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THE
EDUCATIONAL TIMES,

AND

Journal of the College of Preceptors.

VOL. LXV.

From January to December, 1912.

295'64
17/10/13.

LONDON:
FRANCIS HODGSON, 89 FARRINGDON STREET, E.C.

1912.

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THE EDUCATIONAL TIMES,

AND

Journal of the College of Preceptors.

Vol. LXV.] New Series, No. 609.

JANUARY 1, 1912.

{ Published Monthly, price, to Non Members, 6d.; by Post, 7d. Annual Subscription, 7s.

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 20th of January, 1912, at 3 p.m.

MEMBERS' DINNER.

The Members' Dinner will take place at the Holborn Restaurant, W.C., on Saturday, the 20th of January, at 6.30 p.m. Tickets (not including wine), 6s. each. Members who intend to be present are requested to send early notice to the SECRETARY. Members may obtain tickets for their friends.

LECTURES FOR TEACHERS.

The First Course of Lectures (Fortieth Annual Series), by Prof. J. ADAMS, M.A., B.Sc., LL.D., F.C.P., on "Rational and Experimental Psychology as applied to Education," will commence on Thursday, February 8th, 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.
The Lectures will be delivered on Thursday Evenings at 7 o'clock, at the College, Bloomsbury Square, W.C.

EXAMINATIONS.

Diplomas.—The Summer Examination of Teachers for the Diplomas of the College will commence on the 26th of August, 1912.

Practical Examination for Certificates of Ability to Teach.—The next Practical Examination will be held in February, 1912.

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 25th of June, 1912.

Lower Forms Examinations.—The Midsummer Examination will commence on the 25th of June, 1912.

Professional Preliminary Examinations.—These Examinations are held in March and September. The Spring Examination in 1912 will commence on the 5th of March.

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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NOTICE.—"THE EDUCATIONAL TIMES" for February will contain the CLASS LISTS OF CANDIDATES who have passed at the recent CHRISTMAS EXAMINATIONS of the College of Preceptors.

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This Course will to a certain extent prepare for the Examinations of the College in connexion with the Associateship, the Licentiatehip, 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. 8.) *Nature and Scope of Psychology.*—Point of view; science of consciousness; nature of consciousness, general and individual; insulation of individual consciousness; the subjective and the objective; the study of the soul; meaning of the ego, and its various aspects; dangers of the psychological attitude on the part of the teacher; psychological data of education; psychology a theoretical study, education a practical.

II. (Feb. 15.) *Personality and Temperament.* Essential unity of the soul; various modes of being conscious; the so-called "faculties"; dangers of hypostasis; evolution of personality; nature of temperaments and their classification; permanency of the temperaments, and the means by which they may be modified; relation between temperament and personality; advantages and dangers of using "types" in education.

III. (Feb. 22.) *Perceptive Processes.*—Nature of sensation; the senses, general and special; contribution sensation makes to knowledge; the "preferred sense"; the training of the senses; distinction between sensation and perception; the mind's share in perception; meaning and limits of observation; the gazing point; rhythm of concentration and diffusion; the place of inference.

IV. (Feb. 29.) *The Conceptual.*—Nature of conception and its relation to perception; the range of the representative processes; nature and origin of ideas; the active and the passive aspects of ideas; presented content and presentative activity; the relation of definition to the concept; degrees of generality of ideas; the grouping and interaction of ideas; recall mediate and immediate.

V. (March 7.) *Memory.*—Not limited to intellectual processes; fundamental nature; relation to personal identity; Bergson's two kinds of memory; predominance of the purposive element; possibility of improving the memory as an original endowment; mnemonics and the educational applications; learning by heart and by rote; reminiscence and recollection; "verbal," "pictorial," and "rational" memory; relation to reality.

VI. (March 14.) *Imagination.*—Distinction from memory on the one hand and conception on the other; relation to thinking, and the corresponding limitations; conditions determining the working of the imagination, and the corresponding classification into "kinds" of imagination; importance in real life of "clearly imaged ends"; function of the imagination in school-work; its aesthetic use; nature and moral value of ideals.

VII. (March 21.) *Interest and Attention.*—Nature of each; interaction between them; circular reaction; interest as means and as end; relation between the interesting and the easy; quarrels about the classification of the kinds of attention; the mechanism of attention; its manipulation; its duration; its rhythm; various functions of attention in educational process; moral implications of the newer views.

VIII. (May 2.) *Subconsciousness and the Habitual.*—Vague notions of the subconscious and their dangers; nothing mystical about the subconscious; the dynamic conception underlying it; association a general principle of organic development and not limited to ideas; relation to habits; place and value of habits in education; making and breaking of habits; special and general habits; accommodation and co-ordination; the continuum of common interest; reintegration.

IX. (May 9.) *Suggestion.*—The teacher's means of manipulating the paid-up capital of the pupil; suggestion has no power save in calling up ideational combinations already formed; ideas as forces; self-activity; suggestion as self-originated; pseudo-auto-suggestion; meaning of temptation; making pupils temptation proof in certain directions; relation of suggestion to imitation; spontaneous and deliberate imitation.

X. (May 16.) *Reasoning.*—Fundamentally an adaptation of means to ends on the ideational plane; may be regarded as the purposive aspect of apperception; relation between thought and language; the constant element in thought; the dynamic basis of all thinking; the laws of thought as thought; nature and source of errors in thinking; possibility of honest difference in results of thinking; place and function of syllogistic and other formal modes of thinking.

XI. (May 23.) *The Affective Processes.*—Danger of isolating this aspect of soul life; unreasonable depreciation of the emotions by certain professional philosophers; value of emotions as support of intellectual process; classification of the emotions; expression of the emotions; Lange-James theory of the relation between emotion and its expression; important educational bearings of the truth underlying this theory.

XII. (May 30.) *Conation.* Interrelations of knowledge, feeling, desire, and will; nature and function of motive; fallacy of "the strongest motive"; the motiveless will; practical aspects of the theory of the freedom of the will; evolution of the will; its subjective and objective aspects; hypostasis of the will; possibilities of real training of the will; meaning of "breaking the will"; importance of the time element in all attempts at will-training.

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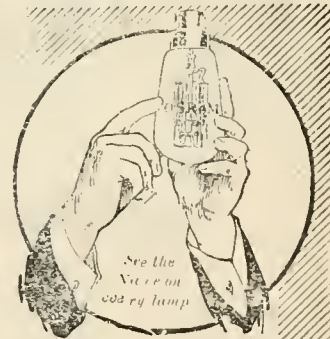
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The Educational Times.

IN another column will be found an important series of resolutions passed by a Joint Conference of the Private Schools Association, the Teachers' Guild, and the College of Preceptors, and unanimously adopted by the College Council at their last meeting. The unanimity is a memorable and a gratifying occurrence, for, on two of the three Associations concerned, private teachers, though fully represented, are by no means the preponderating power; and, at the present moment, the centrifugal forces are so strong that to secure combined action in any common cause would seem an almost hopeless task.

We talk of the teaching profession: but at present this is only a name, an ideal and, if you will, an aspiration and a watchword. Teachers are organized, but in sections—we might almost say in watertight compartments. The solidarity and self-government that distinguish the other learned professions are still lacking to teachers; they are still at best a heterogeneous federation.

This is a self-evident proposition, but to bring it home we will give one or two illustrations, and we take the first that comes to hand. As we write, there lies before us the *Times* of Christmas Day. It announces that the Report of the Board of Education Consultative Committee on Examinations in Secondary Schools is issued to-day as a White book. With the Report we are not here concerned, but it is significant of an unorganized or disorganized profession that the Committee has taken three years to incubate the Report, that it is not signed unanimously, that a Report of the same Committee on the same subject made in 1904 was of no effect, and, further, that the Board of Education expressly disclaims acceptance or rejection of the principles laid down, or of the opinions stated in evidence by their own officials. And, when we proceed to examine the constitution of the Consultative Committee, it is clear from the names that it can in no way be considered representative of the profession. There are on it two acting and two past teachers in secondary schools, but there is not a single representative of assistant masters or assistant mistresses, and no member has any connexion, direct or indirect, with private schools. The Consultative

Committee is an appendage of the Board of Education; it is appointed by the Board, can consider only questions referred to it by the Board, and the Board can either pigeon-hole its decisions, as it did in the case of the 1904 Report, or, if it acts upon them, as in the case of the late Registration Council, use the Council as a scapegoat to bear the blame of its own egregious failure. Let us hope that the new Registration Council—which, if it ever comes into existence, will start under happier auspices—will in time become a truly representative and independent Parliament of Teachers. On the same page of the *Times* is a letter from Mr. Nowell Smith correcting "an unfortunate error which has crept into your otherwise accurate report of the proceedings" of the Head Masters' Conference. The error is of no importance, but we are told that it arose from a request to the reporters not to report the discussion which preceded the voting. But Mr. Nowell Smith seizes this opportunity to correct a general misconception of the work of the Conference. It is constantly charged with "futility and discussions leading to no result." But, so the President of the Conference informs us, the public discussions are only for the ventilation of subjects of educational interest and the gradual formation of public opinion.

The real work of the Conference is done in the private business meetings and by the Standing Committees, and it is proposed next year to cut down the time for public discussion in order to give more time to private business. This may be a wise move, and we cannot honestly say that the public will lose much by this restriction of its privileges. But there are two alternatives suggested by Mr. Nowell Smith's letter, neither of which seems to have dawned upon the Conference. Six hours is assuredly scant time even for head masters to decide for themselves the policy of public schools and to educate public opinion, and it would be too much to expect them to prolong their sittings, with a heavy term behind them and Christmas day approaching fast. But it would be quite easy, were they so inclined, to choose some other season. Their brethren in the elementary schools, with half their holidays in the year, devote of these, not six hours, but six days, to discussing the problems of primary education. There is a second course, so obvious that it must have suggested itself to the head masters themselves. Why do they not commit the happy dispatch, or, to call it by a less repellent name, suffer euthanasia? Like Ariel's guitar,

they would only "die to live in happier life again." Nineteenth of them already belong to the Incorporated Association of Head Masters, and will in ten days' time be debating at the Guildhall the same problems that they debated a week ago at Sherborne. "Societates non sunt multiplicandae praeter necessitatem," and we still live in hope that the projected week of Conferences for secondary teachers, on the lines of the annual meeting of the British Association, may come to pass.

We have wandered far from the theme with which we started—the joint resolutions of the three Associations on private schools, and it behoves us, in conclusion, to show that our apparent digression is not irrelevant. The resolutions are eminently moderate, and few would be prepared to meet their demands with a direct negative; but, as is natural with resolutions drafted so as to approve themselves to three distinct bodies, they are somewhat vague and colourless and admit of different interpretations. That "efficient private schools should be preserved" is, in England at least, a platitude, but it raises at once the question who is to judge of their efficiency. Apparently, from the fourth resolution, the Board of Education and Local Education Authorities are intended, for it is there affirmed that, while the general standard of efficiency should be the same for private and public schools, it is not reasonable to demand of all self-supported schools the same structural advantages and equipment as are expected from State- or rate-aided schools. To this proposition we may likewise agree; but it is not one that could be embodied in the minutes of a County Council or the regulations of the Board of Education, nor does it meet the case of private schools that do not seek recognition. The demand that the independence of such schools should be safeguarded is an appeal to public opinion.

There remains the question of scholarships, and here the resolution is categorical and definite. The demand is for absolute free trade in scholarships, with the sole restriction that the Local Authority must approve the school at which the scholarship is held. This also is a most reasonable request, but when the resolutions, as was resolved, are sent to the Board of Education, the Board will doubtless reply that there is nothing in law or in their regulations to prevent this being done, and that it is in fact done by the more enlightened of the Local Authorities. We may add that some proviso is needed to debar from scholarships pupils whose parents require no pecuniary assistance to educate their children. We must guard against the repetition in a lower social grade of the gross abuse whereby the endowments of Eton and Winchester are squandered on boys whose parents have been able to afford from £100 to £200 a year on their training at a preparatory school.

These and many other points which the resolutions suggest, but on which we cannot now enter, need to be thrashed out, not *in camera*, as Mr. Nowell Smith proposes, but at an open conference where the members of the Joint Committee may meet and confer with all concerned—representatives of public and private schools, of elementary and secondary teachers, of Local Authorities and governing bodies, Inspectors and Examiners; and the fittest President for such a Conference would be the President of the Board of Education.

NOTES.

As we go to press, the Consultative Committee have just issued an elaborate Report on the subject of Examinations in Secondary Schools. In another column we indicate the trend of their argument, and give the main points of their recommendations. The importance of the matter to the College of Preceptors, as well as to the University and other examining bodies, is sufficiently plain. We refrain from anticipating the considered judgment of the Council of the College.

MR. L. A. SELBY-BIGGE, C.B., has been appointed Permanent Secretary of the Board of Education in succession to Sir Robert Morant. He had a distinguished career at Oxford, where he became a Fellow of University College, and Lecturer in Philosophy in 1883. He was appointed an Assistant Charity Commissioner in 1894, joined the staff of the Board of Education in 1902, and was appointed an Assistant Secretary in January, 1904. He served in the Legal Department of the Elementary Branch till February, 1907, when he was transferred to the Secondary Branch. Since January, 1908, he has been Principal Assistant Secretary of the Elementary Branch. He is now in the full glare of the footlights, and we hope he will play his part with applause. The situation is admittedly difficult, but great things may be done with sympathy and tact.

AFTER all the toil and trouble in connexion with the establishment of the Teachers' Council, it is disquieting to learn that in some quarters there is mooted dissatisfaction with certain points in the agreed scheme. A compromise, it is true, always leaves something of the nature of a grievance with one or other of the parties; but it is not the part of wisdom to disturb it by afterthoughts. The especial rock of offence, we understand, lies in the representation accorded to the Universities. The importance of the Universities in the educational system, and particularly their reflex influence upon the other grades of educational institutions, ought to be sufficiently obvious; and no less obvious is the advantage of having the opportunity of discussing matters with their representatives face to face, instead of working independently and probably enough at cross purposes. The solidarity of the Council not only symbolizes the solidarity of the profession; it means, and it maintains and consolidates, that much-needed unity. In a word, it would be a grave misfortune to seek to disturb the full University representation as agreed by secondary, elementary, and technical teachers before Sir Robert Morant.

SIR JOHN GORST has blown another trumpet blast for reform of national education, and we trust it has made the ears of the new Education Minister tingle. Millions and millions of money are poured out year by year for "what is called 'education,'" and "the greater part of this money is, under

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*Mr. Pease's
Opportunity.*

the present system, wasted, and might as well, so far as education is concerned, be thrown into the sea." Look at Sir George Newman's Report on the physique of the children: "a starved and stunted race is at the present moment being allowed to grow up as a legacy to the next generation to deal with." "Payment by results" is still poison in the system; new methods are hampered or repressed lest "the grant" should be imperilled. "The higher or secondary schools and the Universities are still fettered by medieval systems": "we do not educate our scholars and students, nor do we permit them by independent research to educate themselves; we only prepare them for examination." Let us therefore have "a drastic revolution in the red-tape methods by which education is tied and bound." Let the Board of Education "now relax or altogether remove its tyranny over Local Authorities." Sir John complains at large; it is for Mr. Pease to take the necessary steps in detail. Sir John does, indeed, admit the excellent practice of a wise, though very exceptional, section of the teachers: "there are, it is true, isolated teachers, both men and women, in the elementary and secondary schools and at the Universities who have struggled to shake off the incubus of centuries of custom, and have shown by brilliant example what education really should be." "Peradventure ten shall be found there." But Sir John understands the practical importance of the broad brush; and no doubt the broad brush has become tolerably justifiable. It is more than time that the mass of the children should be considered more specially in relation to their future life and work in the world; and that in the higher grades the more or less probable destiny of the few should be specially provided for without compromising the proper course for the many. At the same time, the grip of historical development is to be recognized; and, though it is natural to be impatient, it is also natural to resist change. There is no escaping the struggle of opposing forces. Yet if one looks back over a generation—and it is only by surveying a long period that one can estimate progress—one cannot but see that things have been briskly moving towards better conditions. Mr. Pease certainly has his opportunity. What will he do with it?

MR. PEASE, dining with the Clothworkers on December 6, most properly signalized the generous assistance rendered by the great City companies to the promotion of facilities for higher education in this country. The Goldsmiths' Company contributed £50,000 to the new engineering buildings of the Imperial College of Science and Technology. The Drapers' Company contributed £10,000 to the building fund of the new college of Bangor, and this year £23,000 to the physiological laboratory at Cambridge and £15,000 to the University at Sheffield. This year the Clothworkers' Company contributed £5,000 to the Textile Industries Department at Leeds University; and indeed the Company has equipped the textile and dyeing department of Leeds University to the extent of £161,000; it is second in the list of donors to the City and Guilds of London Institute, and 75

per cent. of its income is contributed to the promotion of education. The Merchant Taylors Company maintains the Merchant Taylors School; the Mercers' Company is identified with St. Paul's School; the Fishmongers' Company with the Gresham College; the Skinners' Company with Tonbridge School; and the Haberdashers' Company with Aske's Foundation. Words failed him, Mr. Pease said in conclusion, to commend sufficiently the liberality and generosity of the City Companies in the interest of education. Presumably, then, the fragmentary donations to American Universities, even as intermittently recorded in our "Current Events" lists of endowments, would paralyse him into dumb show. And what of McGill University, which has just raised over £300,000 within a short week? Mr. Pease was speaking in reply to the toast of the Houses of Parliament. What had he to say for the generosity of Parliament? What of the embarrassments of the University of London next door? Parliament cannot be generous lest it should check the flow of private liberality, and private liberality is earmarked and partial when it is not actually frost-bound. If Parliament cannot see its duty to the nation in this matter, might it not at least and at length try the effect of adequate example—say, half the price of a Dreadnought to begin with?

THE Royal Commission on University Education in London has just issued a report (White Paper) on the housing of the University. It has become clear to them that the Imperial Institute buildings are insufficient and incapable of being made sufficient, while they are not central enough and have never become associated with the University in the minds of the public. The Commission "think it is in the public interest as well as in the interest of the University of London that as large a site as possible should be obtained in a central position, and buildings erected for a reconstituted University which would be a visible sign of recognition and acceptance as a great public institution. Far more is needed than the minimum accommodation and maintenance required by the University for carrying on its routine work." These are perfectly obvious propositions. Well, University College is quite capable of physical expansion. But where is the money? "A great University is not self-supporting and can never be so," and London University, like other Universities in this country, must "depend to a large extent for the liberal support necessary for its full development on the endowments of private benefactors." In that case, we shall still have to wait for the coming of the Coquecigrues. Has the Government no duty in the matter? Has the country no probability of profit? In any case, we trust the money is not going into bricks and mortar until the Chairs are endowed with at least a living wage.

ONCE more the wisdom of Convocation has displayed its exiguity in rejecting a singularly mild proposal of reform. Even candidates for honours in mathematics and natural science

Greek
at Oxford.

are not to be exempted from a peddling examination in Greek. Many will agree with Mr. A. C. Benson that the defeat of the proposal is matter for congratulation rather than for regret. The honours student is likely to be the least embarrassed with the Greek prescription: it is the average and under average student that is the real sufferer. The decision did not rest with the actual teachers of the men affected, who might be supposed to know most about the matter, but with non-teachers out of touch with University or school work. Was it even the decision of Convocation itself? Apparently not, at least in any but a formal and accidental sense. "I wish to point out," writes Dr. Rubie to the *Guardian*, "that most members of Convocation—on whichever side they voted—felt great dissatisfaction that the voting proved nothing as to the views of Convocation as a whole. That this is so is quite clear from the fact that, roughly speaking, one thousand recorded votes out of a possible seven thousand, and of this thousand a large proportion were resident members of Congregation." Altogether it seems a preposterous way of doing business. Mr. Asquith says he has no time just now to undertake University reform; but evidently, unless it be seriously taken in hand by the University, it will soon have to be applied by less tender hands outside.

SIR PHILIP MAGNUS made a gallant attempt to get secondary teachers excluded from the operation of the Insurance Act, explaining the situation with his accustomed lucidity and driving home his arguments with relentless precision. The vast majority of assistant masters start with a salary under £160, but advance to a higher figure. While they remain under £160, they cannot derive anything like adequate benefit from the scheme, and they may lose the superior advantages they already, in most cases, possess. Miss Tuke, the President of the University Women Teachers, cites a case where "the provision for one month under existing school arrangements amounts to more than that for six months under the Insurance Bill"; and governors and Education Authorities may possibly enough come to think that their statutory contribution constitutes a good reason for withdrawing their larger customary liberality. True, the employer is not relieved "from any legal liability to pay wages during sickness to any person employed by him in accordance with any established custom," and the customary right has been established in a certain class of schools. But this does not affect a liability that is not "legal" or a custom that has not been established in the legal sense. On the other hand, when assistant teachers rise above £160 after insurance for five years, the choice between losing the return for their contributions and becoming voluntary insurers does not seem exhilarating. The debate, however, drifted to salary and superannuation, and the case for an adequate superannuation scheme was strongly emphasized. Mr. Pease spoke of the teachers sympathetically, and said he would "like to meet their wishes if it be possible." It now lies with the representatives of the teachers to submit to him "a practicable scheme."

THERE is no resisting the conquests of woman. Two years ago the President of the Royal Academy warned the male students to look to their laurels. This year he finds that, in spite of his warning, all the principal prizes in the painting school (except one), beginning with Gold Medal, have gone to the women. He naturally asks why this has happened, and he thinks the answer is obvious:

The female students are in earnest and work hard; the men are slack and either do not know how to work or do not sufficiently care. The men, I suspect, are more under the influence of the "spirit of the times," and listen to that deadly, irresponsible chatter about genius being independent of study, and become slack in their work, in the school and out of it. I have no other way of accounting for it. Whatever the "spirit of the times" may have to say about the relative positions of man and woman, the *capacity* of men to excel has shown itself from the beginning of the world. And I believe that, while the men talk and believe themselves superior, the women are working patiently and steadily and with an energy which is imbued with the love of their work, and their devotion to it is rapidly gaining for them a power which, unless the men stand to it and show more determination, will slip from them.

Substantially, Sir Edward Poynter is right. Is there any other department of study where the same contrast may not be noted? "The female students work hard; the men are slack." The natural results inevitably follow.

It is always a pleasure to see a veteran educationist honoured by a later generation. At Manchester, on November 22, Mr. John Angell, F.I.C., F.C.S., was entertained at a complimentary dinner and presented with an illuminated address, Bishop Welldon, President of the Executive Committee, occupying the chair. The honour has been amply deserved. Mr. Angell has long been an enthusiastic worker in the cause of popular education on scientific lines. While conducting the Chemistry classes at the London Mechanics' Institution, he co-operated with the eminent Prof. Graham, of University College, as private chemical assistant; and, under the influence of George Combe, he took an active part in promoting the original Birkbeck School, being Honorary Secretary of the Committee that established it. Subsequently he accepted George Combe's invitation to conduct from Edinburgh a movement for advancing their views on the importance of Science teaching. The scheme fell through, however, and Mr. Angell, at the invitation of the late Dr. John Watts and the Rev. Dr. McKerrow, went to Manchester to take charge of the Oddfellows' Orphan School. Shortly afterwards he reorganized the Working Men's College at Salford, modelling the day and night schools on the plan of the Birkbeck School, London, and the Williams School, Edinburgh. His success at Salford led to his appointment as Mathematical Master to the adult evening classes at the Manchester Mechanics' Institution; and, on the introduction of Science teaching at Manchester Grammar School, he was appointed Science Master, and held the post for eighteen years. Besides his regular teaching work, he was an active member of various literary and scientific societies in Manchester, and wrote several useful text-books. For many years he was local honorary secretary of the College of Preceptors, of which he was also a prizeman in the Theory and Practice

of Education. More than twenty years ago he read before the College a paper on "Physical Science Teaching." "I do not know," wrote Prof. Laurie, "whether I have ever read a treatise on education and method with such cordial concurrence and so much admiration." It is a very honourable record, and the influential recognition of it does great credit to Mr. Angell's Manchester friends.

THE HOPKINS BENEVOLENT FUND FOR TEACHERS.—The Council of the College of Preceptors will shortly consider applications for annuities from the Hopkins Benevolent Fund. In accordance with the provisions of Dr. Hopkins' will, the annuities will be restricted to "poor gentlemen of the age of sixty and upwards, whose lives have been devoted to teaching, preference being given to those holding diplomas of the College of Preceptors." Communications respecting the Hopkins Fund should be addressed to the Secretary, the College of Preceptors, Bloomsbury Square, London, W.C.

SUMMARY OF THE MONTH.

IN the House of Commons, Sir J. LONSDALE (Armagh, Mid) asked the Chief Secretary for Ireland if he was aware that of fifteen county councils who had allocated sixty-two University scholarships of an aggregate annual value of about £2,750, all except three had stipulated that these scholarships should be tenable only at the National (Roman Catholic) University, or at one of its constituent colleges, and that Irish should be a compulsory subject; if he was aware that the effect of these conditions was to exclude practically all Protestant students from any benefit from these scholarships, the cost of which was defrayed out of the public rates, to which Protestants contributed; and if, in view of the terms of the Irish Universities Act, 1908, he would take steps to prevent Protestant students being penalized, and Trinity College and Belfast University being boycotted, in connexion with these scholarships.

Mr. BIRRELL (Bristol, N.)—Under Section 9 of the Irish Universities Act, county councils may assist by scholarships students at any University in Ireland, but no grant under the section may be subject to any religious qualifications. While the limitation of scholarships to the National University does not exclude Protestant students, it would be more in keeping with the spirit of the Act if it were left to the student to select his University. As I have already stated in the House, I expect shortly to be in a position to establish a scheme whereby clever boys may be enabled to pass from primary to secondary schools, and ultimately to compete for scholarships at the University, and I hope that the county councils will help to make the scheme possible by dispensing with any restriction such as that to which exception is taken, not unreasonably, in the question.

THE Annual Conference of Head Masters met at Sherborne School (December 21, 22). Mr. Ford (Harrow) moved, and Mr. Lowry (Tonbridge) seconded, the adoption of the report of the Head Masters' Conference and the Preparatory Schools Association on Bible Teaching, and proposed that the Head Masters' Conference should invite the preparatory schools to give the scheme a trial. The Rev. J. R. Wynne-Edwards (Leeds) moved, and Canon Swallow (Chigwell) seconded, an amendment that the report be adopted with the exception of the recommendation as to the use of "the forthcoming Schools Bible." The amendment was adopted. The conference next agreed to other proposals of the Committee, as amended, to the effect that the Scripture paper in the common entrance examinations from March 1913, onwards, be constructed according to the Joint Committee's report, and that the Joint Conference be requested to assist in setting the Scripture paper at the common entrance examination, in disseminating suitable books, and generally watching the working of the report. It was also agreed that any suggested modifications and improvements of the scheme

should be considered at the conference of 1913. The Chairman (Mr. Nowell C. Smith) read a letter from the War Office, in which it was stated that the Army Council felt it might be of assistance to head masters to have a more intimate personal acquaintance with the colleges at which their pupils subsequently commenced their military education, and therefore invited them to pay a visit to the Royal Military College during the coming summer. On the motion of Mr. W. W. Vaughan (Wellington College), it was decided to accept the invitation. Mr. Lowry (Tonbridge) submitted a resolution to the effect that the Conference was not satisfied with the examination for junior appointments in the Civil Service and with the prospects of successful candidates. Were head masters justified in advising boys to go in for Civil Service appointments, in which the prospects of promotion were exceedingly small and the salaries meagre? The motion was adopted.

THE performance of the Westminster play—this year Terence's "Thormio"—proved a great success. The actors entered into the spirit of the fun with natural ease, being letter-perfect in their parts, and succeeded in bringing out the very modern character that the turns of the comedy still possess. The epilogue, as usual, was well provided with tasty plums, which greatly tickled the palate of the beholders. The only milk to be had during the railway strike was "condensum Helveticum." A burlesque of the Sidney Street Siege brought Mr. Churchill, deeply disguised, on the stage, and in the midst of the mêlée the famous "pastor Devotus," with his little black sheep, arrived on the scene. Mr. Lloyd George, with his super-tax, was commemorated, roars of laughter greeting the little servant who says: "Lambo, lambo imaginem regis, ut mihi degrotanti nulla expensio sit." ("I lick and lick the King's stamp, that if I fall ill I may be put to no expense.") The review of the year was very cleverly presented both by author (or authors) and by actors.

THE prizes and certificates gained by students of the City of London College were distributed by Sir Thomas Barlow at the Mansion House, the Lord Mayor presiding. Sir Edward Clarke, K.C., in proposing a resolution of thanks to the honorary examiners for their valuable services, and to the Board of Education, the London County Council, and the City Parochial Foundation for their material assistance, which had made it possible to carry on efficiently the work of the College, severely criticized the action of the London County Council in its recent dealings with the College. Some time ago, Sir Edward said, a recommendation was made by an Education Committee of the Council that, unless a new Principal was appointed of whom the Council approved, and there was a reorganization of the College, the Council would withdraw its financial support. To be called on to get rid of a Principal who had served the College so loyally and so well struck him as being perfectly intolerable. He would rather have seen the College disappear altogether than that the governing body should be guilty of such an act of injustice. When the recommendation was discussed the Council decided to leave out the part referring to the Principal, and, regarding the reorganization, while he did not know exactly what were the views of the governing body, he thought it very likely they would say, "We are the City of London College, and are not going to be the London County Council College on any terms." When it came to a struggle between the College and the London County Council he should enter on the contest with every cheerfulness.

THE Education Committee of the London County Council have agreed to recommendations of the Education Sub-Committee in support of the principle of holding classes for delicate and other suitable children in the playgrounds of selected schools, or in parks and open spaces near selected schools, and that for 1912-1913 the sum of £900 be expended on the work. Inspectors and head teachers had reported in favour of the experiments already tried in this direction. Where they were taught under open-air conditions it was found that the children were fresher towards the end of the school session, suffered less from colds and minor ailments necessitating absence from school, that there was less dullness and sleepiness, and that the activity, carriage, and

appearance of the children dealt with had improved. Mentally the children were more alert, and gripped their work better. The playground classes were very popular with the parents. The Committee referred to the difficulty of finding sites for the schools in those districts of London where they were most needed. A solution of the difficulty in some cases might be found in the holding of classes in parks and open spaces, and they had the sympathy and promised assistance of the Parks Committee. This year the classes will open on April 1, and close on October 27.

FOR some time past, on the recommendation of a committee appointed by the India Office, negotiations (says the *Times*) have been proceeding with the London Institution in Finsbury Circus for the provision of a centre for the teaching of Oriental languages in London. These negotiations, carried on by Lord Haldane, as Chairman of the Royal Commission on University Education in London, in consultation with the Treasury and the India Office, have reached a definite and satisfactory stage, a provisional agreement between the Treasury and the governing body of the Institution having been arrived at. The details of the agreement will be made public almost immediately, and simultaneously the members of the Institution are being circularized with a view to exercising certain options as to their proprietary rights. They can either be paid out at an agreed rate or can retain their connexion with the Institution under the entirely changed conditions upon specified terms. The acceptance of what are understood to be very favourable terms by the main body of the proprietors seems to be assured, and it may be anticipated with equal confidence that the practical help of the City Corporation and Companies, the Chamber of Commerce, and other business interests in the City of London essential to the complete success of the undertaking will be forthcoming now that a definite scheme has been formulated.

AN interim report (says the *Daily Telegraph*) has been issued by the India Office Departmental Committee, of whom the Earl of Cromer is chairman, appointed in March 1910, "to formulate in detail an organized scheme for the institution in London of a School of Oriental Languages, upon the lines recommended by Lord Reay's Committee of 1909." It having been suggested that the London Institution might be utilized for the purpose, a detailed report on the proposal was prepared by Dr. Heath, a member, and Mr. P. J. Hartog, the Secretary, of the Committee, and architect's plans were obtained from Prof. F. M. Simpson. As a result, the Committee are unanimously of opinion that, taking into account not only the academic but also the commercial needs which the School of Oriental Studies is intended to supply, it would be difficult to find a site with greater advantages than that of the London Institution; and they are also of opinion that, subject to certain modifications, Prof. Simpson's plans would provide convenient and satisfactory accommodation for the new school at the outset. They desire to emphasize the fact that the value of the site of the London Institution cannot be estimated at less than £100,000, and that at a cost of some £20,000 or £25,000 the existing buildings could be adapted for the purposes of the new school. The site and buildings of the Berlin School of Oriental Studies were provided at Government expense, at a cost of over £50,000. The estimated annual expenditure for domestic and administrative staff and establishment expenses of the school amounts to £4,000. Of this sum £1,000 is for rates and taxes, and £1,500 is for maintaining the existing library of the institution, containing 200,000 volumes, in addition to a more specialized library of Oriental books required for the school. In regard to the question of the constitution of the governing body, the Committee do not desire to say more at present than that they are of opinion that it would be desirable to establish the school under a Royal Charter. They add that, in order to save time, they have sent a copy of their report unofficially to the president of the institution, and will be happy to do whatever lies in their power to assist in bringing the negotiations to a satisfactory conclusion. Particulars of Prof. Simpson's plans appended to the report show that the proposed accommodation provides for a minimum of 805 and a maximum of 1,015 students. The plans have been so drawn that when more accommodation becomes necessary an additional

five rooms could be provided by adding a third floor to the new building, at a cost of about £1,200.

At a meeting of influential Sussex residents, held at the Royal Pavilion, Brighton (December 12), the Mayor (Mr. Stanford) presiding, a proposal to establish a college of University rank for the county was unanimously approved. The Mayor pointed out that 25 to 35 per cent. of the students attending the higher schools and colleges under the authority of the Brighton Town Council resided outside the borough, and consequently there was reason to hope that Brighton in this movement would receive the hearty co-operation of other Sussex towns. It was not yet fully realized in England that the leader of modern industry must be a highly educated man. He favoured the proposal to found a University college for Sussex as a constituent part of the University of London. Mr. C. E. Clayton, the originator of the scheme, moved a resolution emphasizing its desirability. The Rev. Rhondda Williams hoped the advantages of the scheme for girls would be put forward. An influential committee was appointed to promote the object.

THE recent publication of statistics showing that a large number of students of American Universities pay their way by out-of-term employments (says the *Standard*) suggests a method of popularizing the English Universities which reformers have been too reluctant to establish. Popularization of our Universities has developed considerably during the last half-century, but it has proceeded on lines of subsidy and scholarship rather than on lines of self-help. Both the movement which recruits the Universities from the elementary schools and the movement which draws working men into them are still based on a temporary divorce between learning and earning. One of our representatives put before an educational expert the figures, which showed that £15,000 had been earned by Columbia University students during one year, and received the following opinion as to the merits of this system:—

"It has been obvious for some time that the newer countries would try to get back to the original method by which poor men entered the system of higher education. By a gradual and detrimental process our two great English Universities have become predominantly plutocratic, and, in spite of the numbers of cheaper Universities which have now come into existence, some amount of capital is practically essential if their educational opportunities are to be widely used. Scotland, of course, retains the method of self-help and out-of-term employment, but even Parisian students have somewhat lost this tradition. There does not seem to be any reason why young Englishmen should not be willing to join in ordinary economic life for the sake of pursuing their higher education. The academic year is really a half-year, and I am afraid that at present men study in their holidays more than in the term-times. Scholarships do not cause their recipients to deteriorate, but they do bring those recipients into an atmosphere which discourages self-help. The country would be stronger by a closer conjunction between its economic and its educational life."

A NEW YORK contemporary (says the *Standard*) has taken the trouble to compile a list of some American women who now fill occupations formerly occupied by men. Of about one hundred and fifty instances given, the following are among the more striking cases:—Violet Oakley has been selected to design and paint the mural decorations in Philadelphia's new court house; Evelyn Mitchell is studying the mosquito for the Smithsonian Institution; Alice Rogers Moore is engaged in preparing for Harvard University a scientific treatise on the theory of composite light; Belle M. Fowler has been appointed Food Inspector for the City of Spokane; Louise M. Allen is Seed Expert for the State of Washington; Lydia Berkeley Tague is Judge of the County Court of Eagle County, Colorado; Ella Wilson is Mayor of Hunnewell, Kansas; Georgia M. Martin has been appointed Chief Clerk of the Northern Pacific Railroad; Lillian Gertrude Randolph conducts the Bronx Society of Botanical Culture; Gertrude Jordan is County Treasurer of Cherry County, Nebraska, and has just been renominated; Jennie Connor is a Dispatcher of Trains in Massachusetts; Bird

Sheldon Manager of the United States Postal Savings Bank at Los Angeles, California; Ellen Rose has secured a contract to pump coal from bottom of Susquehanna River; and Beatrix Jones Government Landscape Gardener at Mount Vernon.

HUMANITY SOCIETY'S medals have been presented to Mr. E. J. Fozzard, teacher at Mowlem Street, Bethnal Green, School, and Mr. T. C. Waterland, of Mantua Street School, Battersea. Mr. Fozzard rescued a boy of about six, who fell from a steamer on the Broads. He jumped into the water, but, soon realizing there was little chance of reaching the child by swimming, he made his way ashore and ran along the bank until opposite the struggling youngster. He again entered the water and brought the lad to the bank. Mr. Waterland's rescued bather was in difficulties at Mablethorpe. The teacher swam to him, but was flung from time to time against the rough sides of a culvert at the extreme seaward end of a freshwater drainage outlet. He was cut and bruised, and lost consciousness as he left the water. He had previously rescued other persons from drowning.

(From our own Correspondent.)

THERE have been no upheavals in the last few weeks of the past term. The Senate, by large majorities, flatly refused to saddle the undergraduate with heavier fees for the relief of the necessities of the new-fledged graduate. The original proposal and the modified compromise were alike relegated to the limbo of *non-placced* graces.

In connexion with the fee system there is a slight difficulty looming on the horizon with regard to the scientific departments. To begin with, the official staff have their defined stipends. Now, in some of the more successful departments, physics, engineering, chemistry, and the like, the large increase in the work and in the number of the pupils has led to the employment of lecturers and demonstrators. For attendance at classes and lectures the usual fee of one guinea or two provides a more than satisfactory return to the department. It is easy enough to see that a demonstrator who receives some nominal stipend will not do badly if he has two courses of lectures a term, with about sixty men in each course. But here the difficulty comes in. How are these fees to be apportioned among the workers? Obviously, as all the lecturers are utilizing the material of University departments, some portion of the fees ought to be devoted to the maintenance of the institution, while those who like the higher subjects with smaller classes ought not to be remunerated on the strict numerical extent of their classes. In some departments the arrangements are made solely by the professor, and it is felt that some general scheme should be formulated to do justice to all concerned. All the departments mentioned are so flourishing and so well arranged that the difficulty is far from being insuperable. One thing is to be regretted—that so many fees have to be paid by pupils, and that while, in some branches of our work, professors have very few pupils, in others the work of teaching is quite beyond the powers of the official staff. There is no doubt about it, that for teaching purposes the college as a unit will soon cease to exist: only in the larger corporations is it possible to provide adequate and complete teaching in any branch of scientific work. Naturally the best teachers are attracted to the central body. Where the pupils are, there are the fees, and, in consequence, the teachers.

