and Exercises, by Frederick Betz. Heath, 1s. 6d.

## ENGLISH.

- The Cambridge History of English Literature. Vol. X: The Age of Johnson. Cambridge University Press, buckram, 9s. net; half morocco, 15s. net.

- Beowulf. Edited, with Introduction, Bibliography, Notes, Glossary, and Appendixes, by W. J. Sedgefield, Litt.D. Second edition, revised and partly rewritten. Manchester University Press, 9s. net.
- A Practical Course in Secondary English. By George Ogilvie and Edward Albert. Harrap, 4s. 6d.
- Exercises in English Grammar. By N. Notman. Longmans, 6d.
- English: A Modern Grammar. By G. H. Clarke and G. T. Ungood. Horace Marshall, 2s. 6d.
- Some Notes on the Verb in Modern English. By Handel Smith. Wellington, Som.: Parkhouse, 8d. net.
- Preliminary English Course. By A. M. Walsley. Clive, 1s. 6d.
- An Advanced English Grammar. With Exercises. By G. L. Kirtledge and F. E. Farley. Ginn, 4s.
- Written English: and the Way to Write. By K. M. Moakes. Longmans, 1s. 6d. (Teacher's edition, 2s.)
- The Language of Commerce. Vol. II. Third edition. By Walter A. Parkyn. Simpkin, Marshall, 1s. 6d.
- A Handbook of English Literature. By W. T. Webb and J. A. Aldis. Bale, 5s.
- The Oxford Shakespeare. Edited by W. J. Craig. Milford, 2s. 6d. net.
- Great Names in English Literature. Vol. I: Chaucer to Bunyan. By Edith L. Elias. Harrap, 1s. 6d.
- English Literature in Prose and Verse. From the Beginning to the Fourteenth Century. Compiled by Amy Cruse. Harrap, 1s.
- Aesop's and Other Fables. Everyman's Library. Dent, 1s. net.
- The Children's Anthology of Verse. In three parts: Junior, Intermediate, and Senior. Each part, 4d. Macmillan.
- Prose Texts for Junior Forms. Edited by C. L. Thomson. (1) The Pilgrim's Progress, Part I. (2) Gulliver's Travels. (3) Legends of Early Scotland. (4) The De Coverley Essays. (5) Legends of Early England. (6) Legends of Early Rome. Horace Marshall, 9d. each.
- The Hero Readers.—British Soldier Heroes, Series II. Heinemann, 1s. 6d.
- Everyman's Library.—A Century of English Essays. Ranging from Caxton to R. L. Stevenson and the writers of our own time. Dent, 1s. net.
- Edmund Burke: Thoughts on the Cause of the Present Discontents. Edited by W. Murison. Cambridge University Press, 2s. 6d.
- Tales from the Earthly Paradise. Edited by W. J. Glover. Black, 6d.
- The Poetry and Life Series.—(1) Poe and his Poetry. (2) Pope and his Poetry. Harrap, 10d. each.
- The Brodie Books.—(1) Gulliver's Voyage to Lilliput. (2) Tales from a Wonder Book. Brodie, 1d. each; cloth, 3d.
- The Merchant of Venice. B.E.S.S. edition. Routledge, 6d. net.
- Much Ado about Nothing. Clive, 1s. 4d.
- Dramatic Scenes from Great Novelists. Part II. Allen, 6d. net.
- Pope: Essay on Man. Edited by A. Hamilton Thompson. Cambridge University Press, 2s.

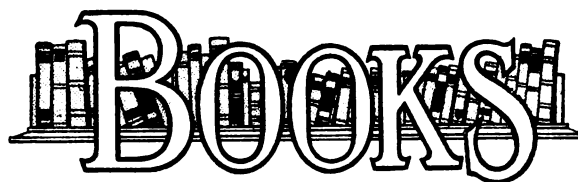
#### HISTORY.

- History of University Reform, from 1800 A.D. to the Present Time. With suggestions towards a Complete Scheme for the University of Cambridge. By A. I. Tillyard. Heffer, 10s. net.
- The Navy under the Early Stuarts and its Influence on English History. By C. D. Penn. The Faith Press, 5s. net.
- Exercises and Problems in English History (1485–1820), chiefly from Original Sources. Compiled by W. J. R. Gibbs. Cambridge University Press, 2s. 6d.
- Child-Man in Britain. By F. Ashford. Harrap, 2s. 6d. net.
- The Nation's Library.—(1) Canada as an Imperial Factor. By Hamar Greenwood, M.P. (2) The Story of Trusts. By M. E. Hirst. Collins, 1s. net each.

#### GEOGRAPHY.

- An Atlas of Commercial Geography. Compiled by Fawcett Allen. With Introduction by D. A. Jones. Cambridge University Press, 3s. 6d. net.
- The Realm of Nature: an Outline of Physiology. By Dr. Hugh Robert Mill. Murray, 5s.
- A Short Geography of Europe. By A. J. Dicks. Cambridge University Press, 10d.
- The Oxford Geographies.—The Upper Thames Country and the Severn-Avon Plain. By N. E. McMunn. Clarendon Press, 1s. 8d.
- Everyman's Library.—A Literary and Historical Atlas of Africa and Australasia. By J. G. Bartholomew. Dent, 1s. net.
- Cassell's Modern School Series.—Geography Section. Book V: Europe and North America. 1s. 6d.
- Historical Geography of Scotland. By W. R. Kermack. Johnston, 2s. 6d. net.
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- Practical Geometry and Graphics. For advanced students. By Joseph Harrison and G. A. Baxandall. Enlarged edition. Macmillan, 6s.
- A First Book of Practical Mathematics. By T. S. Usherwood and C. J. A. Trimble. Macmillan, 1s. 6d.
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- The Twisted Cubic: with some account of the Metrical Properties of the Cubical Hyperbola. By P. W. Wood. No. 14 of the Cambridge Mathematical Tracts. Cambridge University Press, 2s. 6d. net.
- Practical Mathematics: for Students attending Evening and Day Technical Classes. By Norman W. M'Lachlan. Longmans, 2s. 6d. net.
- Elementary Practical Electricity and Magnetism. By J. C. Kirkman. Harrap, 2s. 6d. net.

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- Organic Chemistry for Students of Medicine. By James Walker. Gurney & Jackson, 6s.
- Wireless Telegraphy and Telephony without Wires. By Charles R. Gibson. Seeley, 2s. net.
- Notes on the Natural History of Common British Animals and some of their Foreign Relations. Vertebrates. By Kate M. Hall. Adlard, 3s. 6d. net.
- Wonders of Land and Sea. Edited by Graeme Williams. To be completed in 24 fortnightly parts. Part I. Cassell, 7d. net.

HYGIENE.

- The Three Gifts of Life: a Girl's Responsibility for Race Progress. By Nellie M. Smith. Introduction by Thomas Denison Wood. Cassell, 2s. net.

RELIGION.

- Members one of Another. Sermons preached in Sherborne School Chapel. By Nowell Smith, Head Master. Chapman & Hall, 5s. net.
- The Catholic Student's "Aids" to the Bible. By Hugh Pope, O.P., S.T.M. Preface by the Cardinal Archbishop of Westminster. The Old Testament. Washbourne, 3s. 6d. net.
- The New Testament: the Authorized Version Corrected. The text prepared by Sir Edward Clarke. Smith, Elder, 3s. 6d. net.

ART.

- History and Methods of Ancient and Modern Painting. By James Ward. Chapman & Hall, 7s. 6d. net.
- Art in Spain and Portugal. By Marcel Dieulafoy. Heinemann, 6s. net.

MUSIC.

- A Manual of Music. For use in Training Colleges and Secondary Schools. By T. Keighley. Longmans, 1s.; cloth, 1s. 6d.
- Songs of Love and Duty, for the Young. Compiled by G. Spiller. Fourth edition, revised. Watts, 6d. net.
- Physical Exercises and Song Games for the Little Ones. Words by L. M. Sidnell. Music by Mabel L. Turner. McDougall, 2s. 6d. net.
- Children's Singing Games: a Book of Verse and Music for Children. Words by Lettice Thomson. Music by Alban Dobson. Horace Marshall, 1s. 6d.

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MISCELLANEOUS.

- Out of the Dark. By Helen Keller. Hodder & Stoughton, 5s.
- Board of Education—Syllabus of the Preliminary Examination for the Elementary School Teachers' Certificate, 1915. Part I, December, 1914; Part II, March, 1915.
- The Influence of School-books upon Eyesight. Report of the British Association. Second edition, revised, 4d.
- The Birkbeck College Calendar, 1913-1914. 3d.
- University College, University of London, Calendar, 1913-1914.

MATHEMATICS.

Readers desiring to contribute to the *Mathematical columns* are asked to observe the following directions very carefully:—

- (1) To write on one side only of the paper.
- (2) To avoid putting more than one piece of work on a single sheet of paper.
- (3) To sign each separate piece of work.

14507. (EDWARD V. HUNTINGTON, A.M.)—Given

$$f(x_1) + f(x_2) + \dots + f(x_n) = 0,$$

where the  $x$ 's may be chosen at pleasure provided  $x_1 + x_2 + \dots + x_n = 0$ , it is evident that, if  $f(x) = Cx$ , the condition is satisfied. Prove that this is the *only* admissible form of the function.

Solutions (I) by SARADAKANTA GANGULY, M.A.; (II) by E. R. HAMILTON, B.Sc.

(I) Suppose  $x_1 = x_2 = x_3 = \dots = x_n = 0$ ; then the relation

$$f(x_1) + f(x_2) + \dots + f(x_n) = 0$$

becomes

$$nf(0) = 0.$$

That is,  $f(x)$  vanishes when  $x$  does so; therefore  $x$  is a factor of  $f(x)$ .

Therefore assume  $f(x) = x\phi(x)$ .

The given relation may, therefore, be stated thus:—

$$x_1\phi(x_1) + x_2\phi(x_2) + \dots + x_n\phi(x_n) = 0.$$

Now suppose  $x_1 = x_2 = x_3 = \dots = x_r = a$ ,

$$x_{r+1} = -ra, \quad x_{r+2} = x_{r+3} = \dots = x_n = 0.$$

Then

$$ra\phi(a) - ra\phi(-ra) = 0.$$

Therefore

$$\phi(a) = \phi(-ra),$$

which shows that  $\phi(x)$  is independent of  $x$ , and is, therefore, a constant, say  $C$ .

Therefore  $f(x) = Cx$ .

(II) Put first  $x_1 = x_2 = \dots = x_n = 0$ . Then  $nf(0) = 0$ ; therefore

$$f(0) = 0 \dots \dots \dots (1).$$

The function is odd, its graph having centro-symmetry about the origin. For put  $x_1 = x, x_2 = -x$ , and all other  $x$ 's = zero.

We get  $f(x) + f(-x) + (n-2)f(0) = 0,$

which by (1) gives  $f(x) = -f(-x) \dots \dots \dots (2).$

Now put  $x_1 = (n-1)x$  and  $x_2 = x_3 = \dots = x_n = -x$ .

This gives  $f\{(n-1)x\} + (n-1)f(-x) = 0,$

which by (2) gives  $f\{(n-1)x\} = (n-1)f(x) \dots \dots \dots (3).$

or  $f(nx) = nf(x) \dots \dots \dots (3).$

Now, since we may assign  $x_1$ , say, any value provided we make  $x_2 = -x_1$  and all the other  $x$ 's zero, the function  $f(x)$  is continuous and determinate for all (finite) values of  $x$ . Hence it is differentiable. Therefore, from (3),  $nf'(nx) = nf'(x)$

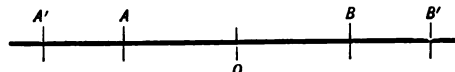
or  $f'(nx) = f'(x) \dots \dots \dots (4).$

If (4) holds for all values of  $x$ , which it does,  $f'(x)$  must be constant. Hence  $f(x)$  has the form  $Cx$ .

Note.—The statement that  $f'(nx) = f'(x)$ , for all values of  $x$ , implies  $f'(x)$  constant, is not obviously true. I think, however, it is sound.

For, if  $f'(nx) = f'(x)$ , therefore  $nf''(nx) = f''(x)$ ; and if  $x = \text{zero}$  (which is not excluded), and  $n \neq 0$ , this gives  $f''(x) = 0$ . Also  $f(x)$  clearly cannot have form  $Cx + D$ .

N.B.—If  $x_1, x_2, \dots$ , are the co-ordinates of equal elements of an elastic string AB, we are led to see by the above work that if this



string be stretched in any manner other than a homogeneous stretch the centre of gravity (O) of the string will shift its position.

It should be possible to obtain a graphical proof of the theorem.

12429. (D. BIDDLE.)—Three circles A, B, C, having their centres collinear, are in successive external contact, and have common

(Continued on page 476.)



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tangents. The diameter of A is given and the sum of the diameters of B and C. Describe the circles.

[Solutions too numerous to allow of all being published.—ED.]

Solutions (I) a Graphical Solution by FREDERICK PHILLIPS, F.C.P., B.Sc., F.C.S.; (II) a Geometrical Solution by HENRY RIDDELL, M.E., and W. J. ASHDOWN.

(I) Let the radius of A be  $a$ , and let the radii of B and C be  $x$  and  $y$  respectively, so that  $x + y = b$  ..... (1).

From the figure it is obvious that another relation connecting  $x$  and  $y$  is

$$y^2 = ax \text{ ..... (2)}$$

We may therefore determine  $x$  and  $y$  as follows:—

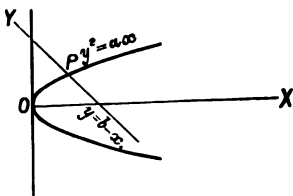
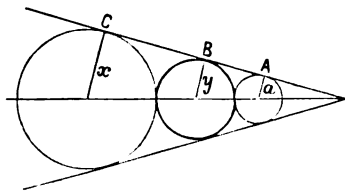
Plot the parabola

$$y^2 = ax,$$

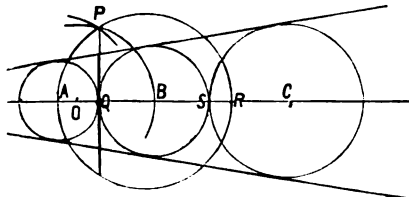
and the straight line

$$y = b - x,$$

and at once we have the required values for  $x$  and  $y$  (co-ordinates of P in Fig. 2).



(II) Describe the circle A and produce radius AQ to R, making



QR = sum of radii of B and C. On AR as diameter describe a circle, and draw QP tangent at Q, cutting this circle in P. With centre O, the mid-point of AQ, and radius OP, describe circle cutting QR in B, then is B the centre of the second circle, and the diagram can be completed as shown.

BQ.BA = QP<sup>2</sup> (since tangent from B to circle upon AQ as diameter = QP) = AQ.QR.

Now if AQ =  $r_1$ , QB =  $r_2$ , and BR =  $r_3$ , we have

$$r_2(r_1 + r_2) = r_1(r_2 + r_3) \text{ or } r_1r_3 = r_2^2,$$

and since the three circles have centres collinear they have common tangents. But  $r_1 = AQ$  and  $r_2 + r_3 =$  sum of radii of B and C as given.

17566. (NORMAN ALLISTON).—In one of his notes to Bachet's "Diophantus," Fermat writes: "I have also discovered and proved that no triangular number except 1 can be a biquadrate." What is his, or any other, proof?

Solution by J. M. CHILD, B.A., B.Sc.

Lemma 1.—The difference between two biquadrates cannot be a square (Fermat).

Suppose  $a^4 - b^4 = c^2$ , where  $a, b, c$  are numbers prime to one another; then  $a$  must be odd, and of  $b, c$ , one is odd and the other is even. If  $b$  is odd,  $a^2 + b^2 = 2p^2$  and  $a^2 - b^2 = 2q^2$ , where  $p$  is odd and  $q$  is even, and  $2pq = c$ ; therefore

$$p^2 + q^2 = a^2, \quad p^2 - q^2 = b^2.$$

If  $b$  is even  $a^2 + b^2 = p^2$  and  $a^2 - b^2 = q^2$ , where  $p$  and  $q$  are both odd.

Hence in both cases there must be two squares  $x^2$  (odd),  $y^2$  (even), such that their sum and difference are both squares (odd).

Let  $x^2 + y^2 = r^2$  and  $x^2 - y^2 = s^2$ ;

therefore

$$2y^2 = r^2 - s^2.$$

Since  $r$  and  $s$  are prime to one another and both odd,  $r + s$  and  $r - s$  have a single common factor 2; therefore

$$\left. \begin{aligned} r + s &= 2m^2 \\ r - s &= n^2 \end{aligned} \right\} \text{ or } \left. \begin{aligned} n^2 & \\ 2m^2 & \end{aligned} \right\} \begin{array}{l} n \text{ even,} \\ m \text{ odd;} \end{array}$$

therefore  $x^2 = \frac{1}{2}(r^2 + s^2) = [\frac{1}{2}(r + s)]^2 + [\frac{1}{2}(r - s)]^2 = (\frac{1}{2}n^2)^2 + (m^2)^2$ ;

therefore  $x = u^2 + v^2$ ,  $\frac{1}{2}n^2 = 2uv$ ,  $m^2 = u^2 - v^2$ ,

where  $u$  and  $v$  are prime to one another and one is even and the other is odd.

Hence  $u$  and  $v$  are two square numbers—since  $uv = (\frac{1}{2}n)^2$ —whose sum and difference are both squares—since  $u^2 - v^2 = m^2$  (odd).

Moreover  $u + v < m^2 < \frac{1}{2}(r + s) < \frac{1}{2}(r^2 - s^2) < y^2 < x^2 + y^2$ .

i.e., their sum is less than the sum of the original squares.

Thus a "descente infinie" is established and the theorem is proved.

Lemma 2.—The difference of two fourth powers cannot be twice a square.

Suppose  $a^4 - b^4 = 2c^2$ , where  $a, b, c$  are integers prime to one another: then  $a, b$  are odd and  $c$  is even; therefore  $a^2 + b^2$  is divisible by 2 alone; therefore

$$a^2 + b^2 = 2q^2, \quad a^2 - b^2 = p^2,$$

where  $p$  is even and  $q$  is odd; therefore

$$\frac{1}{2}(a + b)^2 + \frac{1}{2}(a - b)^2 = q^2;$$

therefore  $\frac{1}{2}(a + b) \cdot \frac{1}{2}(a - b) = 2rs (r^2 - s^2)$ ,  $q = r^2 + s^2$ ;

therefore

$$p^2 = 8rs (r^2 - s^2),$$

where  $r$  and  $s$  are prime to one another, and one is odd and the other even; therefore

$$r + s = m^2, \quad r - s = n^2,$$

where  $m$  and  $n$  are both odd; therefore

$$\frac{1}{2}p^2 = m^2n^2 (m^4 - n^4), \quad \text{i.e., } m^4 - n^4 = 2k^2.$$

Also  $m^2 + n^2 = 2r < 2rs < r^2 + s^2 < q < a^2 + b^2$ ;

which establishes a "descente infinie," and the theorem is proved.

For, if  $\frac{1}{2}[n(n + 1)] = c^2$ , since  $n$  and  $n + 1$  are prime to one another, we have (i) either  $n = 2p^4$ ,  $n + 1 = q^4$ , giving  $q^4 - 1 = 2p^4$ , which is impossible by Lemma 2.

"The difference between two biquadrates cannot be twice a square."

(ii) Or  $n + 1 = 2p^4$ ,  $n = q^4$ , giving  $q^4 + 1 = 2p^4$ ; therefore

$$4p^8 = (q^4 + 1)^2 = (q^4 - 1)^2 + 4q^4;$$

therefore

$$(2p^2)^4 - (2q^4)^4 = [2(q^4 - 1)]^2,$$

which is impossible by Lemma 1.

"The difference between two biquadrates cannot be a square."

The only "solution" of (ii) is

$$2p^2 = 2q^2, \quad q^4 - 1 = 0, \quad \text{i.e., } p = 1, \quad q = 1;$$

therefore

$$\frac{1}{2}[n(n + 1)] = 1.$$

[Rest in Reprint.]

17561. (R. F. DAVIS, M.A.).—If  $A, B, C$  are the angles of a triangle, determine  $L, M$  as symmetric functions, so that

$$L \sin A + M \cos A + \sin 3A = 0$$

with similar equations in  $B, C$ ; leading to the relation

$$\begin{vmatrix} \sin A & \cos A & \sin 3A \\ \sin B & \cos B & \sin 3B \\ \sin C & \cos C & \sin 3C \end{vmatrix} = 0.$$

Solution by Professor K. J. SANJANA, M.A., and T. P. TRIVEDI, M.A., LL.B.

Since  $\sin 3A$  contains a factor  $\sin A$ ,  $M$  will also contain the factor  $\sin A$ ; it similarly contains the factors  $\sin B$  and  $\sin C$ . We therefore naturally take  $M = m \sin A \sin B \sin C$ .

This gives

$$L \sin A + m \sin A \sin B \sin C = -\sin 3A = \sin A (1 - 4 \cos^2 A);$$

therefore  $L + m \sin B \sin C \cos A = 1 - 4 \cos^2 A$ ;

similarly  $L + m \sin C \sin A \cos B = 1 - 4 \cos^2 B$ .

Solving these, we get

$$m = -4 \quad \text{and} \quad L = 1 + 4 \cos A \cos B \cos C.$$

Hence we get  $L = 1 + 4 \cos A \cos B \cos C$

and  $M = -4 \sin A \sin B \sin C$ .

17223. (Professor SANJANA, M.A.).—Prove that, when  $m < n$  and  $na < \pi$ ,

$$\int_0^{\pi} \frac{x^{n+m-1} dx}{x^{2n} + 2x^n \cos na + 1} = \frac{\pi}{n \sin m\pi/n} \frac{\sin ma}{\sin na}.$$

Solution by Professor R. SRINIVASAN, M.A.

$$\frac{x^{n+m-1}}{x^{2n} + 2x^n \cos na + 1} = \frac{x^{n+m-1}}{e^{ina} - e^{-ina}} \left\{ \frac{1}{x^n + e^{-ina}} - \frac{1}{x^n + e^{ina}} \right\}.$$

Now we know that

$$\int_0^{\pi} \frac{x^n dx}{1 + x^b} = \frac{\pi}{b} \cdot \frac{1}{\sin(a + 1)\pi/b}.$$

In this change  $x$  to  $z/k$ ; then we get

$$\int_0^\infty \frac{z^a dz}{z^b + k^b} = \frac{1}{k^{a-b+1}} \cdot \frac{\pi}{b} \cdot \frac{1}{\sin(a+1)\pi/b}$$

In this put  $a = n+m-1$ ,  $b = n$ , and  $k = e^{ia}$ , then we get

$$\int_0^\infty \frac{z^{n+m-1} dz}{z^n + e^{ina}} = \frac{1}{e^{ina}} \cdot \frac{\pi}{n} \cdot \frac{1}{\sin(1+m/n)\pi}$$

Therefore the given integral

$$\begin{aligned} &= \frac{(\pi/n) \cdot 1/[\sin(1+m/n)\pi]}{e^{ina} - e^{-ina}} \left( \frac{1}{e^{ina}} - \frac{1}{e^{-ina}} \right) \\ &= \frac{-(\pi/n) \cdot 1/\sin m\pi/n}{2i \sin na} (-2i \sin ma) \\ &= \frac{\pi}{n \sin m\pi/n} \cdot \frac{\sin ma}{\sin na} \end{aligned}$$

**17399.** (Professor NEUBERG.)—On donne deux droites  $d, d'$  qui ne se coupent pas. En chaque M de  $d$  on mène un plan perpendiculaire à la perpendiculaire MM' abaissée de M sur  $d'$ . Trouver l'enveloppe de ce plan.

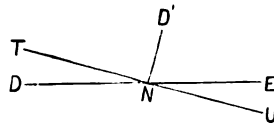
Solution by PHILIP T. STEPHENSON, B.A.

Since the plane is parallel to  $d'$ , the envelope is a cylinder.

DE, D', N are the projections of  $d, d', M$  on the plane of the paper which is taken perpendicular to  $d'$ .

The trace of the moving plane is TU drawn at right angles to D'N the projection of M'M.

The envelope of TU being a parabola, that of the moving plane is a parabolic cylinder.



**18027.** (H. STEWART.)—A vertical wall at a place in north latitude  $\lambda$  has a north azimuth  $\alpha$ . Prove that, when the sun's north declination is  $\delta$ , the time during which the sun is on the southern side of the wall

$$= 2 \cos^{-1}(\tan \delta \cos \lambda \sin \alpha) / (1 - \sin^2 \alpha \cos^2 \lambda)^{1/2}$$

Solutions (I) by C. W. ADAMS; (II) by Professor J. C. SWAMI-NARAYAN, M.A.

(I) W is the wall, N the north pole, Q and Q' the subsolar points on the wall's great circle.

The required time is  $\tau + \tau'$ , where

$$\begin{aligned} \sin \tau + \sin \lambda \tan \alpha \cos \tau' &= \tan \delta \tan \alpha \cos \lambda, \\ \sin \tau' - \sin \lambda \tan \alpha \cos \tau &= -\tan \delta \tan \alpha \cos \lambda. \end{aligned}$$

Hence, by the usual procedure,

$$(1 + \sin^2 \lambda \tan^2 \alpha) \cos^2 \frac{1}{2}(\tau + \tau') = \tan^2 \delta \tan^2 \alpha \cos^2 \lambda;$$

and so  $\tau + \tau' = 2 \cos^{-1}(\tan \delta \cos \lambda \sin \alpha) / (1 - \sin^2 \alpha \cos^2 \lambda)^{1/2}$ .

(II) In the figure to Solution (I) let N be the pole and Z be the zenith. Imagine the wall produced to cut the sky in Z. Let the sun's path cut the wall in Q, Q'.

Then  $\angle QZN = \alpha$ , and  $\angle QNQ' = h$ , the required time. Also

$$NQ = \frac{1}{2}\pi - \delta = NQ'$$

Draw ND perpendicular to QQ'; ND bisects  $\angle QNQ'$ .

Now  $\sin \alpha = \sin ND / \sin(\frac{1}{2}\pi - \lambda) = \sin ND / \cos \lambda$ .

Therefore  $\sin ND = \cos \lambda \sin \alpha$  ..... (1).

Also  $\tan ND \tan(\frac{1}{2}\pi - \delta) = \cos \frac{1}{2}h = \tan \delta \tan ND$ .

Therefore  $\cos \frac{1}{2}h = \cos \lambda \sin \alpha \tan \delta / (1 - \cos^2 \lambda \sin^2 \alpha)^{1/2}$ .

Therefore  $h = 2 \cos^{-1}[(\tan \delta \cos \lambda \sin \alpha) / (1 - \cos^2 \lambda \sin^2 \alpha)^{1/2}]$ .

**17559.** (Professor E. J. NANSON.)—Find the position of a point on a given circle when the ratio of its distance from a fixed diameter to its distance from a fixed point on the tangent at an extremity of that diameter is a maximum or minimum.

Solutions (I) by Professor K. J. SANJANA, M.A., and T. P. TRIVEDI, M.A., LL.B.; (II) by C. M. ROSS, B.A.

(I) Let the radius (AO) =  $a$ ,  $AQ = ak$ , and  $\angle AOP = \theta$ . Then  $PN = a \sin \theta$ , and  $PQ = \sqrt{(ak - a \sin \theta)^2 + (a - a \cos \theta)^2}$ .

Thus we require the minimum or maximum of  $[(k - \sin \theta)^2 + (1 - \cos \theta)^2] / \sin^2 \theta$ , i.e., of  $f(\theta) \equiv (k^2 + 2) \operatorname{cosec}^2 \theta - 2k \operatorname{cosec} \theta - 2 \cot \theta \operatorname{cosec} \theta$ .

Hence  $f'(\theta) \equiv 2 \operatorname{cosec} \theta \{ -(k^2 + 2) \operatorname{cosec} \theta \cot \theta + k \cot \theta + \operatorname{cosec}^2 \theta + \cot^2 \theta \} = 0, \infty$ .

When  $\operatorname{cosec} \theta = \infty$ ,  $\theta = 0^\circ$  or  $180^\circ$ , and we get the obvious maxima. Otherwise

$$2 \operatorname{cosec}^2 \theta - 1 = \sqrt{(\operatorname{cosec}^2 \theta - 1) \cdot \{(k^2 + 2) \operatorname{cosec} \theta - k\}}$$

gives the minima. The equation is of the fourth degree when rationalized, and it is not easy to pick out the applicable roots.

(II) Let O be the centre of the circle and OX the diameter. If  $\theta$  is the angle XOP, and  $r$  the radius of the circle, the distance PM of P from the diameter =  $r \sin \theta$ , and the square of the distance of P from Q is

$$\begin{aligned} &r^2(1 - \cos \theta)^2 + (r \sin \theta - p)^2 \\ &= 2r^2(1 - \cos \theta) - 2pr \sin \theta + p^2. \end{aligned}$$

Hence the ratio of PM to P'Q

$$= r \sin \theta / \{ 2r^2(1 - \cos \theta) - 2pr \sin \theta + p^2 \}^{1/2} = u \text{ (say),}$$

and therefore  $u = 2tr / \{ t^2(4r^2 + p^2) - 4prt + p^2 \}^{1/2}$ ,

where  $t = \tan \frac{1}{2}\theta$

$$du/dt = t^2(4r^2 + p^2) - 4prt + p^2 - t[t(4r^2 + p^2) - 2pr] = 0$$

for a maximum or a minimum. Whence

$$t^2(4r^2 + p^2) - 4prt + p^2 = t[t(4r^2 + p^2) - 2pr]$$

or

$$t = p/2r$$

if  $p \neq 0$ .

Hence  $\tan \frac{1}{2}\theta = p/2r$  gives a minimum value, since  $d^2u/dt^2$  is positive, when  $t = p/2r$ .

Again, if  $p = 0$  the maxima are found.

**17485.** (A. M. NESBITT, M.A.)—The normals at the points of contact of the conic  $\sqrt{(la)} + \sqrt{(mb)} + \sqrt{(nc)} = 0$  with the sides of the triangle of reference are concurrent. Prove that

$$\begin{vmatrix} l^2 & m^2 & n^2 \\ a^2 & b^2 & c^2 \\ a \cos A & b \cos B & c \cos C \end{vmatrix} = 0.$$

Solution by C. E. YOUNGMAN, M.A., R. TATA, M.A., and others.

Let D, E, F be the points of contact; then D is  $(0 : n : m)$ , and  $BD : DC = cm : bm$ ; therefore

$$(BD - DC) : BC = (cm - bm) : (cm + bm).$$

Now the condition for concurrent normals is

$$BD^2 - DC^2 + CE^2 - EA^2 + AF^2 - FL^2 = 0 \dots \dots \dots (1);$$

therefore  $a^2(cm - bm)(an + cl)(bl + am) + \dots + \dots = 0$ ;

therefore  $l \cos A (b^2n^2 - c^2m^2) + \dots + \dots = 0$ .

(The Question should have in the last line  $l, m, n$  in place of  $a, b, c$ .)

It is a curious property of this DEF that

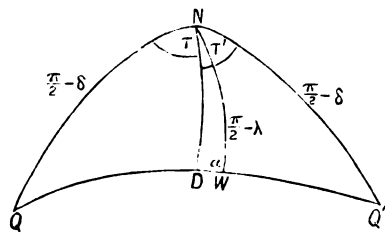
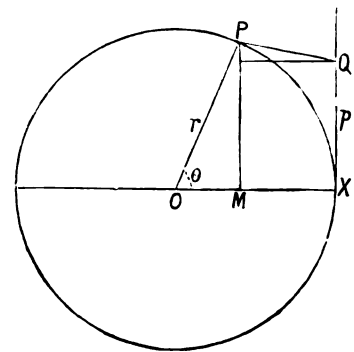
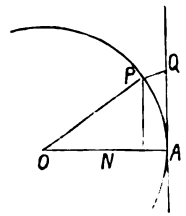
$$\cot ADB + \cot BEC + \cot CFA = 0.$$

For (1) can be written  $BC(BC - 2DC) + \dots + \dots = 0$ ,

or  $BC^2 + CA^2 + AB^2 = 2BC \cdot DC + \dots + \dots$

Now divide by  $4\Delta$ , and write  $pqr$  for the altitudes; then

$$\cot A + \cot B + \cot C = DC/p + \dots + \dots = \cot C - \cot ADB + \dots + \dots$$



## QUESTIONS FOR SOLUTION.

**17616.** (A. W. H. THOMPSON.)—Denoting the mutual moment of two lines  $\alpha, \beta$  by  $(\alpha\beta)$ , and the sine of the spherical triangle whose summits are the directions  $\alpha, \beta, \gamma$  by  $(\alpha\beta\gamma)$ ; show that the regulus through the lines  $\alpha, \beta, \gamma$  has a generator parallel to another line  $\delta$ , if

$$(\beta\gamma)(\beta\gamma\delta) + (\gamma\alpha)(\gamma\alpha\delta) + (\alpha\beta)(\alpha\beta\delta) = 0.$$

Hence give necessary and sufficient conditions that the four lines  $\alpha, \beta, \gamma, \delta$  are co-regular. Hence, or otherwise, prove the following analogue in space of the theorem of the orthopole in a plane. If  $a, b, c, d, A, B, C, D$  be the points and planes of a tetrahedron;  $L$  be any plane; and  $p, q, r, s$  be the feet of the perpendiculars from  $a, b, c, d$  on  $L$ ; then the perpendiculars from  $p, q, r, s$  on  $A, B, C, D$  are co-regular.

**17617.** (C. M. ROSS, B.A.)—If

$$u = \int_0^x \frac{\tan^{-1} ax \tan^{-1} bx}{x^2} dx,$$

show that

$$d^2u/(da db) = \pi/(a+b),$$

and thus evaluate the integral.

**17618.** (Professor R. SRINIVASAN, M.A.)—If

$$(m+1) \tan \theta = (1-m) \tan \phi,$$

$$\frac{\sin 2\theta}{\sin 2\phi} = 1 + 2 \sum_{r=1}^{\infty} (-1)^r m^r \cos 2r\phi.$$

**17619.** (W. E. H. BERWICK.)—If  $S_0(n) = n$ , and when  $r$  and  $n$  are positive integers,

$$S_r(n) = 1^r + 2^r + 3^r + \dots + (n-1)^r + n^r,$$

show that  $n^{r+1} = \sum_{t=1}^{n-1} (-1)^{t-1} \frac{(r+1)!}{t!(r+1-t)!} S_{r+1-t}(n)$ .

**17620.** (J. M. CHILD, B.A., B.Sc.)—Prove that, if  $n$  is a prime number, and  $m$  is less than  $n$ ,  $(mn)!/(n!)^m - m!$  is divisible by  $n^2$ . Is this theorem new? If not, who first enunciated it?

**17621.** (Professor K. J. SANJANA, M.A.)—Show that, when  $6n+3$  is not a power of 3, the number  $(x^{2n} + 1)/(x^2 + 1)$  has five factors at least,  $n$  being a positive integer and  $6x$  a perfect square. When, however,  $6n+3$  is of the form  $3^k$ , the number of factors is  $2k$ .

**17622.** (J. J. BARNVILLE, B.A.)—Express  $x^n - x^1 + 1$  in the forms  $A^2 \pm 6B^2$ , and deduce the factors of  $x^{12} + 6^n$ .

**17623.** (Professor NEUBERG.)—Trouver des valeurs de  $x, y, z$  qui rendent l'expression  $3^x + 4^y + 5^z$  divisible par 13.

**17624.** (R. F. DAVIS, M.A. Suggested by Question 17533.)—Has the equation  $y(x-4)^2 = x(3y+1)(y-3)$  any rational solution beyond  $x = 4, y = 3$  or  $-1/3$ ?

**17625.** (C. E. YOUNGMAN, M.A.)—NP, NQ being equal but not symmetrical normals to a limaçon, and APB, CQD the corresponding tangent-chords, prove that the points A, B, C, D, N lie on a circle with radius  $b$  which touches and encloses the directrix  $r = b \cos \theta$ .

**17626.** (W. N. BAILEY.)—Show that there are in general four pairs of confocal conics which are such that one of the conics circumscribes a given triangle, and the other is inscribed in another given triangle. In particular, if the two triangles coincide, the points of contact of the inscribed conics with the sides are the points of contact of the inscribed and escribed circles, and the tangents to the circumscribed conics at the vertices are the bisectors of the angles.

**17627.** (Professor E. J. NANSON. Suggested by Question 17428.)—A circle described on a chord PQ of a conic as diameter cuts the conic again in P', Q'. If PQ passes through a fixed point, so does P'Q'.

**17628.** (R. TATA, M.A.)—The locus of points from which three normals can be drawn to a parabola, such that one of them is equally inclined to the other two is a pair of lines at right angles to each other.

**17629.** (E. G. HOGG, M.A.)—The eccentricity of the Steiner ellipse of a triangle is  $\sqrt{[2d/(R+d)]}$ , where R is the circum-radius, and  $d$  the diameter of the Brocard circle of the triangle.

**17630.** (W. F. BEARD, M.A. Suggested by Question 17594.)—ABC is a triangle, P a fixed point in BC; Q, R points in CA, AP such that the triangles BRP, CPQ are equal. Prove that QR envelopes a parabola.

**17631.** (A. M. NESBITT, M.A.)—A straight line cuts the sides BC, CA, AB of a triangle in P, Q, and R; S is any point, and SL, SL', the internal and external bisectors of the angle QSR, cut PQR in L, L'; similarly for the bisectors of the angle RSP (SM, SM'), and of the angle PSQ (SN, SN'). Prove that (AL', BM, CN), (AL, BM', CN), (AL, BM, CN'), and (AL', BM', CN') are concurrent sets of lines.

**17632.** (H. D. DUNRY, M.A.)—AB is a diameter of a circle, radius R; P, Q are any two points on the circumference. Show geometrically that

$$AP^2 + PQ^2 + QB^2 \pm (AP \cdot PQ \cdot QB)/R = 4R^2,$$

according as the points P, Q lie on the same side or opposite sides of AB.

**17633.** (Professor J. C. SWAMINARAYAN, M.A.)—Ox, Oy are two great circles on a sphere, cutting each other at right angles at O. P, P' are any two points on the sphere. PM, P'M' are drawn perpendicular to Ox, and PN, P'N' to Oy. If OM = x, OM' = x', ON = y, ON' = y', the distance  $\delta$  between P, P' is given by

$$\cos \delta \left\{ (1 - \sin^2 x \sin^2 y)(1 - \sin^2 x' \sin^2 y') \right\}^{\frac{1}{2}} \\ = \cos x \cos x' \cos y \cos y' + \cos x \cos x' \sin y \sin y' \\ + \cos y \cos y' \sin x \sin x'.$$

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**12331.** (Professor SCHOUTE.)—To find the complex of the lowest degree that contains a given congruence  $(m, n)$  of the order  $m$  and the class  $n$ .

**12619.** (Professor ΜΥΚΗΟΡΑΔΗΥΑΥ, M.A.)—If two equal and parallel pieces of mirror glass, containing a thin plate of air between them, be closely united and immersed in a vessel of water, explain how it is that an object at the bottom can be plainly seen through them until the angle at which they are inclined to the surface becomes considerable, after which the object cannot be seen.

**12666.** (J. BRILL, M.A.)—A portion of a spherical surface is occupied by a thin shell of matter, of uniform surface density  $\sigma$ , attracting according to the Newtonian Law; prove that the potential of this at any point on the remaining portion of the surface is  $a\omega$ , where  $a$  is the diameter of the sphere, and  $\omega$  the solid angle subtended at the point by the contour of the portion occupied by matter. What is the value of the potential at points on this latter portion?

**12725.** (D. BIDDLE.)—Inscribe a circle in a triangle such that the areas of the triangle and of the three segments of the circle shall be in geometrical progression, the triangle being (1) a terminal, (2) an intermediate, member of the series.

**12842.** (Professor SYLVESTER.)—If, in the equation

$$x^3 + 5\epsilon x^2 + 10\epsilon^2 x^2 + 10\epsilon^2 x^2 + 5\epsilon x + 1 = 0, \quad \epsilon\epsilon = m,$$

and  $m$  is greater than 1 or less than  $\frac{1}{2}$ , or (abstraction made of the case where  $\epsilon = \epsilon$ )  $m$  is equal to 1 or equal to  $\frac{1}{2}$ , only one of the roots of the equation will be real. But, if  $m$  is intermediate between 1 and  $\frac{1}{2}$ , such values may be assigned to  $\epsilon$  and  $\epsilon$  as will cause three of the roots to be real, in which case the necessary (but not sufficient) condition must be satisfied, that  $\epsilon\epsilon$  shall be of the form  $m^{1 \pm \rho}$ , where  $\rho < \frac{1}{2}$ .

**13005.** (Professor MATZ.)—In order that a vertical cylindrical stalk may be severed by a blow of minimum force, find at what inclination the stalk must be struck by a sharp wedge-shaped blade.

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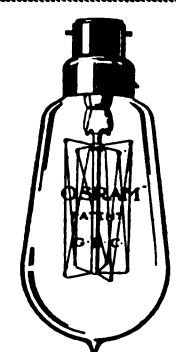
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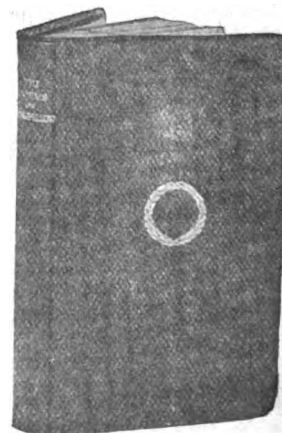
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## The Educational Times.

### THE CASE OF THE SMALLER SCHOOLS.

If an administrative order could ensure that all secondary schools should consist of four hundred pupils, neither more nor less, the basis of calculation for grants of public money would matter little. Granted that schools were of the same size, the cost of maintenance would in each case approximate to the same figure. The present method of estimating grants bears hardly on the smaller schools. A school of a hundred pupils, if it is to provide both an efficient system of classification and grading, and at the same time to offer the alternative courses of study that the parents of the area that the school serves have a right to expect, requires double the relative expenditure on staff that is needed by a school of four hundred pupils. The greater item in the cost of maintenance is concerned with salaries. In a school of four hundred pupils the sum required for the assistant staff might reasonably be put at the sum of £4,000. In a school of a hundred pupils the sum needed for salaries would be £2,000 if the pupils are to have the same opportunities that are afforded in the larger school. At the existing computation of Government grants the larger school would receive £2,000, or half the sum required for the assistant staff; while the smaller school would receive £500, or one quarter of the salaries of the assistant staff. The inequality is obvious. The chief expense of a school is the payment of the teachers, and we maintain that the Government grant should, in equity, be in proportion to the cost of maintenance, and not in proportion to the number of pupils.

In the result the present basis of calculating grants acts inequitably upon the smaller schools. Children educated at a smaller school do not get the same opportunities that they would have in a larger school. The grading and classification of the smaller school is often incomplete, and alternative courses of study are some-

times non-existent merely because the school is understaffed. And the under-staffing follows from the proportionately low grant. If the nation undertakes to provide opportunities of secondary education for all pupils, the children of parents who happen to live in a thinly populated district should not therefore be handicapped. This handicap on the smaller schools is one of the strongest reasons for the change demanded in the basis of calculating grants.

There has been wide misconception in various quarters with reference to the proposal that we have from time to time advocated in these columns. The proposal is, briefly, this: that when the Local Education Authority and the Board of Education have agreed upon the staff requisite for a given school, and upon the scale of salaries to be paid, the Treasury Grant should take the form of a payment proportionate to the salary fund and not proportionate to the number of pupils. It is not necessary that the grant should meet the whole cost of salaries. Indeed, we think it extremely unlikely that the Treasury and Parliament will at once agree to pay the whole sum expended on the teachers. The expected Education Bill may provide for a payment of two-thirds or of four-fifths. We are convinced that only on this basis can justice be done to schools of varying sizes. Eventually it is possible that the State will agree to meet the whole expense of salaries; but we are here only concerned in pointing out the need of a grant proportionate to the cost of the school.

One misconception is spread abroad as a reason why this change should not commend itself to Local Education Authorities. It is said that if the State pays the salaries the Local Authorities will be shorn of their powers. We do not propose that the State shall pay salaries. At present the State makes a grant of £5 for each pupil in a school, and the amount so calculated is paid to the Local Authority, which, in reality, adds it to the salary fund. If the grant is calculated upon the salaries paid, the sum will, just as now, be paid over to the Authority, which will proceed to expend it exactly as before. In no possible way is the freedom of the Local Authority threat-

ened. The Authority must pay salaries. At present the State helps it to the amount of £5 a pupil. Under the plan we propose, the State would help the Authority to a still larger amount. The Authority would, as before, appoint and dismiss teachers; it would, if it so desired, pay larger salaries than the scale agreed upon; but it would do so out of its own funds. The Education Committees are demanding, and quite rightly, that the State should bear a larger proportion of the cost of education. We say that this larger proportion must be calculated upon the cost of the school, *i.e.* the staff, and not upon the number of pupils.

Another misconception comes from those who express fear lest teachers should become Civil Servants. Teachers will not become Civil Servants because the State pays a higher proportion of the cost of education than it does at present, and because that grant is calculated upon the cost of the staff. There is no indication that teachers are likely to become Civil Servants in the sense in which the term applies to officers in Government Departments. The essence of the Civil Service is security of tenure during good behaviour. If in one corner of a Government Department work is slack in a given week, the clerks still sit at their desks and receive their pay. They are not, as operatives in a cotton mill may be, put on four days a week and paid in proportion. If teachers are to be Civil Servants in the present sense of the term, the Board of Education must ensure them continuous work and continuous pay. This the Board is certainly not prepared to do. Such a state of affairs would mean that admission to the teaching profession each year must be strictly limited by the number of vacancies. It would mean, further, that all freedom of appointment and dismissal would be taken from the authorities of the school. The governors could only make a change on the staff by finding a vacancy elsewhere for the teacher they wished to remove; they would have no freedom of appointment, but could only take the teacher notified to them as free by the Board. Such a condition, however desirable it may be thought by some to be, is not at present conceivable. If training licence to teach, and pensions are in the hands of the Government, it is obvious that teachers will become more closely connected with the State. But the change in the basis of grants will neither help nor postpone this.

Another objection to a change in the basis of grants is voiced by the Incorporated Association of Head Mistresses. So far as we can ascertain, the argument is that under the proposed system girls' schools would get less than boys' schools, because the salaries paid to women are less than those paid to men. We fully admit the injustice and we are surprised that women have for so long put up with this state of inequality. We believe there are still governing bodies which pay trifling salaries to assistant mistresses on the ground that they "live at home," and so the parents are made to contribute to the salary fund. But the inequality between the salaries of masters and mistresses is no argument against the change we advocate. In any case the girls' schools

stand to receive higher grants than they do at present. And the very fact that grants were assessed in proportion to salaries would encourage governors of girls' schools to raise their scales approximately to those in use for masters. The inequality would become more glaringly known and consequently would be more quickly rectified. One other point: there is nothing to prevent the authorities of girls' schools demanding a different proportion. If three-fourths of the salary fund in boys' schools is paid by the State, in girls' schools the proportion might be seven-eighths.

We end as we began: no other proposal is in the field, or has been made. The only basis for the assessment of grants, that is fair alike to all sorts and conditions of schools, is that which is proportionate to the main expense of the school—salaries.

## NOTES.

THE Teachers' Registration Council completed the preliminary part of its work on November 21. The conditions of entry to the Register have been drawn up and published. We give this historic document in full. It includes a list of the members and an introductory memorandum signed by the chairman. An important stage in the development of professional unity has been reached. It is a good augury that the conditions, including University professors and technological teachers, have received the unanimous agreement of a large Council representing every sort of education in the country. It only remains now for teachers to come in their thousands and register. The forms are ready, and for the modest sum of a guinea, once paid, a teacher can be formally enrolled as a member of a professional body. The recognition of the importance of the movement given by the Press both in London and in the provinces indicates a widespread feeling that teachers ought to form themselves into a united profession. We publish an article on the subject from a writer who has made himself familiar with all the aspects of this important matter.

THE formation of the Teachers' Register is a matter of special moment to members of the College of Preceptors, and sets the seal on the work that the College has been doing for sixty-seven years. In the memorandum, signed by Mr. Acland, the year 1846 is mentioned as that in which the movement for registration first arose. This was the year of the foundation of the College of Preceptors. One of the main objects of the College is thus stated in the charter. The College was founded for the purpose of

Affording facilities to the teacher for the acquiring of a sound knowledge of his profession, and by providing for the periodical session of a competent Board of Examiners to ascertain and give certificates of the acquirements and fitness for their office of persons engaged, or likely to be engaged, in the education of youth, particularly in the private schools of England and Wales.

The first number of *The Educational Times*, published in

October 1847, gives as one of the objects of its publication

To furnish those who intend to enter the profession, and to its junior members, that instruction in the principles of the art of teaching and in their practical application which is indispensably necessary to enable them to perform their duties successfully.

Throughout its whole existence the College has worked for the training of teachers and the formation of a professional body. By a happy accident the final report of the Registration Council is issued from the College buildings in which that Council has rented temporary offices.

Mr. J. A. PEASE has made a determined effort, both in speaking at the Mansion House and in a letter to the Vice-Chancellor of London University, to secure support for the Departmental Committee that has been charged with the duty of carrying out the recommendations of the Royal Commission. The starting-point of the Departmental Committee is that the underlying principles of the Commission's scheme must be regarded as accepted, although modifications in machinery and details may be admitted. If these principles can be accepted by the various institutions and persons concerned, then the Government, so Mr. Pease assures us, is prepared to hasten on the necessary legislation and to provide the needed funds. He appeals for legislation by consent, urging that the Commission's scheme is the only one before us, and that, if it is discarded, all chance of reform will be postponed for many years. "I would ask those who are anxious that London should have a University worthy of itself," says Mr. Pease, "to be slow to reject this scheme because in this point or that it may fall short of their ideals, or is even contrary to what they think best. Some sacrifice will be necessary if a worthy scheme is to be carried out."

THE principles that Mr. Pease lays down for general acceptance are these: the government of the University, and particularly its financial administration, shall be entrusted to a small Senate, predominantly lay in its composition and not representative of special interests, but that the control of teaching and examinations shall be in the hands of teachers, and that the educational and financial control of the constituent colleges shall be vested in the University. It is further laid down that as much of the University work as possible, together with the University administration, should be concentrated in a central University quarter; but the site of this quarter is at present an open question. On this point it will be the duty of the Departmental Committee to advise the Government. The concluding principle laid down by Mr. Pease is of special importance, seeing the controversy that has arisen. It is: "That the scheme of reconstruction should provide effectively for continuance of access to University examinations by external students, *i.e.* by those who are not attached to any college or school of the University."

THE question of a site is very difficult of solution, because matters of policy are included. *External Students.* A central site in the neighbourhood of the British Museum is held by some to indicate the absorption of King's College into University College. But the greatest opposition is voiced by the Council of the Graduates' Association. This body has issued a pamphlet, in which the findings of the Commission are criticized, both generally and in detail. A public meeting of students, convened by the Students' Representative Council, showed a strong element hostile to the Commission's scheme, mainly on the ground that the interests of external students would not be safeguarded. On the other hand, Sir E. Durning-Lawrence has resigned office as Vice-President of the Graduates' Association because he is in favour of a central site, and he expresses the hope, in his letter of resignation, that the Association will reconsider its policy, and, "instead of hindering these great developments, will turn its energies to helping to give effect to them." For the moment it looks as if there could be no general agreement, and as if, while the combatants are sparring, the opportunity for action would be lost.

No one can doubt that the opportunity which the University of London has in the past afforded to men and women of graduating without residence has had a distinctly stimulating effect upon the intellectual development of the country. Thousands of students, who were cut off from all hope of attending a University course, have been encouraged, greatly for their own benefit and for the good of the nation, to undertake a definite course of study in their leisure time, by the hope of obtaining a degree, which should prove both to themselves and to others that their study had not been vain and desultory. In this respect the University of London has exercised a unique influence upon education. Residence in a University atmosphere for a period of years carries with it certain definite advantages, but that is not a reason for denying to other students another set of advantages. So good a case has been made out for the external student that we do not think that anyone would dare to propose his abolition. Mr. Pease says that the scheme of reconstruction should "provide effectively" for the external student. We wish the Graduates' Association would withdraw its general opposition to the scheme, while retaining a watching brief to ensure that the "provision" is "effective."

THERE are two matters in the recent Report of the Welsh Department of the Board of Education that may be commended generally to the notice of school authorities. These are both concerned with the care for the bodies of the pupils. The time has gone by when it was considered the function of a secondary school to concern itself mainly, if not wholly, with the teaching of subjects intended to stock and train the mind. This Report,

which is signed by Mr. A. T. Davies, and in which Mr. Owen Edwards may be presumed to have collaborated, reminds governing bodies of the necessity of providing physical training for the pupils. It also points out the need for midday dinners, and says that where such meals have been provided children can do more work and better work in the afternoons. So far as our information goes, a number of schools in Wales now provide a meal for the pupils at prices ranging from 2d.—for which we are assured that, in one school at least, a sufficient and nourishing meal is provided, the governors paying for coal and service—up to 6d., for which in other schools a good meal of meat, vegetables, and pudding is given.

In other points we are unable to see eye to eye with the writer of the Report of the Welsh Department of the Board of Education. *The Age of Matriculation.* The Welsh Department is, we believe, independent of the Board of Education, and takes its authority direct from Parliament through Mr. J. A. Pease. It is necessary to understand this fact, or we might be puzzled by the continued condemnation of the Welsh intermediate schools on points that would receive other treatment from the Board of Education. For instance, the Report before us charges the intermediate schools with wasting time and money in maintaining little University departments at the top of the schools, and urges that pupils should be sent on to the University so soon as they have matriculated. In England the policy of the Board is to encourage attendance at school beyond the age of sixteen. To some extent the Universities have caused this confusion by establishing a matriculation examination that can be passed at the age of sixteen. We do not want overlapping; but pupils of sixteen are not ready for a University education. The Report also says that students, after taking a degree at the University of Wales, may then, if they wish, proceed to Oxford or Cambridge. This involves a criticism of the University of Wales that is, we are informed, keenly resented.

On two other matters the Report of the Welsh Department is, we believe, out of harmony with the policy of the Board of Education. *Inspection and Examination.* First, in the matter of inspection. The Report again urges that specialist examiners should be employed as inspectors, and, further, if we read the Report aright, that they should teach in the schools, in order to convince the staff that they are experts, and not merely critics. While an examiner is setting papers, it would not be possible that he should also be visiting schools and discussing his subject with the teachers, unless he could guarantee to visit every school within a period of six months preceding the examination. In the matter of examinations, the Report suggests considerable changes, and, in particular, argues that the examination should not be determined by the requirements of public bodies, but should suit the curriculum of the school. In theory, we agree, but in practice the school examina-

tion is bound to remain the entrance examination to further courses of study, and, therefore, the requirements of public bodies must, as it seems to us, be considered. The Consultative Committee recommends the establishment of an examination that should open the door to all careers.

THE schools in Wales are not sitting down quietly under these constant criticisms from the Welsh Department. *Protests.* We have received copies of strong protests that have been made by the Governors of Friars' School, Bangor, and the Wrexham County School, respectively. In commenting on the former of these two protests the *Manchester Guardian* says: "If the Governors of all intermediate schools in Wales undertook the defence of their work in the vigorous spirit in which the Bangor Governors have done, some check would soon be put to the airy and non-constructive criticism which of late has been too freely applied to Welsh schools and colleges." This criticism has undoubtedly done great harm. It has tended to discourage a large number of schools that are doing good work, and it has confused the public mind which can not understand why the Welsh Department should condemn in public documents the schools of Wales, whose welfare should be its first consideration. The Welsh University we are informed, has no desire to teach immature boys and girls of sixteen, to whom the freedom and independence of University life is not suitable.

THE series of kinematograph exhibitions that have been organized by the *Evening News* have shown how far at present moving pictures can be used as an aid to education. *Moving Pictures.* Of the patience, the skill, the ingenuity, the scientific knowledge involved in preparing the films it is impossible to speak in terms of too high praise. The exhibitions, which have been held in many parts of London, will bring home to teachers the possibilities and at the same time will focus criticism. It seems to us that the films, as an educational instrument, suffer from certain disabilities. In the first place the film makers do not seem to have dissociated themselves entirely from the idea of preparing an entertainment for the general public. The "interest" that appeals to the tired or bored man who drops into a kinema in order to be amused is quite different from the "interest" shown by a child or student seeking for explanation or illustration of a subject that is being investigated. In the second place, the pictures move too rapidly. Before a clear idea is grasped, the picture has gone. In some cases we could not help feeling that an ordinary photograph would have been more useful than the film.

THE best among the films that we saw was "The Ascent of the Matterhorn." As a rule, in this film the movement was not too rapid. It gave an idea of snow mountains that could be obtained in no other way short of climbing. But



the film of the Manchester Canal moved too quickly; many questions would have to be asked and answered to make it intelligible to a class of children. One would need to be able to stop it at will. It is possible that the promoters of the exhibitions were anxious to show the audience as much as they could during the time. But it would have been more instructive to teachers if the films had been shown on the supposition that the audience consisted of school children. The "Studies of Fish Life" were perfectly marvellous; but the passing of the film left only a blurred impression on the mind. Again, in "The Making of Silk Hats," it is not reasonable to suppose that one could master the methods of the industry in the few minutes occupied by the display of the film. We are convinced that moving pictures will soon become an essential part of educational equipment, just as they are already in the schools of medicine; but the film-makers must seek the help of teachers.

As an aid to clear thinking, we desire to remove a misconception that has received support in some quarters. The misconception refers to the attitude of Mrs. Bryant towards the proposal that the Government grant should be based on staff and not on pupils. At a meeting of the Association of Head Mistresses on October 3, Mrs. Bryant brought forward an amendment to the proposal. The amendment was to the effect that additional grants were desirable, but that the present basis of calculating grants should be retained. The amendment was carried. On October 11, Mrs. Bryant spoke in favour of a resolution to the effect that a substantial proportion of any increased grants that might be paid should be assigned to improving the staffing of schools and increasing the salaries of teachers. Mrs. Bryant's attitude remains the same; she asks for increased grants that may be applied to salaries, but she desires that the grants should be paid, as at present, on the basis of the number of pupils in attendance.