Except for the Specials, this is not the term for examinations: still a large number of poll-men have to undergo their ordeal twice every year with unflinching regularity. Grumbles are occasionally heard about the conduct of the Specials. This year the examiners for the Law Special seem to have incurred the wrath of the average candidate. But after all this is one of our weakest departments, and we must be thankful for small mercies.

It is practically decided that the University lectureships in medicine and surgery shall not be continued. In lieu of these two appointments a fresh office is to be created, that of Demonstrator in Medicine to the Regius Professor of that subject. There is an increasing tendency on the part of our medical

students to do the strictly scientific part of their work here—that is, to pass the first and second examinations for the M.B. while in residence, thus clearing off the subjects of chemistry, physics, anatomy, and physiology, but when that is done the average man betakes himself to a London hospital where he can apply himself to the practical application of his instruction. The Cambridge man, although apparently starting late, is able to produce even better results than his London confrère, who is hampered by thoughts of elementary scientific examinations when all his time is wanted for the more engrossing cares of clinical work.

The Master of Corpus, Col. R. Townley Caldwell, has proceeded to the degree of LL.D. *jure dignitatis*, and was presented by the Public Orator in one of his neatest speeches. In due course, Dr. Caldwell will take his place in the Vice-Chancellor's chair, and will add dignity to the office.

Dr. Inge, Dean of St. Paul's, has been elected to an honorary fellowship at Jesus. The halfpenny press has invented the name of "the gloomy Dean," but it is suggested that a sense of humour is not always found in the reporters employed on the cheaper journals. There is plenty of effervescence in many a bottle although the well fitting cork may keep it in its proper place.

We hear little about some of our University departments—the Observatory, for example—but whatever we do hear is good. The latest grant by the Treasury for the promotion of astrophysical research is only a recognition of the work that has been so ably done by Prof. Newall, and be it remembered that, in this case, it is a labour of love. As Sir Robert Ball observed in the Senate, he knew of many of Prof. Newall's liberal acts towards the Observatory, but he was perfectly certain there were many others of which he was ignorant, as Prof. Newall did not let his left hand know what his right hand had done. At any rate, the Newall Telescope, the Huggins benefaction, the gift of Major Hills's spectroscopic apparatus, and finally the transfer of the Solar Physics Observatory to Cambridge, are facts to be noted with pride by Cambridge men. The suggestion is that, on the next vacancy in the Plumian Professorship, this chair shall be charged with the direction of the Solar Physics Observatory.

To turn to outdoor matters. The football match was a distinct disappointment to Cambridge people. Our side hardly did themselves justice, while Oxford, playing a phenomenal game, established a commanding lead at the start. In the subsequent four the fifteen showed that the match against Oxford was not the last word as to the merits of the team. We meet again on January 16.

THE Theological Department of King's College contains 187 regular students. The Council has taken over the London direct control of the Theological Hostel in Mechelenburgh Square. A favourable offer from the Ecclesiastical Commissioners of a site in Vincent Square having been made, an appeal for £50,000, of which £25,000 is for building and furnishing the proposed new hostel, has been issued. To promote the incorporation of the secular portion of King's College in the University, an appeal was made, and this enabled the greater part of the liabilities of the Council to be cleared off, but about £4,000 is still required for this purpose.

M. MARCEL REYMOND, President of the Committee of Patronage of Foreign Students in Grenoble University, Grenoble, who was recently in London, gave a representative of the *Times* some information about the

University's extraordinary success in attracting students from all over Europe and America to a remote town among the mountains of South-eastern France. The movement began in 1896, when a small municipal subsidy enabled his committee to send out circulars announcing the courses of the Faculty of Letters. In 1897 one student came, from Germany. In the following year the number of foreign students was five. Then an American teacher suggested holiday courses, and the idea was put into operation. The total number of foreign students at Grenoble steadily and rapidly increased from 151 in 1898-9 to 1,104 in 1908-9, then to 1,230 in 1909-10, and finally to 1,420 in 1910-11. Of the 1,230 enrolled in 1909-10, 423 were

Germans, 212 Russians, 135 Italians, 135 Bulgarians, 119 British, 63 Americans, and 62 Austrians. Special lectures during term, besides the holiday courses, are given for the foreigners. The large majority of these students are found in the Faculty of Letters, but considerable numbers attend the Faculties of Law and Science. The University buildings having been far outgrown by the number of students, a new lecture theatre for 400 was built in 1905, and another for 800 in 1909. The difficulty of securing cheap board and lodging has also been overcome. At first only 90 rooms were put at the committee's disposal; to-day there are nearly 2,000.

THE EDUCATIONAL LADDER.

BEIT MEMORIAL FELLOWSHIPS (£250 a year for three years) for **MEDICAL RESEARCH**.—Dr. P. G. E. Bayon, Craggs Investigator to the London School of Tropical Medicine; Evelyn Ashley Cooper, B.Sc., Jenner Memorial Research Scholar at the Lister Institute; Dr. Elizabeth Thomson Fraser, Assistant Bacteriologist to the Glasgow Royal Infirmary; Dr. George Graham, at present engaged in research work at Munich under Prof. F. von Mueller; Dr. James Andrew Gunn, Second Assistant in the Materia Medica Department of Edinburgh University; Dr. Willoughby Henwood Harvey, at present engaged in research work at the University of Cambridge; Dr. Judah Leon Jona, Assistant Lecturer and Demonstrator in Physiology at the University of Melbourne; Roland Victor Morris, B.Sc., Private Assistant to Prof. Perkin; Charles Henry O'Donoghue, B.Sc., Assistant to the Jodrell Professor of Zoology, University College, London; Dr. Charles Claud Twort, Carnegie Research Scholar at the University of London.

BOARD OF AGRICULTURE AND FISHERIES.—Research Scholarships in Agricultural Science (£150 a year for three years): P. G. Bailey, Cambridge; J. Clayton, Cambridge; J. T. Edwards; E. T. Hainan, Cambridge; J. Hammond, Cambridge; J. A. Hanley; G. E. Johnson, Birmingham; C. G. P. Laidlaw, Cambridge; A. E. Lechmere, Bristol; J. W. Lesley, Cambridge; A. Neville, London; G. T. Spinks, Cambridge.

CAMBRIDGE, GIRTON COLLEGE.—Gamble Prize (Moral and Political Science and History): S. B. Philpotts, Medieval and Modern Languages Tripos, Class I, 1911.

CAMBRIDGE UNIVERSITY.—Whewell Scholarships: (1) P. J. Baker, King's; (2) A. Black, B.A., Sidney Sussex. Crosse Theological Scholarship: W. Dodgson Sykes, B.A. designate, St. John's. Walsingham Medals (Biology and Geology): R. H. Compton, B.A., Gonville and Cains; Walter Stiles, B.A., Emmanuel. George Williams Prize: Eric H. Ward, B.A., Sidney Sussex. Jeremie Septuagint Prizes: (1) not awarded; (2) John Pinkerton, B.A. designate, Emmanuel.—Members' Prizes: English Essay, K. C. Sen, Trinity Hall; honourable mention, Joseph Brennan, B.A., Christ's. Latin Essay: C. L. Bullock, Scholar of Trinity.

Christ's.—Scholarships: A. F. Booth (Dewsbury Grammar School), £80 for Natural Science; P. Lane (St. Paul's School), £60 for Mathematics; G. R. Sharpe (Highgate School), £60 for Classics; J. R. Pettit (Oundle School), £40 for Classics; G. von Kaufmann (Mill Hill School), £40 for Natural Science; B. W. Downs (New School, Abbotsholme), £40 for Modern Languages. Exhibitions: F. T. Paulconbridge (King Edward's School, Birmingham); T. O. Connert (Tonbridge School), £30 for Classics; F. W. Goddard (Nottingham High School), £30 for Natural Science.

Clare.—Scholarships of £60: F. Bastow (Dulwich College), for Mathematics; G. W. Claye (Perse School), for Classics; D. W. McMichael (Oundle), for Natural Sciences. Scholarships of £50: H. A. Dyson (St. Paul's), for Classics; G. C. Hutchinson (Cheltenham), for History; E. W. Ravenshear (Dulwich College), for Natural Science. Scholarships of £40: D. Hender-on (Haileybury), for History; H. V. Leonard (Rossall), for Classics; P. B. Stoodley (Marlborough), for Mathematics. Exhibition: A. C. Chibnall (St. Paul's), for Natural Science. Cave Exhibition: W. Appleyard (Wakefield School), for Mathematics. Archdeacon Johnson's Exhibition; J. P. McGeogh (Uppingham), for History.

Corpus Christi.—Mathematical Scholarship: Roland G. Rees, Llandoverly College. Mathematical Exhibition: Mark M. Sayer, Rugby School.

Emmanuel.—Scholarships: H. Gilbert (Middlesbrough High School), £80 for Natural Science; A. C. Bartlett (King Edward's School, Birmingham), £60 for Mathematics and Natural Science; A. G. Gould (City of London School), £60 for Classics; E. Welbourn (De Ashton School, Market Rasen), £60 for History; L. H. Bainbridge-Bell (Marlborough College), £40 for Mathematics; T. L. Martin (St. Paul's School), A. J. Simons (Oundle School), £40 for Classics; F. B. Finter (St. Paul's School), £40 for Natural Science; W. A. M. Winter (Bristol Grammar School), for Classics; F. H. W. Jameson (Uppingham School), for Natural Science. Exhibitions: G. Finch (Latymer Upper School), £30 for Mathematics; R. H. Fawcett (Uppingham School), £30 for Classics;

E. F. Thomas (Christ College, Brecon), £30 for Natural Science; J. A. Holden (Market Bosworth Grammar School), Dixie Exhibition for Mathematics; D. N. Shorthore (Ashby-de-la-Zouch Grammar School), Ash Exhibition for Mathematics and Natural Science.

Gonville and Cains.—Scholarships: H. G. Green (Bradford Grammar School), £80 for Mathematics and Natural Science; A. G. Duddell (Wolverhampton Grammar School), F. G. Brewer (City of London School), £80 for Classics; G. B. Donaldson (Oundle School), £80 for Natural Science; J. H. Whitby (City of London School), £60 for Mathematics; W. N. U. Dunlop (Fettes College), £60 for Classics; G. H. Moriarty (Clifton College), £60 for Modern Languages; D. R. Herriot (Fettes College), J. O. Iles (Rugby School), £40 for Mathematics; F. B. Sutherland (Derby Municipal Secondary School), £40 for History; M. B. R. Swann (Dulwich College), £40 for Natural Science. Exhibitions: G. S. Carter (Marlborough College), £30 for Mathematics; J. A. Black (Trinity College, Glenalmond), W. D. Churcher (Cheltenham College), C. J. Burn (Clifton College), £30 for Classics; D. W. R. Richardson (St. Paul's School), £30 for Natural Science.

King's.—Foundation Scholarships: J. H. L. Lambert (Eton College), G. A. Lupton (The Leys School), £80 for Classics; F. Yorke (Merchant Taylors School, Crosby), £80 for Natural Science; D. A. Dawswell (Central Foundation School, London), F. E. Gent (Wellingborough Grammar School), £80 for Mathematics. Minor Scholarship: F. J. M. Chubb (Bradfield College), £60 for Classics. Exhibitions: S. S. Martin (St. Paul's School), £40 for Classics; H. Infield (Owen's School, Islington), £40 for Natural Science; W. B. Brown (Royal Grammar School, Newcastle-on-Tyne), £40 for History; E. C. Benthall (Eton College), £40 for Classics.

Pembroke.—Scholarships: R. Francis (Clifton College), £60 for Classics; H. Todd (Leeds Grammar School), £60 for Mathematics; B. M. Bauer (Aldenharn School), G. A. Curnock (Newbury Grammar School), £60 for Classics; T. Heathcock (Coatham Grammar School), A. S. Fox (Harrow School), £60 for Natural Science; H. St. J. Attwater (Dulwich College), £40 for Classics; D. C. Isaac (Merchant Taylors School, London), E. Giles (Highgate School), £40 for Mathematics; D. St. G. K. Boswell (Charterhouse), J. C. Howe (St. Edmund's School, Canterbury), £40 for Classics. Exhibitions: H. G. Wimbush (Harrow School), £30 for Mathematics; W. G. Woodroffe (Malvern College), £30 for Classics; H. Freeman (Charterhouse), Honorary Exhibition for Classics; W. B. Carslake (Oundle School), K. H. C. Woodroffe (Marlborough College), J. C. O'G. Anderson (Cheltenham College), £30 for Classics; P. Middlemas (Christ's Hospital, Horsham), £30 for Natural Science.

Peterhouse.—Scholarships: R. J. Reichert (Central Foundation School, London), £60 for Mathematics; C. L. Wiseman (King Edward's School, Birmingham), £50 for Mathematics; H. Thomas (Bradford Grammar School), £50 for Natural Sciences; T. G. Elkington (Bronsgrrove School), £40 for Classics; G. A. K. Hervey (Marlborough College), £40 for History. Exhibition: G. V. Williams (Lancaster Grammar School), £30 for Classics.

Sidney Sussex.—Scholarships: R. H. Lawson (Haileybury College), £80 for Classics; L. P. Long (Dulwich College), £80 for Natural Science; J. P. Brouthead (Oakham School), £60 for Classics and a Johnson exhibition; A. J. Hatley (Central Foundation School, London), £60 for Mathematics; S. E. Coyte (Blundell's School), £40 for Mathematics; H. F. Green (Newcastle High School), £40 for Natural Science. Exhibitions: T. F. G. Taylor (Rossall School), £40 for Classics; A. B. Thompson (Marlborough), £30 for Classics; R. W. Jackson (Taunton School), £30 for Mathematics; G. H. Oriell (Taunton School), £30 for Natural Sciences; S. Rogerson (Workshop College), J. E. R. Rosier (St. Paul's School), £30 for History.

St. John's.—Scholarships: F. P. White (Owen's School, Islington), £80 for Mathematics and Natural Science; A. Geary (Market Bosworth Grammar School), £80 for Mathematics; A. R. Jacob (Dulwich College), R. J. Hilary (Tonbridge School), £80 for Classics; A. Montagnon (City of London School), L. A. Higson (Christ's Hospital), £60 for Mathematics; A. G. Patton (City of London School), £60 for Classics; H. Stanier (Longton High School), £60 for Natural Science; H. S. Goodrich (Sheffield Central School), £60 for History; W. H. Bruford (Manchester Grammar School), £60 for Modern Languages; T. Frederick (Aldenharn School), £40 for Classics; G. E. Briggs (Grimsby Municipal School), £40 for Classics; R. Stoneley (City of London School), £40 for Natural Science; R. H. W. Cobbold (Marlborough College), £40 for Classics. Exhibitions: R. F. Budden (Bournemouth School), £30 for Mathematics; A. J. Beard (Felsted School), £30 for Classics; W. Marshall (Nottingham High School), F. O. M. Earp (Bridlington Grammar School), A. S. Hibberd (Weymouth College), £30 for Natural Science; H. D. Bushell (Holloway County School), £30 for History; E. E. Polack (Clifton College), £30 for Hebrew.

Trinity.—Entrance Scholarships: W. N. Bailey (Technical Institute, Consett), for Mathematics; E. N. Buxton (Harrow), for Natural Science; C. G. M. des Graz (Eton), for Classics; E. W. Hamilton (Eton), for Mathematics; D. C. Henry (Malvern), for Mathematics and Natural Science; C. V. L. Lycett (King Edward's School, Birmingham), for Mathematics; E. E. Meyrick (Marlborough), for Classics; S. Pollard (King Edward's School, Birmingham), for Mathematics and Natural Science; L. Y. Sanders (St. Olave's Grammar School), for Natural Science; R. R. Sedgwick (Perse and Westminster), for History; E. K. Wakeford (Clifton College), for Mathematics; H. V. Willink (Eton), for

Classics. Exhibitions: W. E. L. Brown (Charterhouse), for Natural Science; N. M. Butler (Harrow), for History and Classics; L. P. L. Edwards (Whitgift Grammar School, Croydon), for Natural Science; W. H. A. Lawrence (William Ellis School), for Mathematics; H. R. Lupton (Wellington), for Mathematics; T. H. Marshall (Rugby), for Classics; L. H. Sanger-Davies (Marlborough), for Mathematics; R. Vickers (Edinburgh University), for Mathematics.

Trinity Hall.—Scholarships: J. T. Baines (Harrow), £60 in Classics; A. St. G. Walsh (Stockport Grammar School), £40 in Mathematics; N. H. Statham (King's College School), £40 in History. Exhibitions of £30 in Natural Science: G. E. Birkett (Lancaster Grammar School), R. G. Turrall (Queen Elizabeth's Grammar School, Crediton).

CANTERBURY, KING'S SCHOOL.—Junior Foundation King's Scholarships: W. J. Potts, B. W. Galpin, T. R. Jukes, A. G. D. West, all of the King's School. Probationer Foundation King's Scholarships: S. G. Galpin (Junior King's School), H. Wace (Mr. de Winton, Sittingbourne), E. A. E. Smith, J. S. Blunt (Junior King's School), R. O. H. Fuller (Miss Watson Willis, Eastbourne), A. W. Rigden (Junior King's School). Entrance Scholarships: C. F. Hodgson (Mr. Crabtree, Sunningdale), H. Wace (Mr. de Winton, Sittingbourne), U. Sutherland (Mr. C. errill, Dover), N. A. Potter (Junior King's School). House Scholarship: R. O. H. Fuller (Miss Watson Willis, Eastbourne).

DUBLIN UNIVERSITY.—Mathematical Studentship, £500: James B. Brown. Classical Studentship: H. W. Burd.

LONDON UNIVERSITY.—University Scholarships in Law: S. V. Farington, private study; E. C. Mayers, private study, and Chao Chu Wu, King's, equal.

London School of Economics.—Gladstone Memorial Prize: C. W. Sabin. *London (Royal Free Hospital) School of Medicine for Women.*—Exhibition: N. Gibson; Special grant, Joyce B. Reed. School Scholarship: Joyce B. Reed. Mabel Webb Research Scholarship: C. Leatham.

MARLBOROUGH COLLEGE.—Foundation Scholarships: N. C. Harrison, home tuition; F. W. S. Jourdain (Mr. C. C. Lyman, Bardwell Road, Oxford); J. P. Bardsley (Mr. J. W. E. Pearce, Merton Court, Sidecup); F. W. Russell (Mr. E. H. Parry, Stoke House, Stoke Poges); C. M. Clayton (Mr. T. R. Wilcox, Alleen Court, Westcliff-on-Sea); J. B. Charlesworth (Rev. J. W. Chippett, Riber Castle, Matlock); C. M. Pollock (Mr. G. S. Chittenden, Streete Court, Westgate); D. C. Taylor (Mr. O. H. Bradnack, Sutherland House, Windlesham); A. L. Maycock (Rev. T. J. Bullock, Marlborough House, Hove); C. R. Waller (Mr. F. H. P. Palmer, Hill House, St. Leonards-on-Sea); W. C. Streatfield (Mr. E. V. H. Elliott, Stoke Bishop, Bristol); E. V. Staley (Mr. W. Ray, Alton Burn, Nairn); H. St. J. B. Watson (Mr. G. W. Gruggen, Hinwick House, Wellingborough); I. D. S. Stitt (Mr. C. S. Hayward, Bengeo School, Hertford); and R. W. Durno (Mr. F. J. Hemmings, Weymouth). Honourable mention—F. M. Hawes (Mr. R. A. Beresford, Hunstanton); A. N. Bryan Brown (Rev. R. Bull, Southborough); and A. G. S. Muntz (Rev. R. Bull). Indian Scholarship: J. S. Darling (Mr. F. B. Welch, Oswestry School).

OXFORD UNIVERSITY.—H. F. Pelham Scholarship: Donald Atkinson, B.A., Brasenose. Charles Oldham Scholarship: R. S. Knox, Exhibitioner of Exeter. Ireland and Craven Scholarships: Cyril Asquith, B.A., Scholar of Balliol, Ireland and Craven Scholar. *Proxime accesserunt* John Bell, Scholar of Balliol, and Charles E. S. Dodd, Exhibitioner of Balliol, equal. Craven Scholars: Hon. Gerald W. Grenfell, Scholar of Balliol, Craven Scholar (Mr. Bell not being eligible). Distinguished in the Examination: M. R. Ridley, Exhibitioner of Balliol, and E. F. W. Besley, Scholar of Balliol, and A. de C. Williams, Exhibitioner of Balliol, equal.

Balliol.—Classical Scholarships: A. J. Adam, Winchester College; W. K. Potter, Dulwich College; and J. S. Mann, Dulwich College. Donus Exhibitions in Classics: J. Mackenzie, Fettes College; R. Dendy, Haileybury College; and G. M. Hewart, Manchester Grammar School. Williams Exhibition in Classics: M. H. Macmillan, Eton College and private tuition. Brakenbury Scholarships in History: Browning, Glasgow University; and B. H. Sumner, Winchester College. Williams Exhibitions in History: F. H. Underhill, Toronto and Balliol College; A. C. Harwood, Shrewsbury School. Brakenbury Scholarship in Natural Science: no election. Williams Exhibition in Natural Science: K. W. Lane, Rugby School. Mathematical Scholarship: V. G. Ursell, Mounmouth Grammar School. Williams Exhibition in Mathematics: G. E. S. Stewart, Giggleswick School.

Brasenose.—Junior Hulme Scholarship, £100: C. J. Gadd (King Edward's, Bath) and E. H. Lawrence (Malvern College). Open Scholarships, £80: H. G. Wilkie (Uppingham), E. A. Parker (Clifton). Somerset Thornhill Scholarship, £70: J. C. Stokoe (Manchester Grammar School). Somerset Thornhill Scholarship, £80: J. A. G. Leask (Fettes). Scholarship in Modern History: R. H. Peck (St. Paul's).

Christ Church.—Open Scholarship in Natural Science: Alfred Kendrick, Oxford Boys' High School. College Exhibitions in Natural Science: Hedley George Watts, Worcester Royal Grammar School; Philip Garthwaite Knowles, Mill Hill School. Open Scholarships in Classics: J. H. M. Stainforth (Charterhouse), J. F. L. Elliot (Rugby), E. A. Mackintosh (St. Paul's). College Exhibition in Classics: A. H. Armstrong (Eton). Douglas Jerrold Scholarship in English Literature: F. A. Rose (Aberdeen University).

Exeter.—Open Classical Scholarships: R. H. Barrow (Manchester School), R. B. Arnell (Berkhamsted School), E. J. Solomon (St. Paul's School). Stapledon Scholarship: F. F. B. Hobbs (Christ's Hospital). Stapledon Scholarship for Mathematics: V. T. Saunders (Kingsbridge School). Open Exhibition: V. L. S. Bedwell (St. John's, Leatherhead). Synes Exhibition: G. J. Elliott Felsted School.

Hertford. In Classics.—Open Scholarships of £100 for five years: Arthur S. C. Barnard, Cheltenham College; Desmond H. Beatty, King's College School, Wimbledon; and Edward B. Fry, Lewis School, Pengam, Cardiff. Harrow Scholarship of £100 for five years: Charles E. Bland, Harrow School. Meeke Scholarship of £40 for four years: James Nash, Worcester Cathedral King's School. Meeke Scholarship of £40 for four years (open for this turn and awarded for History): John H. Kealy, Portsmouth Grammar School. In Mathematics.—Open Scholarship of £100 for five years: Graham C. K. Jolley, Bradford Grammar School. Sons of Fellows Scholarship: William P. Campbell, Clifton College. Exhibitions in Classics: A. C. Cameron, Radley College; H. J. Clarke, Repton School; H. G. Dixey, Sherborne School; A. W. Hodges, Epsom School; O. W. Price, Radley College and Hertford College. Exhibition in Mathematics: R. Bird, Central School, Sheffield. Exhibition in History: S. J. F. Maiden, King's School, Canterbury.

Jesus.—Scholarships: R. L. Murray (St. Edmund's School, Canterbury), £80 for Classics (Rustat); B. L. Manning (Caistor Grammar School), £80 for History; E. G. Myddelton (Wellingborough Grammar School), £60 for Mathematics; N. C. Hamilton (St. Olave's Grammar School), £60 for Classics (Rustat); A. F. Akhurst (Merchant Taylors School, London), £40 for Mathematics; H. A. R. Crookham (Felsted School), £40 for Classics (Rustat); R. J. Wait (Oundle School), £40 for Natural Science; W. T. Sargeant (Cheltenham College), £40 for History (Rustat). Exhibitions: J. B. Kirkpatrick (Marlborough College), £30 for Classics; C. E. Newham (Nottingham High School), £30 for Natural Science.

Keble.—Classical Scholarships: H. N. Smith, Exeter Grammar School; and G. W. R. Treadgold, Dulwich College. Glendon Classical Scholarship: J. G. Frere. Modern History Scholarship: G. R. Goody, late of Weymouth College. Open Classical Exhibition: L. A. Cattley, Marlborough College.

Lincoln.—Scholarship of £80 in Modern History: H. D. E. Ferguson (Rugby). Pratt Scholarship of £60: W. Ashley (Oundle School and Birmingham University). Exhibition of £30: G. N. Sutton (Christ's Hospital).

Magdalen.—Senior Demyships: for four years, T. F. Wimill, B.A., late Exhibitioner of the College (formerly of the East London College); till end of 1913, John E. V. Crofts, B.A., formerly Bible Clerk of Queen's College (previously of Magdalen College School). Demyship in History: Gerald M. Sproat, Winchester College. Exhibition in History: Richard B. Graham, Manchester Grammar School.

Merton.—Chambers Postmastership (Classics): Geoffrey R. G. Mure, Eton College. Open Postmasterships: John Lawson, Dulwich College, and Robert W. H. Pringle, Fettes College. Exhibition of £60: Henry O. T. Rischbieth, Merton College and Adelaide University. Postmastership in Mathematics: Reginald Bird, Central Secondary School, Sheffield. Exhibition of £60 in Mathematics: Arthur E. Birch, East London College. Exhibition of £60 in Classics: Alfred G. N. Dixey, Manchester Grammar School. History Exhibitions: £80, Charles S. B. Buckland, Tonbridge School; £60, Karl H. Culpin, Doncaster Grammar School.

New College.—Scholarship in Modern History: D. F. Jerrold, Westminster School. Exhibition in Modern History: E. Brewerton, Manchester Grammar School. Open Scholarship in Mathematics: John F. L. Bray, Aske's Hatcham Boys' School. Winchester Scholarships and Exhibitions—Scholarships in Classics: J. E. Stephenson, J. W. Russell, and R. M. Don. Exhibition in Mathematics and Physics: W. L. F. Browne. Exhibitions in Classics: A. D. Finney and E. B. Reynolds.

Oriel.—Open Scholarships: P. N. R. Butcher (Sherborne), J. C. Penny (Fettes), M. H. Gilkes (Dulwich). Adam de Brome Scholarship: W. G. Reid (Aberdeen University). An Exhibition has been offered to P. H. B. Lyon (Rugby); and the Ireland Exhibition to A. F. H. Wiggan.

Queen's.—Foundation Scholarships: Arnold M. Stephens, Manchester School (Classics); Thomas Scott, Royal Academical Institute, Belfast (Classics); William L. Ferrar, Bristol School (Mathematics); Ernest H. Davenport, Cheltenham College (Modern History). Eglesfield Scholarship: Harold A. Feldtmann, St. Bees School (Classics). Jodrell Scholarship: Cecil K. Hughes, St. Bees School (Classics). Hastings Exhibitions: Russell Green, King Edward VII School, Sheffield (honorary scholar) (Classics); Percy Furness, Wakefield School (honorary scholar) (Classics); Frank Taylor, Bradford School (honorary scholar) (Mathematics); Thomas M. Macleod, Giggleswick School (Classics); John L. I. Hawkesworth, St. Bees School (Modern History); Hinton J. Harris, St. Bees School (Natural Science). Southampton Exhibition: Malcolm H. Mackeith, King Edward VI School, Southampton (Natural Science).

St. John's.—Open Scholarships in Classics: A. Moody, Felsted School; G. H. Claypole, King's School, Canterbury; and F. A. Newsham, Harrison College, Barbados. Exhibition in Mathematics: H. H. Shephard, Manchester Grammar School. Exhibitions in History: J.

Sever, Manchester Grammar School; and W. C. Costin, Reading School.

Trinity.—Scholarships of £80 a year for Classics: G. F. Lawrence (Winchester College), F. N. Tribe (Clifton College), A. G. Rigby (Leeds Grammar School), A. G. N. Dixey (Manchester Grammar School). Exhibitions for Modern History: £70 a year to W. T. Sargeant (Cheltenham College); £60 a year to G. A. K. Hervey (Marlborough College).—Millard Scholarship of £80 a year for Natural Science: A. M. Bown (Gainsborough Grammar School). Ford Studentships (close): F. L. Goad (King's School, Canterbury), V. C. H. Yongg (Brentwood Grammar School). Henniker Exhibition: H. M. Wilkinson (Charterhouse School).

Wadhams.—Heap Exhibition (Hebrew): C. G. Herbert, Merchant Taylors School. Scholarships of £80 a year: H. Samuels, Liverpool College; H. G. Powers, St. George's School, Harpenden; and G. T. Paine, King Edward VII School, Sheffield. Exhibitions: H. A. H. Gibbons, Repton School; H. P. C. Burton, Repton School; L. T. Seymour, St. Edward's School, Oxford; and A. E. Morris, Cardiff College.

ROYAL ACADEMY.—Gold Medals and Travelling Studentships: Historical Painting, Margaret L. Williams; Landscape, Gladys M. Clark Kennedy; Sculpture, John Angel; Architecture, Alan Binning.

WELLINGTON COLLEGE.—Open Scholarships: J. B. Purefoy (Messrs. Delme, Radcliffe, and Ellis, St. Neots, Eversley), £80 on the Modern Side and the Robert Henry Wentworth Higher Scholarship: W. H. E. Thomas (Messrs. M. C. Pitkin and G. Sandwith, Earleywood School, Ascot), £80 on Classical Side; G. C. D'Arbuz (Mrs. Wolsey White, Marlborough House, The Drive, Hove), £80 on Modern Side; P. M. Balfour (Rev. H. Bull, Westgate-on-Sea), £60 on Classical Side; R. L. Griffin (Mr. R. Bruce Lockhart, Eagle House, Sandhurst), £50 on the Classical Side.

EXAMINATIONS IN SECONDARY SCHOOLS.

REPORT OF THE CONSULTATIVE COMMITTEE.

THE report of the Consultative Committee on Examinations in Secondary Schools has just been issued in a portly volume of some six hundred pages, about a hundred and forty of which are occupied by the text of the report. The Board of Education stands uncommitted by any opinion expressed by anybody in the volume. As to practical suggestions of reform, it is held that the number of examinations should be reduced and their pressure upon the early years of school life relieved; and that in their management the experience of teachers actually working in the schools should be more systematically taken into account. "The award of certificates should be made in fuller knowledge of the inner life of the schools and of the methods of teaching employed in them. And the machinery of external examination should be so readjusted as to provide, what does not now exist, a generally accepted test of the school work of pupils at about sixteen years of age, a test so devised as to furnish a guarantee of their having received up to that point the sound and liberal education upon which their advanced studies, whether at school or college, might be based." The cardinal point of a plan of effective reform being combination of inspection with external examination, the Committee reject external examinations controlled by provincial authorities or organized by the Board of Education, and recommend external examinations held by an Examinations Council.

"The Examinations Council," it is stated, "should include representatives of the Universities, of the Local Authorities, and of the teachers, men and women, in different types of schools, as well as of the official experience of the Board of Education itself. The new body should be so constituted as to comprise a limited number of persons of practical experience, especially of the requirements of professional, industrial, and commercial life. The function of the Council would be the supervision of all external examinations in recognized secondary schools. It would lay down regulations as to the scope, time, and method of these examinations. It would control their organization, fix the fees to be charged for admission to them, and approve of the examiners. In all secondary schools, aided or recognized

by the Board, no external examinations would be permitted except those held under the authority or with the approval of the Examinations Council."

The establishment of an Examinations Council, it is thought, would bring order into the present confusion. It would replace multiplicity of standards by unity of control. It would set up, in lieu of the present bewildering variety of examinations and certificates, a clear and progressive series of tests and awards under the supervision of a body which would be authorized by the State, representative of educational experience, and associated with (though not administratively controlled by) the Board of Education.

"The plan which we are now considering has the further advantage of so combining the work of the inspectors with the conduct of external examinations as to facilitate the establishment of that earlier certificate for which we have suggested the name of the Secondary School Testamur. It is not proposed that this Testamur should be issued under the supervision of the external examining authority. But the importance of maintaining in proper relation to each other the standards upon which the Secondary School Testamur and the Secondary School Certificate would be respectively awarded makes a close co-operation necessary between those who will have the responsibility of awarding the School Testamur and the body which will fix the standard of the Secondary School Certificate Examination. Such co-operation would be fully secured by the work of an Examinations Council established in intimate relation to the Board of Education, but, so far as the conduct of secondary-school examinations is concerned, independent in determining the method of examination and the standard of award."

To prepare the way for the constitution of an Examinations Council, it is suggested that the Board of Education should invite the principal bodies that conduct examinations in secondary schools to a Conference to discuss: (1) the means by which the external examinations now conducted by those bodies may be brought into intimate connexion with the system of inspection without imposing inspection by two independent authorities upon any school; (2) the means by which the various examinations may be brought to equivalence of standard according to their respective grades, with due regard to that variety of requirement which is beneficial to the schools; and (3) the means by which the experience of the existing examining bodies could best be made available for the guidance of the new representative authority when established for the supervision and control of all external examinations in recognized secondary schools.

Importance is attached to the need of altering public opinion towards external examinations. It is pointed out that the results possess a conventional value "which induces, and often virtually compels, teachers to devote a disproportionate amount of thought and energy to preparing their pupils for success in them." The publication of examination results in newspapers and prospectuses is not approved, and it is contended that they set up a false standard by which teachers are fettered. Also, governing bodies and parents are encouraged "to content themselves with what appears to be sufficient evidence of the school's intellectual efficiency, but which in reality diverts attention from the details of that process of intellectual training which is of far greater importance than success in passing an examination." Everything should be done to encourage and extend progress from the elementary to the secondary schools. "We have therefore proposed," say the Committee, "that opportunities for secondary education should be enlarged by the supply of a sufficient number of bursaries, scholarships, and maintenance allowances, so that pupils of promise should be enabled to take advantage of the full course of secondary education."

It is also suggested that certain types of elementary schools should be recognized as qualifying their pupils for the privileges of the Secondary-School Certificate Examination, and that other pupils should be admitted as external candidates to the examination and should be given a certificate which should be regarded as an alternative qualification. To this proposal Mr. Marshall Jackman takes exception. He contends that to have two certificates, the Secondary-School Certificate and the Secondary Education Certificate, side by side, will be an evil, and that contempt will be poured on the alternative certificate.

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CURRENT EVENTS.

Fixtures. THE Half-yearly General Meeting of the Members of the College of Preceptors will be held at the College on Saturday, January 20, at 3 p.m.

In the evening of the same day there will be a Dinner at the Holborn Restaurant for Members of the College of Preceptors and their friends.

* * *

THE Annual Meeting of the Incorporated Association of Assistant Masters in Secondary Schools will be held, on January 3, 4, and 5, at Merchant Taylors School, E.C.

The Annual Dinner, which will celebrate the Association's twenty-first year, will be held at Pagani's Restaurant, Great Portland Street, W., on January 4.

* * *

THE tenth Annual Meeting of the North of England Education Conference will be held at Armstrong College, Newcastle-upon-Tyne, on January 4, 5, and 6, under the Presidency of Lord Grey. There will be a comprehensive exhibition of educational apparatus. Joint Hon. Secretaries: Spurley Hey, B.A., Secretary of Education, Newcastle-upon-Tyne, and F. H. Pruen, M.A., Secretary, Armstrong College.

* * *

THE Annual General Meeting of the Modern Language Association will be held at Birmingham on January 4, 5.

* * *

THE L.C.C. Annual Conference of Teachers will be held at Birkbeck College on January 4-6. Tickets from the Chief Inspector, L.C.C. Offices, Victoria Embankment, W.C.

* * *

THE Annual Meeting of the Mathematical Association will be held at the London Day Training College, Southampton Row, W.C., on January 10.

* * *

THE Annual General Meeting of the English Association will be held at University College, London, on January 12 and 13.

* * *

THE Bible-study Week for Teachers in Elementary Schools and in Sunday Schools at Claydon, Bucks, is fixed for April 6-13. Two courses of lectures—New Testament and Old Testament—to illustrate the idea of "God manifested in Creation, in the spirit of man, and in the Person of Our Lord." Apply to Miss B. Leahy, Claydon House, Steeple Claydon S.O., Bucks.

* * *

THE National Peace Congress will be held at the Caxton Hall, Westminster, May 15-18.

* * *

A CONFERENCE has been arranged by the Association for the International Interchange of Students for June 28.

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THE Imperial Conference of Teachers' Associations, convened by the League of Empire, has been fixed for July 13-16, 1912.

* * *

THE Second International Congress of Entomology will be held at Oxford, August 12-17, 1912. General Secretary of Executive Committee: Dr. Malcolm Burr, care of the Entomological Society of London, 11 Chandos Street, Cavendish Square, W.

—♦♦—

THE Nobel Peace Prize has been awarded jointly to M. Tobias M. C. Asser, Member of the Dutch Council of State and Legal Adviser to the Dutch Ministry of Foreign Affairs, formerly Professor in the University of Amsterdam, and to M. Alfred H. Fried, editor of the *Friedenswarte* (Vienna).

* * *

THE University of Oxford has conferred the honorary degree of D.C.L. upon Viscount Hythe, M.A., Hon. Fellow of Balliol; and the honorary degree of M.A. upon Watkin S. Jones, B.A., B.Sc. Wales, Jesus.

* * *

THE University of Cambridge has conferred the honorary degree of LL.D. upon Earl Grey (Trinity) and Baron Rothschild (Trinity); and the honorary degree of M.A. upon Mr. Gregory William Eccles, for forty-eight years agent for the University Library in claiming books under the Copyright Act.

* * *

THE University of Sheffield has conferred the degree of Doctor of Metallurgy upon Mr. Andrew McWilliam, Professor of Metallurgy in the University, who has just been appointed to a Government post in India.

* * *

THE University of Manchester has resolved to confer the following honorary degrees:—

LL.D. (at meeting of the Historical Association in January): Prof. Firth, Oxford; Prof. Lodge, Edinburgh; Prof. Pollard, London; J. E. Morris, Treasurer of the Historical Association.

D.Sc. (at opening of the new Physical Laboratories Extension, or on some other suitable occasion): Mme Curie; Sebastian Ferranti, President of the Institution of Electrical Engineers.

* * *

THE University of Wales has conferred the honorary degree of D.D. upon the Rev. Griffith John, of Hankow, in recognition of his translation of the Scriptures into Chinese.