BIRKBECK COLLEGE recently celebrated the ninetieth anniversary of its foundation, and we give in another column an interesting account of the history of this institution, which plays so important a part in the education of London's workers, and which will, no doubt, form part of the reconstituted University of London. The *Westminster Gazette* reminds us of the bitter opposition made to Dr. Birkbeck when he first proposed his scheme for a Mechanics' Institute. "The *St. James's Chronicle*," says the *Westminster*, "attacked it as a 'diabolical scheme for the destruction of the Empire'; and others averred that Dr. Birkbeck's proposals 'to set up the labourers as a separate or independent class' meant 'scattering the seeds of evil, the extent of which the wisest of us cannot anticipate.'" With technical institutes in every town, we have made marvellous progress in ninety years towards providing opportunities of education for all. But the change

in public opinion is still more marvellous. No public man and no newspaper would now advocate a policy of limiting means of education.

MISS MADELEINE O'CONNOR delighted a large audience with her lecture on "Irish Life and Song" which was given at the College of Preceptors last month. This is the second of a series of social meetings arranged by the Council for the enjoyment of the members of the College. The large number of members who assembled showed that the arrangements have been appreciated. Miss O'Connor prefaced her lecture by a brief historical account of Irish music, musicians, and musical instruments. The attention of the audience was held throughout, and the songs, with which the lecturer illustrated her theme, were especially enjoyed. The lecturer was introduced by Mr. W. C. Brown, and a vote of thanks was proposed by the Rev. J. O. Bevan. After the lecture tea and coffee were served, and the members spent half an hour in conversation in the Council Room.

A SOMEWHAT momentous meeting of the Court of Bristol University was held on the 14th of last month. Prof. Turner moved a resolution asking the Council of the University to inform the Court of the circumstances of the appointment of Prof. Cowl. The resolution was seconded by Mr. Nowell Smith, but was lost, as only three members voted for it. The pro-Chancellor, the Right Hon. Lewis Fry, denied that there was any desire to obscure the facts. He said that the decision not to appoint Prof. Cowl was in the exercise of a discretion clearly vested in the Council solely, and was exercised honestly, carefully, and in the true interest of the University. The Vice-Chancellor, Sir Isambard Owen, supported this view. It would seem for the moment that the malcontents have failed to establish their case for an inquiry. But, in our opinion, the Council are not acting in a wise manner. Bristol is seething with discontent. This can only be met by a full and impartial inquiry into the whole of the matters in dispute.

BOY SCOUTS have figured widely in the correspondence columns of the newspapers during the last few weeks. The movement has been charged with militarism. Against this view Sir Robert Baden-Powell has vigorously protested. He tells us that the object of the movement is to teach good citizenship. Incidentally, a boy learns to defend himself in case of attack. There are nearly a million Boy Scouts. At a recent Exhibition twelve countries were represented, and several troops of foreign Scouts have been to England. All this, in the opinion of the Chief Scout, makes for mutual knowledge, and, therefore, for peace. He describes war as an anachronism and a disgrace to civilization. "With the practical steps being taken," says Sir Robert, "there dawns the hope

for the future development of international peace. In the Boy Scout movement we are endeavouring to do our share in a practical way towards that same end."

THE sweeping victories of Rhodes scholars in the Freshmen's Sports at Oxford have drawn attention to the comparative neglect by English public-school boys of individual athletic contests in favour of games played with others.

The Rhodes scholars come up to the University at about the age of twenty-two, and they are practised athletes. The English public-school boy comes into residence at the University at about the age of eighteen. At school the playing fields are always more popular than the gymnasium or the athletic ground. In order to equalize matters, the Oxford University Athletic Committee have passed two resolutions. These are (1) that a residence of any time in any other University or similar institution shall disqualify a competitor from competing in the Oxford University Freshmen's Athletic sports; (2) that in the Oxford University Athletic Sports, as distinct from college sports, no competitor shall compete if more than twenty-four years of age. These resolutions are not intended to take effect until the season October 1914-15. The disqualification may apply to students from Scotch or other English Universities equally with the Rhodes Scholars.

## SUMMARY OF THE MONTH.

THE Teachers' Guild have issued the following Resolutions on the Continuation Schools Bill:—

1. That the Council generally approve of the principle underlying the Continuation Schools Bill, but consider that it might be expedient in the first instance to make the Bill applicable only to selected trades and industries.
2. That the number of hours and times of attendance should be so arranged as to suit various trades and industries, and be settled by local by-laws within prescribed limits.
3. That, in view of the relatively small proportion of the population which takes advantage of further education under the present voluntary system, and of the irregularity of attendance, and in view of the fact of the vital importance and value of educational tutelage during the years from fourteen to eighteen, and in view of the waste that arises in the present system which largely nullifies the expenditure upon elementary schools, we are of opinion that more and better provision should be made for further education of young people, and that this should, at least in some measure, be compulsory. *Rider*: Attendance at continuation schools or classes should be compulsory for boys and girls not otherwise undergoing further education.
4. That in our opinion, as an aid to this end, the age of compulsory school attendance should be raised to fifteen, and that, to secure the efficient use of the extra years at school, it would be necessary to establish higher standard schools central in position.
5. The Council strongly urge a generous and systematic development of the provision of Day Continuation and Trade Schools.

THE Head Master of Charterhouse (Mr. Frank Fletcher), distributing the prizes at the County School for Girls, Guildford, on Saturday, said he was at present engaged in an organization which was going to press upon the Government that, in any future assignment of public money for education, there should be a definite part marked out, not for buildings, but for improving the position of the teachers and enabling schools to get efficient instructors, who should be paid a living wage and given a real chance and a sense of independence. Schools

were suffering from a great deal of nonsense which was uttered by the more ignorant and talkative members of the public. Some complained that such and such a class were over-educated. There was no such thing as over-education. People might have wrong education, or too much teaching, but they could not have too much education. A favourite catchword at the present moment was that woman's place was the home, which seemed to imply that she did not want education. It was just because woman's place was the home that she wanted all the education that could possibly be given her, for it should be remembered that the character of the sons and husbands of the future would depend on the kind of education women received.

A NEW use for the Thames was suggested in a report before a recent meeting of the London County Council Education Committee. A difficulty exists in securing sites in London suitable for open-air schools. There are two such schools in South London, but the Council has failed to get a site for a third on the north of the Thames. It is suggested that the problem should be solved by mooring vessels on the Thames. It was claimed that ideal open-air schools could thus be provided, without the cost of buying land. All that is necessary is an old ship, and the open-air school is ready for service. It is suggested that such a floating school could be made to serve the crowded districts in the East End.

MR. JAMES BRYCE has consented to give the inaugural address at the Conference Week of Educational Societies which begins at the London University, South Kensington, on January 2 of next year. He has chosen as his theme, "Salient Points in Education." The following associations have arranged to hold their annual meetings under the same roof during the Conference Week: Art Teachers' Guild, Assistant Mistresses' Association, Association of Teachers of Domestic Subjects, Child Study Society, Froebel Society, College of Preceptors, Geographical Association, Manual Training Teachers' Association, Modern Language Society, Montessori Society, National Home-Reading Union, Parents' National Educational Union, Private Schools Association, Royal Drawing Society, School Nature Study Society, Science Teachers' Association, Simplified Spelling Society, Teachers' Guild, Teachers in Technical Institutes, Training College Association, and the University Women Teachers' Association. A large number of the meetings will be open to the public. The Vice-Chancellor of the London University (Dr. Herringham) has promised to preside over the inaugural gathering. Among the speakers expected to take part in the meetings are Sir Robert Baden-Powell, Sir Henry Miers, Prof. Gilbert Murray, Vice-Chancellor Michael Sadler, and Miss Burstall.

THE certificated teachers of Herefordshire have decided to take action in a body with a view to compelling the Education Authority to redress the grievances from which they allege they suffer. The *Schoolmaster* states that the dates for handing in the resignations of the teachers will depend upon the terms of the various contracts of service; but it is understood that these will be sent in so as to terminate as nearly as possible at the same time. The first group of about a hundred resignations will terminate on Jan. 31, 1914, these being resignations of head masters and head mistresses only. For various reasons the remainder of the resignations are being delayed for consideration by the executive of the National Union of Teachers. The Herefordshire teachers assert that they are among the lowest paid in the country, and that their application to the County Education Authority for the adoption of a scale has been refused. The union has ample funds, and Herefordshire is regarded as a test case.

A NEW education enterprise, which has the sanction of the Board of Education, has been started at the Stirchley Technical Institute, Birmingham. It is a scheme to provide continuation classes for young employees in the day, instead of at night, and it has been enthusiastically taken up by Messrs. Cadbury Bros., who are permitting more than six hundred of their young workpeople to be educated in the

firm's time. Other manufacturers are looking upon the experiment with interest, and it seems assured of success. Hitherto the young people employed at the Bournville works have been required to attend an evening school on two or three evenings each week. Now they will attend the day school once weekly and the night school once. Each of the employees is to be present one morning or afternoon a week. The session will last for about forty weeks, the instruction at first consisting of English and arithmetic, with physical training.—*Manchester Guardian*.

THE First Annual Meeting of the Teachers' Associations throughout the Empire was held recently under the patronage of H.R.H. the Duke of Connaught. Over three hundred Overseas delegates and members were present, in addition to the British representatives. In the afternoon a business meeting took place, when Lord Meath was in the chair, and in the evening a large reception was held by the Council. The principal speaker at both sessions was the Minister of Education for Ontario (the Hon. R. A. Pyne, M.D., LL.D.), who came from Canada on purpose to consider arrangements for the second meeting of the Imperial Conference of Teachers' Associations which will be held in Toronto in 1916, by invitation of the Government of Ontario. This invitation was cordially accepted by the meeting, and the Minister afterwards met the Conference Committee of the League of the Empire in order to discuss particulars. The Conference will probably take place during the month of August, 1916, and it is hoped that representatives from every great city of the Empire may be present. The invitations and the definite arrangements will be published in due course. Other important business before the meeting was the formal inauguration of the Imperial Union of Teachers. The need of some bond between teachers throughout the Empire has for some time been generally recognized; indeed, the Union may be said to be the practical outcome of the affiliation to the League of Teachers' organizations in all parts of the Empire and of the Imperial Conference which took place last year.

THE Mansion House Advisory Committee of Associations of Boys has issued the following resolution:—

This Committee, directly representing 60,000 boys in London, and associated with 300,000 in the United Kingdom, is of opinion that the Board of Education should give official recognition to the constituent and other associations which accept a prescribed standard, and depute to them, under approved conditions, the physical training of boys at State-aided schools. And, further, that every school-boy, on reaching the age of twelve years, should compulsorily, and as a phase of his education, join one or other of the approved associations.

The Committee also decided on the details of a scheme by which the constituent associations, the Local Juvenile Advisory Committee for Employment, and the School Care Committees shall be brought into closer working relations.

PROF. RIPPMAAN'S carefully observed little daughter Hermione and her pleasant adventures in the art of speech greatly enlivened his learned and technical lecture on child language at a recent meeting of the Child Study Association. The story of how Hermione, at the age of sixteen months, was introduced to a pig, and she grunted politely with a much cleverer imitation of his grunt than a grown-up person could have achieved, illustrated the observation that children at a very early age love to repeat inarticulate noises. She is unusually clever at distinguishing the sounds of words. Her skill in using a combination of sounds at the age of seventeen months was so great that simple words like "chrysanthemums" tripped gaily off her tongue, and the only thing that stumped her was "Encyclopædia Britannica." Prof. Rippmann upset various old theories. He said there was nothing in the fond belief that a child understands language a considerable time before it uses it. Gesture and intonation it is quick to interpret, but is pleased when the most horrid things are said to it in a nice voice. That children very seldom invent words—all

stories to the contrary notwithstanding—that they have a meaning of their own for the words they use, that they are most ingenious and daring in their use of any limited vocabulary, that a word in baby talk stands for a whole sentence—as, for instance, "Bow-wow" means, "Mother, I am afraid of this dog; take it away"—that one may use baby talk to a child without injuring it, but that it is wrong to make use of its own imperfect imitations of words; that the mother is above all people the one who influences the child's speech, and that the child has a right to the best that can be given it in clearness and beauty of enunciation—these were some of Prof. Rippmann's interesting conclusions.—*Manchester Guardian*.

IN the old days pure science appeared to be something no one was interested in from the point of view of practical education. Now the greatest commercial discoveries depended upon new ideas, new conceptions being developed by men who had genius which made them devoted to their work, even though they had to starve to do it. It was only in Universities and technical schools that they found these men, and if British industry was to hold its own in the future they would have to realize the necessity there was, not only to turn to science, but to see that pure science had an opportunity of developing itself and being brought in contact with their daily work. He contrasted the rapid strides that were being made in the development of Universities in America with what was being done in this country. He had, he said, great faith in the capacity of the British nation; but unless we woke up thoroughly in the matter of education, and particularly higher education, he was a little nervous as to what we might find the state of things concerning our industrial supremacy some fifteen or twenty years hence.—Lord Haldane at Sheffield.

THE twenty-fourth Annual Report of the National Home-Reading Union has just been published and records a year of considerable activity. Four courses of reading—the Special, General, Introductory, and Young People's—have provided reading circles and individual members all over the country with a sufficiently wide range of subjects to suit every variety of taste, and last year's session closed with a membership of over 6,000. Outside the United Kingdom the work of the Union is making the best progress in Australia and South Africa, where branches are at work under capable and energetic honorary secretaries. In almost all countries the Union has some supporters, but they are, for the most part, scattered and isolated. A special feature of the Union's work is its Young People's Section, linked up with which are about 1,500 reading circles embracing about 70,000 scholars in day and evening schools. Through the co-operation of the London County Council and many of the provincial Education Authorities this side of the work has been considerably developed, and further extension is still looked for. The Endowment Fund which the Union is seeking to raise has made progress during the year, but still falls far short of the desired sum of £10,000. The Committee appeal to all who recognize the value of the Union's work to give effective expression to their sympathy with the movement by contributing to the fund.

AMONGST the letters from successful A.C.P. and L.C.P. students of Clough's College at the Summer 1913 Diploma Examinations, given on page 450 of the November issue of *The Educational Times*, was that of Mr. W. J. Jenkin. The necessary preliminaries were not received from this candidate in time to include his name amongst those to whom the L.C.P. Diploma was awarded in the list on page 452, but the notification of the award will be duly made in our January issue.—Ed.

DIARIES.—We have received from Messrs. Charles Letts & Co. a copy of "The Teacher's Pocket Diary" for 1914. It is in a convenient form and especially arranged for teachers. Pitman's "Year-book and Diary" for 1914 (1s.) is a handy book for the pocket. The "Almanach Hachette" (2 francs) will prove a useful compilation for teachers of French. The "Cambridge Pocket Diary" and the "Cambridge Desk Diary," published at the University Press, are especially arranged for the Academic Year.

## TEACHERS' REGISTRATION COUNCIL.

## INTRODUCTORY MEMORANDUM.

THE Conditions of Registration now made public are the result of the labours thus far of the Teachers' Registration Council, constituted by Order in Council of February 29, 1912.

Several previous efforts have been made to form a Register of Teachers, the earliest of these being in the year 1846, while during subsequent years Bills have been presented to Parliament with a similar object. These efforts, although they did not result in the forming of a permanent Register, served to throw light upon many aspects of the problem and to render its ultimate solution less difficult.

The latest attempt had its origin in the Education (Administrative Provisions) Act of 1907, which gave authority for the issue of an Order in Council setting up a Registration Council, Representative of the Teaching Profession. A Conference was held in November, 1909, under the presidency of the Right Hon. Sir Herbert H. Cozens-Hardy, when the representatives of thirty-seven associations of teachers attended and unanimously resolved to promote the formation of a Teachers'

Registration Council. A summary of the proceedings of the Conference, together with a report by the Secretary of the Board of Education, will be found in the Parliamentary paper Cd. 5726, which gives also full information as to the steps which led to the Order in Council of February 29, 1912.

This Order provided for the formation of a Teachers' Registration Council, representative of the teaching profession, and consisting of forty-four members, all of whom are to be teachers or persons recently engaged in teaching. These members are elected by the appointing bodies named in the First Schedule of the Order in such a manner that eleven Universities and forty-two Associations of Teachers are represented on the Council, eleven members being drawn from each of the main groups of teachers, viz: University teachers, elementary school teachers, secondary school teachers, technological and specialist teachers. The Council thus formed, with the appointing bodies represented, will be found below:—

## 1.—Appointments made by Bodies shown in Part I of the First Schedule to the Order in Council.

## UNIVERSITY TEACHERS' GROUP.

APPOINTING BODY.	PERSON OR PERSONS APPOINTED.
The Hebdomadal Council of the University of Oxford ..	The Very Rev. T. B. Strong, Dean of Christ Church, Vice-Chancellor of the University.
The Council of the Senate of the University of Cambridge ..	Mr. W. Durnford, Vice-Provost King's College, Cambridge.
The Senate of the University of Durham ... ..	Prof. F. B. Jevons, Professor of Philosophy, University of Durham.
The Senate of the University of London ... ..	Sir Henry Miers, Principal London University.
The Council of the Victoria University of Manchester ..	Prof. J. J. Findlay, Professor of Education, Manchester University.
The Council of the University of Birmingham ... ..	Prof. Alfred Hughes, Organizing Professor of Education, Birmingham University.
The Council of the University of Liverpool ... ..	Prof. E. T. Campagnac, Professor of Education, Liverpool University.
The Council of the University of Leeds ... ..	Prof. B. M. Connal, Professor of Latin, Leeds University.
The Council of the University of Sheffield ... ..	Mr. H. A. L. Fisher, Vice-Chancellor Sheffield University.
The Council of the University of Bristol ... ..	Prof. J. Wertheimer, Dean of the Faculty of Engineering, Bristol University.
The University Court of the University of Wales ... ..	Sir Harry Reichel, Principal University College of North Wales, Bangor.

## ELEMENTARY TEACHERS' GROUP.

APPOINTING BODY.	PERSON OR PERSONS APPOINTED.
National Union of Teachers ... ..	{ Miss A. L. Broome, Head Mistress, Girls' Central School, Ipswich. Miss I. Cleghorn, Head Mistress, Heeley Bank School, Sheffield. Miss E. R. Conway, Head Mistress, Tiber Street School, Liverpool. Mr. W. D. Bentliff, Head Master, Haselrigg Road School, Clapham, S.W. Mr. Allen Croft, Head Master, Sneinton Dale School, Nottingham. Mr. A. W. Dakers, President, National Union of Teachers. Mr. G. Sharples, Head Master, Waterloo Road School, Manchester. Mr. J. W. Iliffe, Head Master, Central Secondary School, Sheffield.
National Association of Head Teachers ... ..	{ Miss E. F. L. Goodwin, Head Mistress, Eastern School, Southampton.
National Federation of Class Teachers ... ..	{ Miss E. Phillips, Assistant Mistress, Roath Park School, Cardiff. Mr. T. H. J. Underdown, Assistant Master, Ashton Gate School, Bristol.

## SECONDARY TEACHERS' GROUP.

APPOINTING BODY.	PERSON OR PERSONS APPOINTED.
Head Masters' Conference ... ..	Rev. Dr. James Gow, Head Master, Westminster School.
Head Masters' Association ... ..	Dr. H. J. Spenser, Head Master, University College School, Hampstead.
Head Mistresses' Association ... ..	{ Miss M. A. Douglas, Head Mistress, Godolphin School, Salisbury. Miss Florence Gadesden, Head Mistress, Blackheath High School.
Assistant Masters' Association ... ..	Mr. A. A. Somerville, Assistant Master, Eton College.
Assistant Mistresses' Association ... ..	Miss E. S. Lees, Science Mistress, High School, Clapham.
Association of Preparatory Schools ... ..	Mr. Frank Ritchie, Head Master, Beechview, Sevenoaks.
Private Schools Association ... ..	Dr. F. A. Sibly, Head Master, Haywardsfield, Stonehouse.
College of Preceptors ... ..	Mr. W. G. Rushbrooke, Head Master, St. Olave's Grammar School.
Teachers' Guild ... ..	Mr. Francis Storr, former Assistant Master, Merchant Taylors School.
Froebel Society ... ..	Miss E. R. Murray, Lecturer, Maria Grey Training College.

2.—Appointments made by Bodies or Groups of Bodies shown in Part II of the First Schedule to the Order in Council.

SPECIALIST TEACHERS' GROUP.

APPOINTING BODY OR GROUP OF BODIES.	PERSON APPOINTED.
Association of Technical Institutions ... ..	Mr. F. Wilkinson, former Principal, Municipal Technical School, Bolton.
Association of Teachers in Technical Institutions ... ..	Mr. P. Abbott, Lecturer, Regent Street Polytechnic.
National Society of Art Masters... ..	} Mr. H. B. Carpenter, Principal, School of Art, Rochdale.
Art Teachers' Guild ... ..	
Royal Drawing Society ... ..	
Royal Academy of Music ... ..	
Royal College of Music ... ..	
Union of Graduates in Music Incorporated ... ..	
Union of Directors of Music in Secondary Schools ... ..	
Incorporated Society of Musicians ... ..	
Guildhall School of Music... ..	
Royal College of Organists ... ..	
National Shorthand Association (Incorporated) Teachers' Section ... ..	} Dr. H. W. Richards, Professor, Royal Academy of Music.
Society of Certificated Teachers of Shorthand ... ..	
Association of Book-keeping Teachers ... ..	} Mr. Alfred Nixon, Principal, Municipal School of Commerce, Manchester.
Incorporated Society of Commercial Teachers ... ..	
Association of Teachers of Domestic Subjects ... ..	Miss M. E. Marsden, Principal, Domestic Science Training Department, Battersea Polytechnic, S.W.
National Association of Manual Training Teachers ... ..	} Mr. W. Pearson Smith, Instructor, Manual Training Centre, London.
Educational Handwork Association ... ..	
Incorporated Gymnastic Teachers' Institute ... ..	} Mr. Guy M. Campbell, a Founder and Chairman, British College of Physical Education.
British College of Physical Education ... ..	
Ling Association ... ..	
National Society of Physical Education ... ..	
Union of Teachers of the Deaf on the Pure Oral System ... ..	} Mr. A. J. Story, Principal, The Mount, Stoke-on-Trent.
National Association of Teachers of the Deaf ... ..	
College of Teachers of the Blind ... ..	} Lady Campbell, late Lady Superintendent, The Royal Normal College, Upper Norwood, S.E.
Smith Training College of the Royal Normal College for the Blind ... ..	
Training College Association ... ..	} Prof. John Adams, Professor of Education, University of London.
Teachers' Training Association ... ..	

The Chairman to be elected by the Council from outside its own body.

In addition there are ten Committees, consisting of teachers representing various forms of technological and specialist teaching.

The Council held its first meeting on July 23, 1912, and at the second meeting on October 4, 1912, the Right Hon. A. H. D. Acland was elected Chairman. There have been held in all eleven meetings of the Council. In addition, the four groups representing University teachers, secondary school teachers, elementary school teachers, and specialist teachers, have held several meetings for the purpose of considering conditions of Registration appropriate to their own requirements, while the ten Committees have also met from time to time for a similar purpose. The proceedings of these Groups and Committees have all been laid before the Council. Members of the Council and of the Committees have also consulted their constituents or appointing bodies under conditions sanctioned by the Council.

The results of the deliberations and proceedings of the Council are to be found in the accompanying Conditions of Registration, which are believed to represent the considered opinion of the representative teachers who have been engaged in the task of compiling them.

It will be seen that, up to December 1918, there are Alternative Conditions which provide generally that teachers whose experience dates only from the present year will be able to register in due course on the qualifications of experience and fitness for the teaching profession. Thus every possible regard is shown to existing interests.

After December 1918, however, applicants will be required to satisfy the Conditions laid down in respect of attainments, training in teaching, and experience. These are clearly set out, but it may be added that these conditions may be satisfied at once by many teachers, and that the Alternative Conditions are to be regarded merely as optional for a limited period.

In the Parliamentary Paper Cd. 5726 already mentioned it is stated that the composition of the Council should be determined not primarily by the kinds of teachers admitted to the Register, "but rather by the larger and more general conception of the unification of the teaching profession," upon which several preceding conferences of teachers had laid great stress.

These words express an aim which has formed the back-

ground of the Council's work. Great as is the diversity of teaching work, and of professional aspirations represented on the Council, its efforts to frame the Conditions of Registration have been made in the unanimous and sincere belief that the solidarity of the entire teaching profession is worth striving for, not only in the interests of teachers as a body, but also in the interests of education and of the whole community.

It is believed that national education will profit by the existence of a body of Registered teachers, drawn from every form of teaching work and holding definite and ascertained qualifications.

In issuing the Conditions of Registration, therefore, the Council appeals with confidence to all teachers to apply without delay for admission to the Register in order that the desire for unity so frequently expressed may be shown to have reality, and that the Council, representing as it does all classes of teachers, may feel that its work so far has merited the support of those on whose behalf it is appointed to speak.

On behalf of the Teachers' Registration Council.

November, 1913.

A. H. D. ACLAND, Chairman.

CONDITIONS OF REGISTRATION.

[In accordance with the provisions of the above-mentioned Order, and of the Education (Administrative Provisions) Act, 1907, the Teachers' Registration Council has framed conditions for the admission of approved persons to a Register of Teachers, the said Register to contain the names and addresses of all registered teachers in alphabetical order in one column, together with the date of their registration, and such further statement as regards their attainments, training, and experience as the Council may from time to time determine that it is desirable to set forth.]

The following are the conditions approved by the Council under which entries may be made on the Register:—

I.—ATTAINMENTS.

The applicant must have obtained one of the qualifications set forth in the Appendix to these conditions.

This condition will not apply in the case of teachers who produce evidence satisfactory to the Council of having had not less than three academic years' experience as recognized

teachers in Universities and institutions of University rank, approved by the Council for this purpose.

#### II.—TRAINING IN TEACHING.

The applicant must produce evidence satisfactory to the Council of having completed successfully a course of training in the principles and methods of teaching, accompanied by practice under supervision. This course must extend over a period of at least one academic year or its equivalent and must be carried on under conditions approved by the Council for this purpose.

This condition will not apply in the case of teachers who produce evidence satisfactory to the Council of having had not less than three academic years' experience as recognized teachers in Universities and institutions of University rank, approved by the Council for this purpose. It may be modified in other cases where an applicant satisfies the Council that facilities for the prescribed training do not exist.

#### III.—EXPERIENCE.

The applicant must produce evidence satisfactory to the Council of having had a period of experience as a teacher in Universities, Colleges, Schools, or similar educational institutions, accepted for this purpose by the Council.

The period of such experience required is *either* Three academic years' experience where the applicant is mainly or solely employed in teaching, *or* Five academic years' experience where the applicant is not mainly or solely employed in teaching, subject, in the latter case, to the provision that the Council may require evidence of an additional period of experience. The length of this additional period will depend on the total amount of time which the applicant is shown to have devoted to teaching.

Of the required period of experience two academic years at least must have been spent in one school or institution, or under one governing body, or the whole period must have been spent in not more than two schools or institutions.

The certificate of experience must be accompanied by evidence satisfactory to the Council that the applicant has shown fitness for the teaching profession.

#### IV.—AGE.

The applicant must have attained the age of twenty-five years.

#### V.—FEE.

The fee for Registration is a single payment of one guinea. Applicants for admission to the Register must send with their application a remittance for one guinea, which will be returned should the application be refused.

#### CONDITIONS ALTERNATIVE TO I, II, AND III.

(In force up to and including December 31, 1918.)

Up to and including December 31, 1918, the Registration Council will be prepared to consider an application for Registration from any teacher who is unable to satisfy fully the requirements of Conditions I, II, and III, provided that the applicant satisfies the requirements of Conditions IV and V, and also produces evidence satisfactory to the Council of having had the period of experience, prescribed below, as a teacher in Universities, colleges, schools, or similar educational institutions, accepted for this purpose by the Council.

The period of such experience required is *either*—Five academic years' experience where the applicant is mainly or solely employed in teaching, *or* Ten academic years' experience where the applicant is not mainly or solely employed in teaching, subject, in the latter case, to the provision that the Council may require evidence of an additional period of experience. The length of this additional period will depend on the total amount of time which the applicant is shown to have devoted to teaching.

Of the required period of experience two academic years at least must have been spent in one school or institution, or under one governing body.

The certificate of experience must be accompanied by evidence satisfactory to the Council that the applicant has shown fitness for the teaching profession.

The required period of experience will be reduced by one year in the case of applicants who produce evidence satis-

factory to the Council of having completed successfully a course of training in the principles and methods of teaching, accompanied by practice under supervision. This course must extend over a period of at least one academic year or its equivalent, and must be carried on under conditions approved by the Council for this purpose.

In the case of teachers in public elementary schools at least two academic years of the required experience must have been obtained subsequent to the recognition of the applicant by the Board of Education as a certificated teacher in public elementary schools. This condition does not apply in the case of teachers in Schools for Blind, Deaf, or Defective children, who may be accepted for Registration under the foregoing paragraphs of these Alternative Conditions.

#### VI.—CERTIFICATE OF REGISTRATION.

Applicants accepted for Registration will receive a certificate of Registration, which must be returned to the Council once every nine years for renewal.

In no case can a duplicate of the certificate of Registration be supplied.

#### VII.—EXPIRATION OF CERTIFICATE OF REGISTRATION.

The Certificate of Registration is valid for a period of nine years from the date of its original issue or last renewal. At any time within six months of the expiration of this period the certificate will be renewed without fee, provided that it is returned to the Council together with an application on the form to be obtained from the Secretary. This form will be sent to all registered teachers at least six months before the date of expiration of their certificates. Certificates which are not renewed in the proper form and within the prescribed period will be cancelled, the Register Entry being removed from the Register.