* * *

THE German Crown Order of the Second Class has been conferred upon Dr. A. W. Ward, Master of Peterhouse.

* * *

MR. F. W. HARDWICH, M.A., Professor of Mining in Sheffield University, has been elected President of the Midland Institute of Mining, Civil, and Mechanical Engineering.

* * *

THE Royal Medal of the Royal Society has been awarded to Dr. W. H. Bayliss, D.Sc., F.R.S., Assistant Professor of Physiology in University College, London.

* * *

THE Dean of Canterbury and Dr. Richard Lodge, Professor of History in Edinburgh University, have been elected to Honorary Fellowships at Brasenose College, Oxford.

* * *

MR. GEORGE A. MACMILLAN, Hon. D.Litt., of Lincoln College, Oxford, has been elected to an honorary Fellowship of the College.

THE Dean of St. Paul's has been elected an Honorary Fellow of Jesus College, Cambridge. He was formerly a Professorial Fellow of the College.

* * *

A HANDSOME brass tablet has been placed in Queenswood School to commemorate the services of the late Rev. David J. Waller, D.D., Chairman of the Board of Governors from the foundation of the school in 1894 to his death in 1911.

—♦♦—

AN anonymous donor has offered to erect at University College, London, "the buildings for the combined School of Architecture (resulting from the amalgamation of the schools at present separately conducted at University College and King's College), together with—so far as a sum of £30,000 will suffice—studios for the teaching of sculpture and the rearrangement of the School of Fine Art; and the Department of Applied Statistics, including the Laboratory of Eugenics."

* * *

ONE munificent donor has contributed £70,000 to the movement for a Shakespeare Memorial Theatre in London, and smaller sums have been received and promised. Contributions may be sent to the Shakespeare Memorial Committee, Whitehall House, Charing Cross, S.W.

* * *

MRS. C. KAYLER has given £1,000 to University College Hospital to found and endow a Lectureship in Physiology and Pharmacology, in memory of her father, the late Dr. Sydney Ringer, F.R.S., formerly Consulting Physician to the Hospital.

* * *

MR. AND MRS. WALTER BAILEY, on occasion of their golden wedding, have given £1,000 towards the rearrangement and decoration of the interior of a portion of University College, London.

* * *

SIR EDWIN AND LADY DURNING-LAWRENCE have given £8,000 to the endowment fund of University College School, Hampstead. Sir Edwin is an Old Boy, and Chairman of the Council of the School. An "Old Gower" has given £1,000.

* * *

£9,500 is required to erect a permanent building for the Liverpool University Settlement. £4,000 has been promised.

* * *

HAILEYBURY COLLEGE still wants £5,000 for its commemoration Fund. Contributions to the Secretary.

* * *

THE REV. JOHN A. REEVE, of Marlborough, sometime Rector of St. Mary, Lambeth, and Chaplain to the Archbishop of Canterbury, has bequeathed £1,000 each to St. Augustine's College, Canterbury, and to Selwyn College, Cambridge.

* * *

MR. ROBERT IRVINE, of Edinburgh, who died a good many years ago, left a portion of his estate to accumulate to £30,000, and then to be handed over to the University of Edinburgh to found a Professorship of Bacteriology. The £30,000, it is understood, will be given to the University presently.

* * *

MR. JOHN THOMPSON, of the Aberdeen University Press, has left an endowment for a Lectureship in Aberdeen Uni-

versity on "The Structure and Functions of the Human Body."

* * *

THE HON. ROLAND G. HAZARD, Rhode Island, has presented to the Anthropological Museum of Aberdeen University a large and valuable collection of flint arrow-heads, illustrative of all the types of primitive arrow-heads and Red Indian arrow-heads used by the Indians of the United States from the Atlantic to the Pacific.

* * *

THE Endowment Fund of £300,000 required by McGill University has been raised—in five days. A cablegram was received in Montreal from Lord Strathcona offering to give £20,000 if £400,000 were raised, but a reply was sent stating that this offer came too late.

* * *

BRYN MAWR will receive £125,000 under the will of Miss E. C. Woerishoffer, a graduate of the College. Columbia University will take £486,000 of the estate of the late Mr. John S. Kennedy; New York University and the Presbyterian Board of Aid for Colleges, £195,000 each; Robert College, Constantinople, £370,000; and Yale, Amherst, Dartmouth, Bowdoin, Hamilton, and Glasgow, £20,000 each.

* * *

MR. JOSEPH PULITZER, of the *New York World* and the *St. Louis Post-Despatch*, who left some £6,000,000, has bequeathed £200,000 to Columbia University to establish a School of Journalism, and £200,000 more if after three years the School proves successful; also £50,000 for scholarships and prizes. If Columbia fail to act, the money goes to Harvard for similar purposes.

The will (says the *New York correspondent of the Standard*) provides the following other annual grants:—£200 for the best American novel presenting a wholesome atmosphere of American life and the highest standard of American manners and manhood; £200 for an American play best representing the educational value and power of the stage for raising the standards of good morals, taste, and manners; £200 for the best American biography teaching patriotic and unselfish services to the people; £400 for the best book upon American history; £300 travelling European scholarship for the most talented American art student; £300 travelling European scholarship for the most talented American musical student.

The Metropolitan Museum of Art and the Philharmonic Society each receive £100,000.

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PRINCE ROLAND BONAPARTE has given £10,000 to the French Academy of Science for aid in research work.

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In connexion with the work of the General Education Board of the United States, we (*Nature*) learn from *Science* that conditional appropriations amounting to £127,000 have been granted to six colleges and Universities by the Board of Trustees. Applications from twenty-four institutions were presented. From this list the Board selected six, among which is distributed conditionally the available funds as follows:—to Bucknell University, Lewisburg, Pa., £7,000 towards £32,000; to Earlham College, Richmond, Ind., £15,000 towards £80,000; to Furman University, Greenville, S.C., £5,000 towards £20,000; to Grinnell College, Grinnell, Ia., £20,000 towards £100,000; to Smith College, £40,000 towards £200,000; to Southern Methodist University, Dallas, Tex., £40,000 towards £200,000. During the meeting attention was directed to the fact that since Mr. Rockefeller made his first contribution to the Board for the promotion of higher education, contributions have been made

to ninety-one institutions, amounting to £1,525,000 towards a total of £7,182,000. Fifty-one institutions to which the Board has made conditional contributions have completed the subscriptions for the supplemental sums required, and to these institutions the Board has already paid £700,000 in cash. As a result of the campaigns made by these fifty-one institutions, their assets have been increased by more than £3,800,000. Their student bodies have increased by 2,047. 183 new Professors have been employed, and the annual payment to Professors in these fifty-one institutions has been increased £84,300.

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Scholarships
and Prizes.

THE Federation of University Women offers a Prize Fellowship, £120, open to women that have published original work. Apply by February 1. Particulars from the Hon. Secretary, 36 Russell Square, W.C.

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THE Law Society offers five studentships, £40 a year each, in July next. Regulations from the Law Society, 103 Chancery Lane, W.C.

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GOLDSMITHS' EXHIBITIONS tenable at Cambridge are vacant. Examination May 1-3. Apply for forms of petition to Sir Walter S. Prideaux, Goldsmiths' Hall, E.C., by the end of February.

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THE Entrance Scholarship Examinations in Classics at Girton and Newnham will be held by the Colleges conjointly, March 19-21.

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Appointments
and Vacancies.

M. HENRI BERGSON, Professor of Philosophy in the Collège de France, has been appointed Gifford Lecturer in Edinburgh University, 1913-15.

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LORD HALDANE has been appointed Chancellor of the University of Bristol, in succession to the late Mr. H. O. Wills.

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THE MASTER OF TRINITY (Dr. H. M. Butler) has been appointed Romanes Lecturer in Oxford University for 1912.

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MR. W. BATESON, F.R.S., honorary Fellow of St. John's College, Cambridge, and Director of the John Innes Horticultural Institution at Merton, Surrey, has been appointed Herbert Spence Lecturer at Oxford for 1912. He will deliver the lecture on February 28—"Biological Fact and the Structure of Society."

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MR. W. BATESON, M.D., F.R.S., has been appointed Fulmerian Professor of Physiology at the Royal Institution for a term of three years.

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PROF. T. F. TOUT, M.A., of Manchester University, has been appointed Ford's Lecturer in English History at Oxford for 1912-13.

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DR. ALEX HILL, formerly Master of Downing College, Cambridge, has been appointed Secretary to the Organizing Committee for the Imperial University Congress to be

held in London in July next, in place of the late Dr. R. D. Roberts.

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MR. A. R. WALLER, M.A., Assistant Secretary for the past nine years, has been appointed Secretary to the Syndics of the Cambridge University Press, in succession to Mr. R. T. Wright, who retires after twenty years' service. Mr. S. C. Roberts, Pembroke College, has been appointed Assistant Secretary.

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DR. W. R. BOYCE GIBSON, M.A., D.Sc., Lecturer in Philosophy, Liverpool University, has been appointed Professor of Mental and Moral Philosophy in the University of Melbourne.

Kingswood School (Bath); Queen's College, Oxford, 1888-9; Jena, Paris, and Glasgow 1893-98. Lecturer in Philosophy in London University 1898-1909; Examiner in Philosophy at Glasgow 1898-1901, at St. Andrews 1906-9, and at London since 1909. Various publications, philosophical and religious.

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DR. HENRY BASSETT, Demonstrator and Assistant Lecturer in Chemistry, University of Liverpool, has been appointed Professor of Chemistry in University College, Reading, in succession to Prof. J. K. H. Inglis, who has been appointed Professor of Chemistry in Otago University, New Zealand.

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APPLICATIONS for the Chair of Mathematics in Edinburgh University should be lodged with Mr. A. B. Fleming, W.S., 4 Albyn Place, Edinburgh, by February 8.

* * *

MR. J. R. WEAVER, M.A., Acting Professor of History in Trinity College, has been appointed Erasmus Smith's Professor of Modern History in the University of Dublin.

* * *

M. HENRI PIRENNE, Professor of Medieval and Belgian History in the University of Ghent, has been appointed Chichele Lecturer in Foreign History at Oxford for 1912.

* * *

A LECTURER in Physics and Applied Mathematics is required at Rhodes University College, Grahamstown, C.C., South Africa. £300; passage money, £40. Apply to Mr. F. J. Wylie, 9 South Parks Road, Oxford, by January 15.

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At the London (Royal Free Hospital) School of Medicine for Women (University of London), Dr. Walter d'Este Emery has been appointed Lecturer in General Pathology, and Dr. W. H. B. Stoddart, Lecturer in Mental Pathology.

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MR. C. H. WYATT, Director of Elementary Education, has been appointed Director of Education to the Manchester Education Committee in succession (so far as concerns the Higher Education) to Mr. J. H. Reynolds, M.Sc., retired.

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THE REV. J. L. PHILLIPS, M.A., Classical Master and Chaplain at St. Paul's School, has been appointed Reader of the Hon. Society of Gray's Inn.

Christ College, Brecon; Keble College, Oxford (Scholar). Abbot University Scholar; Coplestone Exhibitioner 1900. First Class Classical Mods. 1901; Second Class Lit. Hum. 1903. St. Paul's 1905.

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DR. BERNARD HODGSON, of Armstrong College, has been

appointed Assistant Lecturer in Physics in Bristol University.

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MR. F. C. THOMPSON, B.A., Trinity College, Cambridge, has been appointed Assistant Lecturer in Latin at Cardiff University College.

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MR. RALPH B. HENDERSON, M.A., Assistant Master, Rugby School, has been appointed Head Master of the Strand School, King's College, London.

Bristol School; New College, Oxford (Open Scholar and Goldsmiths' Exhibitioner). First Class Mathematical Mods 1899; First Class Mathematics 1901. King Edward's School, Birmingham. Rugby 1902. Author of "The Scaly-winged (Christophers)."

* * *

A HEAD MASTER is required for Carlisle Grammar School. £500, with capitation fees. Apply to Mr. H. Studholme Cartwell, 34 Lowther Street, Carlisle, by January 6.

* * *

AN Assistant Lecturer and Demonstrator in Mechanical Engineering is required in the University of Sydney. £250, rising to £500; £60 travelling expenses. Apply to the Agent-General for New South Wales, 123 and 125 Cannon Street, E.C., by January 10.

* * *

A MISTRESS OF METHOD (Honours in Final Examination for a degree) is required for Avery Hill Training College for Women, Eltham. £180, rising to £250, all found during term. Form (from L.C.C. Education Offices) to be returned by January 5. Endorse "H. 4," and enclose stamped addressed foolscap envelope.

* * *

MR. J. HOLLAND ROSE, D.Litt., Christ's College, has been elected Reader in Modern History at Cambridge.



A SECOND edition of the first volume of Prof. Literary. Meumann's "Vorlesungen zur Einführung in die Experimentelle Pädagogik—Ihre psychologischen Grundlagen," revised and enlarged, is announced by Wilhelm Engelmann (Leipzig). The second and third volumes are in preparation, and may be expected shortly.

* * *

THE Cambridge University Press announce "The Wars of Religion in France, 1559-1576," by James Westfall Thompson, Ph.D., Associate Professor of European History in the University of Chicago. The work "is based upon a careful examination of original sources, and contains a valuable appendix of hitherto unpublished documents from the archives of Paris and London."

* * *

HARROW and Eton have combined forces to produce "The Groundwork of British History" on a generous scale, with an unusually full account of the nineteenth century. The authors are Mr. G. T. Warner, Head of the Modern Side, Harrow School, and Mr. C. H. K. Marten, of Eton. Messrs. Blackie will publish the volume.



THE L.C.C. Education Committee unanimously adopted a report of the Accommodation and Attendance Committee recommending that forty should be the maximum number of pupils in the senior departments, and forty-eight in the infant department.

The scheme is expected to cost some four and a half millions for provision of new schools.

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THE Royal Commission on the University of London has issued a third Blue Book of evidence.

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THE University of Durham has decided that any graduate of Durham professing Christian faith shall be eligible for the B.D. and D.D. degrees.

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At the September examination for the National Diploma in the Science and Practice of Dairying held by the National Agricultural Examination Board, 15 candidates (out of 33) at the English centre, and 20 (out of 42) at the Scottish centre, satisfied the examiners.

THE CANADA EDUCATIONAL COMMISSION.

SOME OF THEIR EUROPEAN EXPERIENCES.

THE Royal Commissioners on Industrial Training and Technical Education having returned to Ottawa to prepare their Report, Dr. J. W. Robertson, their Chairman, has outlined to the *Ottawa Citizen* recently the general features of their summer's work in Great Britain and on the Continent of Europe. The Commission was, of course, received everywhere with the utmost cordiality. We give main points.

GENERAL IMPRESSIONS.

At present one can only give a few of the more vivid of the general impressions received (said Dr. Robertson). First of all one thinks of the character of the men who are responsible for the organization and administration of the education, and of the head masters and other teachers who carry on the class work. Courtesy, enthusiasm, and ability of high order were always to the front. New buildings and equipment for technical instruction are everywhere in evidence. The revival of interest in education, or rather the awakening of interest in this newer field of education, has brought out much rivalry between the different cities as to which shall have the finest institutions for its young people. Nor is the attention and interest wholly or even mainly devoted to the material equipment. The effort is focused on the boy and on the girl, particularly between the ages of fourteen and eighteen.

Trade preparatory day schools have been started to give boys between twelve and fourteen two years of the sort of education which, while still general for real culture, gives them practical preparation for beginning to learn skilled trades in the various factories and shops. Continuation classes with a trade preparatory side have been begun and are being extended. There are evening continuation classes for boys and girls who have begun work, with courses having direct relation to the trades and skilled occupations in the city or locality. These continuation classes, commercial classes, technical classes, and art classes have become a great feature of the educational effort on behalf of most of the children whose attendance at the ordinary school ends with their fourteenth year.

The earnestness of the pupils, their interest in their work, and the regularity of their attendance, were evidence of their own recognition of the value of the education they are receiving. In the United Kingdom, attendance at these technical schools and evening classes is voluntary, whereas, in twenty-one out of the twenty-six States in the German Empire, attendance for a number of hours per week (from four to eight) is compulsory for boys from fourteen to seventeen. In a few of the States it is compulsory also for girls. The employers are required to provide opportunities for their employés to attend such classes, to be over before 7 o'clock in the evening.

THE UNITED KINGDOM.

Notwithstanding the immense progress and the manifold evidences of progress in this new field of educational effort in Eng-

land, Scotland, and Ireland, one seldom hears any laudation by the people themselves of what they are doing. The refrain of nearly every comment on the educational work of England by an Englishman is lamentation at its backwardness compared with that of Germany. I could not fully share that feeling after being over Germany and other European countries.

Whatever of backwardness, due to neglect or indifference in the past, may still exist in the United Kingdom—and it still stares at you out of the factory workers and their living quarters in the big cities—it appears to me that a most resolute and well directed effort has been continued during the last seven or ten years, and that it is only a question of time when the spirit and fruits of the present movement will have reached all classes as fully as in Germany. Whether the workers and their families in England will get as much from the education when it has reached them all is another question. In Germany I was impressed by the apparent solidarity of the citizenship with remarkable absence of restrictions on personal tastes and preferences. Education did not seem to be planned or cherished as a means whereby the individual got ahead of other individuals. It looks like a great national service whereby all the individuals are being trained towards ability for their respective occupations in the interest of the State. The personal power and well-being of the units of the community are looked after for the sake of the State. Elsewhere more emphasis was laid on the development of individualism with its tendency to exploit the uneducated for profit.

GERMANY.

This is not the time to discuss the systems or methods of German education. That is reserved for our report to the Minister of Labour; but a few words on some general aspects of it would not be an encroachment upon the field of that report, and might be useful at the present time. The spirit of sociability and the evidence of "feeling at home" by the children in their classes and playgrounds impressed me. There was not the shadow of an indication that the military or any other system of organization had cowed or curbed the natural spirits and manners of the children. The demeanour was that of well-bred, gentlemanly children at ease, interested and enthusiastic regarding their work. Everywhere thoroughness was not proclaimed but was revealed by what was being done. I need not remark upon the excellence of the specimens of handwriting in the schools, but I would mention the legibility, beauty, and neatness of the handwriting I observed in general on envelopes and addresses of parcels that came under my notice.

Singing was taught not merely as a means of voice production or voice culture. It impressed me as being rather the culture of the whole child—body, mind, and spirit, trained towards controlled expression. I had not thought it possible that singing could be made such an instrument for physical and spiritual development. I found the same thing in the Danish schools. To excel in music appears to be only a minor part of the means, whereas to train towards control of the physical and emotional nature and into a feeling rather than an understanding of solidarity in citizenship were the main objects.

One of the main aims of the system of education in most of the German States seems to be to make for the efficiency of the individual as a citizen as well as for effectiveness as a worker. Attendance at educational classes of some sort between fourteen and seventeen years of age is compulsory, for the sake of technical improvement and industrial efficiency no doubt, but also for the development of power and a sense of responsibility on the citizen as such. Comparing a German city with one in England or Canada, one is struck by the absence from the streets in the evening of the youth of both sexes standing on street corners or wandering aimlessly about. The vocational classes for all sorts of workers between the ages of fourteen and seventeen have evidently given the people generally a liking for, and satisfaction from, attending classes after the ordinary elementary-school days are over.

In the technical classes themselves provision is made for all classes of workers and practically for three sorts of careers—viz. for the hand workers, for the foremen and superintendents, and for the leaders and managers. During apprenticeship the youths are required to attend classes during several hours per

week, ranging usually from four to ten; and employers are required to let their apprentices go at such times that the classes can be over before 7 o'clock in the evening. Many of the leading employers let the apprentices go to attend classes during one or two forenoons or afternoons per week. In such cases the wages of the apprentices are paid for attendance at the school just as though they were at work in the shop. After apprenticeship is over there are evening technical classes and even Sunday forenoon classes. We are told that when compulsory attendance was first required by Government action there was a good deal of hostility on the part of employers and even of the youths themselves. After two years of experience the most of the opposition had disappeared, and now compulsory participation in some educational work is accepted as part of the civilization.

SWITZERLAND.

In visiting an apprentices' class in one of the schools in Switzerland, I asked the lads who had attended two years under the compulsory regulations to vote whether or not they would now attend voluntarily. Thirty voted they would attend voluntarily, and only one did not vote. I inquired from the teachers their opinion as to how many of the pupils would have come voluntarily from the first. They thought not more than one-third of those in that particular class would have begun without the compulsory requirement. At Zurich and Winterthur, also in Switzerland, we found real apprentice trade schools. The young men served their apprenticeship under shop conditions in those schools, were taught a trade thoroughly, and were able to pass the State examination for the completed apprenticeship at the end of their course. The course in the engineering trade was four years. Such workmen were esteemed as being so well trained that they were in greater demand than apprentices who had served in the usual way in shops only. These apprentice schools are run under commercial factory conditions, and the output is sold at a higher price than the output of similar factories where the work is done by journeymen.

FRANCE.

In France great attention is paid to drawing and applied art. For the gaining of scholarships and admission to the highest grade of technical institutions, the examination includes the making of some specific article in iron or steel from a drawing and specification. A certain length of time is allowed for the work, and the hand skill and constructive power of the student counts for a good deal in the examination results. That was rather a new aspect in the character of examinations.

DENMARK.

In Denmark I was impressed by the fine appearance of the cultivated fields, by the spirit of contentment—but not of apathy—that one found among the rural population, by the pervasiveness of their patriotism, and the intensity with which they pursue co-operation methods in connexion with rural life, particularly in the production of butter, in the production of bacon, in the collection of eggs, and in the improvement of their cattle and pigs. While Denmark is chiefly an agricultural country, we found technical schools in the comparatively small towns. These provided classes especially for those engaged in the building trades.

Physical culture is made much of. The People's High Schools, which are peculiar to Denmark, are in a class by themselves. They consist of a one-year course of five months in the winter for young men between eighteen and twenty-five years of age, and a three months' course in summer for young women of the same ages. They are cultural schools devoting much time to history, Danish literature, physical culture and singing; and they are one of the prime forces in Danish efficiency in agriculture and domestic life.

IRELAND.

Perhaps from no other country were we able to learn as much concerning efficiency in organization and in the carrying out of methods for the training of the workers as in Ireland and Scotland respectively. The Municipal Technical College at Belfast is a beautiful building and a model of well considered suitability for instruction in the principles that underlie the

various trades, crafts, and occupations followed in that great shipbuilding and textile centre. The organization of instruction for the rural population in Ireland provides for all classes and all localities. Leaders are trained at the Royal Albert Agricultural College near Dublin. Farm schools with a one year's course for practical farming are provided at different centres, and a travelling pastoral instructor, who visits anywhere from four to twelve farms and farmers per day, spends his whole time in a small area settled anew by small holders under the Congested Districts Boards. We found such a man in charge of some two hundred and fifty "colonists," each having about twenty-five acres of land that had formerly been a large grazing estate. I was there three years after the first allocation. Many of the "colonists" had put half of their area under tillage, and were growing fine crops of oats, barley, potatoes, and other roots. A new spirit of confidence and hopefulness seemed to be replacing the old attitude of resentment at conditions in the beautiful, lovable, distressful island.

SCOTLAND.

From Scotland there is so much to learn that one is embarrassed in seeking for only a few examples that may be presented in a few words. Edinburgh and Glasgow, with the present provision for industrial training and technical education, have no reason to be ashamed of their effort in the presence of the best that is being done in Munich, Dresden, or other German cities. They were probably twenty years later in getting started, but have made up more than five years of the leeway during the last eight years of energetic work. In the smaller towns of Scotland provision is made for technical education in a manner full of instruction for Canada. Particular instances are Dunfermline, Galashiels, and Hawick. The latter has long been a garden city before that newer name had been used to designate a movement for the more sanitary and beautiful housing of the workers. Among all the places which I visited, I think it stands easily first as a textile industrial centre for the housing of its workers, well kept appearance of its streets, and the everywhere abundant flower gardens, with throngs of children playing on the grass.

HOME TO CANADA.

As I have already indicated, an outstanding feature of recent activity in Europe is the attention given to vocational education, the provision made for industrial training and technical education, and the response which the effort of the leaders and the enactments by the governments is receiving from the young people themselves, from their parents, and from employers. The last ten years have seen more done in that direction in Great Britain than the previous fifty. Canada will have to do much in the near future, and do it with reasonable energy and speed to keep from being left still further behind.

One comes back to Canada not only without any abatement of affection and admiration for her people and her institutions, but with renewed appreciation of the fine outlook here for all who are able and willing to work honestly and with goodwill. Our systems of education have raised the general intelligence of the people to a level which compares favourably with that of other countries. That determines the kind and extent of industrial training and technical education which can be acquired. The present situation not only calls for a great forward movement, but it contains in the population and existing institutions all the elements which are necessary for making that immediately practicable and fruitful of satisfactory results.

INDUSTRIAL EDUCATION: AN AMERICAN VIEW.

By DOX E. MOWRY, Madison, Wis.

[From *Education* (Boston).]

To those of us who have given the subject of industrial education serious thought it is clear in our minds that one of the most potent factors in causing unemployment is the lack of educational facilities, industrial as well as academic. Theodore Roosevelt in his visit to Milwaukee last September [1910], ex-

pressed himself as highly pleased with the showing which Milwaukee is making with her trade schools for girls and boys. This is just the beginning, he said, of a movement that is bound to make for a better citizenship. Milwaukee is one of the first cities of the United States to maintain at public expense schools for industrial education.

Modern industrial conditions seem to have little or no tendency to produce intelligent workmen. Workmen are no longer receiving that thorough training formerly obtained under the now extinct system of apprenticeship. The all-important consideration seems to be: How can the greatest amount of money be earned from the very beginning of one's career? For this reason, the young men are apt to consider the present, relying upon the future for future needs. Even among the so-called better classes there is, generally speaking, no desire to perfect oneself in industrial pursuits. Opportunities that are offered for industrial training are under private control, for the most part, in the United States. The State has taken no important steps to provide for such education. The sphere of the State has been too narrow—it has confined itself to the academic field entirely.

This may be due to the fact that the working men have been contemplated as producers—placed upon the level with the perfected machine. A broader education has not been deemed an essential element in our industrial prosperity.* The traditional balance between learning and labour has been completely usurped by learning. Factories, and the rapid change which has been wrought in the industrial field, have changed our life. These conditions seem to have failed to attract the attention of our educators. Slight efforts have been made to repair the gap between the lost home training and the business world. True it is that several Universities, through their correspondence departments, are now making rapid strides in the right direction. Factories are being induced to allow the workmen to receive technical education during the regular work day. Many private courses are given in industrial branches by correspondence schools. Nevertheless, the present system, if it can be called a system, is not complete or thorough.

Those who really fear that industrial instruction will lead us to a misconception of the advantages of the division of labour, appear to live in the exercise of a very artless and simple faith in the power of society to set aside at pleasure the laws of economic development. While man has made some progress in the control of Nature's laws, he has hardly made a beginning in the control of economic laws, whose governing power is in proportion to their immovability. So much more unfounded is the fear of a misconception of the utility of the division of labour as one of the most efficacious of economic laws. Division of labour is not now an hypothetical expression; it is a power which, like a power of Nature, gains recognition. The division of labour has swept away feudalism and called civil society into life. It is a power which will bring civil society in its turn to the grave and will create a new society based upon organized manufacturing principles.

"Would it not be a meritorious work to instruct our youth in the construction of whole articles, and thus overcome the stupefying influences of the division of labour, whose advantages our present civilization cannot and will not dispense with? Does not wisdom, as well as duty, command us to give those thousands who may be condemned to spend their lives in the tread-mill course on a simple, or, perhaps, upon a single spiritless operation, an insight into the attractive, satisfying, and educative side of labour?" †

The lack of skill among the wage earners is largely caused by the fact that skill has, apparently, no permanent value, no dignity, no appreciable approbation. The skill acquired after years of work may be rendered useless as a means of earning a living by the introduction of machinery. The mind and the muscles of the workman have been trained in one given direction, and this training renders him less fit for the operation of the machine—and for any other occupation.

The plain men, labour reformers, who study the industrial situation and its evolutionary processes, foresaw that adaptability and availability were worth more than skilled ability. They were among the very first to advocate and demand schools of technology. Schools, then, were to be placed in resistance to the demoralizing influence of the rapidly decaying industrial and social system. Schools were to be made an aid in the direction of enlightened citizenship.

The educational opposition to industrial education is based upon the purely technical character of such education. Nevertheless, industrial education is not opposed to general education. It is a means of securing better general education. If the United States were as well supplied with industrial schools as some parts of Germany, and if they were as well attended, there would be in the United States more young people of high-school age under industrial instruction than there are now under academic instruction. Boston, for example, would have more than four thousand instead of about nine hundred students in her Mechanics Arts High School and in the Free Evening Industrial Drawing schools.*

It is partially true that present experiments in industrial education have been essentially economic in their nature and limited to very narrow grooves in which education has played but an insignificant part. But a second and much higher form of industrial education is being advocated at the present time by those who seek for the aim of this education (1) perfectibility in manual skill, (2) a wider range of intelligence for the working man, and (3) a better citizenship. With these ideas as a working basis, there can be little question but that industrial education will assume a higher sphere of activity. We are lacking, under our present educational system, that general industrial education which should lead up to our present incomplete system of technical education. Upon such a framework depends, in an important measure, our advancement. The more strictly industrial schools of to-day are managed by private institutions. They are not cosmopolitan even in character, although they are run upon a basis which is far more practical than the German system. It is quite necessary for us to get away from the strictly pedagogical lines of endeavour and adopt a State policy that will embrace academic and industrial training jointly. The elements of industrial training, agriculture, domestic and mechanical sciences should be taught in the public schools. In addition to this elementary teaching, distinctive industrial schools, housed in separate buildings, should be established.

This is all the more necessary when we consider that the majority of children in the United States remain in our public schools only five years. ‡ It is evident that skill, requisite for competent industrial employment, cannot be acquired during these years of youthful development. The employers, with but few exceptions, provide no system of technical education. The "system of apprenticeship" is a misnomer. The "helper" must help himself. The older employes are jealous of the newcomer, and consequently place barriers in his way, or lend him as little aid as possible. In various trades different lengths of time are said to be required to "learn the trade," but in nearly all cases the particular trade could be learned in half of the time if the proper means of enlightenment were provided. Education should overcome the barriers of secrecy and seclusion. Without this industrial education a greater and greater number of men will be found without skill; and a larger number of men will grow old in a particular trade without ambition and without security. Young men are seeking employment in the warehouses and in the offices. They do not seek work in productive industry. This may be due to the fact that no public supervision is provided for even a partial education in the industrial arts and sciences. † The sharper competition which

* J. Millar, "Technical Education," page 5.

† The Report of the Commission to investigate industrial and technical education in Mass. shows that 33 per cent. of all children of that state who begin work between the ages, 14-16, are employed in unskilled industries, and 65 per cent. in low grade industries (page 31).

‡ W. Smith, before the House and Senate of Pennsylvania, February 15, 1877, page 31.

* The Report of the Commission on Industrial and Technical Education (Mass.) gives the foreign status of industrial education.

† R. Seidel, "Industrial Instruction," page 39.

we must inevitably face demands that industrial knowledge must be provided if we are to maintain our industrial framework.

The employer who insists on employing children should be compelled to provide part-time day classes for those between the ages of fourteen and eighteen years. These youthful labourers should not be allowed to "work themselves up" without substantial advantages. And at the same time an effective check should be placed upon those employers whose only salvation seems to be in keeping men and children from learning a trade. The growing division of farm labour, and the increasing complexities resulting therefrom, require and demand better educational facilities. We have no means, outside of our State and private agricultural colleges and our incomplete country training schools, for instructing the farmer in scientific farming. Few attempts are made to give agricultural instruction in the high schools for that matter. The children of the poor, and this class includes the immigrants as well, should be the first to receive attention. To-day they are among the last to be given instruction. The best help for such as these is self-help—and this will never be possible under a system of pauperizing charity. The workman has no incentive no ambition to seek other avenues of employment. Life is a grind. Industrial education, it would seem, can provide this incentive. Hon. Carroll D. Wright said a number of years ago that there was a constant decrease in the number of labourers who seemed destined to remain at the bottom; but this decrease, with the changing conditions, seemed hardly perceptible.

Industrial education is, however, a problem of and for the community as a whole. It is in the cities, especially, that we find the illiteracy and the lack of skill in a particular trade. And it is among the immigrants that the evil is most apparent. A recent report of the Western Passenger Association shows that fully 50 per cent. of all immigrants locate in our larger cities. If the immigrants are to be allowed to come in such numbers it is quite certain that we must provide means for decreasing the number of unskilled workmen in the next generation.* The immigrant is unfit physically, financially, and in many other ways, in most instances, to take up farming.

In speaking of his visit to Milwaukee, Theodore Roosevelt said:—"As soon as I was asked by the Press Club to come to Milwaukee, I made up my mind that there was one thing I was going to see, and that was your system of trade schools. I feel that it is important, from the standpoint of our common citizenship, that each man should be able to do a little more than pull his own weight in the world. It is, of course, of literally vital consequence to have him trained so that he begins early to pull that weight effectively, instead of leaving him to be trained haphazard, so that he learns to pull his weight three or four years later, and not so well. That is what this school is doing. I feel that it is of the utmost consequence to the boy in his profession in after life. I do not have to ask about that. It is shown by the fact that I have met man after man who, although he is past the age when he gets his tuition free, comes back here to pay to learn it; because he has found out that he does not learn by himself so well as he can be taught here under the circumstances under which this school is carried on. I feel that it is of enormous importance. And I believe another thing. I believe that a by-product of your work here is good citizenship. I believe that each graduate, each man who as a boy has worked here, is more apt to turn out a good citizen; able to do his part with his fellows in the country, to make it a better place for all of us to live in."

Industrial education in the United States must be given more serious consideration by our educators if we are to produce a better citizenship; and this, together with the economic considerations, which should not be overlooked, will cause us, I am sure, to give this important educational subject more and more studied attention.

* P. F. Hall, in his "Immigration" (page 6), shows that the average of illiteracy among foreigners is about 25 per cent. The percentage of unskilled is a little higher. He predicts (page 9) that if the present average holds to the end of the present decade the number of immigrants from 1901 will be nearly eight millions, while the former decade showed less than four millions.

THE COLLEGE OF PRECEPTORS.

MEETING OF THE COUNCIL.

A MEETING of the Council was held at the College, Bloomsbury Square, on December 16. Present: Sir Philip Magnus, President, in the chair; Prof. Adamson, Dr. Armitage Smith, Mr. Bain, Mr. Barlet, Rev. J. B. Blomfield, Mr. E. A. Butler, Mr. Charles, Miss Crookshank, Miss Dawes, Mrs. Felkin, Mr. Howe, Mr. Kelland, Mr. Millar Inglis, Dr. Moody, Mr. Pendlebury, Mr. Rushbrooke, Rev. Dr. Scott, Dr. Sibly, Mr. Starbuck, and Mr. Storr.

The Secretary reported that the Christmas Certificate and Lower Forms Examinations had been held at 107 Centres in the United Kingdom and at 33 Colonial Centres. The total number of candidates was about 5,200.

The Diploma of Licentiate was granted to Mr. T. S. Barnes and Mr. W. J. J. Gosling, who had satisfied all the required conditions.

Mr. Millar Inglis, one of the representatives of the College on the Federal Council, submitted a report of the proceedings at the last meeting of the Council.

A Report from the Joint Conference of the Private Schools Association, the Teachers' Guild and the College of Preceptors was considered, and the Council unanimously adopted the following resolutions:—

(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, in order that Private Schools may fulfil their function in our Educational system, it is essential that the independence of those schools which do not desire Recognition by the Board of Education or by Local Authorities should be safeguarded."

(3) "That (i) Scholarships awarded by any Local Authorities should be open to pupils educated in Private Schools, and (ii) that, subject to the approval of the Local Authority, successful candidates from Private Schools should be allowed to hold their scholarships at Private Schools."

(4) "That the general standard of efficiency required from Private Schools should not be lower than that which is required from schools publicly aided or maintained; but that it is unreasonable to demand in every case from Private Schools the same structural advantages and equipment as are expected from schools in respect of which public funds are available to meet capital and other forms of expenditure."

It was further resolved that copies of the resolutions should be sent to the Board of Education and to Local Education Authorities.

It was resolved that in future issues of the List of Members of the College a distinguishing mark should be attached to the names of those who are receiving certain privileges in accordance with Section II, clause 5, of the By-Laws.

The following persons were elected members of the College:—

Mr. P. F. Adams, L.C.P., F.C.S., 81 Rock Avenue, Gillingham, Kent.

Miss M. Hiddleston, A.C.P., 154 Nechells Park Road, Birmingham.

Mr. E. Lucas, A.C.P., 20 Mary Road, Stechford, Birmingham.

Miss I. L. Owen, A.C.P., Leigh, Dorset.

Mr. D. Willott, B.Sc. Lond., L.C.P., Nutcombe, Cunnor Road, Sutton, Surrey.

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

By the AUTHOR.—Bevan's Wits and their Humours.

By the AGENT-GENERAL FOR NEW SOUTH WALES.—Official Yearbook of New South Wales, 1909-10.

By the CITY AND GUILDS OF LONDON INSTITUTE.—Report on the Work of the Department of Technology, 1910-11.

By A. & C. BLACK.—Bonacina's Climatic Control; Hoskyn's Pictures of British History; Kirkman's Petits Contes Populaires.

By W. B. CLIVE.—Welton and Monahan's Intermediate Logic.

By MACMILLAN & Co.—Dalton's Latin Translation for Public School Scholarships.

By RIVINGTONS.—Robinson's Story of England, Part III.

Calendar of Durham University.

Calendar of the National University of Ireland.

NATIONAL EDUCATION. THE NEED FOR REFORM.

SIR JOHN E. GORST circulated to the Press the following letter (November 26):—

Is not the present moment opportune for taking stock of our national provision for the education of the people of the United Kingdom?

We are spending millions out of the Consolidated Fund, and extracting millions out of the pockets of the rate-payers in the provinces, to be spent on what is called "education." The majority of those who care for the welfare of the people, and are experts in education, are of opinion that the greater part of this money is, under the present system, wasted, and might as well, so far as education is concerned, be thrown into the sea. Physical growth of the children of the nation is, except in the more advanced of our great cities, insufficiently provided for: children are medically inspected and their ailments and defects officially noted and recorded. The terrible condition of the children of the poor and of some of the rich has been thereby revealed in the recent official report of Sir George Newman, the Chief Medical Officer of the Board of Education. Remedial measures, however urgently needed, are not compulsory by law, and in many cities and most counties are neglected. A starved and stunted race is at the present moment being allowed to grow up as a legacy to the next generation to deal with. In most elementary schools children are only drilled, not educated. The pernicious system of "payment for results" practised by the Education Department up to 1895 still leaves the instruction given. Originality of teacher and scholar is sternly repressed. The new methods of self-education by work first and books afterwards, introduced into the schools of Bavaria and spreading all over Germany and elsewhere, is only partially known in British and Irish schools. It is generally confined to the kindergarten instruction of infants: its extension would imperil "the grant."