#### VIII.—RE-ADMISSION TO REGISTER.

When a Certificate of Registration has been cancelled it cannot be renewed, but a fresh application for registration may be made under such conditions as may be prescribed by the Council.

#### IX.—REGISTER ENTRY.

Applicants accepted for registration will receive, in addition to the Certificate of Registration, a signed copy of their Register entry containing the name and address, the date of Registration, and the Register number, together with a statement of the attainments, training, and experience on which the applicant was admitted to registration.

#### X.—ADDITIONS TO REGISTER ENTRY.

Registered teachers who desire to have their Register entry altered by the addition of new particulars as to attainments, training, or experience must apply to the Council enclosing their Certificate of Registration and the signed copy of their original Register entry, together with the necessary evidence and a fee of 2s. 6d. Should the application be granted the Register entry will be altered accordingly, and a signed copy will be forwarded to the applicant. All changes of address must be notified promptly, and will be recorded and acknowledged without fee.

#### XI.—DUPLICATES OF REGISTER ENTRY.

Registered teachers who desire to have additional signed copies of their Register entry must apply to the Council enclosing their Certificates of Registration, together with a supplementary fee of 1s. for each copy.

*Note.*—The Council intends to seek powers to remove from the Register the names of such persons as it may hold to have been guilty of conduct rendering them unfit for the teaching profession, after such persons have had an opportunity of being heard.

#### APPENDIX.

##### SHOWING THE QUALIFICATIONS REQUIRED TO SATISFY CONDITION I.

1.—A certificate of having passed all the examinations for a degree of any University approved by the Council for the purpose of Registration.

2.—A certificate of having passed the examination prescribed or approved by the Board of Education as qualifying a teacher for recognition as a Certificated Teacher in Public Elementary Schools.

3.—The Diploma or Course Certificate of any University,



Technical Institute, or other institution approved by the Council for the purpose of registration, provided that such Diploma or Course Certificate is accompanied by evidence satisfactory to the Council that the applicant has passed through a course of instruction extending over the period prescribed and including such ancillary subjects as the Council deems necessary. The prescribed period for such a course is three academic years of full time day instruction, or five academic years of part time instruction, or three academic years of part time instruction where the applicant after attaining the age of sixteen has had seven years of practical experience of the profession or industry concerned.

4.—A certificate of having passed an examination conducted by any joint Board or other examining body approved by the Council for the purpose of registration, provided that it is shown to the satisfaction of the Council that the applicant has passed through a course of instruction extending over the period prescribed and including the subject or subjects of the examination, together with such ancillary subjects as the Council deems necessary. The prescribed period for such a course is three academic years of full time day instruction, or five academic years of part time instruction, or three academic years of part time instruction where the applicant after attaining the age of sixteen has had seven years of practical experience of the profession or industry concerned.

5.—In subjects in which the Council is satisfied that no degrees or diplomas exist of the character described in 1 to 4 above, and in exceptional cases, the Council may accept other satisfactory evidence that the attainments of the applicant are of a sufficiently high character to warrant registration.

*NOTE.*—In cases where the degree, diploma, or other qualification, enumerated in 1 to 5 above, has been obtained in respect of a technological subject, the Council will require evidence that the applicant has, after attaining the age of sixteen, spent not less than thirty-six calendar months in the practice of the profession or industry concerned. Of this period at least twelve months must be concurrent with or subsequent to the course for the degree, diploma, or other qualification held by the applicant.

Application Forms may be obtained from the SECRETARY, Teachers' Registration Council, 2 Bloomsbury Square, London, W.C.

## EURHYTHMICS.

By Miss MARGARET PUNNETT.

ON Wednesday, November 12, at the King's Hall, Covent Garden, M. Jaques Dalcroze gave the first of his Lecture-Demonstrations this season on Eurhythmics, and those who had the good fortune to be present are to be congratulated on the feast of beauty—beauty of form and movement—which they enjoyed. The natural ease, grace, and harmony of the movements, from the simple rhythmic exercises to the interpretations—tender, joyous, or passionate—of musical masterpieces, the display of free, healthy, and vigorous vitality, and of keen delight in the full use of the body and limbs as a means of expression—all these made a delightful impression, and one not easily to be effaced.

The exercises were arranged in such a way as to show the gradual development of the system as a means of training. The first consisted of marches in which simple rhythms are marked with the arms and feet. Here the first beat of each bar is emphasized, though this practice is discontinued at a later stage. These exercises include practice in control, the pupils being required to stop, to make one or more steps backward, to double or halve the speed, and so on, at a given word of command. One exercise furnished a very interesting example of the use of mental imagery. At the word of command the pupils stopped for a whole bar, and determined the length of it by counting mentally the imaginary movements corresponding to it. At this stage syncopation is introduced and different means are shown of expressing with arms and feet notes of different lengths.

Next followed a series of exercises in interpretation of various rhythms. First, the teacher improvised on the piano, the pupils following his music and interpreting it through the various changes of rhythm, simple and complex, which he introduced. Then two or three pupils in turn expressed

given rhythms in bodily movements while another pupil accompanied these movements by appropriate improvisation on the piano. These exercises, especially when based on such a rhythm as five in a bar, evidently presented considerable difficulty even to trained students. So also did the more advanced of those which followed, namely, exercises in which different parts of the body expressed different rhythms—for example, one arm beating 2 while the other beat 3; the head beating 2, one arm 3, the other arm 4 and the feet 5. One interesting example in this group consisted in the interpretation of a passage from Chopin by rapid movements in which the feet beat 2 while the hands clapped 3.

Up to this point the exercises had dealt with rhythm only; no "expression," that is, interpretation of the emotional aspect of the music, had been attempted. M. Dalcroze made it clear that for children he would include rhythmical exercises only, "expressive" exercises being suitable for more mature pupils.

The "expressive" exercises are many of them exceedingly beautiful. In the first example given, the teacher improvised to a given march rhythm, making his music now gay, now pensive, now passionate and stormy. Each of these phases was "realized" by one of the pupils, and it is difficult to convey by mere words an impression of the variety and beauty of the movements of the interpreters. One moved with dainty grace and smooth easy curves of body and arms; another with wild, joyous vigour and freedom that suggested the very presence of the spirit of the storm-wind. Later on other music was "realized," the most beautiful example being perhaps a five-part fugue of Bach. Here one student "realized" each part, and the intertwining of the five series of movements, the rapid graceful runs, the beautiful curves of body and limbs, the whole forming an exquisite embodiment in visible form of the spirit of the piece—all this needs to be seen to be fully appreciated.

A part of the program consisted of exercises in ear-training—scales, intervals, reading at sight, and so on. These though interesting, seemed—at least to the mere amateur—not specially striking or noteworthy. One feature only of these exercises calls for special comment, namely, the conducting of the class by one of their number by means of rhythmic movements of the whole body. This exercise was particularly interesting as showing in a marked degree what was, indeed, evident throughout, namely, the influence of the personality of the student upon her interpretation of a given theme or her treatment of a given means of expression.

With the impression of the beauty and charm of the exercises still fresh in the mind, it seems a more than usually ungracious task to analyse, to criticize, and to raise questions as to the scope and value of the system in the education of children. Indeed, M. Dalcroze himself reminds us of the extreme difficulty of criticizing such a system without full knowledge. "Eurhythmics," he tells us, "are above all a matter of experience," and no one can have a right to express an opinion as to the merits of the system who does not, as it were, know it from the inside." But we who are specially interested in the educational possibilities of eurhythmics may perhaps be allowed to raise certain questions, if only as means of indicating the directions to be taken by further experiment and further testing of the system in the training of children.

Let us consider the claims M. Dalcroze himself makes for it. In relation to musical training it has evidently a quite special function. No child could fail to be helped and stimulated in his appreciation of rhythm by the simpler exercises proposed, and the musically gifted child at least would probably profit much by many of those which are more complex and advanced. But M. Dalcroze makes for his system much wider claims than this. He maintains that its influence reaches far beyond the realm of musical education. It creates, he says, "by the help of rhythm a rapid and regular current of communication between brain and body. . . The creation in the organism of a rapid and easy means of communication between thought and its means of expression by movement allows the personality free play, giving it character, strength, and life to an extraordinary degree. . . Training the nerve centres, establishing order in the organism, is the only remedy for intellectual perversion produced by lack of will power, and by the incomplete subjection of body to mind."\*

\* "Rhythm as a Factor in Education."

In these and other utterances M. Dalcroze shows the fullest appreciation of the importance in education of establishing right relations between mind and body, of developing muscular control, of securing appropriate "motor-reactions"—of much, in fact, which underlies modern theories of physical education, and of practical work of all sorts. But will eurhythmics play so large a part in the fulfilment of this aim as M. Dalcroze suggests? Only time and fuller experience will make it possible to define clearly its exact function and value. Meantime there are one or two considerations which may perhaps help to guide our investigations. With the growth of the science of psychology there are certain principles which it is possible to lay down with more and more confidence. One of these is that to practise an activity in one connexion in order that it may be used in another is to a certain extent—probably to a large extent—wasteful, that the activity will on the other hand be best learned in the medium in which it is to be exercised. Another important principle is that the more clearly a child can see the purpose of what he is doing the more rapidly and effectively will he learn to co-ordinate thought and act in carrying it out. If these principles are sound, then it seems possible that eurhythmics, however valuable within its own realms—that is, in the development of the muscles and in the practice of the rhythmic expression of music—may not have so wide a sphere as a means of mental training as its gifted founder hopes for it. We must still seek elsewhere, namely, in the varied daily activities in which the child naturally engages, for the chief medium in which he may practise the quick and ready co-ordination of thought and action which we all desire for him. It is in these activities, too, that the sense of purpose will be strongest in him, that the expression of his thought in action will seem most necessary and inevitable—in his games, action-songs, handwork, drawing, and the like. The expression of simple musical rhythms in bodily movement naturally forms one of these activities, and in relation to it M. Dalcroze's work will no doubt prove of increasing value as it is more fully used and its function better understood. But it is only in so far as this particular activity has definite elements in common with other activities that we must expect the benefit gained by practising it to "overflow" into those others.

Such theoretical considerations evidently give only very general guidance as to the probable scope and value of eurhythmics in the education of children. Only further experience of the system can enable us to answer fully the important questions that arise in connexion with it. Assuming, as we surely may, that the expression in movement of the simpler rhythms is one of the child's natural activities, we need to ascertain by experiment how far we may profitably proceed with the more complex rhythms—in other words, at what point the child would begin to feel the exercises irksome and purposeless. We need to find how far it is wise—remembering that each day has only a limited number of hours—to give to eurhythmics time which might otherwise be given to activities such as dramatic singing and dancing—especially in the form of the folk-songs and dances which are proving so valuable in the training of children. The question also arises as to the special value of eurhythmics to the markedly musical child. Should the subject be carried further with such a child than with other children, and, if so, how far?

Meantime, while we await the answers to these and other questions, we owe cordial thanks to the man who has made so delightful and beautiful a contribution to the science of physical education; for there can be little doubt that in some form and to some extent, though these are not yet fully determined, the influence of eurhythmics on physical training in this country is destined to be real and lasting.

## CURRENT EVENTS.

ON Friday, December 12, at 8 p.m., Mr. John Foster Fraser, F.R.G.S., will give a lecture to members of the College of Preceptors on "Camels and Sand, Arabs and Veiled Women." Mr. Fraser is a traveller who speaks from personal experience. His lecture will be illustrated by lantern slides.

MESSRS. DENT are about to publish in book form, under the title of "Continuity," the address which Sir Oliver Lodge gave to the British

Association at Birmingham just recently. We understand that the context has been considerably added to. The book will be issued at 1s. net.

MISS FAITHFULL, Principal of the Cheltenham Ladies' College, has become a Vice-President of the Duty and Discipline Movement. The High Mistress of St. Paul's Girls' School has just become a member of the same Movement, and is allowing her paper on "Moral Education," which was read at the recent Conference of the National Union of Women Workers at Hull, to be printed as one of the propaganda booklets of the Movement, in the "Patriot Series."

"THE Collected Papers of Henry Sweet," edited by H. C. Wyld, will be published shortly by the Oxford University Press. The volume contains papers written by Prof. Sweet extending over a period of thirty and more years: all are philological except a long essay on Shelley's Nature poetry read to the Shelley Society but never published. A large part of the book is devoted to phonetics, in the study of which Sweet was a pioneer.

THE twenty-third annual general meeting of the Incorporated Association of the Head Masters will be held in the Guildhall (by permission of the Court of Common Council) on Tuesday and Wednesday, January 6 and 7, 1914, the President, Sir John D. McClure, Mill Hill School, in the chair.

THE annual meetings of the Incorporated Association of Assistant Masters will take place on Thursday, Friday, and Saturday, January 1, 2, and 3, 1914, at the London Day Training College, Southampton Row, W.C. The Council will meet on the first two days, and on January 3 the general meeting will be held, at 10.30 a.m. The annual dinner of the Association will be held at Pagani's Restaurant, Great Portland Street, W., on Friday, January 2, at 7.30 p.m.

DR. FRANCIS GRAY SMART has bequeathed £10,000 to Gonville and Caius College, Cambridge, for two "Frank Smart Studentships" in Natural History or Botany, and if this sum shall be more than sufficient to provide for these studentships, the balance is to be used to promote the study of these subjects in that college.

MISS ETHEL STRUDWICK has been elected Head Mistress of the City of London School for Girls in succession to Miss Alice Blaggrave, who had held the appointment since the foundation of the School and recently retired on a pension. Miss Strudwick, who is thirty-three years of age, is an M.A. in Classics of the University of London, and obtained the mark of "specially distinguished." Since 1902 she has been working at Bedford College for Women (University of London), and has latterly been head of the Department in Latin and in control of the work of a hundred and thirty students. She has also been, for the past four years, resident tutor of a hostel of Bedford College, with twenty resident students under her charge. She is on many of the Committees and Boards of the University of London, and is a member of the Committee of the Association of University Women Teachers. The salary attached to her new office is £400 per annum, rising to £500 by increments of £20. There were forty-six candidates.

DR. C. H. LLOYD, Precentor and Musical Instructor at Eton College, will resign his post next Easter. The *Times* is requested to state that the name of his successor will be published shortly. In the meantime, applications from candidates are not invited.

MR. CYRIL ASQUITH, Fellow of Magdalen College, and Mr. Carleton Kemp Allen, of New College, Oxford, have been elected Eldon Scholars.

THE LATE MR. WILLIAM GIBSON, the jeweller, of London and Belfast, has bequeathed £10,000 to Queen's University, Belfast.

MR. R. KENNARD DAVIS, M.A., of Marlborough College, formerly Scholar of Balliol College, Oxford, has been appointed Head Master of Woodbridge School, Suffolk, and will take office in January.

RECENTLY the King at York Cottage personally handed to Sidney Brook, of King's Lynn, the gold medal which his Majesty presented for the best scholar at the King Edward VII Grammar School, Lynn.

THE London County Council offer about 300 trade scholarships for girls, securing free education (with maintenance grant) preparing them on leaving school to take up employment in skilled trades.

THE University of Wales has decided to confer an honorary degree on Miss Constance Jones, Mistress of Girton College.

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"My son returned home yesterday from the Tutor with whom I placed him on your recommendation. We are well pleased with his progress and the way he has been looked after. I now wish him to take a course of Chemistry and Physics, and should be glad to know of a good place. Friends have given me some names, but your experience will be of far greater value."

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"We have to thank you very much for your courteous assistance in placing D—. It is just the school she required, and we feel we were fortunate to have had the benefit of your knowledge in the matter. Next year we shall be sending our younger daughter to school, and shall certainly seek your advice again."

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## THE TEACHERS' REGISTER.

### CONDITIONS OF REGISTRATION.

WITH the issue of the Conditions printed elsewhere the Teachers' Registration Council has accomplished the first part of the duty assigned to it under the Education Act of 1907 and the subsequent Order in Council of February 29, 1912. That is to say, it has drawn up the conditions under which a Register may be formed, "the said Register to contain the names and addresses of all registered teachers in alphabetical order in one column, together with the date of their registration and such further statement as regards their attainments, training, and experience as the Council may from time to time determine that it is desirable to set forth." The words quoted are taken from the Act, 1907, and indicate the legal boundaries within which the Council may act, with the additional provision that those admitted to the Register are to be "approved" persons.

Having "formed" the Register in the manner prescribed, the Council is further empowered to "keep" it, from which one may gather that it is intended to give the Council control over all matters concerning the Registration of Teachers, a control not dependent upon the approval of the Board of Education.

The intention of the Act and of the Order in Council is clearly to leave teachers free to build up their own profession as best they can within the limitations of the statute. Thus we return to the position of the schoolmasters of 1846, who founded the College of Preceptors as a representative professional institution designed to raise the standard of attainment of teachers and to enhance their status. The intervening years have witnessed the development of many forms of teaching and the establishment of many organizations representing their interests. But these organizations have usually been associated with the special interests of the different classes of teachers. Thus the National Union of Teachers, which started as the National Union of Elementary Teachers, has continued, despite its wider title, to stand especially for the welfare of the primary teacher. The Teachers' Guild,

although open to all classes of teachers, has drawn its members mainly from teachers in secondary schools. Other organizations have usually been designed avowedly to promote the interests of special classes.

The Registration Council is representative of these organizations and of the Universities. The teacher, as such, is not represented directly, but only through a professional association or University. This method of selection has the merit of securing that the Council shall represent the interests of all classes of teachers and shall make manifest the unity of the teaching profession. The interests of the various classes are, however, so diverse in character that many persons believed a common Register to be impossible, and certainly the Council must have found it no light task to secure the accommodations and compromises necessary before a set of Conditions applying to all teachers could be formulated.

As published, however, the Conditions represent the unanimous opinion of the Council, and they have also been accepted by the ten committees representative of various forms of technological and specialist teaching to which they were submitted as required by the Order in Council. On reading them one finds many signs of the consideration which has been given to the needs of particular classes of teachers, but in no point is such consideration destructive of the principle that a Teachers' Register should promote a high standard of academic attainment, should recognize the value of a training in teaching, and should take proper note of experience and of fitness for the teaching profession.

In each class of teachers the attainments required are the highest that are usual in the branch concerned. Thus the University or secondary-school teacher will usually hold a degree, the primary-school teacher will hold the Government certificate, while the technological and specialist teachers will be required to produce evidence of attainment appropriate to their several branches. It will be noted that the Council does not pledge itself to accept from these teachers any particular examination success. The institution or course certificate must be approved by the Council, and the suggestion as to joint Examining Bodies indicates that the Council desires to see examinations carried on under new conditions. It is clear that the various examining bodies in such subjects as commerce, physical training, and music will be encouraged to form joint boards to conduct one examination in place of the present competing tests.

The requirement as to training in teaching is definite without being rigid. A period of one academic year at least must be spent in the study of the principles and methods of teaching, accompanied by practice under supervision. It is not laid down that this training must be obtained in a training college, and one may suppose that the Council is prepared to consider a form of training such as is proposed for secondary-school teachers, whereby a graduate or other qualified person may be attached for a year to an approved school. Such a form of training seems capable of being applied in the case of a teacher of music or of a branch of technology, for whom no training college of the ordinary type would be suitable. In this matter of training the important thing is not to put a seal upon any particular system, but to insist upon a recognition of the principle that teaching demands specific training, and is not to be undertaken on the strength of academic or athletic prowess alone.

The condition as to experience requires that the applicant shall have served for three years and shall have shown fitness for the teaching profession. This fitness is to be attested by a certificate and also, less directly, by the fact that the applicant has served for a considerable part of the three years in one school. Evidently it is thought well to exclude the teacher who flits from school to school and retains no post for more than a year. In this connexion also it is proposed that the institution or school in which the experience is gained shall come under the consideration of the Council. This will be especially important during the first years of registration when teachers will be accepted for the Register on experience alone. It is to be expected that the Council will provide for a careful inquiry into the character and status of a school before accepting experience therein as a sufficient qualification for registration.

The Conditions proper, of which we have been speaking, are not to be universally imposed at once. The diversity of

interests represented made it necessary to show the fullest possible consideration to "existing" teachers, and accordingly it is provided that up to the last day of 1918, five years hence, any teacher of proved fitness and proper experience extending over five years may be accepted for registration. In the case of "part-time" teachers the necessary period is ten years or longer, according to the amount of experience. Thus it is arranged that any teacher in whole-time service at the present time, or anyone beginning to teach before December 31 of this year, may in due course apply for registration on experience alone.

A further concession is made in the case of University teachers. From these experience as duly recognized teachers is to be the sole requirement both now and in the future. It is clear that this form of teaching is of a special character, undertaken only by men and women of high academic standing from whom it is unnecessary to require pedagogic training or special evidence of qualifications. The presence of University teachers on the Register is extremely desirable, not only to enhance its status, but also to preserve its character as representing the unity of the profession.

Although the Register, when published, as it is expected to be annually from next year, will exhibit a great diversity, yet the statement opposite each person's name will show quite clearly the qualifications for registration, and it will be easy for a prospective employer to gain from its pages authentic information about any teacher. The Register will not guarantee fitness for any particular form of teaching work, but it will be a list of persons holding definite and ascertained qualifications. Just as the fact that a doctor's name is on the Medical Register does not alone attest his fitness to be a specialist in any one branch, so the Teachers' Register cannot give a warranty that a teacher is fitted to meet any particular demand. That is the concern of the employer, who may, however, obtain from the published Register information as to the attainments, training in teaching, experience, and fitness for teaching of any teacher whose name is recorded therein.

## A SCHOOL WITHOUT PRIZES AND PUNISHMENTS.

A STUDENT'S IMPRESSIONS OF SIGNORESSA MONTESSORI.

By SYDNEY WALTON.

"It is an age of giantesses, and of these intellectually Dr. Montessori is undoubtedly one. Attracted by her book, I went to Rome to study her system for myself. I was surprised to find such a great personality. She is a deeply read and widely cultured scientist, as well as an intuitive educationist, and during her lectures she seemed to unfold before us a great and wide educational philosophy much more consistent and complete than anything I had expected. Her lectures revealed an unusual gift of exposition, while she is also imaginative and poetical in her illustrations. Critics sometimes say she seems to know little of Froebel and Pestalozzi, but she moves with ease in the whole range of education."

This is the witness of Mr. Claude Albert Claremont, B.Sc., of Hampstead, who attended Dr. Montessori's training course in Rome held from January to May of this year. Mr. Claremont has become well acquainted with the famous Italian educationist and her work. He tells me that there were eighty-five students in the course drawn from all quarters of the world. One of the most picturesque of the company was an Indian, the head of a school of six hundred boys in Bangalore. It is possible that he may become the tutor to the royal family of the Rajah in his district. America sent many important educationists to sit at the feet of the Portia of pedagogic wisdom; and there was a lady from the Philippines.

"Three schools in the Eternal City itself were open for our daily observation, and perhaps the best of these is the convent school of the St. Franciscan nuns. The other two are municipal schools—one newly opened in the slums, and the other for children of a somewhat better class. Rome, I fear, has been blind, as was Nazareth of old, and the Italian papers are only just beginning to realize how distinguished a prophet Montessori has become to the world beyond the Italian shore. The fact is that the Italians are more backward as regards



their educational system than ourselves or the Americans. The number of Italian illiterates over fifty years old, especially women, is high. I ought to say that the Queen Mother takes the deepest interest in Montessori's work, and occasionally visits the schools.

"As you know, the laws of the school accord as far as possible with the natural laws of life. Dr. Montessori has an absolute respect for life, and permits every manifestation of its spontaneous unfolding. She will not thwart and restrict the young energies. There are no prizes, no punishments, in her schools, for the simple reason that the children are neither unnaturally forced nor repressed; and yet while each child enjoys perfect liberty there is no riot.

"True freedom is found in obedience to law, Dr. Montessori told us in a beautiful passage in one of her lectures. But the laws are the absolute laws of Nature and not imposed by one man upon another, or by the adult upon the child. Dr. Montessori declares that children the world over are oppressed and unable to develop their fullest powers. She spoke of the freedom of the sea and the stars, which nevertheless conform to the laws of Nature, and pointed out that, without this obedience, harmony would be impossible. The freedom of man also has natural limits, to overstep which causes disharmony and destruction. The Montessori children, therefore, may follow their own line of development, but they may not interfere with one another or do any damage. The man attains the greatest freedom who is most perfectly disciplined. And it is to help the child to find this self-discipline that is the high aim of the educator."

Mr. Claremont said that the real prize in a Montessori school is the sense of joyous discovery which will possess the boys or girls when they have found out something or succeeded in doing something for themselves. The children once carried their sand-paper letters above their heads in a kind of triumph at being able to spell. And Dr. Montessori tells of the ecstasy of a little boy who one day shouted on the terrace of the convent school, 'Why, the sky's blue!'

"The self-dependence, the physical control of the Montessori children are delightful to see. In the school grounds or gardens are swings, and flights of stairs, *sometimes* low fences along which the child may climb with its hands, and all are there to aid the child in his physical development. Dr. Montessori approves of Nature study, and considers that that part of education is already excellently carried out. She is a believer in the School Beautiful. The Italians, by the way, are much more solicitous than are we English about the external grace of school buildings.

"It was said of Pestalozzi that the children loved him down to his talons. It is striking to see the children cluster round 'the Dottoressa' when she comes into their room. At present the children are from three to six, but Dr. Montessori hopes to apply her methods right through to the University age, and she is busy with experiments upon older children. As it is, the children who pass through her schools enter the ordinary schools a year younger and a stage higher." Among the older children with regard to whose education she will shortly make further publications, Mr. Claremont tells about a girl of nine summers who had found a beautiful stanza in one of the poets, and of her own accord was conning it by heart.

It is for the spiritual and intellectual awakening of childhood all over the world that this great Italian lady is working. With her golden key of sympathy she is opening anew the wonder-gates which were choked with thick weeds of custom.

MR. H. CHETTLER, M.A., for thirty-two years Head Master of the Stationers' Company's School (which was established in Bolt Court, Fleet Street, in 1861, and is now at Hornsey), has recently retired, and has been presented with a silver salver and a silver loving cup subscribed for by a large number of Old Boys. To mark their appreciation of his services to the school, the Court of the Stationers' Company have made Mr. Chettle an honorary Liveryman of the Company, an unusual honour which is held by only three others.

THE Charity Organization Society announce that the title of the essay for which prizes are offered to training college students, is "The necessity of individual saving to secure good wages and cheap supplies for all."

## BIRKBECK COLLEGE, 1823-1913.

BIRKBECK COLLEGE was founded by Dr. George Birkbeck in 1823, "for the purpose of giving instruction to students in the principles of the arts they practise and in the various branches of science and useful knowledge," and was the first evening adult educational institution in England. The College was thus a pioneer in the educational movement which began early in the last century, and anticipated by nearly seventy-five years the beneficent work now being done in the numerous Polytechnic Institutions in London, the provinces, and throughout our dominions beyond the seas.

A year after the opening of the Institution (in 1824), Dr. Birkbeck, when laying the foundation stone of the Lecture Theatre, spoke these words: "My friends, we are about to erect a temple to the increase of knowledge, to the diffusion of the riches of the mind, to the amelioration of the human intellect; we are proceeding to found an institution for the improvement of the noblest faculties of man, to which the invitation shall be as universal as the dominion of knowledge, to the highest and humblest, alike and equal." The Governors have always endeavoured to act in accordance with these lofty aims, and at a time when general education was not popular the Institution strove with success to foster the idea of its liberal-minded founder that knowledge lies at the root of progress, and its example produced considerable effect on the national movement for the better education of the people. Many distinguished men of the day associated themselves with Dr. Birkbeck in the work initiated by him—amongst others the Duke of Sussex, Lord Brougham, J. B. Gilchrist, George Grote, and Francis Place.

Although most of the educational work in the earlier years would now be considered of elementary character, it was then far in advance of the times. From the very beginning, however, instruction of higher standard was offered to students qualified to benefit by it, and considerable success attended the efforts of the managers for many years; but with the loss of the illustrious founder and the falling away of many of his supporters there ensued a period of despondency. This period was happily shortlived. Fifty years ago a new era was inaugurated, and, aided by many devoted and enthusiastic workers, the College started on a fresh career of usefulness and prosperity, which has gone on progressively until the present day.

It was in 1867 that Lord John Russell presided at the Annual Meeting and spoke enthusiastically of the work done, Lord Shaftesbury and Lord Playfair on similar occasions in later years expressing equal appreciation. In 1870 Mr. W. E. Forster announced the provisions of his great Education Bill of that year from the Birkbeck platform, and it is an interesting fact that when explaining the provisions of that Act Mr. Forster stated that the education rate was not expected to be more than 1d. in the £, and would certainly *never exceed* 3d.

From this time onward students rapidly increased in numbers, and it became impossible to provide accommodation for all the applicants. In 1881 the late Lord Northbrook (for many years president of the College) started a movement for the erection of larger premises: a public appeal resulted in the completion of the present building, which was opened by His Majesty King Edward and Queen Alexandra (then Prince and Princess of Wales) in 1885. It was at this period that Prof. Tyndall described the Institution as an "Evening University," a notable utterance, bearing in mind the fact that in the recently published report of the Royal Commission it is recommended that Birkbeck College should become the constituent college of the University of London for evening students.

The Institution has developed with the advance in education. Its curriculum has kept pace with the constant demand for a higher standard, and its teaching has become more definitely academic in character and aim.