The higher or secondary schools and the Universities are still fettered by medieval systems, which make the acquisition of learning, to be produced at examinations, the main work of students. We do not educate our scholars and students, nor do we permit them by independent research to educate themselves; we only prepare them for examination. There are, it is true, isolated teachers, both men and women, in the elementary and secondary schools and at the Universities who have struggled to shake off the incubus of centuries of custom, and have shown by brilliant example what education really should be. They are the exceptions from whose successful experiments a better national system might be allowed, in the absence of official interference, to create itself. We have, at the present moment, a new Education Minister untrammelled by any commitments in the past; we have Local Authorities everywhere, most of whom are far more fit than any Central Department to spend wisely and effectively the money voted by Parliament and provided by rates. The time is thus ripe for a drastic revolution in the red-tape methods by which education is tied and bound, and the tyranny of the Board of Education over Local Authorities could now be relaxed or altogether removed. The spending of the national funds in real education, with restrictions only to secure honesty of administration, would provide the next generation with a body of youths and maidens fit citizens of our country.

THE FUTURE OF NÄÄS.

It was only last spring that a new director was appointed at Nääs, and now the office is again vacant. Three appointments in four years show plainly that the institution needs to be put on another footing. It may be interesting to give a brief account of the circumstances, as set forth in *Stockholms Dagblad* and *Göteborgs Handelsstidning*.

When the State in Sweden decided to accept August Abrahamson's bequest of his estate at Nääs, with a capital sum of £21,000, the first step, in accordance with the will, was to appoint a body of five trustees. Two of these were to be men connected with agriculture, and the rest men in prominent positions. Their first business was, of course, to appoint a director; but as no application

reached them which they felt able to entertain, they have been compelled to appoint *ad interim* directors, who should be responsible for the courses—in the hope, it would seem, that one or other of these would so warm to his work that they, on the one hand, would feel justified in making him permanent director, and he, on the other, would be willing to accept the post. When this hope, time after time, was disappointed, the trustees resigned in a body, that others might have an opportunity of succeeding where they had failed. But the King refused to accept the resignations, and so a deadlock arises.

It is difficult, amid the guarded language of the public announcements, to see where the shoe pinches most. Some blame the trustees; but apparently without cause, for they have taken good care of the resources of the institution; and the number of students has risen from 389 in 1907 to 427 in 1911. Others think there is a real source of difficulty in the way the will ties the hands of the trustees and the government in the appointment of a director, so that it may be necessary to seek authority to vary its provisions and make them more workable. It would seem, too, that the means of the institution are insufficient for the proper payment of a director and for providing a retiring pension, more especially as the repair and upkeep of the Castle must, by the will, be a first charge on the income of the estate.

There is therefore some prospect that, instead of appointing temporary directors in the hope that one of them will develop a personality which will fix the form of the work at Nääs in the immediate future, the trustees will call in some help from without for the consideration of the whole problem, and themselves determine on what lines the institution shall proceed in time to come, and what extra means will be necessary for the effective carrying out of their plans. The question had already occupied the attention of the late Conservative Government, in which Herr Lindström was Minister for Church and School; and he, it is understood, is, by desire of the present Government, putting himself at the disposal of the trustees.

J. S. THORNTON.

REVIEWS.

ELEMENTARY SCHOOL PROBLEMS.

Problems of the Elementary School. By Arthur C. Perry, Ph.D.
5s. net. Appleton.

It is not often that we get a book from an American headmaster of an elementary school. Dr. Perry is proud of his school, though it is known in the unemotional American way merely by a number, and, what is more, he has been able to inspire his old pupils with his own enthusiasm. His *alumni* (which appears to be American for "old boy") write as enthusiastically about "dear old 'eighty-five'" as Bernard Shaw's chauffeur speaks of Sherbrooke Road. The book is a very curious one. The first part is made up of three chapters dealing with problems of organization: the Organic Structure, the Curriculum, and Moral Training. These are treated after the usual manner of the intelligent American teacher who has not only read but travelled. He does not concern himself with English education, but in dealing with the French and German systems he makes a very illuminating observation. He points out that while the reformers in these countries are clamouring for the *Einheitsschule*—one school for all—the Americans "have the *Einheitsschule*, and are beginning to awaken to a realization of its inadequacy and imperfections." He is quite loyal to democracy, but he feels that it is wrong to have the same sort of school for everybody, inasmuch as, though there ought to be no social caste, there always will be a *natural* caste. He maintains that only 10 per cent. of those who are educated in the elementary schools pass on to the secondary, and of these ten only one passes on to the University. Yet the influence of the University presses all the way down the educational system, and causes the elementary education to have a bias that is in favour of the 10 per cent. at the expense of the ninety. In his characteristic way he demands that "the child who is scheduled for six or eight years of schooling, and then an immediate entrance into vocational life, shall be given an education that shall be his, and not the education that belongs to the child who has before him a University career and the preparation therefor." He defends his use of the word "scheduled" here. In theory the American child must be allowed to schedule himself, but Dr. Perry claims that he is working with the actual conditions. He criticizes

and improves upon Huxley's educational ladder from the gutter to the University, and works out his views by the help of two very ingenious diagrams of various ladders. The whole of this chapter will be found by the English reader to be very instructive and suggestive. The rest of Part I is more ordinary—good solid work, but not out of the common.

In Part II we suddenly find ourselves in a new atmosphere. We are taken into the author's confidence with regard to a great many of the devices—we had almost written "tips"—of the schoolroom. No practical teacher can read Chapters IV–VII without finding something worthy of his attention. In many cases the suggestions are so individual that they can be of value only to teachers of Dr. Perry's special type. But there are many of the others that are of a distinctly general character, and these, with certain modifications, may be applied in any school. This applies particularly to the sections on English and Arithmetic. The section on the Use of the Blackboard is illustrated by diagrams in colour. The severely practical teacher cannot fail to get great satisfaction from this middle part of the book.

A short chapter on the School Museum breaks the suddenness of the change into Chapter VIII, on the *Alumni*. Here we are indeed admitted into the secrets of the prison house. Dr. Perry tells us that he carefully avoided exposing his methods to his old boys, but he has no scruples in expounding them to his fellow teachers. "Eighty-five" appears to have an attendance of about a thousand, and yet every pupil who leaves it gets a personal communication from the head master once a year for four years. To these communications he gets, in most cases, enthusiastic answers, so that he keeps in touch with all his old pupils, and in this way establishes an excellent relation with them, and by means of this relation is able to exercise over his present pupils a considerable amount of influence that would not otherwise be available. It would not be quite fair to give away his plan of operations. It is worth a teacher's while to read for himself.

The last chapter supplies us with another quick change. This time we are in the midst of a very delicate subject, as will be guessed from the title: The Care of Adolescent Girls. Into this matter we cannot, of course, enter here. It is enough to say that Dr. Perry has here had the co-operation of certain experienced and very capable lady teachers, and is able to show how he won the confidence and support of the parents in his efforts to ameliorate unsatisfactory conditions. It will be gathered that the book is not a whole, but rather a group of more or less independent essays by the intrinsic merits of which the volume must stand or fall.

HISTORY OF EDUCATION.

- (1) *A History of Education during the Middle Ages and the Transition to Modern Times*. By Frank Pierrepont Graves, Ph.D., Professor of the History and Philosophy of Education in the Ohio State University. 5s. net. Macmillan.
- (2) *The Beginnings of the Teaching of Modern Subjects in England*. By Foster Watson, M.A., Professor of Education in the University College of Wales, Aberystwyth. 7s. 6d. net. Pitman.

(1) This book is divided into two parts: the history of the Middle Ages, and what is entitled "The Transition to Modern Times." The former consists of 105 pages divided into eleven chapters, and the latter of nine chapters and 223 pages. The account runs on to the eighteenth century. It will thus be seen that the book is not so much a "History of Education during the Middle Ages" as it is of the later period. The whole treatment is very general. This being understood, the work is an admirable short statement of the course of the history of education. The short account of the Middle Ages is distinctly interesting and well informed. The Middle Ages are treated as a period of assimilation and as a period of repression. Monasticism is described and its educational significance shown. Charlemagne's "Revival of Education" has a chapter devoted to it. The educational advance of King Alfred's reign is stated. The author then gives an account of Mohammedan learning and education, and turns to the educational tendencies of mysticism and scholasticism. The education afforded by feudalism and chivalry is then discussed and credit given to the educational work of the Friars. The further topics are the Medieval Universities, the development of cities and new schools. A final chapter describes the passing of the Middle Ages marked by the growth of the national spirit, the development of vernacular literature. The second part contains chapters on the following

subjects: The Renaissance and Humanistic Education, Humanistic Education in Italy, Humanistic Education of the North. Educational Influences of the Protestants, the Education of the Catholics, the Beginnings of Realistic Education, Sense Realism in Education, Educational Influences of Puritanism, Pietism and Rationalism, with a final chapter on the progress before modern times. For an introductory sketch of educational history the book has considerable merit. The author is well read and up to date. There is an excellent apparatus of authorities quoted supplied both at the foot of the page and at the end of each chapter. The author recognizes the distinction of contemporary "sources" of information and later "authorities," and gives well chosen indications of both. The marginal comments serve as direction posts, and the book is suitably finished off with a good index. It is a decidedly serviceable book.

(2) It is not easy to keep pace with the indefatigable pen of Prof. Foster Watson. In this compact and substantial volume he sets forth the essential facts and circumstances relating to the introduction of "modern" subjects into English education—the historical facts in connexion with the social forces that brought the subjects into the educational curriculum. A very interesting introductory chapter sketches the general movements leading to the inclusion of these subjects—the adaptation of the school to its environment. Then the author deals with particular subjects in separate chapters: English (1519–1655), History, Geography (to 1660), Drawing and Calligraphy, Physics and Natural History, Experimental Natural Philosophy, Mathematics, Arithmetic, Geometry, Astronomy, and Modern Languages (French, Italian, Spanish, German, and Dutch, Polyglottism). The final chapter reviews the outstanding triumph of the English language in school and general education at the end of the seventeenth century. Prof. Watson has endeavoured to fix precisely the dates and places of the earliest inclusions by reference to Statutes and Orders prescribing school curricula and to such other authorities as are available; and he gives instructive bibliographical details as to the earliest text-books in so far as they afford important indications of aims and methods. The facts are illuminated by a careful presentation of the social conditions affecting them. "The more deeply we study the interrelations," says Prof. Watson, "the more we realize that the 'school' in the sixteenth and seventeenth centuries (taking the term to include all educational institutions, public and private, preparing for the active duties of life) was not only related to the course of national life, as it always must be, explicitly or implicitly, but that in these centuries important active elements in the community eagerly sought and intelligently followed up into practical effort the educative suggestions and implications received from the most progressive national and social forces of the age." The volume is very comprehensive and instructive, and it is built upon the most industrious research. So far as we are aware, there is no other work covering the same ground.

ANALYTICAL GEOMETRY.

Elements of Analytical Geometry. By George A. Gibson, M.A., LL.D., and P. Pinkerton, M.A., D.Sc. 7s. 6d. Macmillan.

Until quite recently the author of a text-book on elementary analytical geometry usually called his work one on conic sections, and confined himself to a discussion of loci represented by first and second degree algebraic equations only. The idea is now, however, gaining ground that there is great value in adopting a broader basis of treatment than heretofore, and in writing (even for the beginner) of analytical geometry with reference to curves generally, limiting the consideration of the subject more particularly, but not always exclusively, to its application to two-dimensional space and to problems dealing with the plane only. In the present volume, Dr. Gibson and Dr. Pinkerton refrain entirely from the introduction of solid geometry, but give an excellent elementary treatment of the principles of analysis in its relation to the geometry of the plane. Their work is marked, also, to a greater extent than the general text-book by the combination of pure with analytical geometry, and we believe that the authors are right in refusing to draw so sharp a distinction as to consign to separate treatises propositions which on the one hand are best treated by pure geometry, and those which on the other can be more satisfactorily discussed by means of analysis. The work divides itself naturally into three main sections. The first of these embraces Chapters I to IX, and, as we are told in the interesting preface, the aim of this portion is, principally, to make the reader thoroughly familiar

with first principles, and with the formulæ required at every stage in the discussion of the subject as a whole. Among them, for example, are "Section, Distance, and Gradient Formulæ." In these chapters the straight line, the circle, the principles of harmonic section, and the properties of coaxial circles, are all viewed from the standpoint of analysis; but they are studied more on account of their value as simple means of illustrating general principles than with regard to the intrinsic worth of the sum total of the geometrical results obtained. They serve more especially to reveal to the reader the geometrical background which is ever present, even while analysis forms the leading subject of the mental picture. The last chapter of this section of the work carries the student forward on the road of geometrical research by introducing him to the study of the conchoid, the cissoid, and the witch, for by the aid of one or other of these curves famous problems in geometry—the trisection of the angle and the duplication of the cube—become possible, whereas the straight line and circle methods of purely Euclidean geometry failed entirely to solve them.

Up to this point the reader has been occupied with the general problem: Given a geometrical locus, to discuss it analytically. The second main division of the treatise is devoted to the converse problem, and embraces Chapters X to XVII. Here the student learns to consider the geometrical forms of loci represented by algebraical equations, more than usual prominence being, perhaps, accorded to the method of successive approximations. The writers, throughout the whole course of instruction, make great use of what they, following the lead of Prof. Chrystal, call the "freedom equations" to any curve, in contradistinction to the ordinary or "constraint equation" to the locus. For the benefit of any to whom the nomenclature may be unfamiliar, it may be stated that the former term is aptly applied to the set of equations by means of which the co-ordinates of any point on a locus are severally expressed as functions of a single parameter, whilst the latter denotes the equation in which the co-ordinates occur respectively as independent and dependent variables.

Chapter XVIII and the following six chapters constitute the third leading division of the work, and are devoted to the discussion of the various conic sections, free use being made of the methods of what we usually term geometrical conics, as well as of those of analytical conics. In the present book a brief explanation of polar co-ordinates is given, but the system is little employed here by the writers. Very many examples are fully worked to illustrate the principles discussed, and many more problems in the form of exercises naturally find room in the volume, and give opportunities for independent solutions by the individual student. The new text-book puts forward a thoroughly justifiable claim for a worthy place amongst standard manuals on the subject.

GENERAL NOTICES.

LATIN.

Selection from the Latin Literature of the Early Empire. Edited by A. C. B. Brown, M.A., Fereday Fellow of St. John's College, Oxford, Assistant Master at Marlborough College. Part A, Inner Life; Part B, Outer Life. 2s. 6d. each part; complete, 4s. 6d. Clarendon Press.

Though this volume is primarily designed to serve as a handbook for the Oxford Local Examinations, it ought to find a very much wider acceptance. Part A illustrates the Inner Life of the Romans of the Early Empire by passages presenting various phases of politics, education, literature, and philosophy; while Part B similarly illustrates the Outer Life—social types, social incidents, town and country. The scope of the notes is expressly limited to explanation of the subject-matter. There are two maps—Central and Southern Italy, and Rome under the Early Empire. The book adds somewhat to the variety of School readings in Latin, and, as the passages are grouped according to subjects, it presents a tolerably coherent picture of important aspects of Roman life. A good idea most carefully and capably realized.

Bell's Simplified Latin Classics.—(1) *Caesar's Invasions of Britain*; (2) *Livy's Kings of Rome*; (3) *Simple Selections from Cicero's Letters*; (4) *Caesar's Fifth Campaign* (from "De Bello Gallico," Book V). Edited by S. E. Winbolt, M.A., Assistant Master at Christ's Hospital, Horsham. 1s. 6d. each. Bell.

These are the first four volumes of a new series intended for use in a pupil's second, or possibly third, year of Latin, and designed in accordance with the published opinion of the Classical Association's Curriculum Committee. The idea is "to present an interesting portion of a Latin

author, selected, shortened, and simplified, both in vocabulary and construction, so as to be within the pupil's powers; to secure the interest which must belong to a continuous narrative; and also to retain just enough genuine effort." The texts appear to satisfy the conditions; and, if Mr. Winbolt rather leans to the side of simplicity, he will probably take his pupils along the more easily and rapidly. The text is followed by exercises, index of proper names, and vocabulary; and there are numerous useful illustrations. The volumes are well printed and nicely got up. The series will no doubt be highly popular.

An Elementary Latin Exercise Book. By H. G. Ford, M.A., formerly Scholar of Wadham College, Oxford, and L. V. Caudwell, M.A., Assistant Masters in Bristol Grammar School. 2s. 6d. Methuen.

Though primarily intended to accompany Mr. Ford's "School Latin Grammar," the present work may be readily used with "any reasonably accurate grammar." It provides a two years' course for boys of average ability, being divided into six parts, each representing a term's work, and each containing twelve Explanations and Vocabularies, with corresponding Exercises. It has been very thoughtfully constructed, and cannot but be valuable, though a good deal of the explanations should be anticipated in the English class. Vocabularies to the exercises and general English-Latin and Latin-English vocabularies are appended.

Aditus Faciliores, an easy Latin constraining book (with vocabulary), by the late A. W. Potts, M.A., LL.D., Head Master of the Fettes College, Edinburgh, and sometime Fellow of St. John's College, Cambridge, and the Rev. C. Darnell, M.A., late Head Master of Cargiffield Preparatory School, Edinburgh, and Scholar of Pembroke and Downing Colleges, Cambridge, will be welcomed in its twelfth edition (1s. 6d. net, Blackwood). The little book thoroughly deserves its success.

MATHEMATICS.

The Trisection of the Angle by Plane Geometry. By James Whiteford, B.A., M.D. Edin. Greenock: McKelvie. Edinburgh and Glasgow: Menzies. Cambridge: Bowes & Bowes.

In the present work we meet once again with a serious attempt to solve one of those celebrated problems that in times gone by engrossed the thoughts of so many learned mathematicians. To-day, as we know, the expert in mathematics is satisfied that it has been abundantly shown that to trisect the *general angle* by Euclid's methods alone is an impossibility. Dr. Whiteford, as a preface to his present investigation, quotes the published opinions of De Morgan on the subject, and cites the conditions which that eminent mathematician laid down as necessary to be fulfilled rigorously by any one claiming to have surmounted the difficulties which *refuse to be surmounted*. Dr. Whiteford's work is very ingenious, his Lemmas being, moreover, simple and incontrovertible. When, however, the main Problem is reached, it is borne in on the reader that (assuming their validity) the results obtained must in effect be regarded as approximations only. Close approximations they may be, still they are not really more; nay, the very logarithms on which the author relies as tests of his accuracy are known to be true to an assigned number of decimal places only. We remain, therefore, where we were as regards the rigorous solution of the original problem, but all will acknowledge the energy and enthusiasm in research displayed by the writer. The manner in which the present volume has been brought out gives evidence of great care in every respect.

A Text-Book of Integral Calculus. By Ganesh Prasad, B.A. Cantab., D.Sc. (Allahabad). 5s. net. Longmans.

A natural sequel to the earlier work on the Differential Calculus written by the same author. The volume follows the lines of study laid down for students reading for Part I of the Cambridge Mathematical Tripos, and is, moreover, suitable for candidates for the degrees of the Indian Universities. The course of instruction is based on the writer's experience in teaching the subject; hence it is the more likely, by anticipating the difficulties of the beginner, to prove of value to him in his study. The theory of the Calculus is constantly illustrated by means of worked examples; also numerous exercises, some original, others culled both from earlier text-books and from question-papers set at various University examinations afford a quantity of valuable material for purposes of individual practice. The answers are given. It is perhaps as well to draw attention to the author's novel use of the term "General Integral," and to suggest that, since the name has already been employed in a different and generally accepted sense in connexion with the subject of Differential Equations, there is a disadvantage in making it synonymous in the present volume with the standard expression "Indefinite Integral."

In the series of "Special Reports on Educational Subjects," the Board of Education has issued some further papers on the Teaching of Mathematics in the United Kingdom prepared for the International Commission on the Teaching of Mathematics. In our October issue (1911) we mentioned the first eight papers of the series. Now we have No. 9, *The Organization of the Teaching of Mathematics in Public Secondary Schools for Girls*, by Louisa Story, Head Mistress of the Royal School, Bath (1½d.); No. 10, *Examinations from the School Point of View* (with a large appendix of recent examination papers), by Cecil Hawkins, late Senior Mathematical Master at Haikybury College (9d.); and No. 11, *The Teaching of Mathematics to Young Children*, by Irene Stephens, Lecturer in Mathematics at the House of Education, Ambleside (1½d.). WYN 21.

SCIENCE.

Inorganic Chemistry for Schools. By W. M. Hooton, M.Sc., M.A., F.I.C., Chief Chemistry Master at Repton School. 3s. 6d. Edward Arnold.

"It is demanded of a school course in chemistry," says Mr. Hooton, "that it shall train the reason, refine the perceptions, stimulate curiosity and imagination, impart useful knowledge, lend itself to the strengthening of class discipline, and ensure the pupil's success in examination." Towards these comprehensive ends he offers here the substance of a dozen years' experience in teaching the subject. "The text is based on experiments performed by the pupils under direction, and is amplified by illustrative references to phenomena of daily life and to common industrial processes." The exposition is lucid, and each chapter is summarized at the end and followed by a series of testing questions, the answers to numerical questions being appended. There are 87 figures. The book covers the ground of the London Matriculation, the Northern Universities Matriculation, and the Army Entrance Examinations. It contains a couple of years' solid work. A thoroughly capable and most useful work.

Analytical Mechanics, comprising the Kinetics and Statics of Solids and Fluids. By Edwin H. Barton, D.Sc. Lond., F.R.S.E., A.M.I.E.E., F.Ph.S.L., Professor of Experimental Physics, University College, Nottingham. 10s. 6d. net. Longmans.

Prof. Barton assumes that students of this work on theoretical mechanics will possess, or will be concurrently acquiring, an elementary knowledge of the calculus, and he assists those that already have more or less acquaintance with the subject by briefly outlining the elementary parts "to serve as a revision or reference" as well as for logical completeness. After a preliminary survey of the scope of mechanics and a collection of mathematical formulæ required for the solution of mechanical problems, he deals systematically with Kinematics (including mechanisms and strains), Kinetics, Statics, Hydromechanics, and Elasticity. The exposition is able and lucid, and sets of examples are liberally provided, a large number of additional problems of a harder and more varied character being appended. The author has not written with an eye to any particular examination syllabus, but the work will meet the needs of University students generally, and of candidates in the third and honours stages of the Board of Education. There are 241 figures.

The Stars from Year to Year, with Charts for every month, by H. Perian Hawkins, appears in a fifth edition (1s. net.) The introductory matter will give useful guidance, and the charts are very clearly printed.—*The Star Sheet Almanac* for 1912 (6d. net), by the same author, gives charts of the four seasons and fine illustrations of the North American Nebula and of the total eclipse of the sun.—*The Star Calendar* for 1912, also by the same author, is a new design in the form of a planisphere, containing the constellations of the Northern Hemisphere on a revolving chart, with dates and hours of observation (1s. net). All these works will be very helpful to the young student or amateur. They are published by Messrs. Simpkin, Marshall, & Co.

ENGLISH LITERATURE.

The Kingis Quair, and the Quare of Jehusip. Edited by Alexander Lawson, M.A. St. Andr., Hon. D.D. Edin., Berry Professor of English Literature in the University of St. Andrews. A. & C. Black.

Prof. Lawson has two aims: (1) to give the texts of the several poems as the manuscripts present them and as criticism would amend them, and (2) to assign them their place in the development of English and Scottish poetry. The MS. text and the amended text of the "Kingis Quair" are placed on opposite pages; and specimens of the MSS. of both poems are beautifully reproduced. The introduction is ample and careful. It opens with a detailed life of King James I of Scotland, discusses the authenticity of the "Kingis Quair," explores its affinities with earlier and later Scots poetry, and examines the texts and the language of the poems. The authenticity of the "Kingis Quair" has been vigorously canvassed since Mr. J. T. Brown's pronouncement against the royal authorship; and Prof. Lawson concludes that "the verdict must be given, hesitatingly perhaps, yet given against tradition." The notes are very serviceable. There is a slight appendix on historical and paleographical points; and a glossary. The volume is a work of substantial scholarship.

The Classic Myths in English Literature and in Art. By Charles Mills Gayley, Litt. D., LL.D., Professor of the English Language and Literature in the University of California. Second edition, revised and enlarged. 6s. 6d. Ginn.

The term "Classic" is not confined to Greece and Rome, but is to be taken as "synonymous with Classical or as antithetical to Romantic." Thus, the myths of the Norse gods and of Norse and Old German heroes are included, though the myths of Greece and Rome fill much the larger space. Part I treats very fully of "Myths of Divinities and Heroes" in 29 chapters; Part II deals with the "History of Myth"—origin and elements, distribution and preservation. Prof. Gayley ransacks English literature and art for illustrations. A considerable "commentary" is appended, explaining ordinary textual difficulties, interpreting the myths, indicating additional poems that illustrate the myths, and drawing attention to illustrative masterpieces of ancient and modern sculpture and painting. There are 17 full-page illustrations

and maps, and 189 other illustrations. The treatment is comprehensive and capable, and the revision has been thoroughgoing. The indexes are usefully full. An extremely interesting volume.

"Pocket Series of English Classics."—*Lorna Doone. A Romance of Exmoor.* By Richard Doddridge Blackmore. Edited by Albert L. Barbour, Superintendent of Schools, Natick, Mass. 1s. net Macmillan.

"'Lorna Doone,' to a Devonshire man, is as good as clotted cream—almost!" And to people of other shires no less. Mr. Barbour's introduction is biographical and literary; and he adds a few explanatory notes at the end of the volume. The type is small, but quite clear. "The Water Slide" stands as frontispiece, but it is not the water slide of the text. We should gladly give all Mr. Barbour's description for a plan of the locality. Though there are some 660 pages, the book is handy for the pocket.

ART.

The Practice of Oil Painting, and of Drawing as associated with it.

By Solomon J. Solomon, R.A. 6s. net. Seeley.

"The whole object of this volume is to combat the careless craftsmanship which is too common and is detrimental to the work of any painter, however gifted." It is addressed primarily to art students, of course; but it is very well worth the careful attention of art teachers, and of amateurs and picture lovers as well. Mr. Solomon begins with "a method of drawing which is not, I believe, usually taught, but which my own students have found useful as an additional aid to the knowledge they have already acquired." He takes much pains in expounding the construction of the human figure, and devotes several chapters to a study of tone values. The student may now use his palette. The second part of the volume examines the methods of the great masters of painting, typical examples of their works being reproduced. Altogether there are eighty illustrations. The treatment is thoroughly practical, and the points are put with direct force and in lucid expression. A work of signal excellence.

A Catalogue of an Exhibition of Old Masters in aid of the National Art Collections Fund: Grafton Galleries, 1911. Edited by Roger E. Fry and Maurice W. Brockwell. 21s. net. Philip Lee Warner.

A most handsome volume, furnished forth with artistic ability and care worthy of the subject. The list of pictures impresses the importance of the Exhibition, the generosity of the lenders, and the enterprise of the Committee. The descriptions are fully informative—they include the known history of the several pictures, an explanation of the subjects, and often critical comments from standard authorities or else references thereto. Eighty-one of the most famous or most representative works are reproduced in full-page plates with pronounced success. The volume is valuable quite apart from the Exhibition.

Photograms of the Year is a considerable volume of typical photographic pictures reproduced and criticized, under the editorship of H. Snowden Ward, F.R.P.S. (2s. 6d. net, Routledge; and Dawbarn & Ward). This is the seventh year of publication. The numerous pictures are admirably reproduced and the criticisms are well informed and suggestive.

The Nation and its Art Treasures, by Robert C. Witt, M.A., F.S.A. (1s. net, Heinemann), discusses briefly the more important questions relating to the conservation and administration of the various national collections of art. The argument is well informed, temperate, and opportune.

Mr. Franz Hanfstaengl (16 Pall Mall East, S.W.) publishes an animated picture, 18 $\frac{3}{4}$ by 26 in., representing Joan of Arc attacking the English on the bridge of Orleans. The artist, Alice B. Giles, has made the most of the space, and taken much pains with the armour and weapons. The colouring is strong and effective. The picture is No. 11 of the interesting series of "The Scholar's Cartoons." A descriptive leaflet (2d.) has been prepared by the artist. The price of the cartoon is 3s. unframed.

EDUCATION.

How to tell Stories to Children, and Some Stories to Tell. By Sarah Cone Bryant. Third impression. 2s. 6d. Harrap.

The author gives, for the most part, such stories as she has found to be best liked by the children she has experimented on, reproducing them in the actual form she employed; and her statements of theory as to method she confines to the outcome of her own experience. It is by no means easy to tell a story effectively; and there are probably very few storytellers that would not derive useful suggestions from Miss Bryant's remarks on the purpose of story-telling, the selection and adaptation of stories, the way to tell stories, and the specific uses of story-telling in the classroom. Some very good examples are furnished, and the lists of references will be helpful. "Story-telling has a real mission to perform in setting free the natural creative expression of children, and in vitalizing the general atmosphere of the school."

Messrs. Harrap also publish *Stories to tell to Children*, by the same author (2s. 6d. net). It is a collection of fifty-four stories, preceded by some suggestions for the storyteller and by some notes on storytelling in teaching English. The selection is very good, and the stories are simply and pointedly told.

In our October issue we noticed the first volume of *Historical and Other Papers and Documents illustrative of the Educational System of Ontario*, by

(Continued on page 34.)

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HAZELL'S ANNUAL.

Hazell's Annual is not merely "a record of the men and movements of the time," it reaches backward and forward. The great events of the year at home and abroad are chronicled succinctly, from the progress of Aerial Navigation to the administration of Zulu. The provisions of the Anglo-Russian Convention relating to Persia is given, and the events leading up to the crisis are detailed. So with the Morocco complication, which is illustrated with a good map showing the territorial relations in the region of the Congo. The Parliament Act is reproduced; the Insurance Bill is summarized, and compared with the German scheme; and materials are furnished in elucidation of the subjects of Home Rule, Welsh Disestablishment, and Electoral Reform, in anticipation of next session of Parliament. All phases of social and religious progress are noted; and music, art, sport, the drama, &c., are duly reported on. Space has been found for a review of the books of the year, and for a diary of events—new features. Indeed, the course of events has led to the introduction of an exceptionally large number of new articles. The index has again been enlarged, and now contains some seven thousand references. Considering the extraordinary variety and complication of facts and incidents, and the necessity of condensation, the marvel is that the book is so efficiently kept up to date. It is, of course, indispensable.

MISCELLANEOUS.

Parts I to V of *London Stories*, edited by John o' London, have been issued by Messrs. Jack, of Edinburgh (6d. net). Part I is occupied with "The Pageant of London"—old street cries, singular stories of celebrated personages, popular songs, anecdotes, &c.—and, besides numerous interesting and curious illustrations, is accompanied by a reproduction of the magnificent "Pageant of London Characters" (over three feet long), drawn by Mr. George Morrow, of *Punch*. The work will be completed in about twenty parts. "It is a collection of the most interesting stories of the lives, habits, adventures, triumphs, characters, follies, and eccentricities of real London men and women in many ages." It promises to be a book of extraordinarily varied and curious interest.

NEW YEAR BOOKS.

Oiné; or, the Aureole and the Wondrous Gem. By Nean. (3s. 6d. net, Dent).—Nean is "a young Poet Bard of the Lartoriski Clan." *Oiné* is a "child of Faerie," "the Spirit of Truth, Wonder, and Joy": a founding, whose name "was written in a curious way on a necklace which was round her throat." The play (in four acts) opens on Christmas Eve, 1927, and *Oiné* makes her appearance at different ages up to fifteen. Cinthus, Lord Angus of Lir's nephew, plays Prince Charming in a way, though he does not figure in the formal table of "characters." The play is steeped in Celtic mysticism.

The Princess and Carder, one of Dr. George Macdonald's delightful books for young people, is issued in a fine new edition by Messrs. Blackie (3s. 6d. net). The type is large and generously spaced; there are twelve full-page illustrations in colour and twenty-nine text illustrations in black and white by Helen Stratton; and the get-up is attractive.

Rebecca of Sunnybrook Farm, by Kate Douglas Wiggin, is an agreeable addition to "Gay's Shilling Library" (1s., Gay & Hancock). The story has run through a dozen editions in the past eight years, and this is the popular edition. There are no illustrations.

A Cathedral Courtship, another piquant little story by Kate Douglas Wiggin, with half-a-dozen illustrations by Charles E. Brock, is also nicely furnished forth by Messrs. Gay & Hancock (1s. net).

Hilda Cowham's Blackleys and Others (3s. 6d. net, Kegan Paul, Trench, Trübner, & Co.) is an amusing picture book for children, with some verses to the earlier pictures. The drawings are quaint and clever, and they are admirably reproduced.

I Wonder is a slim volume of eight "Essays for the Young People," by the writer of "Confessio Medici" (3s. 6d. net, Macmillan). There is the Way of Wonder to begin with, and the Use of Wonder to end with, and the Wonder of Matter, of Nature, of Self, of Pain, of Death, and of Beauty in between. The essays are thoughtful and simply written, but the young people that are to benefit by them will have to be a good few years old, unless there be some older friend at hand to supply a running commentary of explanation and expansion.

The Danube with Pen and Pencil, by Captain B. Granville Baker (15s., Allen), describes in simple and agreeable style the course of the great river, with the principal historical and legendary incidents that cluster about its towns and castles. The author is enthusiastic over his subject, and with very good reason. At points he does not scruple to challenge the Rhine. On the northward sweep of the Danube from Melk, for example, the country is "lovelier far than the scenery of the much-vaunted Rhine." The ninety-nine illustrations, many of them full page and coloured, give effective representations of most interesting and picturesque scenes. A very charming and pleasantly descriptive volume.

The Italian Fairy Book, by Anne Macdonell (6s., Fisher Unwin),

contains thirty-seven stories selected from the vast mass of Italian folk and fairy tales—not as illustrations of folk-lore, but simply for the delight of children. The selection is, indeed, fairly representative, though the governing purpose of the author is mere entertainment. The tales are not translated, but adapted and retold for English children. The subjects are widely varied, and there is abundant scope for the lightness, gaiety, humour, and dramatic intensity of the Southern folk. There are a hundred spirited illustrations by Morris Meredith Williams, to say nothing of the countless initial letters in varying moods of fantasy. A delightful book for young folk, and not without interest for elders.

The Baron's Heir, by Alice Wilson Fox (6s., Macmillan), is "a sixteenth-century romance for young people" based upon episodes in the life of Sir Thomas More, his family, and friends. The scenes are laid at the Manor House of Gobions in Hertfordshire (where Sir Thomas spent a good deal of his time and is said to have written the "Utopia"), London, and Greenwich. The writer has diligently searched out the historical facts and woven an extremely interesting story, her care being intensified by the lineal descent of her mother from Margaret Roper. A charming volume, with eight illustrations designed by Joyce Burges.

The Rajpoot's Rings, by F. A. Knight (5s., Dent), has for sub-title "The Fate of the MacCarthys," and, as "to be the sport of impulse had ever been the bane of the MacCarthys," it is easy to see that the characteristic would have ample scope in the time of the Indian Mutiny. But there happen elsewhere a great many things that link themselves more or less to things that happened in the Mutiny, and, of course, there is involved a love story. What the Rajpoot's rings had to do with the case we may not disclose. The story is full of adventure and developed with imaginative vigour. Six coloured illustrations by C. Fleming Williams.

The Roll of Honour, by Arthur T. Quiller-Couch (6s. net, Nelson), is "a new book of golden deeds." Upon the roll are inscribed nine names, all "eminent for that self-devotion which is the pure gold of heroism"—self-devotion continuous and sustained, deliberate and conscious of its purpose, its object an idea, and not a person or a group of persons, its result eminent or at least important. The names are: Bolivar, John Brown, Lincoln, Garibaldi, Livingstone, Florence Nightingale, Pasteur, Gordon, Damien. The biographies are full and sympathetic and beautifully written. The get-up is handsome, and there are nine illustrations. A splendid book for young folk.

Aesop's Fables—a new version, chiefly from the original sources, by Thomas James, M.A., late Canon of Peterborough—reappears in "Murray's Shilling Library," with more than a hundred illustrations designed by Tenniel and Wolf. It will form a welcome gift-book to many children.

FRENCH BOOKS.

Mon Journal (10 f., Hachette) contains the usual abundance of excellent stories, articles, and other interesting matters suitable for children between eight and twelve. It is profusely and effectively illustrated. English children that have made a beginning in French will find it extremely useful for supplementary reading, to say nothing of its variety of interest.

Messrs. Hachette issue in their "Nouvelle Collection pour la Jeunesse," *Voyages et Aventures du Capitaine Marius Cougourdan*, by Eugène Mouton (Mérimos), with sixty-six woodcuts by Edouard Zier (1 f. 50 c.). "De tous les marins illustres que Marseille a lancé sur les mers Cougourdan fut à coup sûr le plus prodigieux." The adventures are sufficiently marvellous, and they are related with great spirit.

DIARIES.

Messrs. Charles Letts & Co. (3 Royal Exchange) offer a vast variety of diaries for 1912. Examples are: No. 1, Self-opening Pocket Diary, a page a day, leatherette, yellow edges, 1s. 6d. net; No. 13p, Self-opening Pocket Diary and Note-book, a week a page, with blank page ruled for cash opposite, in art leather cloth, with back loop and pencil, 9d. net; "Sixpenny Tuck," a week a page, 6d. net; No. 21, Self-opening Pocket Diary, a page a day, leather, gilt edges, 2s. 6d. net; No. 24, Pocket Diary and Note-book, a page a day, leather, gilt edges, 1s. net; No. 64b, Popular Shilling Diary (Office Scribbling Diary and Note-book), three days a page, a week in each opening, interleaved blotting, stiff boards, cloth back, 1s. net; No. 30r, Self-opening Peerless Pocket Diary, week in opening, right hand page blank, ruled for cash, tuck, 1s. net; No. 84b, Improved Diary (Small Octavo Diary and Note-book), interleaved blotting, cloth back, 1s. net; No. 91, Popular One-Day Diary (Office Scribbling Diary and Memorandum Book), a page a day, stiff boards, cloth back, 1s. 6d. net; No. 103, Improved Sixpenny Scribbling Diary and Memorandum Book, a week a page, interleaved blotting, stiff boards, cloth back, 6d. net; No. 273b, Popular Desk Diary (Office Scribbling Diary and Note-book), three days a page, interleaved blotting, stiff boards, leather-cloth back, 1s. 6d. net; No. 384b, Small Octavo Diary and Note-book, three days a page, interleaved blotting, cloth, gilt lettered, 1s. 6d. net; No. 600r, Peerless Self-opening Pocket Diary, a week to an opening, padded roan, gilt edges, back loop, pencil, 2s. net. Then there is the "R.H.S." Gardeners' Pocket Diary and Note-book, week in opening, morocco sheep leather, back loop, pencil, 2s. net, with much information for gardeners, amateur and professional, edited by the Rev. W. Wilks, M.A., Vicar of Shirley. Finally, the Schoolboy's Pocket

(Continued on page 36.)

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Board of Education.—(1) How to become a Teacher in a Public Elementary School. 4d. (2) Syllabuses of Science and Technology for 1911-12 applicable to Technical Schools and Classes for Further Education in England and Wales (Revised Syllabuses for the General Science Examinations in 1912). 3d. Wyman.

Cambridge Higher Local Examination: Forty-third Annual Report of the Syndicate. 6d. Cambridge University Press.

City and Guilds of London Institute. Report on the work of the Department of Technology, Session 1910-11. Murray.

[With the examination papers of 1911.]

Education and Preventive Medicine. By Norman Edward Ditman, Ph.D., M.D. 1s. 6d. net. Columbia University Press. London: H. Frowde.

[Comprehensive survey and forcible argument.]

Johns Hopkins University Circular.—No. 8, 1911: Catalogue and Announcement for 1911-12 of the Medical Department.

L.C.C. Annual Report, Vol. IV, Education. 2s. 6d. King.

Oxford Local Examinations.—Regulations and Time-Tables for the Senior, Junior, and Preliminary Examinations in 1913.

[Pages 27-34, here blank, will be issued not later than March 1.]

Wales, North. University College of.—Calendar 1911-12.

MISCELLANEOUS.

Agriculture and Fishing, Board of.—Various useful Leaflets.

Animal Sanctuaries in Labrador. Address by Lt.-Col. William Wood, F.R.S.C., before the Second Annual Meeting of the Commissioners of Conservation, Canada, at Quebec, January 1911.

Grateful, How to Grow. By Aunt Kate. 1d. Leng.

Poliomyelitis in relation to the spread of Inspection in Schools. By Frederick E. Batton, M.A., M.D., F.R.C.P. Issued by the Medical Officers of Schools Association. 1s. net. Churchill.

Quackery [Quack Remedies and Quack Practice] and Medical Law Reform: a Plea for a Royal Commission. By Henry Sewell. 6d. net. King.

World Peace Foundation. By Edwin Ginn. World Peace Foundation (formerly known as the International School of Peace), 29A Beacon Street, Boston, U.S.A.

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.

17132. (F. TAVANI.)—Can a series of positive *decreasing* terms represent an undetermined quantity? Or, in other words, does a series of positive *decreasing* terms necessarily represent a determined quantity either finite or infinite?

Discussion by the PROPOSER.

My view is that a series of positive *decreasing* terms can represent an undetermined quantity and I can rigorously prove it. In some texts, however, dealing with the general theory of the series, this point either is completely omitted or it seems that it is tacitly assumed that "a series of positive decreasing terms either represents a finite quantity or it increases indefinitely, and then it represents a determined infinite quantity." To the latter part I believe that the following restrictive condition must be imposed, viz., "provided that the sum of the infinite infinitesimal terms which form the last part of the series has a determined limit."

We cannot assume that the sum of the infinite infinitesimal terms at the end of the series has a determined limit; therefore we cannot assume that the series increases indefinitely tending towards infinity.

But besides this remark I have a real proof that a series of positive decreasing terms does not necessarily represent a definite quantity, finite or infinite, but it must be admitted that it *can* represent an undetermined quantity.

A discussion having arisen between me and a mathematician, author of some text-book on series, I should like to have the views of other mathematicians.

On the Representation of Ellipses by Arc Ovals.

By W. H. BLYTHE, M.A.

Let CA = a , CB = b be the semi-axes of an ellipse. It is required to find the best positions for K and L, points upon BC and CA that may be taken as centres for circular arcs EN, NA to be used as an approximation to the ellipse. Let AL = LN = r_1 , and KB = KN = r_2 . If the point K be known, L can be found by geometrical construction

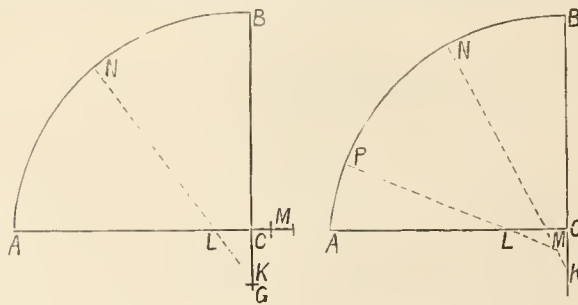


Fig. 1.

Fig. 2.

or by calculation; for, if we take AM = BK (Fig. 1), L lies on the perpendicular bisector of KM. Otherwise r_1 can be found from the condition $a^2 + b^2 + 2r_1r_2 - 2ar_1 - 2br_2 = 0$. The best method to find K by geometrical construction is to fix some point Q in a convenient position on the ellipse, and then to draw the perpendicular bisector of BQ to meet BC in K. If co-ordinates be allowed, the best position of Q that can be obtained is that having co-ordinates $\cdot 707a$, $\cdot 707b$.

Another position found by a simple geometrical construction is this: Let p be the length of the perpendicular from C on AB, take Q as the corner of a square on p , two sides of which lie along CA and CB. K and L can then be determined by two perpendicular bisectors as shown above.

A method given in some books on geometrical drawing is to take CL = $\frac{2}{3}(a-b)$ and the angle CLK = 60° . This method does not approximate very closely to the ellipse, and does not give KN = KB; for, if KN = KB, then CL = $\frac{1}{2}(\sqrt{3}+1)(a-b)$, and the value of $\frac{1}{2}(\sqrt{3}+1)$ differs from $\frac{2}{3}$ by about $\cdot 03$. Still, this error can be allowed for by slightly moving the centre K or L.

If arithmetical calculation be used, we can obtain the positions of K and L more closely. Find G, the centre of curvature at B; take

$$BG = a^2 + b^2,$$

then take $GK = \frac{1}{4}(2 - \sqrt{2})CG$. The value of $\frac{1}{4}(2 - \sqrt{2}) = \frac{1}{4}$ true to .004, $\frac{1}{4}$ being the less of the two.

Having thus found r_2 , we use the condition above mentioned to determine the value of r_1 . It is possible by slightly moving K to find positions of the arcs AN, NB that give the length of the quadrant and its area to a very close degree of approximation. When once found, the values of r_1 and r_2 can be tabulated for future use. For example,

$$a = 100, \quad b = 80, \quad r_1 = 68.9, \quad r_2 = 118.$$

Measure the angles $ALN = 50^\circ \frac{3}{4}$, $NKB = 39^\circ \frac{1}{4}$. Sum of arcs

$$AN, NB = [r_1(50^\circ \frac{3}{4}) + r_2(39^\circ \frac{1}{4})] \pi \div 180 = 141.7.$$

The arc of the ellipse, from Legendre's tables, = 141.7. The area

$$= \frac{1}{2}[r_1^2(50^\circ \frac{3}{4}) + r_2^2(39^\circ \frac{1}{4})] \pi \div 180 - \frac{1}{2}(a - r_1)(r_2 - b) = 6279.$$

The area of the elliptic quadrant = 6283.

The representation of the quadrant of an ellipse by two circular arcs is not satisfactory when $b < a(\cdot 7)$. In Fig. 2, BK is taken = $BG - \frac{1}{10}CG$, and AL is found by increasing $b^2 \div a$ in about the same proportion that BK has to BG. M is then taken so as to make the arc PN rather larger than BN or AP, limited by the condition $BK - AL = LM + MK$.

Let $AL = r_1$, $MP = r_2$, $BK = r_3$. By slightly adjusting L, K, and M, a very fair approximation of the ellipse can be obtained between $a = a(\cdot 7)$ and $b = a(\cdot 5)$. We will suppose then, that, taking $a = 100$, values of r_1, r_2, r_3 have been found and registered from $b = 70$ to $b = 50$. We construct as follows.

Measure $AL = r_1$, $BK = r_3$; with centres L and K and radii $r_2 - r_1, r_3 - r_2$ respectively, describe arcs to cut in M, taking the intersection nearest to C. Join KM and produce it to N, making $KN = KB$. Join ML and produce it to P, making $LP = LA$. With centres L, M, K, describe the arcs AP, PN, and NB.

When $b < \frac{1}{2}a$, it will be necessary to take more circular arcs, limited by the condition that the sum of the distance between consecutive centres is equal to $BK - AL$.

16963. (W. F. BEARD, M.A.)—P is any point on the circum-circle of an equilateral triangle ABC; AP, BP meet BC, CA respectively in X, Y. Prove $BX \cdot AY$ is constant.

Solutions (I) by JAMES BLAIKIE, M.A., and K. V. NATESA AIYAR, B.A., B.E., C.E.; (II) by KRISHNA PRASAD DE, M.A., and very many others.

(I) The triangles YAB, APB, ABX have each an angle of 120° , and as APB has also an angle common to it and each of the other triangles, it is similar to both of them, and thus all three triangles are similar to each other; therefore $AY : AB = AB : BX$,

whence it follows that

$$BX \cdot AY = AB^2.$$

(II) In the two triangles, ABX and YAB,

$$\angle ABX = \angle BAY \text{ (each } = 60^\circ \text{);}$$

and $\angle BAX = \angle BAC - \angle CAP$

$$= \angle BCA - \angle CBP$$

$$= \angle BYA;$$

therefore the triangles are similar; therefore

$$BX \cdot AB = AB \cdot AY,$$

or $BX \cdot AY = AB^2$.

A Thirteen-Rule for π .

By HENRY B. WOODALL.

$$0.13139165, 338, 8788$$

$$0.010, 201, 000, 201, 005$$

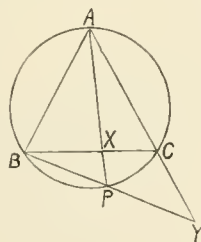
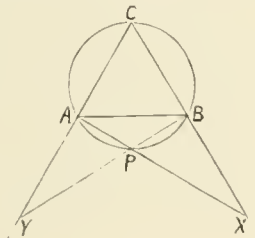
$$\pi = 3.141\ 592\ 65, 3\ 58\ 9\ 793, 238, 46, 26, 4338 \dots$$

(1) For the first eight digits of the decimal part put down 13 twice, then 7 times 13, then 5 times 13; increase the first by 1, the second by 2, the third by 1, the fourth by 0.

(2) For the first fifteen digits of the decimal part put down the first eight digits of the top line as before, then twice the square of 13 [$169 \times 2 = 338$], followed by four times the cube of 13 [$2197 \times 4 = 8788$]; to the first twelve digits so obtained add the four groups 010, 201, 000, 201, and to the last digit on the right what it lacks of 13, carrying the 1 in the ordinary way.

(3) A further seven digits may then be obtained as follows:—Repeat the 338 and subtract 100, repeat the 33 and add 13, and then put down twice 13.

(4) To find the next four digits put down 4, and repeat the 338. Twice 13 digits of the decimal part are thus obtained.



The rule is so easy to bear in mind that (after two or three trials) it is no longer necessary to write down the auxiliary lines.

Another of Mersenne's Numbers of Form $2^n - 1$ discovered to be Composite, as reported (or predicted) by him.

Note by DR. BIDDLE.

We heartily congratulate Mr. Herbert J. Woodall, A.R.C.S., of Stockport, on his singular good fortune, and let us add, great merit (as a careful and painstaking mathematician of the first rank) in having verified Mersenne's statement, as to $2^{31} - 1$, by finding it divisible by 43441.

Since $2^{10} = 1024$, it would seem that the number, which Mr. Woodall has factorized, consists of at least 55 figures. The discovery is a veritable triumph, and it has been confirmed by Col. Allan Cunningham, R.E., who is himself the discoverer of some other factorizable numbers, of the kind $(2^n - 1)$, appearing in Mersenne's list. There are now only sixteen of these remaining to be verified.

Note on the Factorization of $x^5 + Px^4 + c^5$.

By T. STUART, D.Sc.

The condition under which the above expression admits of four rational quadratic factors has been investigated by Prof. Sanjana (*Reprint*, Vol. xviii, p. 64). As his work shows that P must be four times the sum of two fourth powers, each of the two quartic factors are of the form $x^4 + 4a^4$, and so are at once further decomposable.

The most general solution is obtained by examining when the given expression is divisible by the quadratic factor $(x - a)^2 - \beta$, where β is not a perfect square. This requires that

$$(a \pm \sqrt{\beta})^5 + P(a \pm \sqrt{\beta})^4 + c^5 = 0;$$

and hence

$$P(a^4 + 6a^2\beta + \beta^2) + (a^5 + 28a^3\beta + 70a\beta^2 + 28a^2\beta^3 + \beta^4 + c^5) = 0 \dots (1),$$

$$Pa(\beta + a^2) + 2(\beta + a^2)(a^4 + 6a^2\beta + \beta^2) = 0 \dots (2),$$

whence either (i) $a = 0$, or (ii) $\beta = -a^2$, or (iii) $P = -2(a^4 + 6a^2\beta + \beta^2)$.

(i) If $a = 0$, $P = -(\beta^2 + c^5/\beta^2)$, from (1), and

$$x^5 + Px^4 + c^5 = (x^2 + \beta)(x^2 - \beta)(x^2 + c^4/\beta)(x^2 - c^4/\beta).$$

(ii) If $\beta = -a^2$, then $P = 4a^4 + 4^{-1}(c^5/a^4)$, and

$$x^5 + [4a^4 + 4^{-1}(c^5/a^4)]x^4 + c^5 = [x^4 + 4a^4][x^4 + 4^{-1}(c^5/a^4)] \\ = (x^2 + 2ax + 2a^2)(x^2 - 2ax + 2a^2)(x^2 + c^2/a)x + 2^{-1}c^4/a^2 \\ \times (x^2 - c^2/a)x + 2^{-1}c^4/a^2.$$

This is practically the same as Prof. Sanjana's result. In order that P may be integral, c must be even and a a factor in $\frac{1}{2}c^2$. Hence for integral solutions, $c^2 = 2aa'$ and $P = 4(a^4 + a'^4)$, where a and a' are integers.

Examples.— $c = 2, a = 2, a' = 1$, gives $P = 68$, and hence

$$x^5 + 68x^4 + 2^5 = (x^2 + 4x + 8)(x^2 - 4x + 8)(x^2 + 2x + 2)(x^2 - 2x + 2).$$

Similarly, if $c = 4, aa' = 8$ and $(a, a') = (4, 2)$ or $(8, 1)$, giving $P = 1088$ or 16388^* ,

and if $c = 10, aa' = 50$ and $(a, a') = (10, 5), (25, 2)$, or $(50, 1)$, the corresponding values of P being 42500, 1562564*, 25000004.

(iii) Substituting for P in (1) gives $(\beta - a^2)^4 = c^5$; therefore

$$\beta = (a^2 \mp c^5) \text{ and } P = -2(c^5 \mp 8a^2c^2 + 8a^4).$$

As P is a function of a^2 , $(x + a)^2 - \beta$ is also a factor, and the given expression is the product of three factors, viz.,

$$(x^2 + 2ax \pm c^2), \quad (x^2 - 2ax \pm c^2), \quad \text{and} \quad (x^2 \mp c^5) + (2ax)^2.$$

In order that the quartic factor may also break up, P must be the same for a different value of a, say a'. This requires the upper signs to be taken, and $c^2 = a^2 + a'^2$.

Hence $P = -2(a^4 + a'^4 - 6a^2a'^2)$, and the expression is

$$= (x^2 + 2ax + c^2)(x^2 - 2ax + c^2)(x^2 + 2a'x + c^2)(x^2 - 2a'x + c^2).$$

As in (ii), there is an infinite number of fractional solutions for any given value of c, for integral solutions c must be the sum of two squares and may be odd or even.

Examples.—(1) $c = 5, a = 4, a' = 3$, gives $P = 1054$, and the formula

$$x^5 + 1054x^4 + 5^5 = (x^2 + 8x + 25)(x^2 - 8x + 25)(x^2 + 6x + 25)(x^2 - 6x + 25).$$

(2) $c = 10, a = 8, a' = 6$ gives $P = 7648$, and the formula

$$x^5 + 7648x^4 + 10^5 \\ = (x^2 + 16x + 100)(x^2 - 16x + 100)(x^2 + 12x + 100)(x^2 - 12x + 100).$$

The values of P found from the formula in (iii) are (in general) much smaller than those obtained from the corresponding formula in (ii), but the latter are more numerous.

* Due to Prof. Sanjana (*loc. cit.*, p. 65).

16778. (C. E. YOUNGMAN, M.A.)—If three parallels touch a cardioid at P, Q, R then the tangents from P, Q, R will meet at a point T lying on the circle inscribed in the space between the curve and its double tangent.

Additional Solution by PULIN BIHARI DAS.

Following the method given by Mr. G. N. Bates in his solution of Question 10230 in *The Educational Times* of October 1, 1909, we see that $T^3y - x = 3aT(1 - T)$ is the equation to the tangent to the curve. If in this equation we put $x = 2at - at^2$ and $y = 2a/t - a/t^2$, we get the square of $T - t$ multiplied by $t^2 + 2t(T - 1) - T = 0$. This latter gives

$$T = (2t - t^2)/(2t - 1).$$

Similarly, $T_1^3y - 3aT_1^2 + 3aT_1 - x = 0$

represents the equation of tangent from

$$x = 2a\omega t - a\omega^2t^2 \text{ and } y = 2a/\omega t - a/\omega^2t^2$$

if $T_1 = (2\omega t - \omega^2t^2)/(2\omega t - 1)$.

The third tangent is similarly seen to be

$$T_2^3y - 3aT_2^2 + 3aT_2 - x = 0,$$

where $T_2 = (2\omega^2t - \omega t^2)/(2\omega^2t - 1)$.

Solving for x and y from any two of these equations, we find

$$x = a(2t - t^2)(2\omega t - \omega^2t^2)(2\omega^2t - \omega t^2)/6t^3$$

and $y = a(2t - 1)(2\omega t - 1)(2\omega^2t - 1)/6t^3$.

The values of x and y satisfy the third equation. Hence the tangents meet at a point. To get the locus, we see that

$$x = a(8 - t^3)/6 \text{ and } y = a(8t^3 - 1)/6t^3$$

and therefore $(x - 8a/6)(y - 8a/6) = a^2/36$,

which represents in Cartesian coordinates

$$(x - 4a/3)^2 + y^2 = (a/6)^2$$

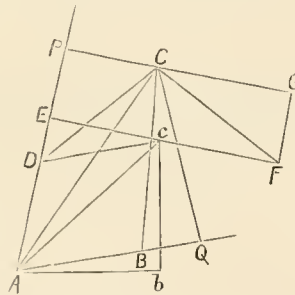
a circle inscribed in the space between the cardioid and its double tangents.

16596. (I. ARNOLD.)—Construct a quadrilateral having its sides equal to four given right lines, and its area equal to a given rectangle, specifying under what conditions the problem becomes impossible.

Solution by the PROPOSER.

Let AB, BC, AD, CD be the given lines, and draw Ab, bc perpendicular to each other, and equal respectively to AB and BC; then with the other two given lines construct the quadrilateral $AbcD$. Produce AD and draw cE perpendicular to AD produced. Next, produce Ec to F so that the rectangle under EF and AD may be double the given area.

Again, take a fourth proportional to AD, Ab , and bc , with which from centre F let an arc be described cutting another arc described from D as centre, and with the given radius CD in C. Join D and C, and from A and C draw the other two given lines AB, CB so as to form the triangle ABC; then is ABCD the required quadrilateral. Through C draw PCG parallel to EF and thus completing the rectangle EG. Now Ac, AC , and FC being drawn, upon AB produced let fall the perpendicular CQ .



Since $AD^2 + DC^2 + 2AD \cdot DP = AB^2 + BC^2 + 2AB \cdot BQ$ and $AD^2 + DC^2 + 2AD \cdot DE = Ab^2 + bc^2$, it follows by taking these last equal quantities from the former that $2AD \cdot DP - 2AD \cdot DE = 2AB \cdot BQ$;

and therefore $BQ : EP(FC) :: AD : AB :: BC : FC$ (by construction). Consequently the triangles BQC, FCG are similar, and therefore $CQ : CG :: BC : FC :: AD : AB$ (by construction). Consequently $CQ \cdot AB = CG \cdot AD$, and hence, by adding $CP \cdot AD$ to each, we have

$CP \cdot AD + CQ \cdot AB$ (= twice the area ABCD) = $CP \cdot AD + CG \cdot AD = EF \cdot AD =$ twice the given area, which is that by construction.

It is to be noted that the problem becomes impossible when the two circles described from D and F as centres neither cut nor touch.

12740. (Professor ORCHARD, M.A., B.Sc.)—Find the least number which, raised to the n th power, will have as factors $n^n, (n-1)^{n-1}, (n-2)^{n-2}, \dots, 2^2$.

Solution by Lt.-Col. ALLAN CUNNINGHAM, R.E.

Let N be the least number sought, i.e. such that N^n contains all the factors $1, 2^2, 3^3, 4^4, \dots, (n-1)^{n-1}, n^n \dots \dots \dots$ (A).

Let L be the least common multiple of all the above factors (A), and p the highest prime factor in (A), and let

$$L = 2^{\alpha} \cdot 3^{\beta} \cdot 5^{\gamma} \dots r^{\rho} \dots p^{\omega} \text{ (all prime powers).}$$

It is evident that L contains all the prime factors in (A), and that N must contain them also raised to certain powers, say,

$$N = 2^{\alpha'} \cdot 3^{\beta'} \cdot 5^{\gamma'} \dots r^{\rho'} \dots p^{\omega'}.$$

Then N may be formed from L by changing $\alpha, \beta, \gamma, \dots$ into $\alpha', \beta', \gamma', \dots$ by the following rules:—

- (i) $\alpha, \beta, \gamma, \dots$ are upper limits of $\alpha', \beta', \gamma', \dots$ respectively.
- (ii) Any exponent ρ prime to n gives $\rho' = \rho$.
- (iii) Any exponent $\rho = n$ gives $\rho' = 1$.
- (iv) Any exponent $\rho = kn$ gives $\rho' = k$.
- (v) Any exponent ρ having a factor g in common with n gives $\rho' = \rho \div g$. [g = greatest common measure of ρ, n .]

Ex. 1.—Take $n = 5$, a prime, giving $L = 2^8 \cdot 3^3 \cdot 5^5$. α, β are prime to $n, \gamma = n$; $N = 2^8 \cdot 3^3 \cdot 5$.

Ex. 2.—Take $n = 6$, giving $L = 2^{24} \cdot 3^6 \cdot 5^6$. $\alpha = 6n, \beta = n, \gamma$ prime to n ; $N = 2^4 \cdot 3 \cdot 5^6$.

Ex. 3.—Take $n = 8$, giving $L = 2^{24} \cdot 3^6 \cdot 5^6 \cdot 7^7$. $\alpha = 3n$; β, n have $g = 2$; γ, δ prime to n ; $N = 2^3 \cdot 3^3 \cdot 5^6 \cdot 7^7$.

QUESTIONS FOR SOLUTION.

17220. (Professor STEGGALL.)—A metal cup is to be made by forcing a circular lamina, radius unity, through a press in such a way that the flat circular bottom is not strained, while the conical side is formed by mere circumferential compression of the material. Find the dimensions of the cup and the angle of its cone when its content is a maximum.

17221. (SOLIDUS.)—A regular prism of n sides whose circumscribed cylinder has radius a , rolls on a perfectly rough horizontal plane. When the centre of gravity is vertically above an edge in contact with the plane, the angular velocity is ω_0 , and when the centre of gravity is vertically above the next edge, it is ω_2 . Prove

$$\omega_2^2 = \omega_0^2 a^2 - \Omega^2 (1 - a^2),$$

where $\Omega^2 \equiv [2g(1 - \cos \pi/n)]/[a(8 + \cos 2\pi/n)]$,

and $\alpha \equiv (2 + 7 \cos 2\pi/n)/(8 + \cos 2\pi/n)$.

Hence prove $\omega_{2r}^2 = \omega_0^2 a^2 - \Omega^2 (1 - a^{2r})$.

If $\omega_0 = 10$ and $g/a = 16$ and $n = 6$, find the time during which it will roll, and the time during which it will oscillate, before coming to rest, also the distance it will roll. If the plane be inclined, find the inclination necessary to keep it rolling indefinitely.

17222. (C. M. ROSS, B.A.)—If $A \equiv a_{11}x_1^2 + a_{22}x_2^2 + \dots + a_{nn}x_n^2 + 2a_{12}x_1x_2 + \dots + 2a_{n-1,n}x_{n-1}x_n$, find the value of the multiple integral

$$\iiint \dots \int e^{-A} dx_1 dx_2 \dots dx_n,$$

the integrations being in each case from $-\infty$ to $+\infty$, and the coefficients a_{11}, a_{22}, \dots , in A, such that A is positive. [Extension of Question 17169.]

17223. (Professor SANJANA, M.A.)—Prove that, when $m < n$ and $na < \pi$, $\int_0^{\pi} x^{m-1} dx = \frac{\pi \sin ma}{n \sin m\pi/n \sin na}$.

17224. (Professor E. J. NANSON.)—If $a_0b_n + a_1b_{n-1} + \dots + a_nb_0 = 0$, except when $n = 0$, and A, B denote the per-symmetric determinants of orders $n + 1, n$ whose elements are $a_0, a_1, a_2, \dots, a_n$; $b_2, b_3, b_4, \dots, b_n$ respectively, then $Ab_n^n = (-1)^n Ba_n^{n+1}$.

17225. (T. STUART, M.A., D.Sc.)—Investigate the validity of the following extension of Fermat's "Last Theorem." The equation

$$X^\lambda + Y^\lambda = Z^\mu$$

is insoluble in integers if λ and μ are prime numbers, and $\lambda \geq 4, \mu \geq 2$.

17226. (Lt.-Col. ALLAN CUNNINGHAM, R.E.)—Give formulæ or rules for forming numbers N which shall be algebraically expressible in at least two of the forms

$$N_1 = t_1^4 - 2u_1^2, \quad N_2 = t_2^2 - 2u_2^4, \quad N_3 = 2u_3^4 - t_3^2, \quad N_4 = 2u_4^2 - t_4^4.$$

17227. (J. J. BARNVILLE, B.A.)—(1) Resolve $x^{20} - 243x^{10} + 3^{10}$ and $x^{30} \pm 256x^{15} + 2^{15}$ each into four rational factors.

(2) Resolve $x^{20} + 5^4x^{10} + 5^5$ into the form $(X + 5x^2)(X^2 - 25x^2)(X^2 - 5x^6)$.

(3) Find the common factor of $x^5 - x^2 + 4$ and $x^{16} - 17x^4 + 16$; and (4) of $x^7 + 7x^2 + 4$, $x^{11} - 23x + 22$, and $x^{13} + x - 90$.

17228. (A. M. NESBITT, M.A.)—Required a neat solution of

$$\begin{aligned} ax + (a-b)y + (a-c)z &= a^2 + (b-c)^2, \\ (b-a)x + by + (b-c)z &= b^2 + (c-a)^2, \\ (c-a)x + (c-b)y + cz &= c^2 + (a-b)^2. \end{aligned}$$

17229. (C. E. YOUNGMAN, M.A.)—If TP, TQ, tangents to a cardioide, meet at right angles (or at any constant angle) the locus of T will be part of the envelope of the circle TPQ.

17230. (S. NARAYANAN, B.A., L.T.)—Show that the trilinear equation of an in-conic of a triangle ABC having a focus at (l, m, n) is

$$\Sigma la(m^2 + n^2 + 2mn \cos A) = 0.$$

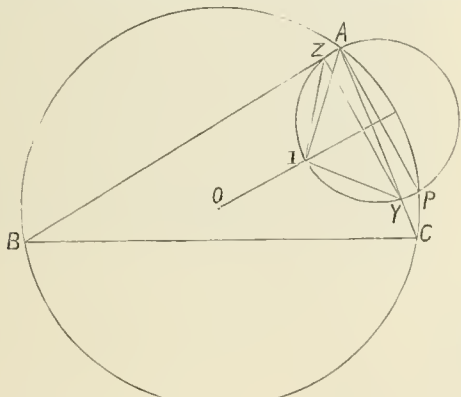
(Cf. Question 14289.)

17231. (N. SANKARA AIYAR.)—An equilateral triangle ABC is formed by three tangents to a parabola at L, M, N. Show that the focus of the parabola lies on the ellipse which touches the sides of LMN at its middle points.

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.

17233. (Professor NEUBERG.)—On donne une droite d située dans un plan P et sur une perpendiculaire à ce plan (qui ne rencontre pas m) deux points A, B. Trouver le lieu de l'orthocentre H d'un triangle ABC dont le sommet parcourt d .

17234. (W. F. BEARD, M.A.)—ABC is a triangle, O, I its circum- and in-centres. The perpendicular from A on OI meets the circle ABC



at P, and the circle AIP meets AC, AB, at Y, Z. Prove $AY \cdot YC = AZ \cdot ZB$.

17235. (R. F. DAVIS, M.A.)—Let OX, OY be given straight lines, and A, B given points. Find a geometrical construction for a line PAQ cutting OX, OY in P, Q respectively in such a manner that PA, AQ subtend equal angles at B.

17233. (Professor NEUBERG.)—On donne une droite d située dans un plan P et sur une perpendiculaire à ce plan (qui ne rencontre pas m) deux points A, B. Trouver le lieu de l'orthocentre H d'un triangle ABC dont le sommet parcourt d .

17236. (A. M. NESBITT, M.A.)—Given two straight lines OA, OB, and a point C, show how to describe a triangle CAB similar to a given triangle RPQ. [The particular case where the point O is at infinity is not without interest.]

17237. (Professor J. C. SWAMINARAYAN, M.A.)—Prove that the following identities are true for all the values of x from 0 to π inclusive :—

$$\begin{aligned} (1) \cos x + \frac{\cos 3x}{3^2} + \frac{\cos 5x}{5^2} + \dots &= \frac{1}{4}\pi(\frac{1}{2}\pi - x), \\ (2) \sin x + \frac{\sin 3x}{3^3} + \frac{\sin 5x}{5^4} + \dots &= \frac{1}{8}\pi x(\pi - x), \\ (3) \cos x + \frac{\cos 3x}{3^4} + \frac{\cos 5x}{5^4} + \dots &= \frac{1}{8}\pi(\frac{1}{2}\pi - x)(\pi^2 + 2\pi x - 2x^2), \end{aligned}$$

$$(4) \sin x + \frac{\sin 3x}{3^5} + \frac{\sin 5x}{5^5} + \dots = \frac{1}{96}\pi x(\pi - x)(\pi^2 + \pi x - x^2),$$

$$(5) \cos x + \frac{\cos 3x}{3^6} + \frac{\cos 5x}{5^6} + \dots = \frac{1}{480}(\frac{1}{2}\pi - x)(\pi^2 + \pi x - x^2)^2,$$

$$(6) \sin x + \frac{\sin 3x}{3^7} + \frac{\sin 5x}{5^7} + \dots = \frac{\pi x(\pi - x)}{2880} [3\pi^4 + 3\pi^3x - 2\pi^2x^2 - 2\pi x^3 + x^4].$$

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2564. (M. COLLINS, B.A.)—A being a curve whose equation is given in the usual Cartesian rectangular co-ordinates, B the evolute of A, and C the evolute of B; required a general differential expression for the radius of curvature of C on the usual supposition of dx being taken constant, and likewise on the supposition of $dx^2 + dy^2 (= dz^2)$ being taken constant.

6090. (T. COTTERILL, M.A.)—A curve U (order m and class n) and a point Z not at infinity are given on a plane. Take the pedal curve of a point of U to the point Z, and the antipedal of a tangent to U to the same point, and then find the order of the pedal if the curve U touches the circular asymptotes of Z and the line at infinity Σ times, and the class of the antipedal of U, if U passes S times through the origin and the circular points at infinity. A similar construction holds for oblique pedals.

6530. (W. E. WRIGHT, B.A.)—Two vertices of a given triangle move along a diameter of an ellipse and the periphery respectively; find the locus of the third vertex.

6576. (R. TUCKER, M.A.)—An inkstand is formed of two conical frustra, placed as in the annexed cut; the vertex of the inner frustum being at the centre of the base. Given the radii of the three sections to be a, b, c , and the slant sides l_1, l_2 , find (1) how much ink the bottle will hold, so that, if it be inverted, no ink will be spilt, taking as a numerical example the radii $1, \frac{1}{2}, \frac{1}{4}$ inches, and the slant sides 2, 1 inches respectively; and (2), given the sum of the slant sides constant, construct the inkstand of maximum capacity.



6626. (Professor SYLVESTER, F.R.S.)—(1) If ϕ is any rational function of ω , investigate a method for determining the condition to which λ must be subject in order that $\lambda\phi + 1 = 0$ shall have one or more real roots of ω lying between 0 and 1. (2) If ϕ, ψ are any two rational functions of ω , investigate a method for determining the condition to which λ, μ must be subject in order that $\lambda\phi + \mu\psi + 1 = 0$ shall have one or more real roots of ω lying between 0 and 1.

6693. (E. W. SYMONS, M.A.)—A parabola has four-point contact with a given ellipse; prove that its axis touches a polar reciprocal of the pedal of the evolute of a coaxial ellipse.

NOTICE TO CORRESPONDENTS.

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

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The following papers were communicated :—

Dr. J. W. Nicholson : On the Pressure of Radiation on a Cylindrical Obstacle.

Mr. H. Hilton : On Hermitian Invariants of a Canonical Substitution.

Prof. E. W. Hobson : On the Fundamental Lemma of the Calculus of Variations and on some Related Theorems.

Prof. W. Burnside : On the Outer Isomorphisms of a Group.

Dr. E. B. Stouffer : On Invariants of Linear Differential Equations.

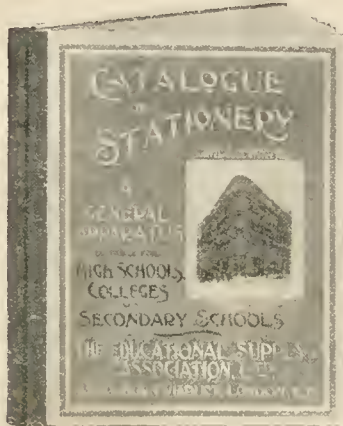
Prof. J. C. Fields : On a Method of proving certain Theorems relating to Adjointness.

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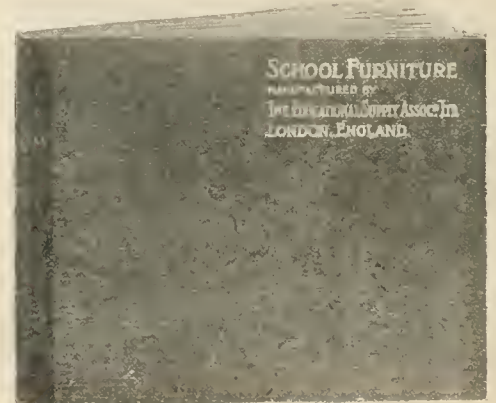
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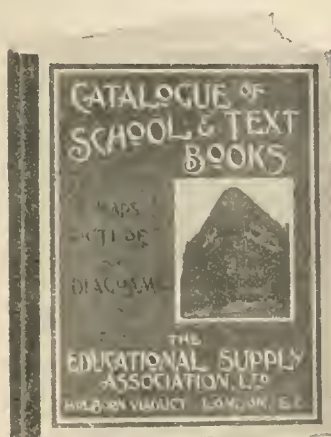
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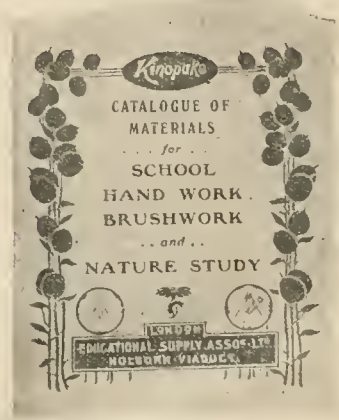
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SYLLABUS.

I. (Feb. 8.) *Nature and Scope of Psychology.*—Point of view: science of consciousness: nature of consciousness, general and individual: insulation of individual consciousness: the subjective and the objective: the study of the soul: meaning of the ego, and its various aspects: dangers of the psychological attitude on the part of the teacher: psychological data of education: psychology a theoretical study, education a practical.

II. (Feb. 15.) *Personality and Temperament.* Essential unity of the soul: various modes of being conscious: the so-called "faculties": dangers of hypostasis: evolution of personality: nature of temperaments and their classification: permanency of the temperaments, and the means by which they may be modified: relation between temperament and personality: advantages and dangers of using "types" in education.

III. (Feb. 22.) *Presentative Processes.*—Nature of sensation: the senses, general and special: contribution sensation makes to knowledge; the "preferred sense": the training of the senses: distinction between sensation and perception: the mind's share in perception: meaning and limits of observation: the gaping point: rhythm of concentration and diffusion: the place of inference.

IV. (Feb. 29.) *The Conceptual.*—Nature of conception and its relation to perception: the range of the representative processes: nature and origin of ideas: the active and the passive aspects of ideas: presented content and presentative activity: the relation of definition to the concept: degrees of generality of ideas: the grouping and interaction of ideas: recall mediate and immediate.

V. (March 7.) *Memory.*—Not limited to intellectual processes: fundamental nature: relation to personal identity: Bergson's two kinds of memory: predominance of the purposive element: possibility of improving the memory as an original endowment: mnemonics and the educational applications: learning by heart and by rote: reminiscence and recollection: "verbal," "pictorial," and "rational" memory: relation to reality.

VI. (March 14.) *Imagination.*—Distinction from memory on the one hand and conception on the other: relation to thinking, and the corresponding limitations: conditions determining the working of the imagination, and the corresponding classification into "kinds" of imagination: importance in real life of "clearly imaged ends": function of the imagination in school-work: its aesthetic use; nature and moral value of ideals.

VII. (March 21.) *Interest and Attention.*—Nature of each: interaction between them: circular reaction: interest as means and as end: relation between the interesting and the easy: quarrels about the classification of the kinds of attention: the mechanism of attention: its manipulation: its duration: its rhythm: various functions of attention in educational process: moral implications of the newer views.

VIII. (May 2.) *Subconsciousness and the Habitual.*—Vague notions of the subconscious and their dangers: nothing mystical about the subconscious: the dynamic conception underlying it: association a general principle of organic development and not limited to ideas: relation to habits: place and value of habits in education: making and breaking of habits; special and general habits; accommodation and co-ordination: the continuum of a minor interest: reintegration.

IX. (May 9.) *Suggestion.*—The teacher's means of manipulating the paid-up capital of the pupil: suggestion has no power save in calling up ideational combinations already formed: ideas as forces: self-activity: suggestion as self-originated: pseudo-auto-suggestion: meaning of temptation: making pupils temptation proof in certain directions: relation of suggestion to imitation: spontaneous and deliberate imitation.

X. (May 16.) *Reasoning.*—Fundamentally an adaptation of means to ends on the ideational plane: may be regarded as the purposive aspect of apperception: relation between thought and language: the constant element in thought: the dynamic basis of all thinking: the laws of thought as thought: nature and source of errors in thinking: possibility of honest difference in results of thinking: place and function of syllogistic and other formal modes of thinking.