The College has now, after many trials and vicissitudes, completed ninety years of public service, and the Governors feel that it is an occasion worthy of celebration. It is one of the most active and vigorous Colleges in the metropolis, and provides approved courses of instruction for the Degrees in Arts, Science, Laws and Economics of the University of London, besides other valuable work. Of the eleven hundred

students in attendance last session (of whom upwards of four hundred were matriculated students of the University) about two-fifths were women, the Institution having the distinction of being the first to recognize the desirability of women being allowed to participate equally in its educational advantages.

The Governors have endeavoured to fulfil the trust handed down to them by Dr. Birkbeck, and it is highly gratifying that the value of the public service rendered by the College should have received the testimony of the Royal Commission on the University of London, as shown by the following extract from the report already referred to:—"We think that the original purpose of the founder of Birkbeck College, and the excellent work that Institution has done for the education of evening students who desire a University training, mark it out as the natural seat of the constituent college for evening and other part-time students."

With this recommendation established, all that is required is a suitable building of adequate dimensions and properly equipped, in order to consummate the great work initiated by Dr. Birkbeck ninety years ago. How is this to be obtained?

## THE COLLEGE OF PRECEPTORS.

### HALF-YEARLY GENERAL MEETING.

THE ordinary Half-yearly General Meeting of the members of the Corporation was held at the College of Preceptors, Bloomsbury Square, on Saturday, October 25.

The Rev. J. O. BEVAN was appointed Chairman, and the SECRETARY read the advertisement convening the meeting.

The minutes of the last meeting, copies of which had been circulated among the members present, were taken as read and confirmed.

The Report of the Council was laid before the meeting and was taken as read, a copy having been previously sent to every member of the College. It was as follows:—

#### REPORT OF THE COUNCIL.

The Council beg to lay before the members of the College the following Report of their proceedings since the issue of their last Report:—

1. A Course of Twelve Lectures to Teachers on "Educational Psychology" has been delivered by Prof. John Adams. A Course of Twelve Lectures on "Aids to Schoolroom Practice" will be delivered by Prof. Adams in the autumn.

2. The Christmas Examination of Teachers for the College Diplomas began on December 30 and ended January 9. It was attended by 426 candidates—332 men and 94 women. The Summer Examination was held on September 1 to 6, and was attended by 231 candidates—173 men and 58 women. Since the issue of the last Report, the Diploma of Fellow was conferred on 3 candidates, that of Licentiate on 41, and that of Associate on 121, who had satisfied the prescribed conditions. Practical Examinations for Certificates of Ability to teach were held in February and May; the number of candidates examined was 10.

3. An Examination of a Foreign Teacher for a Certificate of Proficiency in English was held on March 27 to 29.

4. (a) The Midsummer Certificate and Lower Forms Examinations were held on June 23 to 28, and were attended by 3,689 candidates. (b) Professional Preliminary Examinations were held in the first week in March and the second week in September, and were attended by 393 and 276 candidates respectively.

5. The Council have conducted the Examination and Inspection of five schools.

6. The examination of pupils of schools in Newfoundland, which the Council have conducted on behalf of the Newfoundland Council of Higher Education, was held at 146 Centres, and the number of candidates examined was 2,737.

7. The Council deeply regret to report the death of Mr. C. R. Hodgson, who was for thirty-eight years the Secretary of the College. In order to commemorate his services to the College, the Council have attached his name to the Third Prize for General Proficiency offered at the Certificate Examination, and a portrait of Mr. Hodgson has been placed in the Council Room.

8. (a) Since the last General Meeting twenty-four members have been elected, and six have withdrawn from membership. The Council regret to have to report the death of the following members:—Mrs. Fearnley, Miss M. A. Hartley, A.C.P., Mr. T. Leathwood, Mr. G. Neame, Dr. R. P. Nobbs, the Rev. R. Palmer, Mr. J. Swift, and Mr. T. C. Woodman.

(b) Arrangements have been made to enable life-members and subscribing members to obtain academic costume at a reduced price. Particulars will be sent to members. (c) Arrangements have been made for a reduced tariff for members at certain hotels and boarding-houses in the neighbourhood of the College. A list will shortly be issued to members. (d) It has been decided to supply cards of membership to all life-members and subscribing members. The cards will be issued shortly.

9. (a) Meetings of members were held in March, April, and May. At the March meeting a lecture on "The Montessori Method: Report of a Preliminary Investigation conducted at the Fielden School," was delivered by Prof. Findlay; at the April meeting a lecture on "The Teacher in the Making," by Mr. Frank Roscoe, M.A.; and at the May meeting a lecture on "Intellectual Enthusiasm," by the Very Rev. H. Montagu Butler, D.D., Master of Trinity College, Cambridge. Reports of the meetings have been published, as usual, in *The Educational Times*. (b) A new series of meetings, which will include a social meeting and lectures by distinguished lecturers on subjects of general interest, has been arranged for the coming session. Copies of the program of the meetings have been sent to the members of the College with the October number of the *Educational Times*.

10. The College Calendar in its new form was published at the end of April, and copies have been sent, without charge, to all life-members and subscribing members.

11. The Council have carefully revised the By-laws of the College. Proposals for the amendment of certain of the By-laws will be submitted to the members of the College at the next General Meeting.

12. In order to strengthen the position of Private Schools in view of impending legislation, the Council, with the co-operation of the Private Schools Association, are endeavouring to collect statistics with regard to the work and resources of those schools. A letter inviting Principals to give information on a number of points will shortly be issued to a large number of schools.

13. Grants amounting to £45 from the Benevolent Fund have been made to beneficiaries.

14. (a) Representatives of the Council have taken part in the work of the Teachers' Registration Council, the Federal Council of Secondary School Associations, the Teachers' Training Committee, the Joint Scholarships Board, the Secondary, Technical, and University Teachers' Insurance Society, the Committee of the Conference of Educational Associations, the League of the Empire, the Joint Scholastic Agency, and the Joint Agency for Women Teachers. (b) The Registration Council has almost completed the work of preparing the conditions of registration, and it is expected that these will be issued in the course of next month. All teachers whose names were on the old Register will be admissible to the new Register on payment of the registration fee. (c) The membership of the Federal Council of Secondary Schools Association has been increased by the addition of Representatives of the Conference of Catholic Colleges. The chief subjects under discussion by the Federal Council have been (i) Registration of Teachers, (ii) Examinations, (iii) Pensions and Superannuation of Secondary School Teachers. Information concerning Registration is given in paragraph 14 (b) above. A report on pensions cannot now suitably be made. With regard to Examinations, a Conference has been held between the Representatives of the Federal Council and the Board of Education, and a resultant proposition that closely concerns a section of the work of the College is that the duty of co-ordinating all public examinations affecting secondary schools be entrusted to a body of which one-half of the members should be appointed by the Board of Education and one-half by the Teachers' Registration Council. Further, the Federal Council has been considering a scheme for placing State grants for education on a new basis. At the instance of one of the representatives of the College of Preceptors, the Federal Council has resolved to publish interim reports of its proceedings, and one of these reports has already been placed before the members of the Council. (d) More than ten thousand teachers have joined the State Section of the Secondary, Technical, and University Teachers' Insurance Society, and, since January last, about six hundred members of the Society have received sickness benefit. These figures show that the standard of health among members of the Society is high, and it is hoped that after the triennial valuation it may be possible for the Society to offer further benefits without any increase of subscription. The Dividend Section, which is open to members of the College under certain conditions, offers exceptional advantages to teachers who desire to ensure against sickness. The number of teachers in this Section is about three hundred and fifty. (e) The Council have arranged for two meetings to take place at the University of London in January next, in connexion with the Conference of Educational Associations. At the first meeting, on January 6, there will be a discussion on "Registration," and at the second meeting, on January 8, a discussion on "The Position of Private Schools in a National System of Education."

With reference to Clause 10, Mr. THORNTON suggested that space in the College Calendar should be devoted to an

account of the objects and work of each of the bodies on which the College was represented. With reference to Clause 14, Mr. CRICHTON suggested that it would be an advantage if a short digest or précis of the proceedings of those bodies could be prepared, and either presented at the first General Meeting of the year, or else included in the Calendar. The CHAIRMAN said that the Secretary would make a note of the suggestions offered by Mr. Thornton and Mr. Crichton and submit them to the Council.

The Report of the Council was adopted.

The DEAN, in presenting his Report, said that, in accordance with a promise made to the members, the Report was accompanied by extracts from the Reports of the Examiners. The Report, which had been printed and circulated among the members attending the meeting, was as follows:—

#### THE DEAN'S REPORT.

In addition to the general statement of the examination work of the College during the past half-year, which has been embodied in the Report of the Council, I have now to submit to you some details concerning the Midsummer Certificate and Lower Forms Examinations, together with extracts from the reports of the Examiners.

The Examination was held at 97 Local Centres and Schools from the 23rd to the 28th of June. In the United Kingdom the Examination was held at the following places:—Balham, Belfast, Birmingham, Blackpool, Brighton, Bristol, Bruff, Cardiff, Carnarthen, Carnarvon, Cheltenham, Cheshunt, Cork, Croydon, Drogheda, Dublin, Dumfries, Ealing, Eccles, Edinburgh, Exeter, Eye, Falmouth, Farnborough, Felixstowe, Forest Hill, Glasgow, Goudhurst, Grove Ferry, Hawkhurst, Herne Bay, Highgate, Hornsea, Huddersfield, Hunstanton, Ilford, Inverurie, Kingstown, Launceston, Leeds, Lincoln, Liverpool, London, Manchester, Margate, Market Harborough, Matlock Bank, Merthyr Tydfil, Mountmellick, New-castle-on-Tyne, Newquay (Cardigan), Newquay (Cornwall), New Ross, Nottingham, Ongar, Pencader, Plymouth, Pontypridd, Portsmouth, Richmond (Surrey), Rochester, Rugeley, Sheffield, Southampton, Southport, Sunderland, Taplow, Taunton, Thorne, Watford, Wellington (Shropshire), Westcliff-on-Sea, Weston-super-Mare, Weybridge, Whalley, Wicklow, Wigton, Wisbech, York. The Examination was also held at Cape Coast Castle, Colombo, Constantinople, Georgetown (British Guiana), Gibraltar, Johannesburg, Mandeville (Jamaica), Nassau (Bahamas), Rangoon, Sale (Gippsland), and Wei-hai-wei (China).

The total number of candidates examined was 2803—2106 boys and 697 girls.

The following table shows the proportion of the candidates who passed in the class for which they were entered:—

		Examined.	Passed.	Percentage.
BOYS.	First Class .....	197	111	56
	Second Class .....	766	412	54
	Third Class .....	685	460	67
GIRLS.	First Class .....	140	62	44
	Second Class .....	210	141	67
	Third Class .....	319	268	84

The above table does not take account of those candidates who obtained Certificates of a lower class than that for which they were entered, nor of those (486 in number) who entered for certain subjects required for professional preliminary purposes.

The number of candidates entered for the Lower Forms Examination was 886—546 boys and 340 girls. Of these, 462 boys and 269 girls passed, or 85 and 79 per cent. respectively.

#### EXTRACTS FROM EXAMINERS' REPORTS.

##### SCRIPTURE HISTORY.

*Class I.*—The questions on Old Testament subjects were answered well, and the history was thoroughly known. Of the New Testament subjects, the answering in St. Mark was very good, on the whole; in the Acts it was less complete. The few candidates who took the Epistles showed careful study. Translation from the Greek was everywhere excellent.

*Class II.*—The papers, as a whole, were good: a large number obtained over 60 per cent. of the maximum, and the majority of those who failed to reach the minimum for passing did not fall far below that point. It was very satisfactory to find no trace of irreverence or flippancy in the answers, a point on which the Examiner has had to comment unfavourably on some previous occasions. Almost all portions of the paper were answered equally well, except that in C 2 the use of the phrase "Ephphatha" was very frequently referred to the miracle of healing blind Bartimeus or the blind man of Bethsaida; and a few candidates (mainly in groups apparently from particular schools) wrote, in answering C 1, about a miracle instead of a parable. In C 4 (4), though most candidates who took this section gave the

reference to and context of Our Lord's words, very few explained that for "in the bush" we should read "in the place concerning the bush." In some schools the work shown up was really excellent, and showed very careful preparation, and, as is usually the case, the very good papers were found in batches.

*Class III.*—There was considerable variation of standard in these answers, due rather to faults of teaching than to difference of material; but as a whole the answering was distinctly creditable. The context questions were well done—a point of great importance, because an intelligent knowledge of the text should be aimed at, especially in the early stages of teaching. The question D 4 (on "The plan of Jesus") was very well answered by some, showing a clear conception of the bearing of the parts on the whole. There were groups of excellent papers from certain schools; as to the rest, many were creditable; scarcely five papers could be called disgraceful. From the strictly literary side, the handwriting was fairly good, the spelling better than at Christmas, the arrangement of papers careful.

*Lower Forms.*—The candidates showed a good general knowledge of Old Testament where this was taken, the faults being inaccuracy and a want of perspective. For example, scarcely one answer showed an appreciation of the point of the question about "the coat of many colours." In the New Testament only few seemed to have been carefully taught the simple meaning of "Gospel," "Jesus," "Christ," F 2. The narrative questions, F 3, F 4, were answered fairly, but only fairly; it was the exception to find the narrative told step by step leading to the climax. In spite of faults natural to immature minds, the general result was satisfactory.

##### ENGLISH.

*Class I.*—The Shakespeare papers this year were very much on the usual level. The language had been well studied, contexts were known, and characters prepared. The explaining of Hamlet's "philosophical" arguments was, however, quite beyond the scope of some candidates. The other papers on English authors were, on the whole, rather better prepared than usual. One would like, however, to see a little more aesthetic appreciation of the beauties of descriptive and symbolic poetry. In the Grammar paper the Analysis was good, the Parsing not so good, the Definitions very weak indeed, and mostly quite illogical. The Essays, almost entirely on Description or Telephones, showed great want of originality, both in matter and method, and very little polish in style. The Handwriting and Spelling of the candidates showed improvement.

*Class II.*—Out of 1,013 Home candidates about 570 chose Grammar instead of the Literature alternatives, so that Literature was studied by only 43 per cent. of the total. In the year 1912 about 65 per cent. or 70 per cent. took Literature. Nor was Literature done better than before. The percentage of candidates who attained "Distinction" was much smaller than in 1912. There was an increase of illiterate candidates ("if we learn a dog kindly," "they never know but what," "the child was drowned," &c., &c.). Those who were not illiterate often wrote at great length on the vital importance of observing grammatical rules (Question 6). A lower level of skill was displayed in Analysis. Too many adhered to the old tradition of crowding their analysis in a corner—a maze of minutely scrawled abbreviations—as though they were ashamed of it. Parsing, as a rule, was fairly well done. Considerable intelligence was (as usual) shown in deciding whether given sentences should be corrected or left unaltered. By the majority the term "figures of speech" was interpreted as "parts of speech," and the series of words were written down in columns duly labelled "adjective," "verb," &c. On the average the Grammar paper was not so well answered as the Literature papers, which, except that they were too brief, were frequently quite good. Many candidates appeared to revel in the subtleties and humour of Shakespeare's dialogue. In the Essay, as a rule, little was achieved. Yet there was an obvious improvement on the results attained previous to 1913.

*Class III.*—The weakness of these papers was general in three great particulars: Spelling; use of capital letters, stops, and signs: general power of expression. Very many candidates are either ignorant of, or indifferent to, the use of capital letters and punctuation marks. Composition was very frequently omitted. The outline of story (G 11) was, as a rule, when chosen, literally, or almost literally, transcribed. Composition was best from those taking set books. Great interest was frequently shown in these, especially in A, B, C, and excellent papers were done. Letters produced a considerable amount of slang, apparently from boys; and one would judge that the letter was often preferred as a kind of composition in which anything or nothing may be said, and in any way. Some few letters could hardly have been improved upon. In studying the books the habit of forming mental pictures, and of reading into the spirit of the book, was most pleasingly evident in many instances: in others it was conspicuously wanting. In Grammar the answering was frequently mechanical and knowledge scanty: questions requiring original thought and expression were dealt with least satisfactorily.

*Lower Forms Literature.*—The candidates, with some exceptions, reached a satisfactory standard, and expressed themselves in an intelligible way. The reproduction of the memorized passages was remarkably good all through. Unfortunately, some of the papers were very badly written.

#### ENGLISH HISTORY.

*Class I.*—The new arrangement of longer and overlapping periods seems to work well. The papers (though some were very bad) showed a greater amount of intelligence than has sometimes been the case, and more gained distinction.

*Class II.*—The chief impression made by the papers is that it is essential to make clear to young students the most elementary things in history before attempting advanced work. Many of the papers were spoiled more by confusion of facts than by ignorance. Obviously the candidates had been taught many things and remembered them, but they had no clear view of general outlines to enable them to connect and interpret isolated facts which they remembered. The questions that gave an opportunity of expressing personal views and thoughts, such as C 4 and C 5, produced some of the best answers. Those dealing with customs and institutions, and with the growth of the Empire, were very badly done. It is perhaps not unnatural that the candidates who knew that Sir Robert Peel had founded the police force were far more numerous than those who knew that he had repealed the Corn Laws.

*Lower Forms.*—The most striking point in the answers as a whole was the total absence (except in a small minority of papers) of any idea of chronology or of the division of centuries. The literary questions were very badly answered as to the facts, independently of the chronological confusion. Many poems were assigned to prose writers, and *vice versa*. Some of the answers to A 3 incidentally betrayed great ignorance of geography, many candidates placing Wallingford, and some Lewes, in France; many also thought that Fotheringay is in Scotland. Evidence of great carelessness was shown in the frequent cases of the spelling of proper names, even where the names were printed on the paper.

#### GEOGRAPHY.

*Class I.*—The papers were not strong. Though a good deal of common sense was talked by many candidates, there was great variability and often a great lack of elementary geographical knowledge. Many candidates appear to have been dependent on text-books only, and these not up to date. There were few attempts at illustration by map or diagram. A common defect was inability to utilize the time allowed for the paper; far too much time would be spent over the one or two questions first tackled. Carelessness was very pronounced: "S. America" would be written for "S. Africa," "East" for "West," "Higher" for "Lower." All these were common errors. The favourite questions, though not necessarily the best answers, were Nos. A 2, 5, 6, 8, and B 13, 16. The paper, however, was, on the whole, impartially attacked. The contour map showed that in a large number of schools very little use is made of ordnance maps. Answers on the subject of map-projection were, as a rule, very vague, nor were there many evidences of much instruction in this branch of geography, though there were several brilliant exceptions. Very meagre, too, were the answers sent up on the wind question, and on the three detailed questions which concluded the second section. There was the usual out-of-dateness on the Gulf Stream theory, and for one candidate who wrote of a coral *polyp* fifty would speak of a coral *insect*. "Essay" questions (A 9, B 15, &c.) often evoked good work, but many spoil their work by writing *about* rather than *on* their subject. The large number who tried the "tropical colony" question went wrong mainly over Cape Colony, which they regarded as within the Tropic of Capricorn.

*Class III.*—The location of places on the outline map was the most satisfactory part of the work, but few could draw a sketch map of their own district, which should be one of the first things learnt. Some candidates, however, from Yorkshire, and some from Lancashire, sent up some admirably drawn maps. Some candidates drew fairly accurate maps of the Danube valley, while others gave accurate descriptions of some important towns. Of the climates of Spain, Russia, Canada, and Queensland few knew anything, the usual description being simply "dry and cold" or "hot and wet," which can hardly be considered accurate descriptions of the climates of countries like Spain and Canada which vary so considerably in different parts. Before the vegetable productions of a country can be intelligently considered, it is absolutely necessary that the climate of the different portions should be carefully studied.

*Lower Forms.*—These papers were very commendable, and the answers showed that the students were keen on this subject. The only question badly answered was No. 7. There were, however, among some very vague ideas on the nature of dew. The maps were well done, quite half gaining 50 per cent. or more of the marks.

#### ARITHMETIC.

*Class I.*—The style in which the work was sent up was generally quite good, and the number of numerical blunders was rather below the normal.

*Class II.*—A fair proportion of candidates attained a satisfactory standard, but there were many unsatisfactory features about the work in general. It was often extremely untidy and badly set out, with insufficient explanations of the steps. The meaning of the phrase "correct to two places of decimals" was unknown to many. The work on Areas and Volumes was often poor. There was much carelessness in the details of the working of the easier questions, and many failed to give correct answers to the harder questions through careless reading or insufficient thought in the attempts. The work would be much more satisfactory if the candidates would attempt less and give more thought to those questions which they attempt.

*Lower Forms.*—The average answering reached a satisfactory standard. Several candidates worked all the questions accurately. As a rule, the arrangement of the work was well ordered. Only a very small number neglected the instructions printed at the head of the examination paper.

#### ALGEBRA.

*Class I.*—This paper was not well done by the majority of the candidates, and a high percentage failed to obtain the pass minimum of marks. This was due not so much to the difficulty of individual questions as to inability to perform with accuracy the ordinary elementary algebraical processes of division, multiplication, substitution, simplification, Highest Common Factor, and Least Common Multiple. Bad mistakes such as " $(a + b)^2 = a^2 + b^2$ " and mistakes in sign were more frequent than they should have been in a First Class paper. In the graph question many candidates calculated correctly the corresponding values of the variables, but spoilt their graph by plotting the values obtained on much too small a scale.

*Class III.*—The problems at the end of the paper were fairly attacked, and routine addition, multiplication, division were reasonably good. But the questions requiring thought were very badly answered. Verifications were very imperfect, most thinking it enough to substitute in the results, and the cardinal errors in fractions—omission of denominator, cancelling terms, neglect of signs—were very common. In both fractions and equations errors in handling brackets were frequent.

#### MENSURATION.

*Class I.*—The paper was not satisfactorily answered. The percentage of failures was high considering that the three easiest questions required no further knowledge than that of the volumes of a cylinder and of a frustum of a cone and the areas of a "cap" of a sphere and of the curved surface of a cone. Very many candidates quoted absurdly impossible formulae, such as formulae for *volumes* which were only of the *second* dimension. The fact that so many candidates misquoted formulae suggests that many of them had tried merely to memorize results which they could not prove.

*Class II.*—The answers of the majority of the candidates were satisfactory, but the style of the answering was not good. Many of the candidates showed up a vast mass of figures all over the paper unrelieved by a single word of explanation, without even a diagram or the statement of the formula they were employing, although a note concerning this matter was put at the head of the paper.

#### FRENCH.

*Class I.*—The candidates showed sufficient knowledge of the language to enable them to understand the sense of the passages for translation into English, but the renderings were often very weak, and little thought was given to finding suitable English equivalents for the French phrases. In answering the questions on grammar a large number of candidates made elementary mistakes in the use of pronouns, and gave erroneous forms of common verbs. The translation into French was attempted by almost every candidate, and in the majority of cases with fair success.

*Class II.*—On the whole, the papers were very satisfactory. There was a decided improvement in knowledge of French grammar, and the free composition was very fairly done. Only a few candidates attempted the essay.

*Class III.*—Very poor. Even the translation into English was weak, while the majority of candidates were unable to answer correctly any of the grammar questions.

*Lower Forms.*—The translation into English was good throughout. The grammar was weak, especially the verbs, the new terminology proving a stumbling-block. The translation into French was, on the whole, fair.

#### GERMAN.

*Class I.*—The chief weakness in the translation from German was the poor vocabulary of many candidates, who did not know the meaning of such common words as *gewöhnlich*, *Aufmerksamkeit*, *Menschlichkeit*, *duften*, *flüstern*, *klagen*. This points to insufficient reading. The

grammar section was not well answered. Not a single candidate was able to put a few simple sentences into reported speech. The question requiring some sentences to be expressed in other words again afforded evidence of the candidates' poor vocabulary. The answers to the last question were rarely satisfactory: few had any clear idea how German poetry is scanned, and the inability to indicate the long vowels in a verse of poetry suggested that few could read it aloud with good effect. The translation from English was occasionally well done, but a considerable proportion of the candidates did not know the German for such common words as "lake, nest, branch, to bear, dirty, to dry, easy," and made bad grammatical mistakes. The two candidates who chose the free composition wrote well; one of these was evidently of German nationality.

#### LATIN.

*Class II.*—At a few centres the work was excellent, and showed very careful teaching, but the general results were far from satisfactory. The renderings of passages from the set books, especially Caesar, were fair on the whole. There was a strong tendency, however, to paraphrase rather than translate, and the style of English was far from pleasing. In unprepared translation the majority of the candidates failed signally, paying little attention to moods and tenses and disregarding constructions. Except at a few centres the foundations in accident and elementary syntax did not appear to have been laid with sufficient care. Questions on declension and conjugation were very badly answered, and the parsing was uniformly poor. The composition was of little or no value. Those candidates who attempted it had a fairly good vocabulary, but were ignorant of the ordinary rules for constructing a Latin sentence.

#### CHEMISTRY.

*Class I.*—The description of experiments, with which the candidates were doubtless familiar, was, as a rule, badly given, essential details being often omitted.

*Class II.*—The term "quantitative" in B5 was apparently not understood by several candidates. Many candidates used formulæ for names—thus, "H<sub>2</sub>SO<sub>4</sub>" for "sulphuric acid." Contractions like "dil. H<sub>2</sub>SO<sub>4</sub>" and "Hyd." should not be encouraged. The term "treat" is often used when exact details of manipulation are wanted.

*Practical.*—The work was very well performed and reflects much credit on the teaching.

#### PHYSIOLOGY.

*Class I.*—The standard of knowledge shown was, on the whole, satisfactory, and in a majority of the papers candidates gave evidence of a good capacity for applying that knowledge to the particular questions under consideration. Answers should be arranged more clearly and systematically, and more use should be made of headings and sub-headings. In too large a proportion of papers low marks were due largely to careless reading of the question.

*Class II.*—The average standard of work presented by candidates was satisfactory and showed an adequate grasp of the groundwork of physiology. Answers were not, however, so well set out as should be the case. Better tabulation should be aimed at. Candidates made good use of explanatory diagrams in their answers.

#### BOTANY.

The answers received were, on the whole, very creditable and distinctly better than in recent examinations. More attention has evidently been given to the construction of diagrams. In many instances these were quite satisfactory, though, in the majority of cases, there is still room for considerable improvement. The diagrams of the flower ought to be larger, and in the vertical diagram greater precision in indicating attachment of the parts to the thalamus is desirable. Also more attention to simple experiments is necessary. Lack of familiarity with common plants is evidenced by the majority of candidates. Not only the structure of the flower, but also that of the inflorescence and vegetative parts ought to be known in rather more detail. The remarks apply with equal force to both Classes.

#### DRAWING.

*Classes I and II.*—A large proportion of the model drawings in both classes showed little real appreciation of the meaning and application of perspective rules. This matter of making the pupil realize principles in the relation of actual to apparent forms is both so important and so difficult that no aid should be neglected by the teacher, and the Examiner suggests that pupils should be enabled and accustomed to view their own work from a greater distance than is usual—say four or five feet. They can then generally detect and correct at least some of their errors—especially in foreshortening—without other aid, and learn by degrees to anticipate and avoid customary faults. Another point that needs general attention is the relative proportions of the objects to be drawn as a group. The group was very often evidently not thought of at all as a whole, but each part was dealt with separately; the result being almost

certainly misleading and sometimes absurd. Pupils need to be pressed to check their attempts by frequent comparative measurements. In memory drawing, while a good deal of careful observation was shown, too little use was made of the laws of perspective; and, on the other hand, where these laws were employed, proportion was often ignored. Unless both these important factors are combined the drawings are untrustworthy and practically useless. The second class "flat" example was generally well copied, and the treatment of leaf-points was usually creditable. Some very fair drawings were produced in spite of very faulty methods—constructional or leading lines, for securing accuracy of proportions, or continuity and "swing" of curves, being dispensed with. The general improvement in the quality of line, which has resulted from discouragement of "lining in," is maintained, but might be carried still further.

*Class III.*—With regard to Drawing from the Flat, it may be suggested that in an unsymmetrical subject, such as that given in this examination, a line of reference, horizontal or vertical as the figure might demand, would be of assistance in estimating the swing and bulk of the principal mass. In the group of Models the straight-lined objects were intentionally arranged so that it might be easy for candidates to estimate the apparent rise of the horizontal surface as compared with the vertical edge of the box. Some failed to appreciate this, and (a common fault) made the surface steep instead of flat. Attention should be given to the rule that in "turned" objects (cylindrical, conical, &c.) the long diameter of the ellipse is perpendicular to the axis.

*Lower Forms.*—While the majority of candidates set about their work in a systematic manner, a certain number drew in an unintelligent way. It should be a matter of course to begin with a vertical axis in copying a symmetrical figure, but for lack of an axis many drawings were not only unsymmetrical, but were also not upright. The teaching of proportion (which term for present purposes may be considered as meaning the position and size of the principal masses) should receive more attention. Formerly a rigid process of dividing the axis into three, four, or more parts, and adjusting the proportions in terms of those divisions, was largely taught and practised, with a resulting mechanical attitude of mind. A revulsion ensued, and at present it seems that, with the exception of the few specially endowed pupils, the sense of proportion is only acquired (if at all) by haphazard, after many attempts extending over long periods of time. It is suggested that much time and effort would be saved if the abandoned method were revived in a strictly limited sense. For instance, in the example now under consideration many drawings would have been notably improved had the candidates noticed that the handle of the Arab sword occupies one-half of the total height of the figure. Again, for beginners a practice of demanding in class an increase of say one-fourth would prove a useful help. A little definite drill in this sense would considerably improve the work of the rank and file.

#### POLITICAL ECONOMY.

The papers were fewer in number, but better in quality than usual. The answers were intelligent, and showed some practical grasp of the subject and its utility.

#### DOMESTIC ECONOMY.

The standard of work has greatly improved, and without doubt the subject is now being taken up seriously in the schools. The papers showed much diversity of merit, but there was abundant evidence that many of the candidates had been through courses of Laundry lessons and Housewifery, and had thus gained a serviceable knowledge of those subjects.

The Report of the Dean was adopted.

On behalf of the Council, the DEAN and the TREASURER moved the following Resolutions:—

A. That Section I, Clauses 1, 2, and 3, of the By-Laws be amended so as to read as follows:—

1. All persons who are engaged in education and have passed an examination satisfactory to the Council, and teachers of long experience whose teaching and educational qualifications are attested to the satisfaction of the Council, are admissible as Members of the College of Preceptors.

2. Candidates for election must be proposed and recommended agreeably to the subjoined form, in which the Christian name, surname, educational status or other professional description, place of residence, and qualification for membership of each candidate shall be specified, which form must be subscribed by at least two members of the College, and one of such subscribing members, or some other person of known respectability, must certify his or her personal knowledge of the candidate.

We, whose names are underwritten, recommend A. B. as a fit person to be elected a Member of the College of Preceptors.

"C. D." (from personal knowledge).

"E. F."



To this nomination paper the following form of obligation, signed by the candidate, shall be appended: "I hereby agree, on being elected, to conform to the Charter and By-Laws of the College of Preceptors so long as I continue to be a member thereof."

3. This paper must be delivered to the Secretary, and shall be hung up in the Office of the College for a period of not less than fourteen days and remain there until the candidate is voted for. The name of the candidate shall appear on the agenda paper of the ordinary meeting of the Council held next after the expiration of the aforesaid period of not less than fourteen days, and the voting shall take place at that meeting. No candidate shall be declared elected unless he or she receive the votes of at least three-fourths of the members of the Council present. Membership shall date from the quarter day nearest to the date of the Council Meeting at which the member was elected.

B. That Section III, Clauses 3 and 5, of the By-Laws be amended so as to read as follows:—

3. The Examination of Candidates for the above grades, and all other Examinations instituted by the College, shall, in conformity with the provisions of the Charter, be under the direction of the Council, and be conducted under such regulations and in such manner as the Council may from time to time direct.

5. No person shall be eligible as a Fellow, under Clause 4, unless he or she be recommended by ten Members of the College, five at least of whom shall be Members of the Council. The names of all persons proposed as Fellows under that clause, and the names of their proposers, shall be read at the meeting of Council held next before one of the half-yearly general meetings of the Members of the Corporation, and be published in the Agenda of the next meeting of the Council, when the election shall take place.

C. That Section V, Clause 1, of the By-laws be amended so as to read as follows:—

1. The Secretary shall at least six weeks before the First Ordinary General Meeting in every year give notice in writing to every Member of the College of the date of the meeting. He shall at the same time forward a form of nomination upon which a Member may nominate twelve Members as Members of Council and three Members as Auditors, and upon this form a copy of the by-law next following shall be printed. Upon the nomination form shall also be printed a list of the names of the twelve Members of the Council and the three Auditors whose period of office will expire at the First Ordinary General Meeting, the names of those who have given to the Secretary in writing notice of their unwillingness to be re-elected being indicated.

D.—That in Section V, Clause 5, of the By-Laws, the words "first ordinary" be substituted for the word "January" in line 1.

E.—That Section VIII, Clauses 1, 2, 3, and 4, of the By-laws, be amended so as to read as follows:—

1. The Treasurer shall at least once in every three months examine the Secretary's statements of receipts and payments and verify the same by reference to the accounts and the bank pass books. He shall make no payments except such as shall be authorized by the Council. He shall have authority to order the transfer of money from the current bank account to the deposit bank account, and from the deposit bank account to the current bank account.

2. All payments of £2 and upwards shall be made by cheques signed by the Treasurer, and countersigned by the Secretary; provided that in case of emergency in the opinion of the Finance Committee, such Committee may appoint another member of the Council to sign in place of the Treasurer, or another member of the office staff to countersign in place of the Secretary. Smaller payments may be made in money; but such money shall be provided by cheques, drawn in the regular way, to account of "Petty cash."

3. The Finance Committee shall examine the accounts every three months, and lay before the Council a statement of the pecuniary affairs of the College, every quarter, or whenever required to do so.

4. The duties of the Secretary shall be to attend all meetings of the College and of the Council; to take minutes of their proceedings; to keep regular books of account, which shall be open to the inspection of all Members of the Council; to convene all Committees appointed by the Council; to receive all donations, subscriptions, fees, and other moneys paid to the College; to pay into the College Bank Account on behalf of the Treasurer all moneys received on account of the College; to have charge of the library; to examine the nomination papers and certificates; to carry on the correspondence; to send notices, and generally to execute all orders and resolutions of the Council.

F. That Section X, Clauses 1 and 2, of the By-Laws be struck out.

G.—That the number of Section XI of the By-laws be altered to X, and that that section be amended so as to read as follows:—

1. Every member shall, on election, deliver to the Secretary for entry in the register of members an address in the United Kingdom, to which notices to him or her are to be sent, and shall give immediate notice of any change in such address for entry in such register. Any notice required to be sent to any candidate or member may be sent by prepaid letter through the post addressed, as to members, to their registered address. As regards those members who have no such registered address, or have failed to deliver an address or change of address in the United Kingdom to which notices are to be sent, every notice shall be deemed to be well sent or delivered to such member at the expiration of twenty-four hours after a copy of such notice has been posted up in the office of the College.

Mr. S. J. WALTERS submitted the following amendment:—  
A. Section I, Clause 3, after the words "is voted for" to add the words "and the name of the Candidate shall be posted up in the Entrance Hall of the College."

The DEAN accepted the amendment on behalf of the Council, and the Resolutions as amended were adopted.

Mr. J. CRICHTON submitted the following amendment:—  
"That no revision of the By-laws can be considered as satisfactory which does not provide for the exclusion of all paid servants of the Corporation from membership of the Council."

The CHAIRMAN ruled that Mr. Crichton's amendment could not be accepted as satisfying the requirements of Section V, Clause 9, of the By-laws, but he invited the Meeting to discuss the principle of the amendment.

Mr. CRICHTON urged that the revision of the By-laws had not gone far enough, and that more should have been done to bring them into accord with modern ideas. In one or two points the By-laws were contrary to the Charter, for example, Section VI, Clause 6, which provided that a member vacating his seat on the Council by non-attendance should be re-eligible. More than 20 per cent. of the members of the Council were paid servants of the Corporation, and for that reason, in his opinion, unfitted to serve on the Council.

The DEAN said that the Council were grateful to Mr. Crichton for the care with which he had gone through the By-laws and for the various suggestions for amendment with which he had favoured them. With regard to the re-election of members of the Council whose seats had lapsed through non-attendance, he pointed out that that matter had long ago been referred to counsel, and that it had been found that the practice was quite legitimate, and was followed by many other societies and corporations.

Mr. CRICHTON asked whether in the course of the revision of the By-laws it had been found necessary to inspect the original Charter. The DEAN replied that the printed copy of the Charter had been most carefully compared with the original Charter, every comma and even the difference in spelling through the indiscriminate use of the letters *s* and *z* in the word "advertisement" being noted.

Mr. CRICHTON asked whether the marginal notes printed in the copy of the Charter as issued to members were in the original Charter. The DEAN replied that they were not in the original Charter, but that they were deemed by the lawyers who drew up the body of the Charter to represent its meaning.

Mr. THORNTON agreed with Mr. Crichton that it was undesirable to elect paid servants of the Corporation to the Council. He thought that such persons were less likely to be progressive than those who were unpaid.

Mr. MORGAN said that he had formerly shared the opinion of Mr. Crichton and Mr. Thornton. It had seemed to him that the same person could not be both master and servant; but he had carefully watched the course of action of the examiners since he had been a member of the Council, and he was convinced that they were some of the best members of the Council. On no single occasion had he seen that their duties had clashed or that, as members of the Council, they had advocated anything to their advantage as examiners. He had altered his opinion completely, and he thought that if the Council were deprived of the presence of the Examiners its efficiency would be greatly impaired.

Mr. VINCENT said that, as an unpaid member of the Council, he must protest against Mr. Crichton's proposal to remove those who happened in one capacity or another to be paid servants of the College. Among them were some of the most



distinguished men the Council had the good fortune to include, and the loss of their able and valuable services on the Council would be a disaster for the College.

Mrs. FELKIN thoroughly agreed with the last speaker as to the practical value of the presence of the Examiners on the Council. She pointed out that members of the Parliament by which we were governed were now paid £400 a year.

In reply to a question from Mr. Crichton, the CHAIRMAN ruled that no vote could be taken on the point under discussion.

## THE COLLEGE OF PRECEPTORS.

### MEETING OF THE COUNCIL.

A MEETING of the Council was held at the College, Bloomsbury Square, W.C., on October 25. Present: the Rev. J. O. Bevan, in the chair; Dr. Armitage-Smith, Mr. Bain, Mr. Barlet, Rev. J. B. Blomfield, Prof. W. E. Dixon, Mr. Eagles, Mrs. Felkin, Mr. Hawe, Mr. Hay, Miss Lawford, Mr. Longsdon, Mr. Maxwell, Mr. Millar Inglis, Mr. Morgan, Mr. Pendlebury, Miss Punnett, Mr. Ritchie, Mr. Rushbrooke, Mr. Storr, Rev. Canon Swallow, Mr. Thornton, Mr. Vincent, Mr. White, and Mr. Wilson.

The Secretary reported the results of the recent Summer Examination of Teachers, and Diplomas were granted to those candidates who had satisfied the prescribed conditions. (For list see page 452 in the November number of *The Educational Times*.) The Prize of £10 for Theory and Practice of Education was awarded to Mr. John William Lewis.

The Diploma of Associate was granted to Miss T. A. Betbéder-Talon, who had satisfied the prescribed conditions.

The Secretary reported that copies of the circular letter and *questionnaire* drafted by the Private Schools Inquiry Subcommittee had been issued to about 2,500 private schools, and that further copies were being sent.

The Council referred to the Private Schools Inquiry Subcommittee the question of preparing a record of the work done by private schools in order that copies might be issued by principals to the parents of their pupils.

The Secretary reported that a large number of members of the College had applied for tickets for the new series of Winter Meetings for members and their friends.

He reported that the arrangements for the two meetings of the College which were to take place at the London University in January next in connexion with the Conference of Educational Associations were almost complete, and that the following gentlemen had kindly consented to take part in the proceedings:—At the meeting on January 6, for the discussion of "Teachers' Registration," Sir John McClure and Mr. A. A. Somerville to speak; at the meeting on January 8, for the discussion of "The Position of Private Schools in a National System of Education," Mr. S. Maxwell to take the chair, Mr. John Bayley, Mr. G. P. Dymond, Mr. J. W. Longsdon, and Dr. Michael Sadler to speak. The Finance Committee was requested to consider the question of contributing to a Guarantee Fund for the expense of publication of the Report of the Conference.

The Treasurer was instructed to sell the Consols standing to the credit of the Benevolent Fund, and to invest the proceeds in Four per Cent. Colonial Trustee Stocks.

It was resolved that a leaflet giving information with regard to *The Educational Times* be drawn up by the Editor and the Secretary and be issued from the Office.

Prof. J. W. Adamson was re-elected a Member of the Council.

The following persons were elected Members of the College:—

Miss M. F. La Galle, A.C.P., 26 Colenso Road, Seven Kings, Ilford.

Mr. A. H. Ozzard, Raleigh College, Brixton, S.W.

Mr. D. Ll. Rees, A.C.P., Hauldwyn, Smithfield, Pontardawe, Glam.

The following books had been presented to the Library since the last Meeting of the Council:—

By HACHETTE & Co.—Adair's Cinq Contes Choisis (from Daudet's "Lettres de mon Moulin"); Anderson's Souvestre's Le Parchemin du Docteur Maure; Beckwith's Military Expressions in English, French, and German.

By MACMILLAN & Co.—Jeffcott's Dictionary of Classical Names for English Readers; Usherwood and Trimble's First Book of Practical Mathematics.

By METHUEN & Co.—Stanley's Practical Science for Engineering Students.

By the OXFORD UNIVERSITY PRESS.—Pardoe's Feuilles de Route: 1870.

By the UNIVERSITY TUTORIAL PRESS.—London University Guide and U.C.C. Calendar, 1914; Stout's Manual of Psychology.

Calendar of University College, Cork.

### PRACTICAL EXAMINATION FOR CERTIFICATES OF ABILITY TO TEACH.

The following candidate was successful at the Examination held in October 1913:—

Class I.  
Skinner, A.

## REVIEWS.

*The New Schoolmaster.* By "Fourth Form." (Smith, Elder.)

The air is thick with books upon the public schools. Not so very long ago came a popular panegyric in the form of "The Hill." Mr. Arnold Lunn has recently reaped a rich harvest of mingled praise and anathema, public and private, with the crudely realistic picture of the sacred system at work which is to be found in "The Harrovians." "A Housemaster's Letters," published a little earlier, cast the mild eye of creative authority upon it, and, behold, it was very good. And now there appears another volume of essays, also embodying the substance of previously printed articles, which may be said to form the antistrophe of the chant of the Housemaster, even as Mr. Lunn's book was the perhaps inevitable counterpart of that of Mr. Vachell.

There are three impressions which the present volume is calculated to produce. The first is that the writer certainly deserves that the title of his book should be applied to himself. He is plainly an earnest teacher of wide educational reading, who has been at great trouble to gain practical experience on the Continent as well as at home, and who has endeavoured with real success to see the system of which he writes from without rather than from within. The second is that, though a classic himself, he is eminently and profoundly dissatisfied with the grinding of the traditional classical mill. The third is that he is much impressed with the excellences of the Board of Education, and would regard the submission of all schools to that important department as a distinct step towards his educational ideal.

The clever chapters on the Montessori method sum up, in effect, against the enthusiasts who hail it as salvation. The time is not ripe for judgment. Moreover, the author questions the very existence of the non-interference principle. The child is limited—"by the range of choice which is open to him. He is indeed free to roll upon the rug or occupy himself with many of the fascinating tasks presented by the 'apparatus'; but the counter-attraction of a muddy road for the rolling, or a pin-cushion for the sense-training, is not admitted. Thus the Devil is handicapped at the very start." Similar practical and shrewd remarks characterize the description of experiences at the *Realgymnasium* and *Literarygymnasium* at Zurich. While keeping in view broad questions of social conditions and of organization, the writer has attention for such details as the absence of our absurd "place-taking," and the conversations—a cosmopolitan feature, one is relieved to find—of the boy in the back row. These interests however, are, naturally subsidiary, if fundamental to the construction of his beliefs. His book is written primarily with reference to the sphere of education in which he has been born and bred, and the welfare of Smith minor outweighs in importance the moral development of the infantile Luigi or the intellectual advancement of Hans. And, as has been said before, it is as a reformer in every sense that he comes for-

ward. He has practically nothing but blame for the old order. Numberless quotations might be given in illustration of what he thinks of it. "The salvation of the public-school boy hitherto has been that he has had the sense to refuse the fare offered to him"; "it is astonishing how few public-school masters ever consider what is being done outside their own school"; "those who imagine that by training boys to do nothing in particular they will fit them to do everything in general are sure to end, in taking away even that measure of native intelligence which at the outset they may have seemed to have"—with such drastic comments does he make his case against the "great Nine" schools, and the score of others who would also lay claim to the proud prefix of "public." The "mental discipline" to be gained from compulsory Latin is laughed away. Those who cling to the fetish should pay a visit to the classroom of a modern geography specialist, properly equipped. Greek should be approached by the great majority, if at all, through translations; for who will contend that "less intellectual effort is needed to appreciate, say, Prof. Butler's translation of Aristotle's 'Poetics' or of Prof. Murray's Introduction to the 'Bacchae' than to commit to memory the three voices of *λύω*?" "A superficial study which has some result is better than a detailed study which has none."

With regard to more general questions, it is a relief to find that here at last is a dweller in the inner circle who is cognizant of the fact that there are a few tens of millions in England caring nothing whatever for that world of house-games, averages, and marks, which seems to form the cosmos of the "Housemaster" and of others of the school of the late John Smith of Harrow. The great day-schools, for instance, are treated with a sympathy that has nothing of patronage and much of admiration. Indeed, except for the fact that they leave certain hours of the day undesirably free for the boy, and that they necessitate unhygienic train and tram journeys, they seem to elicit the author's commendation more than the boarding schools.

There is nothing very new in all this, but it is at least stated forcibly and cogently: and definite constructive work is put in, with much of which we feel ourselves in sympathy. But the author is a little too universal in some of his assumptions. We could name at least one public school of three hundred and fifty boys whose curriculum and system are in essence exactly what he would suggest, except, perhaps, for a slight bias in favour of pure engineering work—a good fault, surely, in his eyes. A well-equipped classical side is made entirely optional: a boy need not enter it at all if ancient letters have no charm for him. Or, having joined, he can—and does—leave it without being in any way regarded as a failure, and can find an outlet for his ability in French, German, mathematics, science, or engineering—an extraordinarily good "plant" existing for the last. And the "geography specialist" is as well stocked as the writer could desire. All this in England in 1913.

As regards the wish for co-ordination under the ægis of Whitehall, we cannot help recalling a characteristic criticism by the best-known college Dean in either University, apropos of an ever-recurring bogey of academic life. "Royal Commission? The worst thing conceivable for either Oxford or Cambridge. See how happy we are now—Professors, Lecturers, undergraduates—all equal together. What they'd want to do would be to put us under Government. And what would be the result? In would come officialdom, red-tape, cliques, snobbery. Look at the B— M—. There's an educational institution run by Government. And I can assure you, my dear sir, that the people who live in the place have an immense contempt for the people who live out!" While not quoting the distinguished scholar's remarks as illustrating the first consideration in this matter, we think there is certainly "something in it." And, despite the levelling tendency of the age, there is sufficient conservatism in the country to render Government interference with higher education somewhat remote. Most parents of the class which sends its sons to public schools would prefer things as they are. The majority of the other members of the community are too deeply obsessed with the difficulty of ensuring bread to eat and raiment to put on to bother directly about strange and remote institutions which educate the sons of the favoured with Latin and Greek.

The book, whether it please the reader's type of mind and

prejudices or not, is a work of clear thinking and of practical suggestion. We cordially recommend it.

*The History of Modern Elementary Education.* By Samuel Chester Parker. (6s. 6d. net. Ginn.)

This book exemplifies the intensive method as applied to history. While it gives a sufficient outline of the subject as a whole, it concentrates on certain periods, and on certain points within those periods, in such a way as to give the reader a body of detailed knowledge which he can apply to the elucidation of the various difficulties that arise in other parts of the wide field covered. The social backgrounds are well worked in; the statements of educational theory are fully developed—in some cases too fully developed, we think; and the descriptions of school practice supply a want in the history of education. This last element, indeed, could bear a great deal of expansion. Our own Prof. Adamson is continually reminding us that what is wanted in the history of teaching is a description of what actually took place in the old schools. Had Mr. Parker cut out a great deal of his critical account of Herbartianism, and taken up the space with a fuller account of school practice in the past, he would have greatly enhanced the value of his book. But it is ill scolding a man who has done more than anyone else merely because he has not done still more. We are grateful to him for what he has given us, and have confidence in recommending his book to those who are in search of a clear and well illustrated account of elementary education. The general arrangement of the book is based upon the relation between the religious and the secular elements. The evolution of the secularized system from the religious is of special interest to the Americans, but is not without its value for us, especially at this moment, when we are on the threshold of what we hope to be the final struggle for an educational settlement of religious strife.

*"J.": A Memoir of John Willis Clark, Registrar of the University of Cambridge, and sometime Fellow of Trinity College.* By A. E. Shipley, F.R.S., Master of Christ's College. With two Portraits. (10s. 6d. net. Smith, Elder.)

Why "J."? When Clark became a Fellow of Trinity there happened to be some eight or nine other dons of that ilk, and so for distinction's sake he was called "J. W."; and eventually this was abbreviated to "J." The oddness of the title gives rise to an expectation of a certain oddness in the memoir, and the expectation is not disappointed. The racy style of Mr. Shipley is delightfully congruous: Clark could hardly have found a more genial and effective biographer. Mr. Shipley tells all that the reader need know about "J.'s" relations—both Clarks and Willises: an eminently intellectual ancestry, with a strain of uncommonness that perpetuated itself in "J." "J.'s" own reminiscences, which begin in 1820 (a good many years before he was born) and appear to come down some forty or fifty—it may be sixty—years, present a startling contrast between the Cambridge of that period and the Cambridge of to-day. "J.," being practically an only son and the son of a pragmatical father, was no doubt originally, and always, a spoilt child, and a lonely. He ran the usual course at Eton and Trinity, and finished up his college course with a distinctive exploit: though bracketed twelfth (and last) in Class I of the Classical Tripos he was elected a Fellow of Trinity—a piece of luck that he had the good sense to see (and to say) should never have fallen to him. Then he travels, marries, works miscellaneous—at natural science and architectural history mostly—obtains (and fails to obtain) University posts. He was Superintendent of the Museums of Zoology and Comparative Anatomy, and Secretary to the Museums and Lecture Rooms Syndicate; he was Registrar: always rendering zealous and efficient service. He had a great share in the building up of the unparalleled growth of buildings devoted to the advancement of natural science in this country. Several chapters by specialists are devoted to the various main aspects of his labours. The work will be of extreme interest to Cambridge men, in the first instance; but also to all that are concerned for the progress of education and learning; while the personal interest is varied and intense.

## GENERAL NOTICES.

## POLITICAL ECONOMY.

*Elementary Economics.* By S. J. Chapman, Professor of Political Economy in the University of Manchester. (2s. net. Longmans.)

Prof. Chapman presents the framework of political economy, with careful explanation of terms and with clear statement and illustration of principles, free from the smoke of controversy. To each chapter are appended testing questions with hints towards solution, which will help the student to concentrate on the main points with thoughtful attention. An excellent book for beginners.

## HISTORY.

*Europe since Napoleon, 1815-1910.* By Elizabeth Levett. (3s. 6d. Blackie.)

"This book," says the author, "is intended for the use of Middle Forms in schools, or for boys and girls of fourteen to sixteen years of age, as an introduction to the history of the nineteenth century in Europe." It might also be used, and perhaps to more purpose, as a supplementary or collateral book, whether in or out of school. Miss Levett, in spite of the risks of repetition, treats each country separately; and this, after all, is the safest plan in the circumstances. She does well to emphasize the biographical and personal side of history. In a small book many aspects of a century of events must be omitted; and we do not quarrel with Miss Levett's judgment. She writes clearly and plainly, and with large knowledge. There are genealogical and other tables of utility in appendix; and there are ten maps and a liberal index.

## MATHEMATICS.

*A First Formal Geometry.* By R. Wyke Bayliss, M.A. (1s. 6d. Edward Arnold.)

Where the subject of geometry is being treated on modern lines, this will be found—for the theoretical portion of the work more particularly—a very suitable junior class-book. The title of the volume fairly indicates the general scope of the text, though it does not suggest the fact that the discussion of problems will form no part of the main treatise. These only obtain a place among the exercises of which the author has provided a very full complement. The majority of the questions bear on plane geometry, but a large number immediately preceding the miscellaneous examples that close the volume are three-dimensional, and are intended in their entirety to serve as an introductory course in the elements of solid geometry. As a rule the wording of the propositions is carefully chosen, so that accuracy of detail is a valuable feature of the book. Exceptions in this respect do however occur, as for example in Proposition III. Here the manner in which the figure is to be rotated is not clearly defined, whereas in Proposition IV of the Appendix the author's meaning is distinctly expressed. Proposition VII, as it stands, is also unsatisfactory. A pupil might reasonably object that there is no certainty that the right-hand diagram will involve neither *more* nor *less* than one complete turn in order to represent in juxtaposition the series of exterior angles. Why in this case reject Euclid's methods, seeing that they are interesting and should not offer much difficulty even to young pupils?

*A Junior Course of Arithmetic.* By H. Sydney Jones, M.A. (Macmillan.)

A useful compilation, consisting of exercises carefully selected from those set in Part I of the author's "Modern Arithmetic," and designed to satisfy the requirements of a Lower Form course in a secondary school. In framing the work special efforts have been made to meet the needs of schools in which it is of importance to combine economy with efficiency when dealing with the question of book supply. The new volume has been brought out in a form identical with that of the two parts of "Modern Arithmetic."

## RELIGION.

*Members One of Another.* By Nowell Smith, M.A. (5s. net. Chapman & Hall.)

This book of twenty-two sermons preached by the Head Master in Sherborne School Chapel, is written in simple, direct, and non-sermonic language. It is no easy matter to preach to boys of very different ages, and it is therefore a considerable achievement to have produced sermons which will neither bore the older, nor be unintelligible to the younger, boys. The writer has the art of extending the significance of a text beyond its original context so gradually that its immediate practical applications reach his hearers unawares, when they are, so to speak, off guard. There is no appeal to the gallery and no pulpit rhetoric in the book, but much sincerity of purpose and sympathy with youth.

*More Characters and Scenes from Hebrew Story.* By Hetty Lee. (2s. National Society.)

A particularly useful book for teachers of children from eight to twelve years of age. It deals, largely in biographical form, with the (Continued on page 514.)

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#### MUSIC.

*Mice in Council.* A Cantata for Children, in Unison and Two Parts. By W. G. McNaught. (1s. Novello.)

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*The Singing Leaves.* For Children's Voices, in Unison and Two Parts. By George Rathbone. (Old Notation, 1s.; Tonic Solfa, 6d. Novello.)

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*Children's Singing Games.* By Lettice Thomson and Alban Dobson. B.A. (40 pp. 1s. 6d. Horace Marshall.)

Real music, albeit simple and easily learnt, will be found in the seventeen songs comprising this volume. The words also are such as will readily appeal to children. The book concludes with a few notes on the performance of each game, and is really a most admirable production.

*Physical Exercises and Song Games for the Little Ones.* By L. M. Sidnell and Mabel L. Turner. (47 pp. 2s. 6d. net. McDougall.)

Many teachers of junior classes will smile approval on this book, which seems calculated to fill a long-felt want. First, we have some Swedish exercises with suitable words and music. These are followed by song games, which can be used separately or in correlation with Nature lessons. In reading through this book the thought strikes us that both writers have done their work well. The words and music are at once bright and attractive and easily learnt.

#### CHRISTMAS BOOKS.

NELSON & SONS.

Messrs. T. Nelson & Sons send us a parcel of books sufficiently varied to meet the demands of those who wish to make their Christmas presents in this form. *Cousin Betty*, by Geraldine Mockler (3s. 6d.), is a book that will be read with pleasure by girls in their teens. *Cousin Betty* acts the Fairy Godmother to perfection, and the story ends to everybody's happiness.

Mrs. Craik's *Fairy Book* has been reissued at the moderate price of 6s., as a "juvenile édition de luxe of the best collection of fairy tales ever issued in this country." The type is large, the paper good, and the coloured illustrations quite charming. All tales of terror have been cut out in this edition. *The Book of Palestine*, for boys and girls (5s.), is equally well produced in the matter of print and coloured illustrations. The writer, Mr. Richard Penlake, has lived for some time among the Arabs and visited the places mentioned in the Bible. The account of his journeyings is full of interest. We can recommend the book unreservedly as a delightfully interesting and helpful to young students of the Bible. *The Girls' Budget of Short Stories* (Second Year, 3s. 6d.), with sixteen coloured plates, forms a handsome and interesting gift for girls of fifteen or so.

*Things to Make*, by A. Williams, will prove a really valuable book to the boy with a constructive bent who already has some knowledge of the use of tools. The instructions are clear and the things when made will work. An engine, a box kite, an aeroplane, and many other equally attractive things are included in the volume.

Among books of a lower price we may notice the following, all of which are well produced and illustrated with good coloured plates. There are two new volumes in "The World's

Romances Series," each 2s. 6d. *Dante and Beatrice*, by W. E. Sparkes. This volume also includes the medieval romance of Aucassin and Nicolette. *Kilnugh and Owen*, by E. M. Wilmot-Buxton. In this volume there are three tales from the Welsh Mabinogion. *Grandfather's Stories* are suitable for young children. Each volume (1s.) contains a selection of Folk Tales of one particular district. The volumes are: *Robin Hood and the Friar*, and other stories of Yorkshire. *Thomas the Rhymer*, and other stories of the Scottish Border. *Dick Whittington* and other stories of London. *The Pixies of Penzance* and other stories of the West Country. In "The Famous Families Series" appear a number of volumes dealing with the great deeds of some family famous in history. Each volume has about 128 pages of good print, suitable for young children, eight coloured plates, and is issued for 1s. The stories are: *The Black Douglases*, by D. C. Stedman; *The Campbells of Argyll*, by Hilda Skae; *The Nevilles of Warwick*, by F. E. Melton; *The Percies of Northumberland*, by D. C. Stedman.

SEELEY, SERVICE, & Co.