XI. (May 23.) *The Affective Processes.*—Danger of isolating this aspect of soul life: unreasonable depreciation of the emotions by certain professional philosophers: value of emotions as support of intellectual process: classification of the emotions: expression of the emotions: Lange-James theory of the relation between emotion and its expression: important educational bearings of the truth underlying this theory.

XII. (May 30.) *Conation.*—Interrelations of knowledge, feeling, desire, and will: nature and function of motive: fallacy of "the strongest motive": the motiveless will: practical aspects of the theory of the freedom of the will: evolution of the will: its subjective and objective aspects: hypostasis of the will: possibilities of real training of the will: meaning of "breaking the will": importance of the time element in all attempts at will-training.

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The Educational Times.

The characteristic of the recently issued Report of the Consultative Committee on "Examinations in Secondary Schools" may be said to be the elimination of all forms of competition.

One of the advantages of a scheme of examinations entirely controlled by the Board of Education is stated to be that "it would be embarrassed by no competition." Even the scheme ultimately adopted by the Committee, the establishment of a widely representative Examinations Council, would have the great advantage of "averting embarrassing opposition." The Committee is consistent in its recommendations. Competition is to be discouraged among the examinees as well as among the examiners. There is to be one certificate, and only one. It is not even suggested that this Secondary School Certificate shall have two classes. All pupils are to be raised to the same creditably high level. For those who do not remain long enough at a secondary school to qualify to sit for this uniform certificate, there is to be a Secondary School Testamur, based on class examinations and the school record. Though issued on the authority of the head master, the Testamur must be approved by the Inspector of the Board of Education; and, in conformity with the general policy, every precaution must be taken that no competition is set up between the Certificate and the Testamur.

The point that the Committee has deliberately kept in view throughout as essential is the need for a combination of inspection with external examination. The desire is to prevent the external examination from dominating the whole work of the school, and with this desire the College of Preceptors cordially sympathizes. In fact, long before any of the other bodies of external examiners of secondary schools had come into being, the College had inaugurated a system of joint inspection and examination, which was given up later because of the great difficulties it involved. It is instructive to note that, when the Universities, following in the wake of the College, set about establishing examinations for secondary schools, they profited by the experience of the College, and started a scheme of purely external examinations. It will probably be generally admitted that a combination of inspection and examination is

greatly to be desired; but any scheme for combination must make provision for an organic relation between the two. It will not do, for example, as has been suggested, to let the Board of Education have the inspecting and leave the examination to the Universities. The means suggested in the Report for correlating the work of inspection and examination can hardly be regarded as satisfactory.

More important to the acting teacher, however, is the question of the abolition of every form of external examination except that to determine the granting of a leaving certificate—though the Committee has wisely avoided the use of the word "leaving" in connexion with either the certificate or the examination. Many teachers are of opinion that external examinations at early stages of school life are of doubtful value. On the other hand, there are many who regard suitable external examinations as salutary in effect both as a stimulus and a test, even at quite early stages. It is for this reason that the College of Preceptors continues to hold its Third Class and Lower Forms Examinations, in spite of the adverse opinions expressed by some teachers. It is to be noted that these lower examinations were established at the urgent desire of head teachers, and that no pupil is subjected to these tests unless his teacher considers them desirable. When the stage of the Junior University Certificate (corresponding to the Second Class Certificate of the College) is reached, there is little danger of having to deal with minds too immature for external examinations. The average age of candidates at this stage is about 15, quite a suitable time to face external competition. There is at present a definite need for examinations of the degree of difficulty implied in the Junior University and College Second Class Examinations. Some of the professional bodies already require a Senior Certificate, and might find it possible to add the proposed Secondary School Certificate to their list of qualifying preliminary examinations. But there are other professional bodies on whose clientèle it would at present be impossible to impose the requirements of a Senior Certificate. It would be useless to ask such bodies to accept only the Secondary School Certificate. Moreover, there can be little doubt that all professional bodies will demand in the future, as they have done in the past, to have something to say regarding the content, as well as the standard, of the certificate. They will insist upon certain subjects being included. No doubt it is an attractive ideal to set up a standard of culture

to which all must conform before they begin to make any approach to specialization. In such purely culture work there might be scope for the energies of a General Examinations Council:

Remembering the fate of its recommendations of 1904, the Consultative Committee is anxious that something should be done this time as the result of its deliberations. The most practical recommendation in the Report is the proposal that there should be a Conference between the Board of Education and the Principal Examining Bodies. The Committee has "every reason to believe that the existing examining bodies would be ready to give their careful consideration to any plan which aimed at introducing improvements in the work which they have so much at heart." This is smooth writing, but the examining bodies can hardly be blamed for failing to recognize as an improvement a proposal to dismiss them all in favour of a widely representative Examinations Council. Such a Council might be established with excellent results, but its function should be to moderate among the bodies already in existence. It should determine the standard to which all the examining bodies must conform so far as this Secondary School Certificate is concerned. It might arrange tables of equivalency according to which examinations other than that for the standard certificate may be estimated and compared. But it should leave the present examining bodies to carry on their work under such conditions as enable them to meet the specific demands of their different clientèles. Fortunately the recommendations of the Committee are expressed in a very moderate way, and everything will depend on what happens when the various bodies concerned are brought face to face. As they stand, the recommendations have all the air of a compromise between two out of three strong lines that might have been followed. The suggestion of Examinations controlled by Provincial Authorities is apparently introduced for the sake of completeness, and to give polite expression to ideas that have not had sufficient backing. The real struggle may be guessed to have been between the control by the Board of Education and control by a representative Board *ad hoc*. The compromise between these two latter controls has resulted at present in a victory for the *ad hoc* scheme, but any one who knows the relative staying powers of a permanent official body as compared with those of "a widely representative body" such as is suggested, will have little difficulty in forecasting the relation between the Board and the Examinations Council.

So far as the College of Preceptors is concerned, it may certainly be claimed that it represents a corporation of teachers acting in common for the professional good of teachers and the educational good of their pupils. When a scheme of examinations is founded for teachers by teachers there can be no question of an attack on the liberties of a profession. Can the same be said for a centralized monopoly of examinations? It is noteworthy that one of the weaknesses of the Report as a whole is the inadequate amount of evidence supplied by teachers who have actually made use of the various schemes of examination at present available. It will be well for those teachers who regard with satisfaction a system in which they have a certain

voice in the working of external examinations to let their opinions be heard. Their opinions are of the first importance at the present moment. In the meantime it is for those who distrust centralized bureaucracy to bestir themselves in the deliberations of the proposed Conference.

NOTES.

JANUARY is pre-eminently the month of educational conference. Elsewhere we report in necessarily brief form the main points of discussion at the more important meetings. There is evidently no diminution in the ardour of debate upon topics of interest, whether burning or cooling. Sir J. J. Thomson, indeed, told the Public-School Science Masters that he had few theories on education, and that those he did form were being constantly upset by experience, till he had come to the conclusion that, if we have intelligent masters and small classes, it does not matter much what theory of education we adopt, while, if we have not these, it does not matter much either. But he immediately proceeded to a brisk exposition of some of his theories. The fact is that new conditions and varied experience put a new complexion upon old theories, and demand a restatement, a modification, or a reversal. An annual effort at re-orientation is a healthy process.

WHILE the general activity is gratifying, it is pleasant to recognize that some of the special-subject societies are developing fresh vigour. It is three years now since we ventured to suggest that the English Association might profitably direct its attention to the subject of English Composition in schools; and now we cannot do less than give a hearty welcome to its keen discussion of the subject, and hope that it will be kept in the forefront of the program. The Historical Association, too, attacked some thorny questions with practical address. Prof. Hearnshaw handled capably the use of local records in history teaching (as may be seen in another column); and Prof. Pollard well deserved election as next President were it only for the breezy common sense he infused into the debates. The Geographical Association is also pressing forward. It ought to receive a great impulse from the remarkably suggestive presidential address delivered by Dr. Parkin. The Assistant Masters are, of course, alive in every fibre; and the Head Mistresses have fully earned Dr. Sadler's high appreciation of their thoughtful work.

SIR PHILIP MAGNUS very appropriately devoted his Presidential Address to the Private Schools Association to a defence of private schools. If it was impracticable to say anything new, he, at any rate, brought together effectively the chief things that need to be said and to be insisted on. When the State has done its best there will still be room for the private school: the very mechanism of society, the physical and mental specialties of the constitution of pupils, and the preferences of parents will persist in requiring the private school. The testimony of educational history

emphasizes the importance of the private school for experimental development of methods. The Board of Education, therefore, "should exercise its influence to prevent Local Authorities" from using the rates to crush out efficient private schools by undue and unnecessary competition. "The essential feature of the private school should be its freedom. Still, it should be recognized as efficient, and such recognition should preferably be given by the Universities and accepted by the Board."

THE Association of Teachers of Mathematics for the South-Eastern Part of England, which has its head-quarters at Tonbridge School, has already started a "Journal"—a sign of intended permanence and of extended influence. It has had the good fortune to obtain Dr. A. N. Whitehead, of Cambridge, as its President; and his Presidential Address, on "The Place of Elementary Mathematics in a Liberal Education," occupies the first number of the journal. The Address ought to be conned by every educationist, and particularly by every teacher of elementary mathematics, throughout the country. It is based, not merely on a thorough knowledge of the subject (which goes without saying), but on a broad intellectual outlook that discerns the inner meaning of the educational revolution in progress. The views are sharply and even aggressively outlined, but that is simply because of the severe limitations of an hour's address: it is for the reader to think out the necessary supplement. Dr. Whitehead is far from undervaluing classics; but he points out that "the supreme merit of immediate relevance to the full compass of modern life has been lost to classical literature" through the transformation of the world by modern science. "Elementary mathematics is one of the most characteristic creations of modern thought"—"by virtue of the intimate way in which it correlates theory and practice." What will our multitudinous textbook writers say when they read that "what we want is one hour of the Caliph Omar, to burn up and utterly destroy all the silly mathematical problems which cumber our textbooks"? And what will they say to this: "I would utterly sweep away all prolonged multiplications and divisions, and the theories of the greatest common measure and least common multiple, and complicated forms of linear and quadratic equations"? Or to the suggestion that "half of the teaching of modern history should be handed over to the mathematicians"—"the half which, although the true foundation of all knowledge of nations, is hardly taught"—the quantitative study of social forces by statistical methods? Is it the fact, as Dr. Whitehead believes, that since the abolition of Euclid as a textbook "a lamentable deficiency in logical vigour has crept in, with entirely bad effects on the scholastic value of the subject"? These are a few of the points—enough to suggest meditations.

WE may, however, add Dr. Whitehead's own summary of the outcome of his thoughts on this highly important matter:

*Dr. Whitehead's
Suggestions.*

It is that the elements of mathematics should be treated as the study of a set of fundamental ideas, the importance of

which the student can immediately appreciate; that every proposition and method which cannot pass this test, however important for a more advanced study, should be ruthlessly cut out; that with the time thus gained the fundamental ideas placed before the pupils can be considerably enlarged so as to include what in essence is the method of co-ordinate geometry, the fundamental idea of the differential calculus in relation to rates of increase, and the geometrical notion of similarity. Also, lastly, it has been insisted that important systematic applications of these ideas to the concrete world should be simultaneously studied—for example, some sets of social or scientific statistics and the use of the polygon of forces in the graphical solution of mechanical problems. Again, this rough summary can be further abbreviated into one essential principle, namely: Simplify the details and emphasize the important principles and applications.

'We have now a golden opportunity for reconstituting our scheme of mathematical education. If mathematical teaching is not now revived by a breath of reality, we cannot hope that it will survive as an important element in the liberal education of the future.'

CORDIAL congratulations to Dr. Briggs on the Silver Jubilee of the University Correspondence College. The College was founded on New Year's Day, 1887, incorporating the Intermediate Correspondence Classes, which had been in operation for some two years previously. The staff of the College now numbers thirty graduates, twenty-four of whom are First Class Honourmen. More than four thousand private students have graduated at the University of London under direction of the College, a goodly number of them resident at ends of the earth. In 1889 the University Tutorial College was founded, with laboratories for practical work in Physics, Chemistry, and Biology. The University Tutorial Press, with its own printing and bookbinding works (at Foxton, near Cambridge), has issued more than a thousand new books during the past quarter of a century—largely text-books of a high order, admirably suited to the needs of students. Apart from his managerial work, Dr. Briggs has written numerous scientific text-books for school and college, and has expounded the Law of International Copyright in a weighty tome. Here is a very honourable record of sound educational work.

THE Home Secretary informed an influential deputation organized by the National Council of Morals (January 23) that a draft Bill embodying the recommendations of the Joint Select Committee on Lotteries and Indecent Advertisements has been prepared. The Committee recommended that the law should be amended to provide for summary conviction in cases of publication of obscene matter, that existing legislation should be repealed and a new Bill should be introduced to provide a uniform method of procedure, and that the penalties for publishing, procuring, posting, or exhibiting should be substantially increased. They also expressed the opinion that books of literary merit and genuine works of art should be exempted from the operation of the Act at the discretion of the magistrate. Mr. McKenna said the draft Bill embodied the report of the Committee almost verbatim. The Bill will require the driving force of public opinion, as Mr. McKenna expressly indicated. He is going to discuss the matter with Sir Edward Henry, to see what can be done for a more vigilant enforcement of the law. After all, that is the most essential point.

SUMMARY OF THE MONTH.

Mr. RUNCIMAN and Mr. Pease have issued a joint Memorandum of Revised Arrangements between the Board of Agriculture and Fisheries and the Board of Education in regard to Agricultural Education in England and Wales. It is as follows:

"We have had under consideration the arrangements for the promotion of Agricultural Education made by our predecessors as Presidents of the Board of Agriculture and Fisheries and the Board of Education, and published in the Memorandum [Cd. 4886] of the 22nd of September, 1909; and have come to the conclusion that, in view of the large additional sums which have become available since 1909 for the purposes of Agricultural Education and Research under the Development and Road Improvement Funds Act, 1909, those arrangements now require some modification. It no longer appears possible to delimit the spheres of work of our two Boards by assigning to the Board of Agriculture the responsibility for the Universities and Colleges in which advanced work is being done, and to the Board of Education the responsibility for Farm Schools and such other provision for Agricultural Education as is on a lower plane than that of Agricultural Colleges. It has, therefore, been decided that, in future, the responsibility for Farm Institutes, as well as for the agricultural work of Universities and Colleges, shall be transferred to the Board of Agriculture, and that this Board shall be regarded as the Government Department concerned with this branch of educational work for the purposes of the Development Fund. The application for an advance from the Development Fund in aid of Farm Institutes, which has been made by the Board of Education, will therefore be withdrawn by them, and the Circular 778 on 'Aid from the Development Fund for the provision and maintenance of Farm Institutes' issued by them on the 14th of July last is hereby cancelled. A fresh application for an advance in aid of Farm Institutes will in due course be put forward by the Board of Agriculture. Frequent consultation and co-operation between the two Boards and their respective Officers will be still necessary under the redistribution of functions, and the existing arrangements will be simplified and strengthened."

THE President of the Board of Agriculture (Mr. Runciman), speaking at the annual dinner of the Newcastle Farmers' Club, outlined the proposals for allocating the Development Fund so far as agriculture is concerned. Assistance, he said, would be given to Agricultural Colleges and other institutions to the extent of £12,000 a year, and about £35,000 a year would be spent on research and experimental work. These institutions were handicapped by lack of men, and, if there was to be a full exchange between the institutes and practical farmers, more men must be scientifically trained. Therefore, £16,500 a year was to be devoted to scholarships for these Colleges for the training of young men that were prepared to devote their time and their energies to the work of these institutes and agricultural classes. For the farm institutes they had got a sum of £325,000, and they were at present considering the best means of spending that money to the most practical advantage. Mr. Runciman went on to say that his interest in agriculture did not begin when he entered his present office. While at the Board of Education he had endeavoured to do something towards ruralizing education. When he went to the Board of Education school gardens were attached to only a few hundred schools; now throughout the rural districts there were five thousand school gardens.

THE President of the Board of Education has appointed H.M. Inspector J. C. Hes, Divisional Inspector of Elementary Schools in the North-Western Division, to be Chairman of the Departmental Committee on Playgrounds of Public Elementary Schools, appointed on July 31, 1911; and has also appointed Mr. E. B. Phipps, Principal Assistant Secretary of the elementary branch of the Board, to be a member of the Committee. These changes are made in consequence of the resignation of Mr. L. A. Selby-Bigge of the chairmanship of the Committee on his appointment to be Permanent Secretary of the Board of Education.

THE Head Masters of Eton, Harrow, Winchester, Charterhouse, and Rugby have announced that in their entrance ex-

aminations Greek will not be expected, nor will it count unless the candidate's work in Latin, French, and English is good enough to place him in the Upper Fourth at Eton or a corresponding form in the other four schools. Greek, where now taught in the lower forms, will be dropped, and in the upper forms will be taught in sets, so as to provide for pupils who join knowing some Greek and the non-Greeks. Nothing is definitely stated about scholarships, but it is understood that, in awarding them, the same principle will be applied. The lesser schools will, it is believed, follow this distinguished lead.

THE Governors of Rugby School have drawn up certain statutes in substitution of the existing statutes. The chief provisions are concerned entirely with the scholars:—An examination shall be held once a year for the election of scholars by competition, and shall be conducted by examiners to be named or approved by the governing body in such subjects and in such manner as shall be determined by regulation. The age limit shall be between twelve and fifteen. One of the Benn scholarships shall always be held by a day boy possessing the qualifications for a minor foundationership. The number of scholars in the school at one time shall not be less than forty. The parents or guardians of any scholar may be required to state the date at which they intend to remove him from the school, and shall be bound to adhere to the date so stated. No scholarship shall be of the value of less than £40 a year nor of more than £100 a year; and subject to these limits the values of the scholarships shall be such as the governing body may by regulation determine. No scholarship, other than a Benn scholarship, shall be tenable together with a foundationership. The governing body shall apply to the provision of scholarships the proceeds of all endowments appropriated to that purpose; but all sums over and above those derived from such endowments which may be required for the maintenance of scholarships shall be provided in such manner as the governing body shall from time to time determine. At least twenty of the scholars in the school at one time shall hold scholarships awarded for proficiency in classics. The other scholarships may be awarded for proficiency in such subjects as the governing body may from time to time determine. But no scholarship shall be awarded to a candidate who does not, in the opinion of the examiners, show a sufficient knowledge of the other subjects studied in the school besides that to which the scholarship is assigned.

THE Teachers' Guild is establishing for teachers of all grades, men and women, a friendly society for insurance against accident and illness, as the outcome of the passing of the National Insurance Act. It will be possible (it is stated) to obtain benefits in accordance with the Act or greater benefits at the desire of the person insuring. Additional privileges will be granted to those who are members of the Teachers' Guild. The scheme will be registered very shortly for approval by the Insurance Commissioners. Any persons interested in this scheme should communicate with the General Secretary, Teachers' Guild, 74 Gower Street, W.C.

MR. ALFRED P. MAUDSLAY, in his presidential address at the Annual Meeting of the Royal Anthropological Institute (January 23), said that even at the present day the idea that the origin of man did not form a fit subject for scientific inquiry had not yet entirely died out, and this feeling had militated against anthropology becoming a popular study. Meanwhile the immediate and energetic prosecution of anthropological studies was of vital necessity, since the material with which this science deals was becoming rarer every year, as primitive customs yielded to civilization. The fact that man's physique was less subject to alteration gave a permanent value to the study of physical anthropology. An example of the far-reaching effects of a change in culture was the introduction of writing, which had a democratic tendency, since it placed the tribal law, formerly preserved in the memories of the elders, at the disposal of the younger members of the tribe. There was no better test of the antiquity of American culture than the fact that maize and other vegetable foods had been gradually evolved by patient cultivation from obscure wild plants. The indigenous nature of that culture was shown by the fact that they were unknown in other continents before the discovery, though their value to man led to their introduction all over the world immediately afterwards. The languages of America,

moreover, bore a closer resemblance to one another than to those of the rest of the world.

At a recent meeting of the Edinburgh Provincial Committee for the Training of Teachers, Dr. Lowe, convener of the Studied Sub-Committee, reported that there was a decrease in the number of students attending University classes in 1911, as compared with 1910, the difference being 48 men and 66 women. Various suggestions had been offered for this, but it was not at all unreasonable when they considered what had been recorded in regard to University students. There had been fewer students taking the concurrent course. In 1910, 134 took the concurrent course, in 1911 only 61. There was a considerable decrease at the end of the training college course. Hitherto students served three years; now students at the end of the second year of training might either leave the training college or take a third year. They had lost a considerable number, because at the end of the second year of training there were 118 who had the option to go or stay, and of these 76 chose to go. He thought that might be taken as the cause for the decrease—in the meantime, at any rate. He might say, however, that the difficulties which beset them were even greater in the cases of Glasgow and Aberdeen.—Prof. Darroch said he should not like the impression to get abroad that there were fewer teacher students in the University. The number was very much the same as it was last year; only a large number of three-year students at the junior student training centres were passing the training college and going straight to the University.—Dr. Gardiner thought the ideal way would be to give their students self-culture classes at the University, and not confine them to narrow professional training at the training college.

(From our own Correspondent.)

CALM, peaceful, foggy, dull. The Lent term is all this, and more. Freshmen are beginning to adopt the Cambridge manners and vesture of their Seniors, and the Seniors are thinking of their ultimate and penultimate May terms. Yet the life of the place goes on steadily for all that.

A note of sadness has been struck by the death of Mr. W.M. Coates, of Queens', which occurred on the first day of full term. Well known in all departments of University life, he was universally respected. A successful coach, an energetic College officer, and a strenuous worker in all spheres of energy in which he could do good to others, he has left a vacant place which it will be hard to fill. The funeral was attended by an enormous number of friends, pupils, and fellow workers.

Happy are the people who have no history, but thrice blessed are those who make it. The C.U.O.T.C. are determined that the records of the Corps shall be filled with gallant doings, even though its members may complain of overwork. Alarums and excursions are the order of the day—or rather of the night. A night attack on a heavily fortified position at Grantchester in the hours of darkness constitutes the latest item on the program; the attacking force braved fire—in the form of blank cartridge—and water in the shape of flooded meadows and the overflowing Granta, and marched home with their whilom opponents wet, tired, and happy. Col. Edwards is to be congratulated on the efficiency of his command, and of the decoration (C.B.) with which the authorities have shown their appreciation of his organization of our military department. But there is a rift within the lute. A newly appointed Director of Military Studies is anxious to take all the lecturing into his own hands, and to distribute the coaching among all those engaged in such work, allotting one subject to each man without reference to the experience or claims of those who have borne the burden and heat of the day, and especially of one military instructor of enormous experience and unequalled success—the only Staff College man in Cambridge. So things may hum in this quarter, as college tutors are responsible for the selection of the proper coaches for their men, and are not at all at liberty to abdicate their functions and reverse their practice on the suggestion of a new-comer inexperienced in University ways and methods.

This term has seen the genesis of a new organ. *The Cambridge Magazine*, which bids fair to be a dangerous rival to *The Granta* and *The Cambridge Review*. The first

number, at any rate, shows promise, and though it is reported that the Editor is a gentleman of somewhat pronounced opinions, it is clear that so far all questions are treated without bias and in a judicial spirit. The magazine prints a revised edition of the speech recently delivered in Cambridge by Mr. Owen Seaman, on behalf of the Agenda Club, and the Editor of "Punch" appears at his best. A very strong and well written article, by Mr. A. F. M. Greig, deals trenchantly with the behaviour, or rather misbehaviour, at the theatre, and suggests excellent modes of dealing with the evil. It is curious that some years ago a well known Cambridge resident had, under threats of legal proceedings, to apologize for statements not half so forcible as those which the magazine has printed over the signature of Mr. Greig. The management do their best, but the question is a knotty one.

Some slight changes are likely to be made in the Classical Tripos, Part I. The examination will be slightly shortened in point of time, and will now consist of fourteen papers. It is also proposed that, though two of the fourteen papers are on verse composition, not more than one-tenth of the total marks are to be assigned thereto.

The Forestry Department is developing on healthy lines, backed, of course, by Government support.

Excellent practical work on the structure and wearing qualities of timbers is being done in the Botanical Laboratory by the Assistant Curator. We shall learn in England, what has been common knowledge in Germany for a generation, that though science may not pay at the source, it is a valuable asset at the sea.

Some more emendations have been issued in the regulations for the Special Examinations. It is open to doubt whether any member of any Board understands them. Bad as the rules are, the system to which they refer is worse: if the facts as to the Cambridge Poll Examinations were stated in their nakedness, the world would shake with mirth.

Our boat is gradually settling down. They will doubtless be able to get the distance from Putney to Mortlake, but whether the Oxford men will be able to see them will depend upon the absence of fog.

Our Association football team is said to be good, though the captain has been on the sick list during the vacation.

Lord Selborne is going to deliver an oration at the Carlton Club Banquet next month. The Liberals have not yet responded to the challenge, but will probably have their answering champion ready in due course.

THE "Holmes Circular" was strongly condemned at a special meeting of the Convocation of the University of London, called to consider it on January 12.

Sir Edward Busk presided. The House was asked by the Senate to express an opinion in regard to a letter on the subject from Sir James H. Yoxall, M.P., on behalf of the National Union of Teachers. Sir James drew attention to that part of the memorandum which states that candidates for inspectorships had not "the antecedents which were usually looked for in candidates for junior inspectorships—namely, that they had been educated first at a public school and then at Oxford or Cambridge." He went on to say that the "terms and the tenor of the memorandum as a whole might be described as unfair and improper, but the portion quoted above had particular reference to a preclusion which is injurious to graduates of other Universities than Oxford and Cambridge. There are many teachers who are graduates of other British Universities than Oxford and Cambridge and well qualified to be appointed as inspectors." He had no desire, he added, to make any reflection upon the Universities of Oxford and Cambridge, the true spirit of which was not conveyed in the memorandum or embodied in the privilege which it described.—A discussion took place, in the course of which Sir Albert Rollit moved that the Senate be informed that while Convocation took strong exception to the contents of the paper, it was neither necessary nor becoming now to make any answer to it, especially in view of its date. The motion was ultimately defeated, and the following resolution carried in its stead: "That, in the opinion of Convocation, the sentiment expressed in the memorandum represents a policy followed in the selection of an important body of public servants which deserves condemnation." [The grammar seems scarcely of University standard.] Frequent

reference was made during the discussion to the "anti-democratic nature" of the Board of Education.

THE annual report of the Edinburgh University states that during the past year the total number of matriculated students (including 630 women) was 3,421, being 55 more than last year. Of these, 1,301 (including 580 women) were enrolled in the Faculty of Arts; 426 (including 20 women) in the Faculty of Science; 53 in the Faculty of Divinity; 273 in the Faculty of Law; 1,353 (including 19 women) in the Faculty of Medicine; and 15 (including 11 women) in the Faculty of Music. The number of students in the Faculty of Science exceeds by 44 that for 1910, and is the highest number ever reached. Of the students of Medicine 593, or nearly 44 per cent., belonged to Scotland; 265, or nearly 20 per cent., were from England and Wales; 91 from Ireland; 99 from India; 256, or nearly 19 per cent., from British Dominions; and 49 from foreign countries. These figures show that the proportion of non-Scottish students of Medicine is well maintained; in fact, is slightly higher as compared with 1910. The number of women attending extra-academical lectures, with a view to graduation in Medicine in the University, was 59. The General Council of the University now numbers 11,556. The total annual value of the University fellowships, scholarships, bursaries, and prizes amounts to about £18,900.

THE EDUCATIONAL LADDER.

ABERDEEN UNIVERSITY.—Fullerton Scholarships: Mental and Moral Philosophy, Bertram M. Laing, M.A.; Mathematics and Natural Philosophy, William Polson, M.A.

CAMBRIDGE UNIVERSITY.—Benn W. Levy Studentship in Biochemistry: F. W. Watkyn Thomas, B.A., Trinity (formerly Tonbridge School).

Corpus Christi.—Scholarships: £70, T. A. M. Davies, Clifton College, for Classics; £50, A. C. Jomaron, University College School, Hammer-smith, for Classics; £40, E. la M. Stowell, Sedbergh School and private, for History; A. Boswell, Wilson's Grammar School, Camberwell, for Science; F. W. Terrell, Clifton College, for Classics. Exhibitions of £30: J. V. Field, Marlborough College, and S. V. Foulston, Hymers College, Hull, for Mathematics; E. E. Raven, Shrewsbury School, for Classics; and L. J. Hooley, Macclesfield Grammar School, for Science.

Jesus.—Classical Exhibition, £30: C. R. Alston, Dulwich.

Magdalene.—Scholarships: £70, P. G. Kemp, Calday Grace Grammar School, for Classics; £50, A. C. Estcourt, Gresham's School, Holt, for Mathematics, and J. A. England, Wolverhampton Grammar School, for Classics; £40, C. K. Daphtry, St. Paul's School, and W. R. Wilkinson, Bradford Grammar School, for Classics. Exhibitions of £30: A. Conick, East London College, for Mathematics; C. R. Jackson, Aldenham School, for Classics; A. J. Collins, Merchant Taylors School, for History.

Non-Collegiate.—Clothworkers' Exhibitions, £30 a year for 3 years (with an addition on graduation): J. Rosbotham and F. J. Bywaters.—Leathersellers' Exhibition, £25 a year for 4 years: G. H. Hewitt.—Censors' Exhibitions: W. H. Stokes (£20); J. L. Cohen (£15); F. Meixner (£15).

Queens.—Entrance Scholarships and Exhibitions. For Classics: C. M. Holson, St. Paul's School, Scholarship of £70; J. S. Wane, Lancaster Grammar School, Scholarship of £50; H. G. Evans, Norwich Grammar School, and H. E. Chandler, Radley College, Exhibitions of £30. For Mathematics: P. J. Oldfield, Christ's Hospital, Scholarship of £50; H. E. Lambert, Bournemouth School, Scholarship of £40; J. C. Mirfin, Sheffield Central School, and G. J. Partridge, Christ's Hospital, Exhibitions of £30. For Science: H. W. Gardner, West Suffolk County School, and W. F. Jary, City of Norwich School, Scholarships of £40; C. P. Dutt, Perse School, Cambridge, Exhibition of £30.

GLASGOW UNIVERSITY.—Post-graduate Scholarship in Naval Architecture (Royal Commissioners for the Exhibition of 1851), £200 a year: Arthur Cannon (formerly of the Royal Naval College, Greenwich).

OXFORD UNIVERSITY.—Beit Prize, £50 (Colonial History): Neville J. Laski, Commoner of Corpus Christi (formerly of Manchester Grammar School).—Robert Herbert Memorial Prize: not awarded.

Brasenose.—Somerset-Thornhill Scholarship (open *pro hac vice*): Cedric P. Stoke-Jones, Bradford Grammar School.

Corpus Christi.—Classical Scholarships: N. E. Young, Corpus Christi College, Charles Oldham Scholar; W. A. D. Goodwin, Bromsgrove School; H. Morris, Rugby School; N. T. Porter, St. Edmund's School, Canterbury; J. C. Stokoe, Manchester Grammar School; and H. W. White, Bedford Grammar School. Modern History Scholarship: G. B. Ramsbotham, Wellington College.

Exeter.—Classical Scholarship: John F. Huntington, Marlborough College. Classical Exhibition: Percy H. Barringer, University College School.

Hertford.—Scholarship in Classics (honorary): K. M. Chance, Repton School.

Lincoln.—Classical Scholarships: £80, R. A. Robertson, Edinburgh Academy; £60, J. F. Thompson, Eton College. Exhibitions of £30: A. P. Ritchie, Berkhamsted School; C. P. Starke Jones, Bradford Grammar School; and A. V. Askwith, Bradford Grammar School.

New College.—Fellowship and Classical Lectureship: Leslie W. Hunter, B.A., Fellow of Magdalen.—Open Scholarship in Classics: V. Gollancz, St. Paul's School.—Open Exhibition in Classics: A. N. Westlake, University College School, Hampstead.

Queen's.—Berry Exhibition: Walter E. Butler, Rossall School.—Thanet Exhibition: A. F. Harrison, Appleby School.

University.—Classical Scholarships: E. R. Dodds, Campbell College, Belfast; E. E. Smith, Perse School, Cambridge; and T. R. F. Butler, Charterhouse. Lodge Exhibition: G. B. T. Jardine, Glasgow University.

A DEFENCE OF PRIVATE SCHOOLS.

ADDRESS BY SIR PHILIP MAGNUS, M.P.

AT the Annual General Meeting of the Private Schools Association, Sir Philip Magnus, M.P., was elected Honorary President for 1912, and delivered his presidential address, entitled "In Defence of Private Schools." He said that at present the prospects of private schools were somewhat clouded, but the outlook would improve, and these schools would be recognized as occupying a useful and very special place in our national scheme of secondary education. He did not regard with unalloyed satisfaction legislation which tended to lessen the self-dependence of the subject. Above all, they must take care that State action did not destroy that diversity of effort which aimed at satisfying the great variety of needs in every well organized society, and so preventing any decline or fall into the slough of dull and colourless uniformity. There was some fear of such results from a too rigid bureaucratic control of human activities. And this applied even to the influence of any centralized education authority. The example of Germany should serve as a warning. There was much in German methods which might be usefully studied; but those methods had now been sufficiently long in operation to enable us to see their defects, and to guard against too closely following them. We were too ready to imitate them without any sufficient inquiries into their full effects. John Stuart Mill wrote: "An education established and controlled by the State should only exist, if it exist at all, as one among many competing experiments, carried on for the purpose of example and stimulus, to keep others up to the standard of excellence." This expressed the real function of any system of State-controlled education.

BOARD OF EDUCATION AND VOLUNTARY EFFORT.

While the Board of Education as at present administered had helped to raise the "standard of excellence" in our schools, its constant incursions into the region of voluntary effort were a danger to be guarded against. There rested on it the heavy responsibility of recognizing and assisting all good educational work, and this responsibility should prevent any autocratic interference on its part with educational experiments that gave promise of valuable results, or with endeavours, other than its own, to provide systematic training. There was a natural tendency among officials to extend their influence, and this tendency, unless carefully watched, resulted in the gradual but sure suppression of private effort, and produced that level of uniformity which, in education, was destructive of those very qualities that had given to our national character its distinguishing marks. Within the last decade, the hand of the Board of Education had covered all our elementary schools, had reached our secondary schools, and was about to be stretched over our Universities and technical schools. If the Board gave help where help was needed, without enforcing in all cases identical conditions, it might render inestimable service to the cause of education. But it was equally true that the progress of education in this country might be seriously impeded by any endeavour to bring under its direct control the varied agencies that were now working in different ways to meet a vast number of diverse needs. The opinion was very generally held that a place should be found for private schools in the national scheme of education. If they were to continue to exist they must

be efficient and free from State control. The central authority should favour the extension of these schools. To this end the Board of Education should exercise its influence to prevent local authorities from using the rates for the establishment of new schools that would compete unduly with existing private schools.

NECESSITY FOR FREEDOM.

The essential feature of the private school should be its freedom. Still, it should be recognized as efficient, and such recognition should preferably be given by the Universities and accepted by the Board. The Universities were more likely to encourage freedom in teaching than the Board, and their standard of excellence would be more elastic and more capable of adjustment to varying needs. It was in the private schools, which depended on fees and not on grants, that educational experiments might most successfully be made. The teacher's personal interest in the physical, intellectual, and moral development of his pupils was incomparably of greater value than the strict observance of general regulations as to school fittings, or equipment, or conformity to any special time-table of studies. In order that the private school might be efficient and fulfil its purpose the fees should be comparatively high; but with the general increase of wealth and of the class distinctions which that increase tended to strengthen there need be no fear that the private school would fail to flourish. The school-master should, however, aim high. Character, as an element of success in life, told more than knowledge. As the relations of the State to the citizen during the last decade had been largely modified, the obligations of the citizen had been correspondingly increased. It was for the private school to recognize this broader outlook on life and to adopt a wider definition of the aim and purpose of education. It should train its pupils in practical pursuits, and, by means of regulated exercises, to discharge such duties as every citizen might be called on to perform. In this work it might occupy a position prominently in advance of the school that was State aided and State controlled, and might, firmly and permanently, establish its right to be recognized in any well organized scheme of national education.

THE PUBLIC-SCHOOL BOY.

A HEAD MASTER'S CONCLUSIONS.

MR. A. H. GILKES, Head Master of Dulwich College, communicates to the *Times* his conclusions on several things regarding education:

1. That boys at public schools, at whatever subject they are working—classics, science, modern languages, engineering, mathematics—are not, as a rule, sufficiently in earnest about their work.
2. That boys not at public schools are very much in earnest, but that their earnestness is generally inspired by ambition, and thus often has not the best result; also that they work without sufficient relaxation, and thus injure their physical condition, as well as lose that development which comes to a boy only from proper intercourse with his fellows.
3. That the homes of public-school boys are largely responsible for the indifference which boys show to their work. Their parents and friends continually talk of school work as something to be evaded, and of masters as men to be outwitted.
4. That social intercourse and games have somewhat too much influence at public schools themselves.
5. That teaching methods have been often too dry, and too much directed only to the memory of boys.
6. That the chief danger at the present moment is one in the opposite direction, and that too little demand is now made on a boy's own effort.
7. That boys' minds vary, and that different subjects suit different boys, some mathematics, some languages, some mechanics, and so on.
8. That schools should in every case be arranged so as to meet these different wants, by the establishment of several sides, on each of which most subjects should be taught, but those subjects should in each case be the main subjects to which the boys' minds are most inclined, and the others subordinate.
9. That the danger of external examinations is great, as obscuring the true end of education.
10. That the settlement of educational questions rests at last with the world beyond school.
11. That a boy who has been in earnest at school will, as a rule, meet the requirements of that world, on whatever side of his school he has been, otherwise he will not.

EDUCATIONAL CONFERENCES.

THE HEAD MASTERS' ASSOCIATION.

THE Incorporated Association of Head Masters held its twenty-first Annual General Meeting in the Guildhall (January 9), Dr. H. J. Spenser (University College School) presiding. Dr. Spenser said that all of them were conscious that the time had come when the nation could no longer afford to shirk the task put to it by Matthew Arnold in 1867, the organization of secondary education. To-day the whole business confronted them, grim, formidable, bristling with difficulties, largely attributable to their own neglect in bygone years. They were awaiting, not without apprehension, reform from without. Towards the unification of the profession substantial advance during the past year had been made on three lines that converged and united—training, registration, pensions. What might be the ultimate outcome of the Order in Council establishing a common register no man could foresee, but for the present they hailed it as the capture of the first outwork, the key of the position. In the interval before the promised Teachers' Council could come into existence they had before them the task already accomplished by their colleagues of the primary schools. Before they could make common cause with the other branches of the profession they must make common cause with each other. What they needed was a Ministry of Education organized for education, and not merely for administration. Referring to the third volume of evidence given before the Royal Commission on University Education in London, he said that it was clear that the traditional practice of the older Universities and their colleges with regard to the age of admission was more conducive to the establishment of a high standard of national education and to the efficiency of secondary schools than the empirical methods of modern Universities. Members of that Association had gained valuable experience of the free-place and scholarship system. They had learned that the ladder must be widened, that it must not lead merely the few to the University, but must provide for the many preparation for the vocations of industry and commerce. The ladder needed supplementing by the sieve judiciously applied at successive stages of the upward progress.

After some debate, a motion "that in the opinion of this Association the time has now come when all private and proprietary schools and other educational institutions should be inspected by the Board of Education" was carried, with a few dissentients, and referred to Council for action.—Dr. Alex Hill, Secretary to the forthcoming Congress of the Universities of the Empire, addressed the Conference on the subject of the Congress.—Discussion took place on "Music Teaching in Schools," on "Some Suggested Reforms in the Teaching of Science," and on the evils of the premature withdrawal of boys from secondary schools.—A long discussion on the teaching of Greek and Latin, introduced by Dr. Rouse, ran off into a consideration of the question whether the pupil should learn his lesson with pleasure or with pain.—A resolution was cordially passed to the effect that the Association would welcome the adoption of some scheme whereby success in the War Office Examination for Certificate A might count as a subject or part of a subject in such examinations as are usually taken at the end of a school career.

ASSISTANT MASTERS IN SECONDARY SCHOOLS.

THE Annual General Meeting of the Incorporated Association of Assistant Masters in Secondary Schools was held on January 5 at Merchant Taylors School, Mr. S. E. Winbolt (Christ's Hospital), chairman for 1912, presiding. The Statement of Accounts showed that the finances of the Association are in a thoroughly sound condition, owing in a great measure to the large increase of membership during 1911. The Report of the Joint Scholastic Agency showed that the Agency is being made use of to a larger extent, both by head and assistant masters, every year.—Mr. A. A. Somerville (Eton College) moved the adoption of the Annual Report of the Executive Committee. He touched upon many important questions which had occupied the attention of the Executive Committee during the past year—notably the questions of the new Teachers' Council, superannuation, the National Insurance Bill, &c. With regard to superannuation, he referred with satisfaction to the

reception by the President of the Board of Education of a deputation which waited on him in November last, and also to the list of questions on practical points connected with pensions, which has since been forwarded by the Board to a Joint Committee, which has the question now in hand, for their consideration. The following resolutions were passed:—(1) "That this Association welcomes the formation of the Teachers' Council, and trusts that it will be a useful instrument in organizing and unifying national education." (2) "That this Association welcomes the publication by the Board of Education of statistics of salaries in State-aided secondary schools, which conclusively prove the urgent necessity of a superannuation scheme for secondary teachers; and feels deep satisfaction at the progress made with regard to this question during the past year." (3) "That this Association deplures the many cases of arbitrary dismissal which have occurred during the past year, following upon the appointment of a new head master; and considers that an immediate remedy should be found for so unsatisfactory a state of things." (4) "That the lowest salary paid in any secondary school to an assistant master should be £150, rising by automatic yearly increments of at least £10 to £300; and then by similar increments of £15 to at least £450." (5) "That, in the opinion of this Council, the proposed grant of a large sum of public money to establish a system of scholarships in secondary schools in Ireland should not be considered until the present unsatisfactory position of assistant masters in such schools has been improved."

In the afternoon Dr. A. E. Shipley, F.R.S., F.Z.S. (Master of Christ's College, Cambridge), read an interesting paper on "Students in the late Sixteenth and in the Seventeenth Century." In the latter part of his paper he referred to the many questions affecting the status and remuneration of assistant masters in secondary schools at the present time.—A discussion on "The Relation of Examinations to Education" followed, in which Mr. P. J. Hartog (Registrar of the University of London), Dr. W. H. D. Rouse (Perse School, Cambridge), and Mr. J. L. Holland (Secretary of the Northamptonshire Education Committee) took part.

THE PRIVATE SCHOOLS ASSOCIATION.

The Annual General Meeting of the Private Schools Association was held (January 4) at Dr. Williams's Library, Gordon Square, W.C. Sir Philip Magnus, M.P., was elected Honorary President for the year, and delivered a strong "Defence of Private Schools" (see another column).—Miss L. M. Reynolds, B.A. (Devonshire House, Carlisle), read a paper on "School Journeys: a Record of Twelve Years' Experience of Open-air Education."—Miss A. M. Kellett (Brazenose School, Stamford) read a paper on "Should Latin be taught to Girls?" which was followed by a lively discussion.—Mr. A. D. Hardie, M.A. (Linton House School), read a paper on "The Training of Teachers," which again lead to keen debate.

PUBLIC SCHOOL SCIENCE MASTERS.

The Association of Public School Science Masters opened its twelfth Annual Meeting at the Day Training College, Southampton Row (January 10 and 11), under the presidency of Sir J. J. Thomson. The President dealt with some general aspects of the educational question. The essential thing, he thought, was to have intelligent masters and small classes. He protested against the tendency to make lectures supersede textbooks; dissented from the view that pupils should be examined by their own teachers instead of by outside examiners; attached the utmost importance to the early development of independence and self-reliance; and wished that students could learn German enough to translate an ordinary textbook.—The necessity of chemistry and physics as an introduction to the study of biology, and the teaching of qualitative analysis, were discussed. Perhaps the keenest interest was exhibited in a discussion of educational psychology, Prof. Armstrong refusing to accept the evidence or the experiments of the psychologists, for there was an enormous amount of fallacy in their tests.—Dr. Nuun admitted that psychologists were aware of their imperfections, but bad to begin at what point they could: a student by observing gained self-reliance, and faculty was increased in other directions.

L.C.C. TEACHERS' CONFERENCE.

The Sixteenth Annual Conference of Teachers called by the London County Council was held at the Birkbeck College (January

4 and 5). Mr. Cyril Cobb, Chairman of the L.C.C. Education Committee, in welcoming the Conference from the chair, said the growing influence and importance of the conferences was emblematic of the growing interest among educationists not only in London, but throughout the country.—Miss E. E. Kyle (Highbury Hill High School) opened a discussion on "Specialization in a Secondary School," and Mr. J. W. Samuel (Millwall L.C.C. Mixed Central School) dealt with "Specialization in a Central School."—Prof. Selwyn Image (Oxford) presided over a keen discussion on "Chalk, Brush, and Pencil Work in Elementary Schools."—Other subjects handled were "The Doctrine of Formal Training (Mental Discipline)," and "The Treatment of Backward Children." There was a crowded attendance, many sometimes failing to obtain admittance.

THE TRAINING COLLEGE ASSOCIATION.

Prof. Adams, LL.D., presided at the twentieth Annual General Meeting of the Training College Association, held at the Westminster Palace Hotel (December 20). In his presidential address, Dr. Adams said outside critics seldom raised any objection to the practical work done in training colleges; their attack was almost entirely directed to the theoretical instruction. They did not realize the magnitude of the body of educational facts that had passed out of the controversial area and were in universal recognition. Educational theory had become consolidated to such an extent that in the training colleges it would be possible to spend the whole available time of the students on non-controversial matters. Yet the practical teacher was apt to be impatient of the training college, mainly because of its connexion with controversial matters, and the claim was sometimes made that the training-college people should go to the practical teacher and learn of him. Within limits, the suggestion was a good one, and, as a matter of fact, was acted upon by the training-college people, who had the advantage of understanding the position of the practical teacher, while he did not understand theirs. The present position marked a movement towards an organization in which University, college, and school would be linked up into one whole, with no divided interests, the University supplying the theory and its newer development, the school supplying the field of practical criticism, and the college holding the balance between the two, saving the school from becoming a mere institution of rule of thumb and keeping the University within the realm of the practical.

A number of new or amended syllabuses suitable for two-year training colleges and adapted for use in connexion with the revised curriculum recently approved by the Association, were ordered to be transmitted to the Board of Education as samples of the kind of syllabus which the Association thought desirable. The Chief Inspector of Schools under the Board of Education had sent a letter asking for help in revising the suggestions for teachers issued in 1905.—The President and other members expressed gratification at this informal recognition of the Association as a body of practical persons, and the letter was referred to the Syllabus Committee with instructions to act on it.—Canon Dennis moved that the question of the work done by student-teachers should be remitted to the Committee with instructions to see whether it could be improved; and the motion was agreed to.

NORTH OF ENGLAND EDUCATION CONFERENCE.

The tenth Annual Meeting of the North of England Education Conference was held at Armstrong College, Newcastle-upon-Tyne, on January 4, 5, and 6, under the presidency of Earl Grey, President of Armstrong College. It was a very large gathering, the Universities of Durham, Sheffield, Leeds, and Manchester, together with the public Education Authorities of Northumberland, Durham, Yorkshire, Lancashire, Cumberland, and Westmorland, and various teachers' organizations, being well represented. In united conference were discussed (1) "Education and Practical Life," paper by Sir Hugh Bell, and (2) "Education and the State in relation to (a) Curriculum, (b) Finance, (c) the Division of Control as between the Central and Local Authority," paper by Vice-Chancellor Sadler. The sectional meetings discussed the planning of elementary school buildings, the teaching of history by means of local records, a shorter curriculum and fewer examinations in secondary schools, the awarding of scholarships, the methods of raising the moral tone of the corporate life of the school, and the place of Art in a

liberal education. The papers were on a high level of excellence, and the discussion spirited and instructive. Sir Hugh Bell insisted on the importance of training the mind over the cramming of it with facts; on the necessity for sedulous preparation for practical life; on maintaining a wide and free outlook; on limiting State interference to seeing that good citizens are turned out as speedily as possible; and on adapting the teaching to the varying conditions of the locality. He hoped to see the school age raised to sixteen, and the coming citizen kept under suitable discipline from fourteen to sixteen, "those two crucial years." Dr. Sadler contended that complete control of education by the State is inexpedient and impracticable: "the essential thing is that the intellectual and moral autonomy of every school, college, and University should be secured, subject to the enforcement of sufficient guarantees for the adequate discharge of its appointed duties and of its responsiveness to the valid claims imposed upon it by public trust." Over-regulation he held to be a mistake. "History proves the value of the good private school as a pioneer in new educational methods and as the preserver of some temporarily unfashionable aspects of educational truth."

NATIONAL ASSOCIATION OF EDUCATION OFFICERS.

THE Annual Conference of the National Association of Education Officers was held (December 20) at Sheffield University, Mr. Percival Sharp, Secretary of the St. Helens Education Committee, presiding. The President said that their schools wanted not inspection, but inspiration, and he would like the word "inspectors" to be blotted out of their education vocabulary. The ideal schoolmaster knew and loved the child, and his staff regarded him as the head of the household. Would that the Inspector were the ideal schoolmaster of schoolmasters! Fifteen years ago the Inspector was a kind of glorified check-weighman for the Board of Education. Those were the days of payment by results. Then they had Inspectors with a craving for uniformity in the teacher. The third and present stage was the day of the Junior Inspector—the young man with social antecedents, who brought with him that attitude of complete detachment which the Board loved, and which, translated into plain words, counted nothing more than a perfect ignorance of the duties he was called upon to perform. A new and higher conception of school inspection was due. Much too often they felt the dead hand of the destructive critic, and much too seldom did they feel the warm, living soul of the constructive inspirer.—Among the subjects discussed was the proposed formation of a National Council of Educational Administration, which had the general approval of the Conference.

THE CLASSICAL ASSOCIATION.

A GENERAL Meeting of the Classical Association was held (January 8) at King's College, London, Dr. Kenyon, C.B., Principal Librarian of the British Museum, presiding. The Bishop of Lincoln took for the subject of his presidential address, "Hellenism as a Force in History," and worked it out instructively. An animated discussion took place, on a motion by Prof. E. A. Gardner (University College), "that it is desirable that Greek should be made an alternative subject of study with Latin in institutions where one classical language only can be studied." To give Greek a fair chance on its merits (he said) two things are essential—first, that Greek and Latin should be alternatives where both are not required, in University entrance examinations and their equivalents; and that the test for Greek should not be merely in grammar, but in intelligent reading and translating of classical authors; and, secondly, that all those responsible for classical teaching in schools should be competent to teach Greek as well as Latin. It would therefore be a grave mistake to allow honours in Universities in one classical language only. If the choice of Greek involves no subsequent disability and the possibility of learning it is brought within the reach of all capable of profiting by it, what remains is to convince teachers and parents of its educative value, and to encourage its study, especially in girls' schools and other schools free to choose their curriculum. This is a task in which the Classical Association and the Hellenic Society may well co-operate, with confident hope of a successful issue.—Prof. Gilbert Murray seconded, and a prolonged debate ensued, Prof. Sonnenschein

eventually moving that the discussion be adjourned to the next regular meeting of the Association.—The motion was carried.

Miss H. L. Lorimer (Somerville College, Oxford) read a scholarly and interesting paper on "Dress in Homer and in Archaic Greek Art"—Prof. Haverfield gave a critical and charming paper on "Roman London."—In the evening, at a conversazione at Mercers' Hall, Prof. Murray read a learned paper on "The Ritual of Dionysus and the Forms of Greek Tragedy."

THE MATHEMATICAL ASSOCIATION.

PROF. E. W. HOBSON, in the course of his presidential address at the Annual Meeting of the Mathematical Association, held (January 10) at the Day Training College, Southampton Row, remarked that a great change in the spirit of teaching mathematics had already taken place. The rigid insistence on the theoretical side was giving place to the more practical side of the subject, rising only gradually to the more abstract and theoretical side. The merits of the "rigorous" and "intuitive" methods of mathematical teaching were discussed, and the President said Euclid was not now regarded as good by either school of teaching. His teachings were neither rigorous nor practical.—Mr. G. St. L. Carson, in a paper on "Some Unrealized Possibilities of Mathematical Education," said the mathematician was no longer regarded as a dreamer of dreams; he was classed with the doctor, the engineer, the chemist, and all those whose specialized labours had had immense import for the human race.—Dr. Macaulay contended that the philosophical side of mathematics had only been developed in comparatively recent years, and was not in that simplified state in which they could profitably teach it to young students.—Mr. Carson, in reply, said it would be possible, if they recast their ideas of elementary teaching.

THE MODERN LANGUAGE ASSOCIATION.

THE Annual Meeting of the Modern Language Association was held at Birmingham (January 4), Mr. J. L. Paton (Manchester Grammar School) presiding.—Mr. Neville Chamberlain welcomed the delegates on behalf of the Council of the University.—In his presidential address Mr. Paton said they wanted the modern language teacher to be in every respect on a level with his classical colleague and to be as much a scholar, in the true sense of the word, as any master on the staff. They were beginning to see that internationalism was to be the note of the future, just as nationalism had been the note of the past century.—Prof. Wichmann said as a result of modern language studies there existed in Germany a widespread knowledge of the conditions prevailing in other countries, a sincere goodwill towards foreign nations, and a strong desire to live at peace with them. Had this not been the case he doubted if a few months ago wiser counsels would have got the upper hand of national passion stirred up to fever heat. The German schoolmaster last summer saved the peace of Europe.

THE ENGLISH ASSOCIATION.

THE English Association held its annual conference at University College, London (January 12 and 13). The most practical subject of discussion was "The Teaching of English Composition in Schools." Mr. F. S. Boas, who presided, said there was general agreement (1) that the term "composition" must be interpreted in the broadest possible sense, including oral as well as written composition, and that it must be considered in relation to all other allied forms of self-expression—artistic, manual, and so forth; (2) that composition was in some respects the most important branch of the English curriculum, or, at any rate, it was the part by which the capacity of the average boy or girl was chiefly judged on leaving school; and (3) that it was the most difficult of all branches of English teaching.—Miss E. A. Ford (Clapham Day Training College), who read the first paper, dealt with the teaching of composition in relation to the teaching of literature. It was a fact, she said, that the average English schoolboy or girl on leaving school could not write English. It seemed clear that teachers had not realized sufficiently the importance of the teaching of the mother tongue. They had been too sanguine: they had imagined that the child would gradually grow to a knowledge of the use of its mother tongue. Miss

Ford's paper was designed to show that the literature lesson provided very good opportunities of exercising children in composition. It was mainly from the literature lesson that children, after a certain age, learned new words.—Dr. Rouse (Perse School, Cambridge), in a paper on "The Place of English Composition in the Language Scheme of a Secondary School," said the substance of his paper could be given in one sentence: "English composition is the foundation for all other work." If the pupil could not express his thought he was hampered in every study, and so English composition was the foundation of all other work. Systematic training in English composition was more needed now than it used to be, because now the school teacher had no help from the home. The days when mothers and nurses told stories to the children were gone. The teacher had now to bring out latent faculties which in times gone by would often have been vigorous. He took composition to include speech, writing, and acting. Education which neglected any one of these was defective. As to composition, they were feeling their way. No one could say that this or that was the right way to teach composition. The paramount necessity was clearness, and teachers could not be too careful in guarding against premature elegance.—Mr. George Sampson (Bellenden Road Higher Grade School) dealt with the subject of "Oral Composition in Upper Classes." He emphasized the point that oral composition was not to be regarded as merely a preparation for written composition. It was a thing in itself, and regular practice in it ought to be continued throughout school life. Mr. Sampson went in detail into various ways of cultivating lucid speech among the pupils in a class, such as answers to questions, recapitulation of a lesson just learned, complete narration, discussion, and debates.

A discussion followed the reading of the papers. Miss E. J. Morley (Reading University College) spoke of the amount of school time necessary for the subject of composition.—Mr. A. H. D. Acland, as Chairman of the Consultative Committee, Board of Education, invited opinions as to whether the kind of composition demanded in scholarship and kindred examinations was calculated to affect injuriously the kind of teaching advocated in the papers which had just been read.—Mr. P. J. Hartog (Academic Registrar of London University) urged that the aim which all teachers of English composition should have was to get from their pupils the actual expression of the pupils' own thoughts.—Mr. W. J. Addis (County School, Brockley) protested against the statement of Miss Ford that no English boy or girl on leaving school could write good English.—Dr. Rouse, in reply to Mr. Acland's question, said that, in talking to teachers of all sorts of subjects, he found that, when asked if there was any obstacle in the way of making such-and-such an improvement, the answer invariably was—public examinations.

THE HISTORICAL ASSOCIATION.

THE sixth Annual General Meeting of the Historical Association was held at Manchester University (January 11-13), Prof. Tout presiding. The subject of chief interest was perhaps the attitude of the teacher towards controversial questions of the present day. Prof. Hearshaw (Armstrong College) suggested that until adolescence—fourteen years of age—present-day controversial problems should be strictly barred in every shape and form in the school curriculum, and that, as to the problems of the past—those of the seventeenth century, for example—the teacher should train the pupil in the historical method and show him how to approach these questions with openness of mind. Secondly, when the age of fourteen was reached, and the pupil had become more mature in his thought, definite instruction should be given, in adult schools or continuation schools, in modern political problems, but again from a strictly impartial point of view. In conclusion, Prof. Hearshaw said the teacher should always maintain an attitude of strict impartiality in respect of the political controversies of the times.—Prof. Grant (Leeds University) urged the importance of so teaching history as to show the continuity of our own age with the ages that had gone before. The historic sense was of immense importance. As to the relation between the teaching of history and politics, his own feeling was that by concentrating his attention on political science the teacher of history did not really help political doctrine, while at the same time he injured the study of history.—Prof. Findlay (Manchester University) thought it was more important that they should claim their freedom as citizens than ask for any special power to train the citizens of the future. Their influence and scholarship must be used, but they must

train the pupil not to look to them for beliefs; and the method of using documents and materials and letting the scholars form their own judgment was superseding the old method, by which the teacher supplied both the documents and the judgment. There was no reason for concealing their judgments, but equally there was no reason for volunteering them. The root of the whole matter was intellectual freedom. They claimed it for themselves, and they must give it also to their scholars.

Prof. Pollard said he had been astonished to hear two people say that we should eliminate recent history from the studies of children under the age of fourteen. About 80 or 90 per cent. of the children who were later going to exercise votes left school before the age of fourteen. Were they going to refrain from any attempt to instruct these future citizens in the way in which they were to exercise their votes? The general opinion seemed to be that the teaching of politics should be eliminated as far as possible and the teaching of party politics eliminated entirely. But every political question was an old question, and when they were teaching the sixteenth and the seventeenth centuries they would be ever coming across these questions of Home Rule and the Poor Law, which were matters of party politics in the present day. How, then, were they going to touch such periods? He would make the teacher's method of teaching controversial questions a test of his efficiency as a teacher of history. The Unionist teacher must be able to present a plausible case for Home Rule. If he could not do so he had no business to be a Unionist, and *vice versa*. It was said of Charles James Fox that he could put the case for his opponent better than his opponent could do it for himself, and if they wanted to understand history they must be able to present to their own minds three or four sides to every question. There were more than two sides to every question, and they must get that into their minds and into the minds of their pupils as well. Their object was not to produce a body of political truth, but to create an attitude of mind; for that, and not the acquisition of knowledge, was the object of education.

A resolution "that external examinations for boys and girls under the age of sixteen are as undesirable in history as in every other subject," was carried unanimously.

The teaching of history in elementary schools was also discussed on a motion by Mr. F. J. Adkins, President of the Sheffield Branch of the Association, "that a course of history instruction sufficient to give children as significant an idea as their age will permit of the growth and nature of the British State should be a first charge upon the time of elementary schools for older children." Prof. Pollard assured the meeting that the educational authorities were well disposed to increased specialization and regarded with friendly eyes the proposal made by the Historical Association a year ago, that there should be in every school, primary or secondary, at least one person specially qualified to teach history. The great obstacle to carrying the idea into effect was offered by the teachers themselves. In order to assist the supply of competent teachers of history the University of London had started a diploma in history, and teaching for that diploma was given entirely in the evening at such times as it was possible for the teachers to attend. It was a four years' course, and already developments were contemplated. He commended the example of London in this matter to Manchester and other Universities.—Prof. Leonard (Bristol) said the Association must soon take up the question of teaching history to working men and women. Classes for this purpose were successfully at work in Bristol.—Prof. Unwin (Manchester), Mr. J. L. Paton (High Master of Manchester Grammar School), and others continued the discussion, and the proposition moved by Mr. Adkins was adopted.

THE GEOGRAPHICAL ASSOCIATION.

THE Annual Meeting of the Geographical Association was held at University College, London (January 13). The report showed that the Association now had a membership of 962, an increase of 60 during the year. Two new branches had been formed, one at Leeds and one at Chester. Dr. G. R. Parkin (Organizing Secretary of the Rhodes Scholarship Trust) was elected President of the Association for the ensuing year.

In his presidential address Dr. Parkin declared that no nation in the world had so much reason to study geography as our own. Every year some 300,000 left this country for some other land. It was of great importance that these people should know something about the condition of the country they were going to, for it was going to shape their future characters. About four years

ago, when staying in Montreal, he was asked: "What do you think of this as a country for a white man—35 deg. below zero last night?" Dr. Parkin said that he considered it one of Canada's greatest assets. "How?" he was asked. He replied that an occasional 35 below zero ruled out the black population altogether. It kept out the immense Mediterranean flow which was sweeping across Central America, and therefore the population consisted of the strong Northern races. Canada accordingly must be one of the strong Northern races of the world. More important still was the effect of the climate on the Englishman in the submerged tenth of Canada. Nature there took such a man as it were by the scruff of the neck and said: "If you don't have industry, foresight, and prudence, you will die." The result was that a man of this type got his backbone strengthened, and in a generation became a good citizen. He did not hesitate to say that the British nation had wasted almost more from ignorance of geography than it had in building up its enormous War Debt. He instanced, as an example, a railway which had been thrown across part of a continent in an impossible place for settlers, whereas the acquisition of geographical knowledge would have shown that, within a hundred or two hundred miles, the line might have sent a stream of population flowing through a fertile belt. The great outflow of masses of our people seemed almost as erratic and instinctive as the drift of the buffalo. Alluding to the bearing of geography on commerce, Dr. Parkin spoke of the necessity which suddenly arose for finding areas suitable for cotton growing within the Empire. A great American authority told him recently that it was quite possible that within their lifetime the British Empire would be supplying itself with cotton. Thousands and thousands of our soldiers had perished simply through the absence of a knowledge of geography. In South Africa troops were given a hopeless task in the belief that a mountain was on the other side of the river from where it actually was. From the top of Spion Kop one could see as clearly as possible the geographical mistake made. Discussing the influence of geography study on political thought, Dr. Parkin said there was nothing which made an outside observer more hopeless about this country than the relation of the thought of the people to what the Empire actually was. Nobody who knew the conditions under which the British Empire existed—that it had to draw its food and raw material from the ends of the earth and to send its manufactures back again—who did not also know the sources of its supply, the region of its markets, the conditions which made the markets what they were, and the necessity of holding the communicating points between them in order to maintain our national life, was fit to be a citizen of this country in the larger sense of the word. There was no part of the teacher's work, outside the building of character, which did more towards making a good citizen than education of this nature. With the old fixed ways of looking at things in this country, few people realized the enormous changes of character which occurred when emigrants went to the outlying parts of the Empire. In the study of geography there could be nothing more stimulating to the mind of the pupil than to be shown the extraordinary influence which was going to be exerted on the British race by the various climates in which they were now spreading all over the world. He believed the Englishman, brought up in their raw, rough climate, which every one thought it his duty to grumble about, stood excesses of heat and cold almost better than any other man.

Prof. Lyde initiated a discussion on the organization of home work in school geography, advocating the graduating of the lessons so that the cleverest set of boys received the most difficult task.—Miss Rickards urged the desirability of encouraging independent work on the part of the elder pupils by making them accustomed to deal with information which they could obtain themselves from various sources.—Other speakers dealt with the combination of geography and English and emphasized the importance of children expressing by diagram the lesson already taught in school.—Mr. Herbertson, presenting maps based on the latest census returns for the world, said that approximately the population of Europe was now 400,000,000; Asia, between 950,000,000 and 1,000,000,000; Africa just over 130,000,000, and America slightly under that figure. Mr. Herbertson also exhibited lantern slides of typical land forms selected by a Committee of the International Congress, and Miss S. Nichols showed maps and views of typical land forms in the Near East.

TEACHING OF HISTORY BY MEANS OF LOCAL RECORDS.*

By F. J. C. HEARNshaw, M.A., LL.D.,

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I.

"HISTORY," wrote John Richard Green in 1869, "is the most unpopular of all branches of literature at the present day." Green himself, together with others who caught his noble and infectious enthusiasm, did much to restore history to its proper place in the regard of the reading public. But long after it had regained its rightful position in the realm of literature, it waged a doubtful battle in the realm of education. Most of us can remember the ignominious rank which was assigned to it in the curriculum of the schools in which we were taught, the dullness of the sleepy hours during which we learned about the dreamy doings of the dead, the burden of the load of dates with which our memories were piled. The evidence of our own experience is confirmed by statistics. Until 1900, in public elementary schools, history was an optional and not a compulsory subject. Of all the optional subjects it was the one least frequently chosen, most generally abhorred. For example: in 1899, out of 522,680 children under the London School Board, only 20,765—or less than 4 per cent.—took history as a class subject. The code of 1900 raised history to the grade of a compulsory subject in public elementary schools, and so forced teachers and trainers of teachers to take serious account of it. This increased attention in one great department of education influenced others also. Examining bodies, secondary schools, and Universities, all began to revise their syllabuses and to give to history a larger recognition. But to make a subject inevitable is not to make it interesting, except to the officially minded person to whom whatever is, is right. It became necessary, and it still remains necessary, to ask why, at the close of the nineteenth century, history was so commonly avoided and disliked. The answer is, I think, twofold. First, in the minds of teachers, and of thoughtful people generally, there lingered a suspicion that the value of history is small because the truth of history is questionable. "History is not worth studying," said Walpole, with that over-emphasis which tends to become habitual in politicians, "for we know that it must be false." Much the same sentiment was expressed of the French journalist and romance writer, Alphonse Karr, in the words: "De toutes les histoires écrites les romans sont les seuls dignes de foi." The question of trustworthiness and veracity, however, was one that troubled only mature and conscientious minds. To the minds of children the defect of history was that it dealt with persons and things remote from their everyday experiences, alien from themselves, lacking in those elements of common humanity which alone can give a sense of kinship. The provisions of Magna Carta, the battles of the Wars of the Roses, the causes of the quarrels between the Stuarts and their parliaments—all such things as these, when enumerated in the arid summaries of textbooks, were devoid of all vital connexion with any of the things which formed the environment and made the world of the living child. "History is unpopular," said Green, "because it seems more and more to sever itself from all that can touch the heart of a people."

If these were the causes of the unpopularity of history in the days of Queen Victoria, how far have they been removed in the present day, and how can their recurrence be avoided? It may be said at once that the charge of unaccuracy is rapidly becoming invalid. History is recognized as a science, and it is now written, and where necessary rewritten, in a spirit of scientific thoroughness and impartiality. But it has not yet been fully brought into touch with common life, and in order that it may be so brought into touch three things are needful: first, its vital connexion with current politics must be demonstrated; secondly, its social, industrial, and economic aspects

* A paper read at the North of England Education Conference, Newcastle, on January 5, 1912.

must be emphasized; thirdly, it must be illustrated wherever possible by means of local records and relics. It is not my business now to deal with the first two methods of conveying the breath of life to the dry bones of the past. I must limit myself to the task of showing the advantage which the teacher gains when he is able to give to the "airy nothings" of the textbook writer "a local habitation and a name."

II.

In order to guard against possible misapprehension let me say, first of all, that I do not contend that "local history" as a separate subject should find a place in the school curriculum. By itself it would be too thin, too limited in scope, too trivial. It would fail in one of the prime objects of historical instruction, which is to enlarge the horizon of the mind, to widen the sympathies, to raise the growing interest of the child above the barriers of his own restricted life. I hold, on the contrary, that local history should be kept in complete subordination to general history, and should be treated simply as a means by which general history may be the more effectively taught. I would refuse to allow any separate hour to be assigned to it in the time table, and would urge, instead, that no hour in which history is taught should remain devoid of its presence and its influence.

As auxiliary to general history, the history embodied in local records and relics seems to me to fulfil the following important functions:—

(1) It supplies illustrations and furnishes that detail without which the abstractions of the historical textbook remain unrealized. Textbook accounts of national events are necessarily brief and bare. They lack atmosphere. They convey to the imagination of a child impressions little more vivid than those conveyed by the multiplication table or the axioms of geometry. The feudal system, for example (assuming it to have existed), is little less difficult to grasp and to explain than the binomial theorem (assuming it to be true); but if a child can be taken to a Norman castle one important aspect of feudalism, viz. the military aspect, can, to some extent, be made clear to him; while if the Domesday report upon some manor in his immediate neighbourhood is elucidated, he will at least realize that William the Conqueror was a man and not a mere historic symbol or pedagogic *x*.

(2) It brings history into touch with actual life and with everyday experience. Outlines of general history are forced, by reason of the immensity of their theme, to confine themselves to big men and great subjects. They cannot help it. But the result is that they are "wound too high, for mortal man beneath the sky." Historians, like Macaulay, who come down from their lofty pedestal and walk the common ways of men, have to give up the attempt to portray long epochs, and to limit their realistic efforts to a microscopic portion of the span of human evolution. Now local records and relics, when they are available, serve to bring now one fragment of the nation's story, now another, into relation with history of the village or the borough community. Thus they tend to invest not only the related fragments, but the whole with actuality. There are few places in England which are not within reach of some historic site, few which have not been associated with some man of more than local note, few whose parish or municipal registers are wholly devoid of reference to events of national importance, few which have had nothing to do with any movement which has affected the kingdom at large. Places such as York and Lancaster, Durham and Newcastle, are so full of historic associations, that it is almost possible to write the history of England from the point of view of any one of them. Teachers who fail to use the treasures of localized history neglect one of the most potent instruments by means of which they can make the story of the English nation a vivid and fascinating one to their pupils.

(3) History taught by means of local records and relics has the educational merit of proceeding from the known to the unknown, from the more familiar to the less familiar. In Germany *Heimatkunde*, or knowledge of one's native place, forms a recognized basis of instruction. Topography prepares the way for geography; the plan of the village makes intelligible the map of the world; the spectacle of the policeman fits the imagination to comprehend the idea of the distant central

government, and so on. Similarly history begins at home, and its sphere is extended until it touches the national history by means of the *Ausflug*, or excursion to spots where noteworthy events took place, where relics remain, or where records are preserved. We, in England, would do well to bear the German principle in mind, even if we do not feel ourselves free to apply it with the pedantic thoroughness of our Continental cousins.

(4) Local records emphasize and bring into prominence the social, industrial, and economic aspects of history. The dramatic events of general history are wars and diplomatic conflicts, and the easily besetting temptation of the historian is to give them somewhat more than their due attention. Of course they are important; but they are not the only things that are important. After all, the State exists for the nation, and not the nation for the State. Politics, with its international and its parliamentary crises, is only a means to an end, viz. the provision and the maintenance of the conditions of the good life for the people at large. Politics loom too large in general histories. From local records they are, as a rule, totally absent. Thus local records "call a new world into existence to redress the balance of the old." They bear witness to the slow but sure development of the commonality; they tell of the evolution of popular government; they show the effects of industrial and commercial changes; they speak of birth and death, of love and mortal sorrow, of faith and immortal hope. I do not think, for instance, that I ever realized what the plague meant to medieval England until I looked through the burial registers of a little Hampshire village, and noted how, in bad years, in family after family, mother and baby, father and son, brother and sister, husband and wife, were carried in swift succession to one common grave.

(5) Local records do for English history one service over and above those which they render in the case of the histories of most other countries. They point the way to a realization of the process by which the English constitution has been developed. The local community, rural or municipal, was the original unit out of which the British Empire has been constructed. Communal self-government preceded national self-government; Parliament was at first "a concentration of local machinery"; municipal charters were the model upon which Magna Carta was framed; Protection and Free Trade were borough problems before they became Imperial problems. Local records, therefore, especially in the cases of the larger English towns and cities, not infrequently provide most instructive evidence as to how, on a small scale, in distant days questions were dealt with which have now become of international importance.

(6) Local records provide admirable opportunities for practice in historical research to teachers and to their more advanced scholars. The sort of thing that can be done, even by the intelligent but uninspired amateur, is shown by the summaries, all made to a rigid pattern, which, under the name of local history, give collected scraps of information respecting manors and villages in the "Victoria County History" series. Very much more can be accomplished by the zealous student who can concentrate his efforts upon one place, and who can bring to his work both local knowledge and an acquaintance with the course of general history. It not infrequently happens that those who begin by endeavouring to solve some knotty problem in local history end by finding that they have in their hands a clue to the solution of some obscure question or other in the constitutional history of the country.

(7) Finally, the study of history from local records tends to stimulate what I, perhaps, may be allowed to call local "patriotism." It shows the significance of things familiar; it rouses a lively interest in objects which otherwise might seem common and base; it invests every well known spot and every existing institution with associations with bygone generations of notable and worthy men; it makes it appear to be an object not beneath the dignity of the modern citizen to maintain the heritage of the past, and to transmit it unimpaired to the ages that are to come.

For these reasons, then, I venture to urge teachers and students generally to make full use of such local records as may be accessible to them in their teaching and their study of English history, in the assurance that to do so will be to impart new interest and new vitality to their work.

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CURRENT EVENTS.

At the Members' Meeting of the College of
Preceptors, on February 21, Prof. Adams will
read a paper on "The Middleman in Educa-
tion: the Appearance of a New Functionary."

* * *

On February 8, Prof. Adams will commence, at the
College of Preceptors, a course of twelve lectures to teach-
ers on "The Psychology essential to Efficient Work in the
School."

* * *

THE Common Entrance Examination (Preparatory
Schools), Lent Term, will be held on March 14 and 15.

* * *

FOR the Tuesday Evening Lectures in connexion with the
Francis Galton Laboratory for National Eugenics apply to
the Secretary, University College.

* * *

MRS. A. HINGSTON QUIGGIN, M.A., will lecture to the Froebel
Society at University College, London, on "Primitive In-
dustries": February 8 ("The Quest for Food"), February 22
("Habitations"), March 7 ("Clothing"), at 6 p.m. Non-
members must obtain tickets (6d. each lecture) beforehand
from Miss Temple Orme, LL.D., Froebel Society, 4 Blooms-
bury Square, W.C.

* * *

MR. BEN. H. MORGAN is delivering a series of six addresses
on "The Trade, Industry, and Finance of the British
Empire," at the London School of Economics, Clare Market,
W.C. February 7, "Canada and Newfoundland"; Feb-
ruary 21, "Australia and New Zealand." Hour, 5 p.m.

* * *

MR. A. D. LINDSAY, M.A., will lecture to the Fabian Edu-
cation Group at Clifford's Inn Hall on "What Oxford can
do for the Higher Education of Working People," Feb-
ruary 6, at 8 p.m. Open.

Mr. Frederick Kettle, B.A., will address a Group Meet-
ing at 3 Clement's Inn, Strand, on "Adventures in School-
keeping," February 15, at 7.30. Open to members, associates,
and their friends.

* * *

THE Annual General Meeting of the Moral Education
League will be held in the Lecture Hall of the Royal
Society of Arts, John Street, Adelphi, W.C., on February 13,
at 8.15 p.m. Mrs. Bryant, D.Sc., Litt.D., will deliver an
address on "The Many-sidedness of Moral Education."
Open to the public.

* * *

THE Annual Conference of the School Nature Study Union
will be held on February 3 at 2.30 p.m. Lecture by Prof. J.
Arthur Thomson, M.A. Publishers' Exhibition. Hon. Secre-
tary: H. E. Turner, 1 Grosvenor Park, Camberwell, S.E.

* * *

MR. CHARLES E. KEYSER will lecture to the Selborne
Society in the Theatre of the Civil Service Commission,

Burlington Gardens, W., on "English Cathedrals," February 19, at 6.30 p.m. (6d.).

* * *

A SUMMER School of Theology for men and women will be held at Oxford (Hall of Trinity College), July 22 to August 2, embracing about fifty lectures on the Philosophy of Religion, Old and New Testament, Church History, and Comparative Religion. Detailed announcements later.

* * *

At the Polyglot Club (4 Southampton Row) the following lectures will be given (8.30 p.m.): February 3, "La Danse grecque (causerie littéraire)," with illustration; February 5, "The Dramatic Art of Ibsen and Shaw," by Mr. H. F. Rubenstein; February 10, "I Trionfi d'Italia," by Dottor C. Stander; February 12, "Betrachtungen über Shakespeares Richard III," by Herr A. Robinson; February 13, "El Nacimiento y la Muerte de los Astros," by Prof. Tarrida del Marmol; February 22, "A. N. Apukhtin, his Life and Poetry," by Mme M. Ivanova; February 24, "Sulle cause del predominio della tubercolosi in Inghilterra," by Dottor C. Ballabene.

◆◆◆

AMONG the New Year Honours are knight-honours conferred upon Dr. H. A. Miers, Principal of the University of London; Dr. Henry Jones, Professor of Moral Philosophy in the University of Glasgow; Dr. Bertram C. A. Windle, President of University College, Cork; Dr. E. B. Tylor, Emeritus Professor of Anthropology in the University of Oxford; and Mr. W. F. Barrett, F.R.S., ex-Professor of Physics in the Royal College of Science, Dublin.