From this firm of publishers we have received several books that will appeal especially to boys. *Ian Hardy, Naval Cadet*, by Commander E. Hamilton Currey (5s.), is a story of adventure both amusing and rousing. It is a thoroughly wholesome book. Ian's doings at home and at school make an excellent story. *The Heroes of the Indian Mutiny*, by Edward Gilliat (5s.), makes the adventurous side of history live. *The Romance of Scientific Discovery*, by Charles R. Gibson (5s.), is a popular and non-scientific account of some of the most important discoveries in science from the earliest times down to the present day. The book would appeal to any boy of fifteen with a taste for science. *Submarine Engineering of To-day*, by Charles W. Dumville-Fife (5s.), makes an equal appeal to boys of an engineering turn of mind. The book deals with all engineering feats under water, such as tunnelling, blasting, and the raising of sunken ships.

Among the reprints and cheaper issues published by the same firm we may notice *The Wonders of Modern Invention*, by Archibald Williams (2s.). The subjects dealt with include wireless telegraphy, liquid air, and torpedoes. *The Wonders of Modern Astronomy*, by Hector Macpherson (2s.), is an interesting book of the same type. There are few boys between the ages of thirteen and sixteen who are not interested in a book, profusely illustrated, that deals with mechanical inventions. *Patriot and Hero*, a story of Maccabean times, by Prof. A. J. Church (3s. 6d.), is an old favourite that will be welcomed in its new form. Other volumes are: *Stories of Red Indian Adventures*, true and stirring narratives of bravery and peril, by H. W. G. Hyrst (2s. 6d.); *The Dog Crusoe and his Master*, a story of adventure in the Western Prairie, by R. M. Ballantyne (2s. 6d.); *Lion-Hearted*, the story of Bishop Hannington's life, retold by Canon E. C. Dawson in language suitable for boys and girls (2s.); *Stories of Elizabethan Heroes*, by Edward Gilliat (2s. 6d.).

HENRY FROWDE AND HODDER & STOUGHTON.

As usual we have from these publishers, as Christmas approaches, a large number of sound and attractive books. The popularity of Mr. Herbert Strang's writings may be gauged from the fact that several of them are now issued in a seven-penny edition. These are: *King of the Air*, *Jack Hardy*, *Lord of the Seas*, *Young Buglers*. In the same series, and at the same moderate price (7d.), we have Captain Gilson's, *The Lost Island* and *For the Admiral*, by W. J. Marx.

In the "Boys' New Library" (1s. net), we have two more stories by Mr. Strang, printed in excellent type: *The Cruise of the Gyro-Car*, and *Swift and Sure*. In "Herbert Strang's Library" we have (1s. each) Kingsley's *Heroes*, with coloured illustrations, and *Captain Cook's Voyages*, also illustrated in colour. "The Wonders of Insect Life Series" (1s. each) is well produced; the paper is good, the type large, and the plates clear and helpful. They are written by F. Martin Duncan, F.R.M.S., F.R.P.S. and L. T. Duncan. Among the volumes are *Some Curious Insects*, *Spiders and Scorpions*, *Insect Life in Pond and Stream*, *Beetles and Flies*, *Butterflies and Moths*. "The Life at Sea Series" includes *A Week on the Eddystone*, *Life on a Lightship*, and *Twelve Days on a Trawler*. These books, by Arthur O. Cooke, are issued at 1s. each, in type

(Continued on page 516.)

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suitable for young eyes, and with attractive pictures, some in colour.

For quite young children we may recommend with confidence *The Happy Families* (1s.), a charming story, by Violet Bradby, based on the game of the same name. The illustrations by Lillian A. Govey and the reproduction of the original card designs are excellent. *Peter Pan's A B C* contains a number of large coloured plates by Flora White, which will certainly charm the little ones (3s. 6d.) *The Peek-a-Boos and Mr. Plopper* is a delightful story-picture-book for the nursery (2s. 6d.). The amusing illustrations, many in colour, are drawn by Chloe Preston and Howard-Vyse. Mrs. Strang's Annual for children is a collection of stories and pictures that will be welcome in any nursery. Every page has its delightful picture (3s. 6d.).

Herbert Strang's Annual (5s. net) is full of stories that will interest boys of twelve to sixteen. Some of the stories are of thrilling interest. There are also articles on such subjects as "The Panama Canal" and "Locomotive Developments of To-day." There are many illustrations, some in colour. *The Blue Book for Girls*, edited by Mrs. Herbert Strang (2s. 6d.), is a collection of stories for girls of twelve and upwards. The plates are gracefully drawn and charmingly coloured. *The Purple Book for Boys*, edited by Herbert Strang (2s. 6d.), will appeal to boys of twelve to fourteen years of age. It is as well produced as the Blue Book spoken of above.

"The Days with Great Composers Series" (3s. 6d. net) has a new volume dealing with Mozart, Schumann, and Tschai-kovsky. "Days with Great Novelists" treats of George Eliot, Dickens, and Thackeray. "Days with the Victorian Poets" includes Rossetti, Morris, and Mrs. Browning. The especial charm of the volumes in this series (3s. 6d. each) lies in the illustrations, which are in many cases strikingly beautiful.

*The Book of Nature*, edited by W. Percival Westell, F.L.S. (5s.), makes a wide appeal to young people in their middle teens. Information, with illustrative drawings, is given on many sides of Nature study. Without being too technical, the work aims at accuracy and at presenting the facts in an interesting manner.

*Dinah Leaves School*, by Margaret Royce (5s.), is the story of a girl who comes from school with very lofty ideas to an ordinary suburban atmosphere. At first she rebels bitterly, then girds up her loins and does the housework, and finally marries. For girls of sixteen the story is healthy and interesting. In *Sultan Jim* Mr. Herbert Strang (6s.) gives us a story of adventure in Africa that will be welcomed by boys in their middle teens. *Gladys and Jack* (5s.), by J. M. Whitfeld, is a bright story, pleasantly illustrated in colour by N. Tenison. *The Race Round the World* (3s. 6d.), by Captain Charles Gibson, is an account of the contest for the £100,000 prize offered by the Combined Newspaper League, and an account of the invention of "Methylite," together with certain passages in the life of Mr. Wang. A new edition of *The Great Victorian Age*, written for children by M. B. Sygne (3s. 6d.), gives a readable account of the main happenings during the reign of Queen Victoria. *The Unlucky Family* (3s. 6d.), a book for children by Mrs. Henry de la Pasture, contains an amusing description of a family suddenly plunged into wealth and able to gratify all their longings.

#### CASSELL & Co.

Among cheap reprints we may call attention to a tasteful volume of *Tennyson's Poems* (1830-1865), printed in good type and illustrated, for the moderate sum of 1s. 6d. A new and enlarged edition of *The V.C.: Its Heroes and their Valour*, by D. H. Parry, is issued at 6s. There are eight illustrations by Stanley L. Wood. *Enter Patricia*, by E. E. Cowper (3s. 6d.), is the story of a delightful family in Cornwall. The visitor who receives a grudging welcome to the family life finally wins her way to universal liking after a series of adventures, including an escaped convict. *The Cragsmen*, by W. Bourne Cooke (3s. 6d.), is a story of smuggling days that will be welcomed by boys. The boy hero performs prodigies of valour. There are coloured illustrations by H. M. Brock. *The Boy's Book of Battles*, by Eric Wood (3s. 6d.), gives an account of famous fights from Marathon to Tsushima. *Grimm's Fairy Tales* (5s.) is a large volume, well produced in good type and on thick paper. There are numerous pictures, coloured and plain.

#### BLACKIE & SON.

A striking point about the publications of this firm is the beauty and charm of the illustrations in colour. Nowhere is this more marked than in the books for little ones. *Blackie's Children's Annual*, in its tenth year of issue, is a large volume of large-print stories with plenty of straightforward pictures that can be understood by young children. The price is 3s. 6d. in picture boards, or 5s. in cloth. *Blackie's Popular Nursery Rhymes* (2s. 6d.) is admirably illustrated by John Hassall. *The Golden Picture Story Book* (2s. 6d.) should be a great favourite in the nursery. Miss Pope tells in lively verse of the adventures of *Tom, Dick, and Harry: Three Playful Puppies* (2s. 6d.). There are twenty-four page illustrations in colour by M. Morris. Mr. Frank Adams produces some amusing coloured pictures in the volume entitled *Quaint Old Rhymes* (2s.). *Stories from the Arabian Nights*, selected and edited for children (1s.), is illustrated by Helen Stratton. *A Cat's Alphabet* (1s. 6d.), illustrated by Louis Wain, is sure to amuse the nursery. *New Testament Stories* (1s. 6d.) are told by Theodora Wilson in simple language and illustrated by Arthur A. Dixon. *My Book about the Post Office* (1s. 6d.) is an interesting and accurate account for young readers of the working of the post-office at home and abroad. The pictures are carefully illustrative of the text.

The following books are suitable for boys. *With Wellington in Spain*, by Captain F. S. Brereton (6s.). The Peninsular War was fought just a hundred years ago. The adventures of plucky Tom Clifford carry the reader breathlessly along. *Through Veld and Forest*, by Harry Collingwood (5s.), is a tale of Africa. The hero, after his father's farm has been burnt by Zulus, serves for a time in the Kaffir War of 1835, and then treks north in search of fortune—which he finds. A new volume in "The Pioneers of Empire Series" is written by Sir Harry Johnston: *Pioneers in Tropical America* (6s.). These stories give the real and true adventures, without exaggeration, of the intrepid pioneers who roamed Tropical America. Among cheaper reprints we have *A Knight of the White Cross*, by G. A. Henty (3s. 6d.). A new book by Harry Collingwood is *Turned Adrift* (3s. 6d.). The exciting tale of adventure starts with a mutiny, the result of which is that the hero and five others are cast adrift by the mutineers. They finally reach home laden with spoils. A new edition is published of *Under the Spangled Banner: a tale of the Spanish-American War*, by Captain F. S. Brereton (3s. 6d.).

For girls we have a thrilling story by Angela R. Brazil, entitled *The Leader of the Lower School* (2s. 6d.). Gipsy Latimer brings her notions of American and colonial schools into a very proper English school. She heads a revolt of the junior school against the tyranny of the sixth form. The story is well written. *The Heroine of the Ranch*, by Bessie Marchant (5s.), is a story of Tierra del Fuego. Life on a ranch in such wild regions is bound to contain thrilling adventures. The heroine shows herself capable of dealing with difficulties and finally discovers the key to a mystery that arose at the beginning of the book. *The Loyalty of Hester Hope*, also by Bessie Marchant (3s. 6d.), is a story of British Columbia. Hester Hope, the heroine, arrives as a lady help on a lonely tobacco plantation in Vancouver. She has been misled, but by sheer pluck, aroused by her notions of loyalty, manages to extricate herself from serious difficulties. *The Daughter of the Manor*, by Katharine Tynan (6s.). To a poverty-stricken family in a cheap London flat comes a fairy godmother in the shape of a wealthy cousin with a beautiful house in the country. The story is charming.

*The Age of Machinery* in "The Great Achievements Series" is written by Alexander Horne (2s. 6d.). The book gives in simple and interesting language an account of how the forces of Nature have been turned to the service of man.

For young children who can read to themselves, we can recommend *Just Forty Winks*, or the droll adventures of David Trot, by Hamish Hendry (2s.). There are delightful pictures by Gertrude M. Bradley. *Teddy's Adventures*, by Mrs. Henry Clarke (1s.), may be also recommended to young readers.

#### WILLIAM HEINEMANN.

*The Adventures of Akbar*, by Flora Annie Steel (6s. net), is produced on excellent paper, printed in very clear type, and is illustrated in colour by Byam Shaw. Little Prince Akbar

(Continued on page 518.)



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By M. I. NEWBIGIN, D.Sc.

## MAN AND HIS CONQUEST OF NATURE

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"To the geography teacher the book is invaluable, as it is a kind of commentary on the usual geography book as it is at present, and we cannot too strongly recommend it to our readers. . . . it grips the attention and stimulates thought in no uncertain manner."—*Woman Teacher's Magazine*.

"This geographical study deals with man in relationship with his environment. The author has filled the volume with interest, and has produced a geography which is full of illustrations derived from nature and from man's attempts to turn everything to his use."—*Education*.

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is sure of numerous admirers—he is a brave boy. For children of twelve this book may be safely purchased. *A Band of Brothers* (6s.), by Charles Turley, is assured of a wide circulation. Readers have not forgotten *Godfrey Martin* and other books dealing with schoolboy life. Boys like a good story of school days, and so do the grown-ups when Mr. Turley is the writer.

JARROLD & SONS.

*Legends of the Stars*, by Edith Henderson (2s. 6d. net), relates the stories connected with the names of the stars. The book is quite interesting, and is written for young readers. In "The Wonderland Series of Little Picture Books for Children" (1s. net each) we have *The Flying House*, *Sea Foam*, and *Tiny Wee Wun*. *Sergeant Silk*, *the Prairie Scout*, by Robert Leighton (2s. 6d.), and *The Stolen Cruiser*, by Percy F. Westerman (3s. 6d.), are two new volumes for boys in "The Empire Rewards Series." They are illustrated.

DENT.

In the series "Tales for Children from Many Lands," edited by F. C. Tilney, we have received two new volumes (1s. 6d. each): (1) *The Original Fables of La Fontaine*, rendered into English prose by the editor of the series, with illustrations in colour by the same hand; and (2) *Gulliver's Travels*, which is pleasingly produced, and well illustrated by Arthur Rackham.

HARRAP.

We can safely recommend the purchase of *Songs and Stories for Little Ones*, by E. Gordon Browne, with melodies chosen and arranged by Eva Browne (2s. net). *Stories from Dutch History* should receive a hearty welcome. The author is Arthur H. Dawson, who makes the stories readable, and leads up to a more careful study of history. Price 3s. 6d. net. In *the Days of the Lionheart*, by Wallace Candy (3s. 6d. net), is illustrated by Jack Orr. It is a sound historical tale that will appeal to boys.

MACMILLAN.

Messrs. Macmillan send us a really beautiful edition of *The Fairy Book*, a collection of the best popular fairy tales chosen and rewritten by the author of "John Halifax, Gentleman." The illustrations by Warwick Goble are numerous, and are remarkable for the vividness of the colouring. They are feasts of colour. The price of the book is 15s. net. The thrilling University life of *Deering at Princeton* (6s.), by Latta Griswold, will be welcomed by those who remember Deering's career at school, well told by the same author.

LONGMANS.

*The Strange Story Book* is the last of the series edited by the late Andrew Lang. Mrs. Lang contributes a preface, in which she gives some account of her husband. The volume contains a portrait of the editor and numerous illustrations (6s.). *Pictures of Palestine* are reproduced from photographs taken by Sophie Nicholls. They are twelve in number, mounted on card. The prices vary from 1s. 6d. to 2s. 6d., and the sizes from 31 in. by 18 in. to 20 in. by 15 in.

SAMPSON LOW.

*The Son of the School*, by Robert Overton (3s. 6d. net), is a story that will be read with avidity by boys of fourteen and thereabouts. The hero soon leaves school and comes in for many strange adventures.

FISHER UNWIN.

*The Hungarian Fairy Book*. By Nandor-Pogany. With illustrations by Willy Pogany. (6s.)—The book is attractively produced, with coloured decorations. The stories will be new to most readers of fairy tales.

RAPHAEL TUCK & SONS.

*Father Tuck's Annual* (picture boards, 3s. 6d.; cloth, 5s.) is a book that will give genuine delight to the nursery. There are stories and rimes of all sorts. No page is without its picture, and these range from full-page coloured plates to marginal sketches. Many of the pictures are distinctly amusing. *John, Jane, and Two Dogs* is one of a series of sixpenny coloured books also intended for the nursery. The printing is good and the pictures numerous and amusing. We have also received a number of Christmas Cards. Some of these are unapproachable for beauty of design and grace of finish. There are hundreds of series issued. We may call special attention to the very beautiful series of hand-painted scenes on celluloid, ranging in price from 2s. 6d. each to 4d.; and some post cards of genuine Christmas design.

## PUBLICATIONS RECEIVED.

### EDUCATION.

- The New Schoolmaster. By "Fourth Form." Smith, Elder, 6s. net.  
 A Manual of Psychology. By G. F. Stout. Third edition, revised and enlarged. Clive, 8s. 6d.  
 The Montessori Principles and Practice. By E. P. Culverwell. Bell, 3s. 6d. net.

### CLASSICS.

- Home University Library.—Euripides and his Age. By Gilbert Murray. Williams & Norgate, 1s. net.  
 The Iliad of Homer. Translated into English prose by E. H. Blakeney. Vol. II: Books XIII–XXIV. Bell, 3s. 6d.  
 Anecdotes from Pliny's Letters. Edited, with Introduction, Notes, and Vocabulary, by W. D. Lowe. Clarendon Press, 1s. 6d.  
 Puer Romanus (Lingua Latina Series). By R. B. Appleton and W. H. S. Jones. Clarendon Press, 2s. 6d.  
 Latin Grammar for Schools and Colleges. By W. King Gillies and Frederick P. Shepherd. Oliver & Boyd, 2s.

### FRENCH.

- Feuilles de Route (1870). Par Paul Déroulède. Adapted and edited by R. H. Pardoe. Clarendon Press, 1s. 6d.  
 Preliminary French Lessons. By Otto Siepmann and L. F. Vernols. New edition, illustrated by H. M. Brock. Macmillan, 1s.  
 L'Histoire de France en Thèmes (1789–1912). Par T. Pettigrew Young. Oxford University Press, 2s. 6d.

### ENGLISH.

- How to Read Shakespeare: A Guide for the General Reader. By James Stalker. Hodder & Stoughton, 5s.  
 Home University Library.—Shelley, Godwin, and their Circle. By H. N. Brailsford. Williams & Norgate, 1s. net.  
 Macaulay's Two Essays on William Pitt, Earl of Chatham. Edited, with Introduction and Notes, by Philip Guedalla. Oxford University Press, 2s. 6d.; or each Essay separately, 1s. 6d.  
 The Heroes. By Charles Kingsley. Edited, with Introduction and Notes, by Cyril Mayne. Coloured illustrations. Clarendon Press, 2s. 6d.  
 This Wonder World. By Agnes Giberne. Religious Tract Society, 1s. 6d.  
 The Hero Readers.—British Sailor Heroes, Series II. Heinemann. Black Sentinel Readers. Book I, 10d.; Book II, 1s.  
 The Chisholm Readers. Book I, 10d.; Book II, 1s. Jack.  
 Life and Legends of Other Lands Series.—Norse and Lap. Black, 1s. 6d. net.  
 Byron: Childe Harold's Pilgrimage. Edited by A. Hamilton Thompson. Cambridge University Press, 2s. 6d.  
 Cassell's Select Poetry Book, 4d.  
 Phonic Primers. I, 4d.; and II, 5d. Oliver & Boyd.  
 Elocution: A Product of Evolution. By John P. McLaurin. Holmes, 2s. 6d. net.  
 Bell's Sixpenny English Texts. (1) Faerie Queene, Book I. (2) Macaulay's History of England, Chapter III. (3) Selections from Chaucer. (4) Poems by John Milton. (5) Poems by Alfred Tennyson. (6) English Elegiacs.

### HISTORY.

- A History of Germany. By H. E. Marshall. With Illustrations in colour. Hodder & Stoughton, 7s. 6d. net.  
 A History of the Royal Society of Arts. By Sir Henry Trueman Woods, with Preface by Lord Sanderson. Murray, 15s. net.  
 The French Revolution (from the Age of Louis XIV to the Coming of Napoleon). By Harold F. B. Wheeler. With a series of illustrations from authentic sources. Jack, 7s. 6d. net.  
 The Man of Egypt. By Clayton Sedgwick Cooper. Illustrated. Hodder & Stoughton, 6s.  
 The Reign of Henry VII (from contemporary sources). By A. F. Pollard. Vol. I, Narrative Extracts. Longmans, 10s. 6d. net.  
 Life of Napoleon I. By J. Holland Rose. Bell, 6s. net.  
 Ancient History for Schools. By E. Nixon and H. R. Steel. Bell, 2s.  
 Outlines of Modern History. By J. D. Rogers. Clarendon Press, 3s. 6d.  
 Oxford County Histories: Lancashire. By E. G. W. Hewlett. Clarendon Press, 1s. 6d. net.  
 Poitiers. By Hilaire Belloc. Rees, 1s. net.  
 English History in Contemporary Poetry. Number II, Lancaster and York (1399 to 1485). By C. L. Kingsford. Number IV,

Court and Parliament (1588 to 1688). By F. J. C. Hearnshaw. Bell, 1s. net each.  
 Old-Time Stories and World Customs. By A. Gertrude Caton. Parts I, II, and III, 6d. each. Macmillan.

GEOGRAPHY.

Dent's Practical Notebook of Regional Geography. Book IV, Europe. 6d. net.  
 Commercial Geography of the British Isles. By Frederick Mort. Oliver & Boyd, 1s  
 The Continent of Europe. By Lionel W. Lyde. Macmillan, 7s. 6d. net.  
 A Geography of the British Isles. By W. L. Bunting and H. L. Collen. Cambridge University Press, 3s. 6d.

RELIGION.

Studies in New Testament Thought. By the Rev. B. K. Cunningham. Student Christian Movement, 8d. net.  
 British Church History (to 1000 A.D.). By the Rev. W. H. Flecker. Bell, 1s. 6d.  
 Science and Christianity. By P. V. Bevan. Student Christian Movement, 6d. net.  
 Studies in Christian Truth. By the Rev. H. R. Mackintosh. Student Christian Movement, 8d. net.  
 The Missionary Motive. Edited by W. Paton. Student Christian Movement, 1s. 6d. net.  
 The Hope of the Redemption of Society. By Malcolm Spencer. Student Christian Movement, 1s. net.

MATHEMATICS.

Tutorial Algebra—Advanced Course. By William Briggs and G. H. Bryan. Fourth edition. Clive, 6s. 6d.  
 A Shorter Algebra. By W. M. Baker and A. A. Bourne. Bell, 2s. 6d.  
 Higher Algebra. By William P. Milne. Edward Arnold, 7s. 6d. net.  
 A Textbook of Elementary Statics. By R. S. Heath. Clarendon Press, 4s. 6d.  
 Bell's Outdoor and Experimental Arithmetics. For the standards, 3d. each course.  
 Graphical Methods. By Carl Runge. Columbia University Lectures. Humphrey Milford, 6s. 6d. net.  
 Mathematical Monographs. The Theory of Relativity. By Robert D. Carmichael. Chapman & Hall, 4s. 6d. net.  
 The Teaching of Arithmetic. By David Eugene Smith. Ginn, 4s. 6d.

SCIENCE.

Practical Science for Engineering Students. By H. Stanley. Methuen, 3s.  
 Mechanics of Particles and Rigid Bodies. By J. Prescott. Longmans, 12s. 6d. net.  
 Home University Library.—(1) The Ocean. By Sir John Murray. (2) Nerves. By Prof. D. Fraser Harris. Williams & Norgate, 1s. each net.  
 Science Progress. October, 1913. Murray, 5s. net.  
 Examples in Physics. By H. Freeman and E. Jobling. Heffer, 1s. net.  
 Elementary Science for the Certificate Examinations. Introductory Section. Edited by William Briggs. Third edition. Clive, 2s. 6d.  
 The Life of the Fly. By Henri Fabre. Translated by Alexander Teixeira de Mattos. Hodder & Stoughton, 6s. net.  
 A First Book of Nature Study. By E. Stanhouse. Macmillan, 1s. 6d.  
 Weeds: Simple Lessons for Children. By Robert Lloyd Praeger. Cambridge University Press, 1s. 6d. net.

HYGIENE.

Questions of Sex Series.—(1) Life at its Beginnings. By Dr. Helen Webb. (2) From Girlhood to Womanhood. By Dr. Elizabeth Sloan Chesser. (3) What a Boy should Know. By Dr. A. T. Schofield and Dr. Percy Vaughan-Jackson. (4) Before I Wed; or, Young Men and Marriage. By Sir Thomas Clouston, M.D. Cassell, each 2s. 6d. net.  
 Laws of Health for Schools. By A. M. Malcolmson. Black, 1s. 6d.

CALENDARS, &c.

The Cambridge University Calendar (1913-1914). Deighton Bell, 9s. net.  
 The London University Guide (1914). University Correspondence College, Burlington House, Cambridge, gratis.  
 University Correspondence College Calendar (1913-1914). Burlington House, Cambridge, 1s. net.

MATHEMATICS.

Readers desiring to contribute to the Mathematical columns are asked to observe the following directions very carefully:—

- (1) To write on one side only of the paper.
- (2) To avoid putting more than one piece of work on a single sheet of paper.
- (3) To sign each separate piece of work.

17547. (Professor K. J. SANJANA, M.A. Proposer's Revision of Question 17099.)—(1) If  $R_n = 1 + \frac{1}{2} + \frac{1}{3} \dots + 1/n$ , examine the convergency of the series  $R_1x + R_2x^2 + R_3x^3 + \dots$  ad inf.

(2) If  $s_n = 1 + \frac{1}{2} + \frac{1}{3} \dots + 1/(2n-1)$ , investigate the sum of  $s_1 - s_2 + s_3 - s_4 + \dots$  ad inf.

Solution by W. N. BAILEY.

(1) Denoting the series  $R_1x + R_2x^2 + R_3x^3 + \dots$  by  $\sum u_n$ , we find that

$$\left| \frac{u_{n+1}}{u_n} \right| = \frac{R_{n+1}}{R_n} |x| \rightarrow |x|,$$

so that the series is convergent if  $|x| < 1$ , divergent if  $|x| > 1$ . If  $x = 1$ , the series becomes

$$1 + (1 + \frac{1}{2}) + (1 + \frac{1}{2} + \frac{1}{3}) + \dots,$$

which diverges since  $u_n \rightarrow \infty$ , and every term is positive.

If  $x = -1$ , the sum of  $2n$  terms is

$$-1 + (1 + \frac{1}{2}) - (1 + \frac{1}{2} + \frac{1}{3}) + (1 + \frac{1}{2} + \frac{1}{3} + \frac{1}{4}) - \dots + (1 + \frac{1}{2} + \frac{1}{3} + \dots + 1/2n) = \frac{1}{2} + \frac{1}{4} + \dots + 1/2n = \frac{1}{2}(1 + \frac{1}{2} + \dots + 1/n) \rightarrow +\infty,$$

while the sum of  $(2n+1)$  terms is

$$-1 + (1 + \frac{1}{2}) - (1 + \frac{1}{2} + \frac{1}{3}) + \dots - [1 + \frac{1}{2} + \dots + 1/(2n+1)]$$

$$= -1 - \frac{1}{3} - \frac{1}{5} - \dots - 1/(2n+1)$$

$$< -[\frac{1}{2} + \frac{1}{4} + \frac{1}{6} + \dots + 1/(2n+2)]$$

$$= -\frac{1}{2}[1 + \frac{1}{2} + \dots + 1/(n+1)] \rightarrow -\infty.$$

Hence, when  $x = -1$ , the series oscillates between  $+\infty$  and  $-\infty$ .

(2) If  $s_n = 1 + \frac{1}{3} + \frac{1}{5} + \dots + 1/(2n-1)$ ,

$$(s_1 - s_2) + (s_3 - s_4) + \dots + (s_{2n-1} - s_{2n}) = -\frac{1}{3} - \frac{1}{7} - \frac{1}{11} - \dots - 1/(4n-1)$$

$$< -(\frac{1}{2} + \frac{1}{4} + \frac{1}{6} + \dots + 1/4n)$$

that is

$$< -\frac{1}{2}(1 + \frac{1}{2} + \dots + 1/n) \rightarrow -\infty,$$

and  $s_1 - (s_2 - s_3) - (s_4 - s_5) - \dots - (s_{2n-1} - s_{2n})$

$$= 1 + \frac{1}{3} + \frac{1}{5} + \dots + 1/(4n+1) > \frac{1}{2} + \frac{1}{4} + \frac{1}{6} + \dots + 1/[2(n+1)]$$

i.e.

$$> \frac{1}{2}[1 + \frac{1}{2} + \dots + 1/(n+1)] \rightarrow +\infty.$$

Therefore the series  $s_1 - s_2 + s_3 - s_4 + \dots$  oscillates between  $+\infty$  and  $-\infty$ .

15091. (Professor HUDSON, M.A.)—Prove that the evolute of  $r = a(2 + \cos \theta)$  has three cusps lying on a straight line perpendicular to the initial line.

Solution by C. E. YOUNGMAN, M.A.

The limaçon  $r = 2a(1 + e \cos \theta)$  can be traced by a point P carried by a circle (Z) which rolls round a circle (O), touching it at D; OD and DZ = a, ZP and OS = ae. Let O be the origin.

$$\text{At P, } x = 2a \cos \theta + ae \cos 2\theta,$$

$$y = 2a \sin \theta + ae \sin 2\theta;$$

and the equation of the normal PD is

$$x(\sin \theta + e \sin 2\theta) - y(\cos \theta + e \cos 2\theta) = ae \sin \theta.$$

Hence for the centre of curvature we have also

$$x(\cos \theta + 2e \cos 2\theta) + y(\sin \theta + 2e \sin 2\theta) = ae \cos \theta;$$

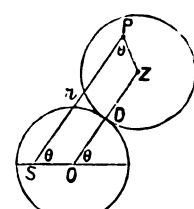
and therefore

$$x(1 + 3e \cos \theta + 2e^2) = ae(1 + e \cos \theta + e \sin \theta \sin 2\theta),$$

$$y(1 + 3e \cos \theta + 2e^2) = 2ae^2 \sin^3 \theta.$$

This centre is a cusp on the evolute when the circle of curvature has four-point contact with the limaçon; which occurs at the points corresponding to the vertices of the inverse conic; that is, when  $\theta = 0$  or  $\pi$ , or  $\cos \theta = -e$ . The cusps therefore lie two on  $y = 0$ , where  $x = ae/(1 \pm 2e)$ , and two on  $x = ae(1 - 2e^2)$ , where

$$y = \pm 2ae^2 \sqrt{1 - e^2}.$$



Thus the four finite cusps on the evolute of a limaçon lie as a rule on the circle

$$(x^2 + y^2)(1 - 4e^2) - 2aex + a^2e^2 = 0;$$

and when  $e = \frac{1}{2}$  one of them goes to infinity and the other three lie on  $x = \frac{1}{2}a$ . Two of these, with the node of the limaçon, are the corners of an equilateral triangle.

The PROPOSER solves on the following lines:—

The radius of curvature of  $r = a(2 + \cos \theta)$  is found to be

$$\frac{1}{2}a(5 + 4 \cos \theta)^{3/2}/(1 + \cos \theta).$$

Its four maxima and minima values occur when  $\cos \theta = -\frac{1}{2}$  and when  $\sin \theta = 0$ .

The distance from the origin of the projection of the centre of curvature on the initial line is found to be

$$\frac{1}{2}a(5 + 6 \cos \theta - 2 \cos^3 \theta)/(1 + \cos \theta).$$

In one of the four cases this is infinity, and in the other three it is  $\frac{3}{2}a$ .

Hence the evolute of this limaçon has three cusps lying on a straight line perpendicular to the initial line.

Note.—The limaçon  $r = a(2 + \cos \theta)$  is an attempt to express the vertical section of a curling stone.

**17848.** (Professor R. W. GENESE, M.A.)—Points P, Q move uniformly on two intersecting straight lines, but are not simultaneously at the point of intersection. On PQ a triangle PQR is described directly similar to any given triangle. The locus of R is a straight line.

Additional Solution by CONSTANCE I. MARKS, B.A. (Lond.).

Let XX', YY' represent the actual paths of P and Q, and when P is at the point of intersection P', let Q be at Q<sub>0</sub> as in figure.

Consider the relative motion of Q to P.

The locus of Q', any point on the relative path, may be shown from first principles to be a straight line.

Also P'Q' is equal and parallel to the side PQ of the corresponding triangle PQR.

Now turn P'Q<sub>0</sub>, P'Q', ... as a rigid framework about P', through an angle equal to and in the same sense as that between PQ and PR in any triangle of the "PQR" series.

Then P'Q<sub>0</sub>, P'Q', ... in their new positions are parallel to the directions of the sides PR of the triangles of the "PQR" series, and are also proportional to these sides. But the locus of their extremities remote from P', namely, Q<sub>0</sub>, Q', ... is a straight line.

It follows that the locus of R is also a straight line.

**17598.** (Professor E. J. NANSON.)—Indicate in what manner Charpit's process leads to the ordinary solution of the Lagrangean equation  $Pp + Qq = R$ .

Solution by the PROPOSER.

The Charpit auxiliary equations for

$$Pp + Qq = R \dots \dots \dots (1),$$

$$\text{are } dp : dq : dx : dy : dz = I : M : P : Q : Pp + Qq \dots \dots \dots (2),$$

where L, M are certain functions of  $x, y, z, p, q$ .

One solution of (2) is (1). Using it, we get from (2),

$$dx : dy : dz = P : Q : R,$$

which are the Lagrangean auxiliary equations for the solution of (1). See Forsyth, *Differential Equations*, § 204, p. 381. From these we get two other solutions of (2), say

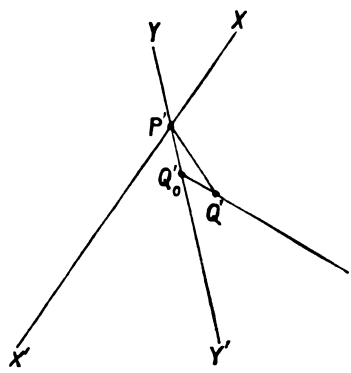
$$f(x, y, z) = a, \quad g(x, y, z) = b \dots \dots \dots (3),$$

and the ordinary solution of (1) is

$$\phi(f, g) = 0 \dots \dots \dots (4),$$

where  $\phi$  is arbitrary, and it is to be explained how Charpit's process leads to this solution.

Now to solve (1) by Charpit's process we need a solution of (1) of the form  $h(x, y, z, p, q) = c$  independent of (1). This must be the fourth solution of (2). The



values of  $p, q$  given by (1), (5) necessarily make the equation

$$dz - pdx - qdy = 0 \dots \dots \dots (6)$$

integrable, and so lead to a complete primitive of (1) in the form

$$k(x, y, z, c) = d \dots \dots \dots (7).$$

Now as (6) is included in (2), it follows that (7) is a fifth solution of (2), and must therefore be expressible in terms of the four solutions (1), (3), (5) already obtained. Now inasmuch as  $p, q$  occur independently in two of these solutions, viz., (1), (5), and as (7) does not contain  $p, q$ , it follows that  $k(x, y, z, c)$  can be expressed in terms of the functions  $f, g$ , and so the complete primitive can be expressed in the form  $\psi(f, g, c) = d$ .

This is merely a relation between the two functions  $f, g$  and the arbitrary constants  $c, d$ . The application to it of the usual process for deducing a general integral from a complete primitive leads to an arbitrary relation between  $f, g$ , and so gives the solution of (1) in the form (4).

**18059.** (H. J. WOODALL, A.R.C.S.)—If  $p$  is prime to  $l-1$ , and  $m$  is the least number such that  $l^m - 1 \equiv 0 \pmod{p}$ , find the least  $n$  such that  $l^n - 1 \equiv 0 \pmod{p^2}$ .

Solution by A. M. NESBITT, M.A.

The required result is obtained by taking  $n = mp$ . For, if we put  $\lambda = l^m$ , we have

$$\lambda^p - 1 = (\lambda - 1)(\lambda^{p-1} + \dots + 1);$$

hence, if we divide  $\lambda^p - 1$  by  $(\lambda - 1)^2$ , the remainder is  $p(\lambda - 1)$ . Thus  $\lambda^p - 1$ , when divided by  $p^2$  ( $p$  being a factor of  $\lambda - 1$ ), leaves no remainder.

Note by the PROPOSER.

Occasionally, however, we come upon cases where

$$l^n - 1 \equiv 0 \pmod{p^2},$$

where  $n$  is not divisible by  $p$ , e.g.,

$$7^4 - 1 \equiv 0 \pmod{5^2};$$

but a more famous case is  $2^{264} - 1 \equiv 0 \pmod{1093^2}$ ,

which has only lately been discovered by Herr W. Meissner.

**17870.** (D. BIDDLE.)—Prove that  $\sum_{n=2}^{\infty} 1/(n^2 - 1) = \frac{3}{4}$ .

Solution by H. FREEMAN, M.A., and many others.

$$u_n = 1/(n^2 - 1) = \frac{1}{2} \left\{ \frac{1}{n-1} - \frac{1}{n+1} \right\},$$

$$u_{n-1} = \frac{1}{2} \left\{ \frac{1}{(n-1)-1} - \frac{1}{(n-1)+1} \right\}$$

$$= \frac{1}{2} \left\{ \frac{1}{n-2} - \frac{1}{n} \right\},$$

$$u_{n-2} = \frac{1}{2} \left\{ \frac{1}{(n-3)-1} - \frac{1}{(n-3)+1} \right\},$$

$$\dots \dots \dots$$

$$u_4 = \frac{1}{2} \left\{ \frac{1}{3} - \frac{1}{5} \right\},$$

$$u_3 = \frac{1}{2} \left\{ \frac{1}{2} - \frac{1}{4} \right\},$$

$$u_2 = \frac{1}{2} \left\{ \frac{1}{1} - \frac{1}{3} \right\}.$$

By addition  $S_n = \frac{1}{2} \left\{ \frac{1}{1} + \frac{1}{2} - \frac{1}{(n+1)} - \frac{1}{n} \right\};$

therefore  $S_{\infty} = \frac{1}{2} \left\{ \frac{1}{1} + \frac{1}{2} \right\} = \frac{1}{2} \cdot \frac{3}{2} = \frac{3}{4}.$

The PROPOSER solves thus:—

The series which, summed to infinity,  $= \frac{1}{2} \cdot \frac{3}{2}$ , is

$$1 - \frac{1}{3} + \frac{1}{5} - \frac{1}{7} + \frac{1}{9} - \frac{1}{11} + \dots$$

The terms of this series may be taken in pairs two different ways:—

$$1 - \frac{1}{3} - \frac{1}{5} + \frac{1}{3} - \frac{1}{7} + \frac{1}{5} - \frac{1}{9} + \dots \dots \dots (\alpha),$$

$$\frac{1}{3} + \frac{1}{5} + \frac{1}{9} + \frac{1}{15} + \frac{1}{21} + \frac{1}{27} + \dots \dots \dots (\beta).$$

Since (α) and (β) are equal, we have

$$\frac{1}{2} = \frac{1}{3} + \frac{1}{5} + \frac{1}{9} + \frac{1}{15} + \frac{1}{21} + \frac{1}{27} + \dots \dots \dots (\gamma)$$

$$= \sum_{n=1}^{\infty} 1/(2n)^2 - 1/4.$$

For the intervening terms required, we have

$$[1/(3^2 - 1) + 1/(5^2 - 1) + 1/(7^2 - 1) + \dots]$$

$$= \left( \frac{1}{8} + \frac{1}{24} + \frac{1}{48} + \dots \right)$$

$$= \frac{1}{8} \sum_{n=1}^{\infty} 2/[n(n+1)] = \frac{1}{8} \left( 1 + \frac{1}{2} + \frac{1}{3} + \frac{1}{4} + \frac{1}{5} + \dots \right) \dots \dots (\delta)$$

$$= \frac{1}{4} \left\{ \frac{1}{2} [2n/(n+1)] \right\}.$$

Adding (γ) and (δ) together, we have

$$1/(2^2 - 1) + 1/(3^2 - 1) + 1/(4^2 - 1) + 1/(5^2 - 1) + 1/(6^2 - 1) + \dots = \frac{3}{4}.$$

**17585.** (Professor NEUBERG.)—Eliminer  $x, y, z$  entre les équations  $xy(x+y) = c, yz(y+z) = a, zx(z+x) = b, xyz = d$ .

Solutions (I) by W. F. BEARD, M.A., and G. W. BORDER, B.A.;  
(II) by Professor R. SRINIVASAN, M.A., and very many others.

(I)  $xyz(y+z) = ax$ ;  
therefore  $-ax + dy + dz = 0$ ,  
and two similar equations. Hence the eliminant is

$$\begin{vmatrix} -a & d & d \\ d & -b & d \\ d & d & -c \end{vmatrix} = 0, \text{ or } 2d^3 + d^2(a+b+c) - abc = 0.$$

(II) Take the product of the first three

$$x^2y^2z^2(x+y) = abc,$$

i.e.,  $x(x+y) = abc/d^2$ ,  
i.e.,  $2xy(x+y) + 2xyz = abc/d^2$ ,  
i.e.,  $a+b+c+2d = abc/d^2$ .

Note on the Orthopole.

By R. F. DAVIS, M.A.

A study of the very interesting chapter on the Orthopole in the second and enlarged edition of Mr. W. Gallatly's *Modern Geometry of the Triangle*, brings out the following result:—ABC is a triangle and UV any chord of its circum-circle. The chords AR, RT are drawn perpendicular to UV, BC respectively. Then the triangles ABC, TUV are such that the Simson lines of the angular points of one triangle with respect to the other triangle are concurrent in S, the orthopole of UV.

Resisting the temptation to call them "Sym-Simsonic," I should like to draw attention to the early occurrence of such triangles. If ABC is a triangle; D, E, F the middle points of its sides; X, Y, Z the feet of the perpendiculars; H the orthocentre and a the middle point of HA; then Xa is perpendicular to EF and Da to YZ. Thus DEF, XYZ are similarly related triangles, the point of concurrence being the centre of the Taylor circle. This was fully discussed in the section by the Rev. T. C. Simmons in *Milne's Companion* (1888), on pp. 142, 143.

17352. (Professor K. J. SANJANA, M.A.)—"To find three numbers such that the product of any two plus the third gives a square."—*Diophantus*, III, 12. Obtain the following solutions:—

$$\frac{a+1}{4-a}, \frac{a^2-3a+1}{4-a}, \frac{a^2+a}{4-a}; \quad a^2, \frac{a^2-4a+1}{4}, \frac{a^2+4a+1}{4};$$

and show how others may be found.

Solution by SARADAKANTA GANGULY, M.A.

Let  $yz+x = A^2$  .....(1);  
 $zx+y = B^2$  .....(2);  
 $xy+z = C^2$  .....(3).

From (1) and (2), by subtraction,  
 $(y-x)(z-1) = A^2 - B^2 = (A+B)(A-B)$ .  
Assume therefore  $y-x = A+B$ ,  $z-1 = A-B$ ;  
therefore  $A = \frac{1}{2}(y+z-x-1)$ ;  
therefore (1) becomes  $4yz+4x = (y+z-x-1)^2$ ,  
or  $x^2+y^2+z^2-2yz-2zx-2xy-2x-2y-2z+1 = 0$ .....(4);  
therefore  $4zx+4y = (z+x-y-1)^2$ ,  
and  $4xy+4z = (x+y-z-1)^2$ .

Hence the Question is reduced to that of solving equation (4), which may be stated in the following three ways:

- (i)  $2(x+1)(y+z) = (x+1)^2 + (y-z)^2 - 4x$
- (ii)  $4yz = (y+z-x-1)^2 - 4x$ ;
- (iii)  $4yz = (y+z-x+1)^2 - 4(y+z)$ .

Accordingly we have three general solutions.  
First,  $2(x+1)(y+z) = (x+1)^2 + (y-z)^2 - 4x$ ;  
therefore  $2(y+z) = x+1 + \frac{(y-z)^2 - 4x}{x+1}$ .....(5).

Assume, therefore,  $(y-z)^2 - 4x = p(x+1)$  .....(6),  
and  $y-z = a$  .....(7).

From (6) and (7),  $x = \frac{a^2-p}{4+p}$  .....(8).

From (5) and (6),  $y+z = \frac{1}{2}(x+1) + \frac{1}{2}p$  .....(9).

From (7), (8) and (9),

$$y = \frac{a^2 + 2a(p+4) + (p+2)^2}{4(4+p)} \dots\dots\dots(10),$$

$$z = \frac{a^2 - 2a(p+4) + (p+2)^2}{4(4+p)} \dots\dots\dots(11).$$

When  $p = -a$ ,  $x, y, z$  respectively become  
 $\frac{a^2+a}{4-a}, \frac{a+1}{4-a}$ , and  $\frac{a^2-3a+1}{4-a}$ .

Thus we get the first of the proposed solutions.

Secondly,  $4yz = (y+z-x-1)^2 - 4x$ .

The right-hand member will have two factors, if  $x$  be a perfect square. So assume  $x = p^2$ . Then the above equation may be stated thus:—

$$4yz = (y+z-p^2-2p-1)(y+z-p^2+2p-1) = \{y+z-(p+1)^2\}\{y+z-(p-1)^2\}.$$

Assume, therefore,

$$2my = n\{y+z-(p+1)^2\} \text{ and } 2nz = m\{y+z-(p-1)^2\};$$

therefore  $y = \frac{n\{n(p+1)^2 - 2mp\}}{(m-n)^2}$  .....(12),

$$z = \frac{m\{m(p-1)^2 + 2np\}}{(m-n)^2} \dots\dots\dots(13).$$

If  $m = -n$ , and  $p = a$ , we get the second of the proposed solutions.

Thirdly,  $4yz = (y+z-x+1)^2 - 4(y+z)$ .

The right-hand member will be the product of two factors, if

$$y+z = p^2 \dots\dots\dots(14).$$

Then  $4yz = (x-p^2-1)^2 - 4p^2 = \{x-(p+1)^2\}\{x-(p-1)^2\}$ .

Assume, therefore,

$$2my = n\{x-(p+1)^2\} \text{ and } 2nz = m\{x-(p-1)^2\};$$

therefore  $2p^2 = 2(y+z) = \left(\frac{m}{n} + \frac{n}{m}\right)x - \frac{m}{n}(p-1)^2 - \frac{n}{m}(p+1)^2$ ;

therefore  $x = \frac{(m+n)^2}{m^2+n^2} p^2 - 2 \frac{m^2-n^2}{m^2+n^2} p + 1$ ;

therefore  $y = \frac{p}{m^2+n^2} (n^2p-2mn)$  and  $z = \frac{p}{m^2+n^2} (m^2p+2mn)$ .

If  $m = -n$ ,  $x, y, z$  respectively become  $1, (p^2+2p)/2, (p^2-2p)/2$ , and we have the additional solution given by Mr. A. M. Nesbitt, M.A. (*v. Reprint*, New Series, Vol. xxv, p. 40).

N.B.—By giving suitable values to  $m, n, p, a$ , we can get any number of integral solutions of the indeterminate equation (4).

18905. (W. J. C. MILLER, B.A.)—Construct a triangle, having given (1) its perimeter, in-radius, and circum-radius; or (2) the distances apart of its centroid, in-centre, and circum-centre.

Solution by NORMAN ALLISTON.

$$\text{tg } \frac{1}{2}a + 1/\text{tg } \frac{1}{2}a = 2/\sin a \text{ and } \text{tg } \frac{1}{2}a = \rho(s-a);$$

therefore  $\frac{\rho^2 + (s-a)^2}{\rho(s-a)} = \frac{2}{\sin a}$  and  $\frac{a}{\sin a} = 2r = \frac{\rho[\rho^2 + (s-a)^2]}{2\rho(s-a)}$ .

From this we obtain the cubic equation

$$a^3 - (2s)a^2 + (s^2 + 4r\rho + \rho^2)a - 4r\rho s = 0,$$

in which  $b$  or  $c$  may replace  $a$ , thus showing that there are three real roots.

The actual solution is obtained from

$$\cos \phi = \frac{\frac{2}{3}\rho s(2r-\rho) - (\frac{1}{3}s)^3}{[(\frac{1}{3}s)^2 - \frac{1}{3}\rho(4r+\rho)]^{\frac{1}{2}}} (= p^{\frac{1}{3}}),$$

$$\begin{aligned} a &= 2\sqrt{p} \cdot \cos \frac{1}{3}\phi + \frac{2}{3}s, \\ b &= -2\sqrt{p} \cdot \cos(\frac{1}{3}\phi + 60^\circ) + \frac{2}{3}s, \\ c &= -2\sqrt{p} \cdot \cos(\frac{1}{3}\phi - 60^\circ) + \frac{2}{3}s. \end{aligned}$$

QUESTIONS FOR SOLUTION.

Corrigendum.—In Question 12725 reposed November 1913, read: "Inscribe in a circle a triangle," &c.

17634. (Professor K. J. SANJANA, M.A.)—Evaluate

$$\int_0^1 \tan(p \tan^{-1} x) dx,$$

where  $|p| < 2$ .

**17635.** (FREDERICK PHILLIPS, F.C.P., B.Sc., F.C.S.)—Show that  
 $2(bx^2 + xy) dy/dx + x^2 - y^2 = 0$ .....(1),  
 and  
 $[2ax^2/(x^2 - y^2) - x] dy/dx + y = 0$ .....(2),  
 are independent first integrals of the same equation in  $x, y, dy/dx, d^2y/dx^2$ . Solve above equations and show that they have a common primitive—which in this case can be obtained by the direct elimination of  $dy/dx$  from (1) and (2) without integration. Give a test showing when this process of elimination can be employed.

**17636.** (A. M. NESBITT, M.A.)—There are  $N$  tickets in a sweepstakes on a race for which  $n$  horses enter. How many tickets must a man take to have an even chance of drawing one starter at least? (Note.—All the horses entered are regarded as "starters," and  $N$  is large in comparison with  $n$ .)

**17637.** (J. J. BARNVILLE, B.A.)—Express  $(x^2 + x + 1)(y^2 + y + 1)$  in the form  $A^2 + 3B^2$  in nine ways.

**17638.** (W. E. H. BERWICK.)—Express  
 $z^4 + (2-6i)z^3 - (60+36i)z^2 + (145-90i)z - 113 + 7i$   
 as a product of factors with coefficients of the form  $a + bi$ , where  $i^2 + 1 = 0$ .

**17639.** (Professor J. C. SWAMINARAYAN, M.A.)—Between  $a, b$ , two arithmetical means  $x_1, y_1$  are inserted; between  $x_1, y_1$ , two arithmetical means  $x_2, y_2$  are inserted, and so on; the process is repeated  $n$  times. Show that

$$(x_n^2 - y_n^2) = \{(a^2 - b^2) 3^n\}.$$

**17640.** (R. F. DAVIS, M.A.)—Examine what inference may be drawn from the equations

$$ayz - (bc/a)x^2 = bzx - (ca/b)y^2 = cxy - (ab/c)z^2 = t.$$

**17641.** (C. M. ROSS, B.A.)—A tangent plane to the cubic surface  $xyz = d^3$  cuts the co-ordinate axes  $Ox, Oy, Oz$  in variable points  $A, B, C$ . Find the locus of the centre of a sphere of constant volume which passes through  $A, B, C$  and the origin  $O$ .

**17642.** (S. KRISHNASWAMI AIYANGAR, B.A.)—If  $\rho$  be the radius of curvature of the curve  $r^m = a^m \sin m\theta$  at a point, whose distance, measured along the curve, from a fixed point is  $s$ , prove that

$$(m-1)(m+1)^2 \rho \cdot d^2\rho/ds^2 - m(m+1)^2 (d\rho/ds)^2 - m(m-1)^2 = 0.$$

Also deduce, by giving special values to  $m$  the corresponding formulae for

a parabola  $3\rho \cdot d^2\rho/ds^2 - (d\rho/ds)^2 - 9 = 0,$

a cardioide  $9\rho \cdot d^2\rho/ds^2 + 9(d\rho/ds)^2 + 1 = 0,$

a lemniscate of Bernoulli  $9\rho \cdot d^2\rho/ds^2 - 18(d\rho/ds)^2 - 2 = 0,$

and a rectangular hyperbola  $3\rho \cdot d^2\rho/ds^2 - 2(d\rho/ds)^2 - 18 = 0.$

These results can also be established independently.

**17643.** (R. VYTHYNATHASWAMY.)—The locus of centres of circles passing through the pole and touching the limaçon

$$a + b \cos(\theta - a) = r$$

is a circle.

**17644.** (C. E. YOUNGMAN, M.A.)—If two equal and opposite limaçons have the same directrix, any normal of one bisects the corresponding tangent-chord of the other.

**17645.** (Professor NEUBERG.)—Etant donnés deux axes rectangulaires  $Ox, Oy$  et une courbe  $\Delta$ , soit  $MP$  l'ordonnée d'un point quelconque  $M$  de  $\Delta$ . On considère l'hyperbole équilatère  $H$  qui a pour centre le point  $P$  et pour un sommet réel le point  $M$ . Construire le point de contact de  $H$  avec son enveloppe et la tangente on ce point, lorsqu'on donne la tangente en  $M$  à  $\Delta$ .

**17646.** (C. V. L. LYCETT.)— $O$  is a point on the normal at a point  $L$  on an ellipse. The circle centre  $O$  and radius  $OL$  cuts the ellipse again in  $MN$ . If the tangents at  $L$  to the ellipse, and the hyperbola of Apollonius of  $O$  cut  $MN$  in  $P$  and  $Q$  respectively, then  $P$  is on the hyperbola and  $(PMQN)$  is harmonic.

**17647.** (Professor E. J. NANSON. Suggested by Question 17577.)—Find the locus of a point whose distances  $x, y, z$  from the vertices of a triangle whose sides are  $a, b, c$  are connected by the equation

$$yz/bc + zx/ca + xy/ab = 1.$$

**17648.** (W. F. BEARD, M.A.)— $T$  is the pole of the tangent at  $P$ , a point on an ellipse, with regard to the director circle. Prove that  $TP$  is perpendicular to the polar of  $T$  with regard to the ellipse.

**17649.** (T. H. MATTHEWS.)—Given a circle and its centre, to inscribe in the circle an equilateral triangle, using the ruler only.

**17650.** (F. G. W. BROWN, B.Sc., L.C.P.)— $ABCD$  is a cyclic quadrilateral in which  $AD = BC$ . If the rectangle  $AB \cdot CD = \text{square on } BC$ , show that the angles  $XAD, XCB$  are each equal to the angle  $ABD$ ,  $X$  being the mid-point of  $BD$ .

**17651.** (F. GLANVILLE TAYLOR.)— $I, I_1, \dots$  are the in- and ex-centres of  $ABC$ ;  $I', I'_1, \dots$  their images through the circum-centre  $O$ , so that  $O$  is the mid-point of  $II', \dots$ . Prove that  $(BI'_1, CI'_2) = X$  is the isogonal conjugate of  $I'_1$ , and that  $A, I', X$  are collinear.

OLD QUESTIONS AS T UNSOLVED (IN OUR COLUMNS).

**12732.** (G. H. HOPKINS.)—Obtain integral values of  $N$  and  $n$  which will satisfy the equation  $\frac{1}{3}n^3 + \frac{1}{2}n^2 + \frac{1}{6}n = N^2$ , having given one set of values, viz.,  $N = 70, n = 24$ . [The equation is

$$\frac{(n+1)n(2n+1)}{2 \cdot 3} = N^2,$$

which means that the value of  $n$  requires  $1^2 + 2^2 + 3^2 + \dots + n^2$  to be a square number. It is possible that there is no other solution

$$1^2 + 2^2 + \dots + (73)^2 = (70)^2 + (357)^2.]$$

**12777.** (Professor IGNACIO BEYENS.)—Démontrer géométriquement la formule bien connue

$$(A \pm B)^4 = \left\{ \frac{1}{2} \{A + (A^2 - B)^{\frac{1}{2}}\} \right\}^4 \pm \left\{ \frac{1}{2} \{A - (A^2 - B)^{\frac{1}{2}}\} \right\}^4.$$

**12799.** (J. J. BARNVILLE, B.A.)—Prove that

$$1 - \frac{1}{2} - \frac{1}{4} + \frac{1}{4} - \frac{1}{6} + \dots = \frac{1}{2} + \frac{1}{2} + \frac{1}{6} + \frac{1}{3} - \frac{1}{7} - \dots = \frac{2}{3}\pi\sqrt{3}.$$

**12818.** (Professor MACFARLANE.)—A rectangular room has the four walls, the floor, and the ceiling covered with mirrors; a candle is placed inside the room. Find a formula which will express all the images.

**12835.** (ARTEMAS MARTIN, LL.D.)—Required a general solution of the equation  $\frac{1}{2}x(x+1)(2x+1) + 1 = y^2$ , which will always give integral values for  $x$ . [Two such values of  $x$  are  $x = 47$ , and  $x = 48$ . Are there any other integral values of  $x$ ?] (Cf. Question 12732 *supra*, Ed.)

**12872.** (W. R. W. ROBERTS.)—Give a geometrical construction for drawing the tangent at a given point on a uninodal quartic curve.

NOTICE TO CORRESPONDENTS.

It is requested that all Mathematical communications should be sent to the Mathematical Editor,

Miss CONSTANCE I. MARKS, B.A., 10 Matheson Road, West Kensington, W.

THE LONDON MATHEMATICAL SOCIETY.

Thursday, November 13, 1913.—Annual General Meeting. Prof. A. E. H. Love, President, in the chair.

Messrs. A. Korn and E. E. Powers were elected members. Profs. A. Hurwitz, M. Noether, P. Painlevé, C. Segre, and W. Voigt, were elected honorary members.

The President spoke of the scientific work of the late Mr. S. Roberts, and on his motion, seconded by Sir J. Larmor, it was agreed that a letter of condolence should be sent to the relatives of Mr. Roberts.

The President proposed, and Prof. Hobson seconded, a resolution expressing the deeply felt gratitude of the Society towards Sir J. Larmor for his services as Treasurer during a period of twenty-one years.

The following papers were communicated:—

“The Skew Isogram Mechanism”: Mr. G. T. Bennett.

“Tauberian Theorems concerning Power Series whose Coefficients are Positive”: Messrs. G. H. Hardy and J. E. Littlewood.

“On Lambert’s Theorem”: Mr. G. H. Hardy.

(i) “The Connexion between Surfaces whose Lines of Curvature are Spherical and Surfaces whose Inflectional Tangents belong to Linear Complexes,” (ii) “Surfaces whose Systems of Inflectional Tangents belong to Systems of Linear Complexes”: Mr. J. E. Campbell.

“On Integration with respect to a Function of Bounded Variation”: Prof. W. H. Young.

“The Computation of Cotes’s Numbers, and their values up to  $n = 20$ ”: Prof. W. W. Johnson.

“Some Ruler Constructions for the Covariants of a Binary Quantic”: Mr. S. G. Soal.

“Analogues of Orthocentric Tetrahedra in Higher Space”: Mr. T. C. Lewis.

“Closed Linkages and Poristic Polygons”: Col. R. L. Hippisley.

The new list of Officers and Council is as follows:—President, A. E. H. Love; Vice-Presidents, H. F. Baker and W. Burnside; Treasurer, A. E. Western; Secretaries, J. H. Grace and T. J. I’A. Bromwich; other Members of the Council, S. Chapman, E. Cunningham, A. L. Dixon, L. N. G. Filon, E. W. Hobson, J. H. Jeans, J. E. Littlewood, H. M. Macdonald, P. A. MacMahon, and H. W. Richmond.





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