* * *

THE Senate of the University of St. Andrews has decided to confer the following honorary degrees *in absentia* upon the following distinguished men, who were chosen for the degrees on the occasion of the celebration of the five hundredth anniversary of the foundation of the University last September, but were unable to be present on that occasion:—

D.D.: Prof. Emile Doumergue, Professor of Church History and Dean of the Faculty of Theology, University of Montauban.

LL.D.: Prof. Pietro Blaserna, Professor of Experimental Physics in the University of Rome, President R. Accademia dei Lincei; Prof. M. J. M. Hill, F.R.S., Astor Professor of Pure Mathematics, University College, London, and lately Vice-Chancellor of the University of London; Dr. Hugo Kronecker, Professor of Physiology, University of Berne; Prof. G. M. Mittag-Leffler, Professor of Pure Mathematics in the University of Stockholm and Rector of that University, Founder and Editor of *Acta Mathematica*; M. Paul Meyer, Commandeur de la Légion d'Honneur, Directeur de l'Ecole Nationale des Chartes, Paris, Professeur honoraire au Collège de France; Prof. Karl Pearson, F.R.S., Galton Professor of Eugenics and Director of the Laboratory of National Eugenics, University of London; Mr. Charles D. Walcott, Secretary of the Smithsonian Institution, Washington, U.S.A.; and Prof. P. Zorn, Geheimrat, Professor of International Law in the University of Bonn.

* * *

SIR EDWARD ELGAR has been elected an Associate of the Académie Royale des Sciences, des Lettres, et des Beaux Arts of Belgium.

* * *

THE Academy of Sciences of the Royal Institute of Bologna has awarded the de Cyon Prize of 3,000 lire (about £120) for 1911 to Prof. E. A. Schäfer, Professor of Physiology in the University of Edinburgh, for his work on the ductless glands.

◆◆◆

LADY McLAREN has presented a heliometer to the University of Aberdeen. The gift was made through Sir David Gill, who has long used the instrument at the Cape and else-

where, and who has been advising as to the selection of a site and equipment for the proposed observatory at Aberdeen.

* * *

THE University of London has granted provisional recognition to a scheme for the endowment of Home Science and Economics at King's College for Women, for which purpose £50,000 has been promised.

The University has also accepted £614 raised by Mrs. J. R. Green for the endowment of Celtic; and an offer by Mr. Albert Reitlinger to found a prize of £40 a year in memory of his late son, Paul Philip Reitlinger.

* * *

DR. R. D. ROBERTS has left (subject to certain life interests) a considerable bequest to the University College of Wales, Aberystwyth, to provide the nucleus of a fund for affording a Sabbatical year of absence for Professors on full salary, after not less than ten years of service.

* * *

SIR CHARLES CHADWYCK-HEALEY has given £4,000 to Cranleigh College to establish a laboratory.

* * *

UNDER a draft scheme for the Newcomen Charity School, Southwark, it is proposed to apply £500 a year to maintain scholarships tenable at St. Olave's and St. Saviour's Grammar Schools and at the Borough Polytechnic.

* * *

ARMSTRONG COLLEGE, Newcastle-on-Tyne, has been left £2,000 under the will of the late Mr. T. G. Gibson, Lesbury, Northumberland, Solicitor.

* * *

THE REV. CECIL H. MAUNSELL, of Thorpe Malsor Hall, Kettering, Rector of Thorpe Malsor, has left the advowson of Thorpe Malsor (£373 net, and residence) to Keble College, Oxford.

* * *

THE *Jewish Chronicle* announces that a wealthy Jew, a native of India, has bequeathed a sum of £80,000 for the endowment of a Jewish College in Jerusalem. This is regarded as likely to form the nucleus of an endowment for a University in Palestine—a project long cherished by leading Jews in all countries.

* * *

THE MARQUISE ARCONATI-VISCONTI has given £20,000 to the University of Paris for the Faculties of Medicine and Letters.

* * *

M. MAETERLINCK has established—partly by devotion of his Nobel Prize—a Maeterlinck Prize of 16,000 francs to be awarded every second year to the author of the most remarkable book published in French.

* * *

AMERICA'S philanthropic benefactions during 1911, as compiled by the *New York Herald* (says the New York correspondent of the *Standard*), total £49,000,000, surpassing all records. Since 1901 the aggregate is £245,000,000. Mr. Carnegie heads this year's philanthropic gifts with £8,000,000, £5,000,000 going to the Carnegie Foundation and £2,000,000 to the Carnegie Institute.

* * *

THE benefactions received by Columbia University for the year ending June 30 last amounted to £507,000; including Barnard College and Teachers College, very nearly to £600,000. The total of gifts in money alone to the several

corporations included in the University during the last ten years reaches £3,310,000. In 1901 there were 81 professors, in 1911 there were 177, and the teachers of all grades rose from 396 to 721.

* * *

HARVARD received £350,000 last year; Princeton, £340,000. Fifty-two other institutions of learning aggregated some £4,000,000.

GONVILLE AND CAIUS COLLEGE, Cambridge, offers, in June, the Wollaston Research Studentship in Physics, £120

for one year, prolongable for a second year. Candidates must be between twenty-one and twenty-five (on October 1, 1912), students of a British, Colonial, or American University. Also studentships of smaller value under same conditions.

* * *

THE Trustees of the "A.K." Fellowships at Cambridge will elect two Fellows in April next. £660. Open to graduates (or equivalent) of any University in the United Kingdom, British subjects, men or women. No age limit. Apply to the Vice-Chancellor by February 29.

* * *

CANDIDATES entering Cherwell Hall, Oxford, this term to train as women secondary teachers are offered scholarships of from £20 to £30. Apply to the Principal.

* * *

THE examination for entrance scholarships at the London School of Medicine for Women will be held on May 28-30. Forms and particulars from the Secretary and Warden, 8 Hunter Street, W.C.

* * *

BEDFORD SCHOOL offers six Exhibitions (£60 to £40) for Boarders, and eight for Day Boys. Examination March 5, 6, 7. Particulars from Head Master.

* * *

THE Leys School, Cambridge, offers Entrance Scholarships in March. Particulars from the Bursar.

* * *

DOVER COLLEGE offers five or more Entrance Scholarships (£60 to £20) and six Exhibitions (for sons of clergymen or of officers) in March. Particulars from the Head Master.

* * *

EASTBOURNE COLLEGE offers Entrance Scholarships (£60 to £30) in March. Particulars from the Head Master.

* * *

EPSOM COLLEGE offers Junior Scholarships and Council Exhibitions in March. Particulars from the Head Master.

* * *

FELSTED SCHOOL offers Scholarships in March. Particulars from the Bursar.

* * *

KING WILLIAM'S COLLEGE, Isle of Man, offers Entrance Scholarships on March 21 and 22. Apply to the Secretary.

* * *

OAKHAM SCHOOL offers three or more Scholarships (£40 to £20) in March. Particulars from the Head Master.

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ROSSALL SCHOOL offers ten (or more) Scholarships (£75 downwards) to boys between twelve and fifteen. Examinations, in London and at Rossall, March 12, 13, 14. Particulars from the Bursar, Rossall, Fleetwood.

UPPINGHAM SCHOOL offers seven Open Scholarships (two £70, five from £50 to £20), March 26, 27, 28. Apply, with certificates of age and character, to the Head Master by March 12.

* * *

KING'S SCHOOL, Worcester, offers, to boys under fifteen, House Scholarships on the results of the Common Entrance Examination in March. Apply to the Rev. Canon W. Haighton Chappel, School House, Worcester.

* * *

Amateur Gardening (148 and 149 Aldersgate Street, E.C.) offers a prize of five guineas for the best essay showing the most approved mode of laying out three distinct areas of land suitable for a school garden. Open to elementary-school teachers. Apply for conditions, &c. Essay to be lodged by March 30.

Appointments and Vacancies.

PROF. HENRI BERGSON, of the Collège de France, has accepted the Gifford Lectureship in the University of Edinburgh for 1913-15.

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SIR WILLIAM RAMSAY, K.C.B., F.R.S., &c., has resigned the Chair of General Chemistry in University College, London, as from the end of the current session.

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PROF. W. A. BONE, D.Sc., Ph.D., F.R.S., Professor of Applied Chemistry in Leeds University (since 1905), has been appointed Professor of Fuel and Refractory Materials in a new Department of Applied Chemistry of Chemical Technology now being established in the Imperial College, South Kensington.

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MR. A. P. LAURIE, M.A., D.Sc., sometime Fellow of King's College, Cambridge, Principal of the Heriot-Watt College, Edinburgh, has been appointed Professor of Chemistry in the Royal Academy, in succession to Sir Arthur Church.

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DR. FREDERICK RANSOM, M.D. Edin., has been appointed Lecturer and Head of the Department of Pharmacology at the London School of Medicine for Women.

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AT King's College (University of London), Mr. Arthur Page, B.A., Barrister-at-Law, has been appointed Lecturer in Criminal Law and Procedure; and Mr. Chin Chung-Yün, D.Litt., Instructor in Chinese.

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PROF. J. G. HIBBEN has been appointed President of Princeton University, in succession to Dr. Woodrow Wilson. He has been Professor of Logic at Princeton since 1893, and has published a number of works on logic and philosophy.

* * *

THE Professorship of Botany, Vegetable Pathology, and Parasitology in the University of Adelaide is vacant. £800, and passage money. Apply to Prof. W. H. Bragg, University of Leeds, by February 14.

* * *

DR. A. D. IMMS, Professor of Biology in the University of Allahabad, has been appointed Forest Zoologist to the Government of India, Forest Research Institute, Dehra Dun, United Provinces.

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MR. F. E. A. CAMPBELL, M.A., Ph.D., Lecturer in English in the University of Bristol, has been appointed to the new

Lectureship in English Philology in the University of Aberdeen.

Trinity College, Dublin (Erasmus Smith Exhibition, Senior Exhibition, Scholarship in Classics); Ph.D., and Lektor in English Language, Greifswald, 1903.

* * *

MR. DUNCAN DAVIDSON, A.R.C.Sc. Dub., N.D.A. of the Agricultural Department of Cardiff University College, has been appointed a Lecturer in Agriculture at the South-Eastern Agricultural College (University of London), Wye, Kent.

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MR. J. A. CARLYLE, B.Sc.Agr. Edin., has been appointed a County Lecturer of Edinburgh and the East of Scotland College of Agriculture.

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THE Principalship of Darlington Training College is vacant through the death of Mr. W. A. Spafford, M.A.

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MR. J. H. WHITELEY, D. ès L., Lecturer in French and English, Gamble Institute, St. Helens, has been appointed an Inspector of Schools under the Board of Education.

* * *

MR. JOHN A. McMICHAEL, B.A., B.Sc. Lond., Head Master, City and County School for Boys, Chester, has been appointed an Inspector of Secondary Schools under the Board of Education.

Manchester Grammar School and Owens College. B.A. Lond. 1889; B.Sc. Lond. 1895.

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MR. J. J. DRAPER, B.A. Cantab., Assistant Master, Bury St. Edmunds Grammar School, has been appointed an Assistant Inspector of Schools under the Board of Education.

* * *

MR. H. B. HEYWOOD, D.Sc. Paris, B.Sc. Lond., Lecturer at the East London College, has been appointed Assistant in the Department of Mathematics at Bedford College (University of London).

* * *

MR. PERCY F. DAVIS, M.A. Oxon., Science Master, Emmanuel School, Wandsworth Common, S.W., has been appointed Master of the Chapel Royal Boys.

Newbury Grammar School and Keble College, Oxford. Third Class Natural Science (Chemistry) 1905. Newbury Grammar School 1893-1901; Emmanuel School 1905.

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MR. BERNARD S. RICHARDS, M.A., Assistant Master, Bradford Grammar School, has been appointed Head Master of King Edward VI Grammar School, Bury St. Edmunds.

Honiton Grammar School, and New College, Oxford. Second Class Classical Mods. 1892; Fourth Class Lit. Hum. 1894. Eagle House School, Sandhurst, 1894; Lancaster Grammar School, 1900; Bradford, 1906.

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MISS Y. G. RAYMOND, B.A., formerly Scholar of Newnham, Science Mistress at St. Paul's Girls' School, has been appointed Head Mistress of the High School, Kidderminster.

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THE REV. WILLIAM F. PEARCE, M.A. Cantab., Assistant Master, Brighton College, has been appointed Head Master of the Prebendal School, Chichester.

St. Albans School and Cavendish College, Cambridge. B.A. 1890; M.A. 1909.

MR. T. S. B. FRANÇOIS DE CHAUMONT, B.A., Senior Mathematics and Science Master, Cathedral School, Hereford, has been appointed Head Master of Victoria College, Bath.

Epsom College and Selwyn College, Cambridge (Scholar). B.A. 1906 (Senior Optime). Warriston School, Moffat, 1906; Duke's School, Alnwick, 1907; Furzie Close School, Barton-on-Sea, 1909; St. Paul's Cathedral Choir School 1910 (temp.); Hereford 1910.

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MR. LAWRENCE S. LAVER, M.A., Senior Classical Master, King Edward's School, Stourbridge, has been appointed Head Master of the Secondary School, Altrincham.

Nottingham High School (Scholar, Leaving Exhibitioner) and St. John's College, Cambridge (Scholar, Hare Exhibitioner, Prize-man); First Class Classical Tripos 1902; acquired French abroad. Caldry Grange Grammar School, West Kirby, 1902-3; Wyggeston School 1903-8.

* * *

MR. JOHN K. WILKINS, M.A., Assistant Master, Municipal Secondary School, Whitworth Street, Manchester, has been appointed Head Master of Chester County School.

Non-Collegiate, Oxford. Second Class Natural Sciences (Physics) 1899; London Matriculation (Honours) 1893; Intermediate Science 1905; Board of Education Certificate. Central School, Manchester (five years); Evening Lecturer, Manchester School of Technology, 1899-1909; Manchester Secondary School 1904. Joint author of "Algebra for Beginners" (Arnold).

"THE English teachers of America do not possess a journal devoted especially to their interests."

Literary. So the National Council of Teachers of English has founded *The English Journal* as its official organ, and the Executive Committee of the Council will act as advisory editors, the Managing Editor being Prof. James F. Hosié, of the Chicago Teachers College. The journal will appear monthly, September to June.

* * *

MESSRS. LONGMANS announce a new edition of Sir Thomas May (Lord Farnborough)'s "Constitutional History of England since the Accession of George III," edited and continued down to 1911 by Francis Holland, in three volumes. Also a second edition of the first volume of Prof. Oppenheim's "International Law," revised and partly rewritten.

* * *

THE Cambridge University Press announces a new translation of the Nibelungenlied—"The Lay of The Nibelung Men"—by Dr. A. S. Way, whose translations of Homer and the great Greek Tragedians are so well known and appreciated. Also "The Thunderweapon in Religion and Folklore," a study in Comparative Archaeology by Dr. Chr. Blinkenberg.

* * *

MESSRS. DENT announce an important new series, "Channels of English Literature," edited by Oliphant Smeaton, M.A. The first volume will be "English Philosophers and Schools of Philosophy," by Prof. James Seth, Edinburgh University. Also several volumes of "The Mediæval Town Series"—Lucca, Canterbury, Santiago.

* * *

MESSRS. RIVINGTONS promise this month "England's Industrial Development: a Historical Survey of Commerce and Industry," from the experienced pen of A. D. Innes, M.A.; and "The Restoration and the Revolution," by Arthur Hassall, M.A.—a new volume of Rivingtons' "Text-books of English History."

* * *

THE January number of *Teachers and Taught* (published for the Friends' First-Day School Association by Messrs. Headley Brothers, 140 Bishopsgate, E.C.) has a special

supplement containing information about pictures, books, models, apparatus, &c., for the monthly sets of "Lesson Notes" on the Association's graded courses for 1912. The fifty-two pictures for the Nature Course (4s. 6d.) are excellent.

* * *

The Coronation Number of the *Indian Review* (November and December, 1911) is a very interesting issue, with many portraits and other illustrations. Besides the coronation of the King-Emperor George there are descriptions of the coronations of Aurangazib, Jehanghir, and Shivaji, and pertinent and historical articles, ancient and modern.

LECTURESHIPS in Arabic, Colonial and Indian General History, and English Law are to be established in Edinburgh University.

* * *

The University Lectureship in Ancient History at Cambridge is to be discontinued.

* * *

The Education Committee of the L.C.C. has adopted a recommendation of the Higher Education Sub-Committee to establish a school for training waiters. They propose to offer twelve scholarships for the first year.

* * *

PROF. BERGSON will deliver a series of lectures at Columbia University this year.

* * *

The registration of students in several of the larger American Universities is reported as follows:—Columbia, 7,429; Chicago, 6,466; Minnesota, 5,965; Wisconsin, 5,538; Pennsylvania, 5,389; Michigan, 5,381; Cornell, 5,104; Illinois, 5,118; Harvard, 5,028; Nebraska, 4,624; California, 3,450; and Missouri, 3,141.

CORRESPONDENCE.

[We do not hold ourselves responsible for the opinions expressed by our correspondents.—ED. E.T.]

EAST LONDON COLLEGE:

THE DRAPERS' COMPANY'S BENEFACTIONS.

To the Editor of "The Educational Times."

SIR,—I notice in your issue of January 1 a paragraph signaling the generous assistance rendered by the great City Companies to the promotion of higher education in this country. I think you have understated the case as regards the Drapers' Company. They built and equipped this College. They have since given handsome grants for re-equipment, for books, and new apparatus. When the College was admitted to participation in the Parliamentary Grant in aid of University Colleges in Great Britain they made a special grant of £2,000 per annum to its general income. In addition to this, between £1,200 and £1,300 are expended annually by the Company on scholarships tenable here, so that, with their annual contribution for the purposes of the foundation as a whole, their annual expenditure on University education here must be taken as over £10,000. It is something of an achievement that in less than ten years, "practically unaided," this great City Company has succeeded in creating a University College in East London.

The Drapers' Company have contributed generously to the University of Oxford in recent years.—I am, Sir, &c.

T. C. HOBSON, Registrar.

East London College (University of London),
January 4, 1912.

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 on Saturday, January 20.

THE SECRETARY having read the advertisement convening the meeting, the Rev. Canon BELL was appointed Chairman.

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 Thirty-ninth Annual Series of Lectures for Teachers, which commenced on February 8 and ended on December 14, comprised a Course of Twelve Lectures on "The Psychology essential to Efficient Work in Schools," and a Course of Twelve Lectures on "Practical Problems of the Teacher of To-day." Both Courses were delivered by Prof. J. Adams. The Council are glad to be able to report an increase in the number of students attending these Courses of Lectures. Last year 52 students took tickets—22 for the First Course and 30 for the Second. This year the total number was 131—58 for the First Course and 73 for the Second.

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 274. For the Christmas Examination the number of entries is about 470. During the past half-year the Diploma of Licentiate has been conferred on 26 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 5,200. The Professional Preliminary Examination for Certificates recognized by professional bodies was held in the second week in September, and was attended by 181 candidates.

4. The Council have conducted during the past half-year the examination of two schools by visiting examiners.

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 eighteen members have been elected, three members have withdrawn, and four holders of the College Diplomas who were admitted to certain privileges of membership under Section II, Clause 5, of the By-laws have ceased to be qualified. The Council regret to have to report the death of the following members:—Mr. D. L. Lowson, Mr. E. F. W. Mondy, L.C.P., Mr. E. C. Musson, Mrs. A. Prince, Mr. S. Snell, the Rev. J. T. Watson, and Mr. W. R. Yardley.

(b) Circulars relating to the objects and work of the College, Membership, and the Hopkins Benevolent Fund have been sent to all members of the College, and also to many other teachers.

(c) A circular letter showing the present position of the diploma holders who were admitted to certain privileges of membership under Section II, Clause 5, of the By-laws, has been sent to every such diploma holder.

(d) The Council have arranged that subscribing members and life members of the College who apply for appointments to the Joint Scholastic Agency or the Joint Agency for Women Teachers shall be exempt from the payment of registration fees. They have also arranged that members who obtain appointments through either of these agencies shall receive from the College repayments of commission, provided that the total of the amounts paid by the College on this account to any member shall not exceed 75 per cent. of the total amount of the subscriptions which the member has paid to the College.

7. Meetings of Members were held in October and November. At the October Meeting a Lecture on "Prizes—Athletic and other" was given by Mr. J. Lewis Paton, M.A.; and at the November Meeting a Lecture on "The Teacher as Craftsman" was given by Prof. J. J. Findlay, M.A. Reports of the Meetings have been published, as usual, in *The Educational Times*.

8. During the past twelve months about 1,150 volumes have been issued to members. Considerable additions have been made to the Library during the year.

9. The Council welcome the announcement by the President of the Board of Education that the Order establishing the new Teachers' Council is shortly to be issued.

10. (a) Representatives of the Council have taken part in the work of the Federal Council of Secondary Schools Associations, the Joint Scholarships Board, the Joint Committee on the Training of Teachers, the Joint Scholastic Agency, the Joint Agency for Women Teachers, and a Joint Conference of representatives of the Private Schools Association, the Teachers' Guild, and the College of Preceptors.

(b) The Joint Conference have carefully considered by what means it

may be possible to secure the preservation of efficient Private Schools and the independence of those Private Schools which do not desire assistance from public funds. They have unanimously adopted a series of resolutions which they hope may influence the action of the Central and Local Education Authorities in relation to Private Schools. The Council of the College will endeavour to bring under the notice of the Education Authorities those of the resolutions to which, in the opinion of the Council, it may be useful to call attention at the present time.

11. During the past year, in addition to the College meetings, 103 meetings of other Associations have been held in the College building.

The Report was considered paragraph by paragraph and was adopted.

With reference to the Statement of Accounts which accompanied the report, Dr. MOODY thought it desirable that a firm of professional accountants should be associated with the three auditors who, in accordance with the Charter, were elected by the General Meeting. Some expense would be incurred, but he considered that the advantage to be gained would outweigh the additional cost.

The DEAN said the point raised was a new one, and deserved the careful consideration of the Council. It involved no reflection on the officers of the College or on the present auditors, who had discharged the duties of their office to the entire satisfaction of the members by whom they had been appointed.

Mr. KELLAND said he was entirely in favour of the proposal, and believed that professional accountants might be able to point out how new sources of revenue might be opened out, and how economies in working could be effected.

The TREASURER did not think that the employment of professional accountants could be expected to assist the College in the manner suggested by the previous speaker. It was the fact that the result of the operations of the College during the past year had not been quite so favourable as in past years, and the published accounts showed a difference between receipts and expenditure of about £140. It was apparent to any one who examined the financial statement to what causes this difference was due, and it required no expert assistance to enlighten them on the matter. He quoted figures to show how there had been deficits in former years, which had, however, in succeeding years been followed by larger surpluses, and the amount of these surpluses had been added to the reserve fund, which had been accumulated for the purpose of meeting such fluctuations of income. He pointed out that the College derived no part of its income from public funds by way of grants or otherwise, and was under no obligation to call in professional assistance in order to satisfy the statutory requirements imposed by the Charter. Though he did not see how any special advantage could accrue to the College from the suggestion in present circumstances, he agreed that it was worthy of careful consideration, and it would have the serious attention of the Finance Committee.

The statement of accounts was then adopted.

The DEAN presented his Report, which had been printed and circulated among the members attending the meeting. 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 140 Local Centres and Schools from the 5th to the 9th of December. In the United Kingdom the Examination was held at the following places:—

Ashford (Kent), Aylesbury, Bamford (Derbyshire), Bath, Beccles, Belper, Bentham, Bewdley, Biggleswade, Birmingham, Blackpool, Bognor, Bournemouth, Brentwood, Bridlington, Brighton, Bristol, Bury St. Edmunds, Cardiff, Carlisle, Carmarthen, Caruforth, Castletown (Isle of Man), Cheltenham, Cheshunt, Chichester, Clapham, Crewe, Croydon, Ealing, Eastbourne, East Grinstead, Edinburgh, Eochar, Exeter, Folkestone, Gosberton, Harlow, Harrogate, Hastings, Hawkhurst, Hereford, Herne Bay, Hornsey, Iwerurie, Jersey, Kirkwall, Leeds, Liverpool, London, Maidstone, Manchester, Margate, Middlesbrough, Muswell Hill, Newcastle Emlyn, Newcastle-on-Tyne, Newport (Mon.), Newquay, Northampton, Norwich, Nottingham, Ongar, Penketh, Plymouth, Portsmouth, Reading, Richmond-on-Thames, Ripley (Surrey), St. Annes-on-Sea, St. Leonards-on-Sea, Sale, Scarborough, Selby, Sevenoaks, Sheffield, Shirley, Shoreham, Southampton, Southend, Southport, Sunderland, Swindon, Taunton, Torquay, Walton (Liverpool), Wellington (Salop), West Norwood, Weston-super-Mare, Whitchurch (Salop), Wisbech, Woodford, Worthing, and York. The Examination was also held at Gibraltar; Constantinople; Batticaloa, Colombo, and Manipay (Ceylon); Rangoon (Burma), Kingston and Stewart Town (Jamaica); St. George's (Grenada); St. Lucia and St. Vincent

(B.W.I.); Bloemfontein, Cala, Grahamstown, Johannesburg, Ladysmith, Mafeking, Oakford, Uitenhage, and Umzimto (South Africa); Cape Coast Castle; Accra (Gold Coast); Bathurst (Gambia); Abeokuta and Lagos (S. Nigeria); Nairobi (B.E. Africa); Zanzibar; Georgetown (B. Guiana); and Lima (Peru).

The total number of candidates examined (not including 631 examined at Colonial Centres) was 3112—2435 boys and 677 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	265	160	60
	Second Class ...	956	628	66
	Third Class	774	611	79
GIRLS.	First Class	132	72	55
	Second Class ...	209	147	70
	Third Class	310	256	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 (466 in number) who entered for certain subjects required for professional preliminary purposes.

The number of candidates entered for the Lower Forms Examination (not including 252 examined at Colonial Centres) was 1081—653 boys and 428 girls. Of these 542 boys and 357 girls passed, or 83 per cent. in either case.

At the Professional Preliminary Examination for First and Second Class Certificates, which was held from the 5th to the 7th of September, at Aberdeen, Birmingham, Blackburn, Bristol, Cardiff, Edinburgh, Leeds, Liverpool, London, Manchester, Newcastle-on-Tyne, and Nottingham, 181 candidates presented themselves. The number of candidates examined at these Professional Preliminary Examinations during the year was 520.

The Summer Examination of Teachers for the College Diplomas took place, on the 28th of August and five following days, at Birmingham, Bristol, Dublin, Leeds, Liverpool, London, Manchester, Newcastle-on-Tyne, Plymouth. The Examination was also held at Bangalore, Bombay, Lovedale, Lucknow, Madras, and Sanawar (India); Bathurst (Gambia); Freetown (Sierra Leone); Hong-Kong; Corentyne (British Guiana); and Taiping (Perak). It was attended by 273 candidates—206 men and 67 women. On the results of this Examination, 26 candidates obtained the Diploma of Licentiate and 77 that of Associate.

The Christmas Examination of Teachers for the College Diplomas took place on the 1st to the 8th of January at Birmingham, Belfast, Bristol, Dublin, Leeds, Liverpool, London, Manchester, Newcastle-on-Tyne, Plymouth, Scalloway. The Examination was also held at Gibraltar; Bombay, Calcutta, and Peshawar (India); Adams, Calitzdorp, and Johannesburg (S. Africa); Buguma (S. Nigeria); Hong-Kong; and Anking (China). It was attended by 453 candidates—358 men and 95 women.

Practical Examinations to test Ability to Teach were held in February, May, and October. At these Examinations 12 candidates presented themselves, and 8 obtained Certificates.

The number of schools examined and inspected during the year under the Visiting Examination and Inspection Schemes (A) and (B), was 6.

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 154 Centres in Newfoundland on the 19th to the 26th of June, and the numbers of candidates who were examined in the several grades were as follows:—Associateship, 112; Intermediate, 634; Preliminary, 1,377; Primary, 1,467.

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. WALTERS and Mr. WILLIAMS 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 THE COUNCIL.

Rev. Canon Bell, M.A., 19 Cowley Street, S.W.
 W. Campbell Brown, M.A., Tollington School, Muswell Hill, N.
 R. F. Charles, M.A., 12 St. Alban's Villas, Highgate Road, N.W.
 R. F. Cholmeley, M.A., Owen's School, Islington, N.
 Miss M. Crookshank, L.L.A., Ringwood, Rickmansworth.
 Rev. A. A. David, D.D., Rugby School.
 R. Have, B.A., The High School for Boys, Croydon.
 Miss S. Jebb, 9 Clyde Road, St. Leonards-on-Sea.
 Miss F. J. Lawford, Camden School for Girls, N.W.
 A. Milne, B.A., University School, Hastings.
 Barrow Rule, Kensworth, Cissbury Road, Broadwater, Worthing.
 A. A. Somerville, M.A., Eton College, Eton.

AUDITORS.

John Bell, M.A., LL.D., 34 Redbourne Avenue, Finchley, N.
 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.

In the evening fifty-four members and friends of the College dined together at the Holborn Restaurant, under the presidency of Mr. E. A. BUTLER. The company included Prof. Adams, Prof. Adamson, Dr., Mrs., and Miss Armitage Smith, Mr. Bain, Mr. Barlet, Mr. Beesley, Rev. J. Blomfield, Mr. Campbell Brown, Mrs. and the Misses Butler, Mr. and Mrs. Charles, Mrs. le Chavatois, Mr. Coates, Mr. Constantinides, Dr., Mrs., and Miss E. Dickinson, Miss Ghinickie, Mr. Harrold, Mr. Hawe, Mr. Hay, Mr., Mrs., and Miss Hodgson, Mr. King, Mr. Johnson, Mr. Lodge, Mr. and Mrs. Longsdon, Mr. Mardling, Rev. J. S. Masham, Mr. Pendlebury, Mr. Porter, Prof. Ramirez, Mr. Ruf, Mr. J. J. Robinson, Mr. and Mrs. Hammond Robinson, Mr. Rushbrooke, Dr. R. P. Scott, Mr. Shovelton, Prof. Spiers, Mr. Starbuck, Dr. Stevens, Mr. Whitbread, and Mr. Williams. Prof. Adams proposed the toast of "The College of Preceptors," which was responded to by the Chairman; Mr. Rushbrooke proposed "The Visitors," which was responded to by Dr. Stevens; and Dr. R. P. Scott proposed "The Secretary and his Staff," which was responded to by Mr. Hodgson. A very enjoyable programme of music and recitations, which was highly appreciated, was contributed by Mrs. and Miss Armitage Smith, Miss E. Dickinson, Mr. Gwilym Richards, and Mr. Harold Hilman.

THE COLLEGE OF PRECEPTORS.

ADJOURNED MEETING OF THE COUNCIL.

An adjourned meeting of the Council was held on January 20. Present: Prof. Adams (in the chair), Dr. Armitage Smith, Mr. Bain, Rev. J. O. Bevan, Rev. J. B. Blomfield, Mr. Brown, Mr. Charles, Mr. Eagles, Mr. Hawe, Mr. Hay, Mr. Kelland, Rev. R. Lee, Dr. Moody, Mr. Pendlebury, Miss Pannett, Mr. Rushbrooke, Mr. Starbuck, and Mr. Vincent.

Diplomas were granted to Mr. S. P. Chinnappa and Mr. P. R. Rayner, who had satisfied the required conditions.

It was resolved that a Special Committee be appointed to consider the Report of the Consultative Committee of the Board of Education on Examinations in Secondary Schools.

EXAMINATIONS IN SECONDARY SCHOOLS.

VIEWS OF VICE-CHANCELLOR M. E. SADLER,
C.B., LL.D.

[From *Indian Education*.]

FOR a long time there has been much discussion as to the future of external examinations in English secondary schools. We are now beginning to see what is likely to be done by way of reform of what is mischievous in the present state of things. There are no signs of any general desire that a State leaving examination should be organized by the Board of Education and imposed upon all secondary schools receiving aid or recognition from the State. It appears to be widely felt among teachers that the administrative traditions of the Board of Education would not be favourable to the development of such an examination on wise lines. In ten years' time opinion may change. Much depends on the degree with which the Board may succeed in winning the confidence of the teachers in the higher schools, and on its power to avoid mechanical routine in its official dealings with secondary education. But at present there is no movement in favour of a State examination like that which is at work in Scotland, and there is still less disposition to ask for a leaving examination like that organized in the German secondary schools. There is more competition between secondary schools in England than there is in any part of Germany. Our teachers are in no case members of the Civil Service. Private schools play a more important part with us than under German conditions. The result is, that a system

which seems to work well when two or three public secondary schools represent practically the whole of higher secondary education in a district, proves on consideration to be ill adapted to the different circumstances which prevail in England. The working of the German system is under the influence of an old-established tradition, a tradition which affects the relations between the inspectors and the school staffs, and which gives sufficient guarantee that no teacher would make dishonourable use of his knowledge of the questions which would be set for the written work in the leaving examination of his school. In England the relations between inspectors and teachers are still occasional rather than intimate, and vague rather than well defined. The inspectors have had practically no experience in the work of examining a school; there is very little local organization of their work; and the State, though sufficiently informed as to the general merits of any inspected school, has but little continuous knowledge of the details of its teaching work. In other words, the administrative conditions which secure smoothness of working in the German examination system do not yet exist in England. The setting up of a State-leaving examination for secondary schools would be at best premature, and might be positively harmful.

Another plan, which has much American precedent behind it, is attractive to some of the less experienced observers, but rejected by the mass of teachers' opinion and by that of other bodies concerned. This is what is called in the United States the accrediting system. From any school which proves at intervals its general efficiency by submitting to inspection, candidates are received for admission into Universities and other places of higher education on the certificate of the head master or head mistress of their school, who testifies to their fitness for being exempt from the test of any external examination. There are conflicting opinions as to the way in which this system works in the United States. But, even if the evidence were all favourable, there would still be misgiving as to the introduction of the system into England. It is felt that the secondary schools gain by submitting their intellectual results to an entirely impartial external test; that they thus learn to measure their work with that of schools of like grade in other parts of the country; and that the certification of pupils who offer themselves to be examined is better entrusted to an independent authority than to the teachers in the school itself. For these reasons the accrediting system, like the plan of a State examination in secondary schools, is not likely to be adopted, at any rate, under present conditions.

The third form of remedy, and the one to which educational opinion seems most strongly to incline, is a reform of the existing system of examinations. Such reform would be compassed by a greater concentration of the present examining authorities, by their all being brought into more harmonized co-operation through the agency of a general Board, and by the closer combination of the results of inspection with those of examination. The Association of Head Mistresses, which always contributes to the wise solution of our educational questions by the careful thinking which it devotes to the great problems of administrative policy, emphasizes the importance of two changes, the adoption of which would go far towards removing the worst evils of the present system. The head mistresses urge that no girl should take an external examination under sixteen years of age. They also recommend that experienced teachers now at work in the schools should be effectively represented on the examining body. They point to the success of the Northern Universities Examination Board which, as one of the principles of its constitution, includes certain representatives of the teachers engaged in the secondary schools in the area. It is not unlikely that representatives of the teachers, or assessors speaking in behalf of the teachers, will in future be added to each of the great University examining bodies. If, in addition to this, the experience of the inspectors and of the teachers were more effectively combined, an important and practicable reform would have been effected in English secondary education.

But the greatest difficulty which lies in the way of the establishment of a well organized system of school examinations is found in the fact that, in a majority of the recognized secondary schools in England, the great bulk of the pupils leave at fifteen or fifteen and a half years of age. To exclude schools with a

leaving age as low as this from the privileges of an authorized secondary-schools examination would obviously be inexpedient. Yet, if the age of the examination is put much lower, it loses many of its secondary-school characteristics, and would have to be open to a number of higher-grade board schools, which, though not secondary in the strict sense of the word, are nevertheless secondary in some of their aims and in some of the standards of their work. For these reasons, whatever is done in England will have to be determined by the claims of pupils who are at most sixteen years of age. In Germany, when the leaving examination was established, the needs of the boys of eighteen or nineteen were primarily considered. Thus Germany began by instituting an examination which fixed the higher level of secondary education; England will have to begin by bringing about a concentration of external examinations at a much lower age in secondary-school life. But even if this is done there will be many, especially among those who speak for the interests of the elementary schools, who will say that the examination is pitched too high for the educational needs of the masses of the children. They will claim right of admission to the examination for pupils who complete their school life in elementary or higher elementary schools, continuing there till about fifteen years of age. This is a crucial difference between the conditions of the German case and those which have to be faced in England. Germany organized her higher secondary education before the elementary schools had grown to the full stature of their influence; in England the question of secondary-schools examinations has been so long deferred that it cannot now be dealt with, except on a basis which would conciliate the support of the elementary-school interest.

Moreover, behind the question of school examination there lies that not less formidable one of competitive examinations for scholarships, both at the entrance to public-school life and at the beginning of the University course. These examinations have a determinative influence upon the course of study in preparatory schools for boys, and in many of the great public schools. To set up a new Government examination without dealing with the scholarship question would be futile. On the other hand, there is no sign of any general wish in England to abolish the examinations now held for scholarships at public schools or Universities. We may perhaps hope for a modification in the conditions of scholarship examinations, but we cannot anticipate their abolition. Whatever is done, therefore, in the establishment of a secondary-schools examination at sixteen will have to allow for the existence of a great variety of courses of study in different types of secondary school up to that age. It will also have to leave the University scholarship examinations as the main test for intellectual distinction among the older boys and girls at school.

THE Publications Committee of the Episcopal Church in Scotland have now arranged a contract with the Syndics of the Cambridge University Press for the publication of the authorized Scottish Liturgy and the Schedule of Variations from the Book of Common Prayer as sanctioned by the Provincial Synod in December last. The Committee have also arranged with the Syndics for the later publication of a Complete Prayer Book with all the Scottish Variations incorporated where they occur in the text. But the preparation of this book necessarily entails a good deal of work on the part of the secretaries of the Publications Committee, so that it cannot be brought out at once.

THE governing body of University College, Dublin, has decided to proceed at once with the erection of the new buildings for the College. The site for the new collegiate building, which is to be of a very handsome character, will include the site of the old Royal University, Earlsfort Terrace, and the site of the buildings and grounds so lately generously granted to University College, Dublin, by Lord Iveagh. The offices of the Senate of the National University, which controls the three constituent colleges and the staff of the University, have been transferred from Earlsfort Terrace to two handsome houses in Merrion Square, so that the buildings and offices of the University Senate and staff will be separated from the collegiate buildings proper of University College, Dublin.

REVIEWS.

THE CAMBRIDGE MODERN HISTORY.

"The Cambridge Modern History."—Vol. XIII: *Tables, and General Index*. 16s. net. Cambridge University Press.

This supplementary volume is a necessary companion to the twelve volumes of narrative. The General Index occupies fully two-thirds of the space—a generous measure, and really indispensable for rapid and effective consultation. The series of tables and lists numbers 151. There are genealogical tables of the sovereign families of European and certain other countries, and of various noble houses that were prominent in European Succession questions or took a leading part in the civil and religious wars of the sixteenth and seventeenth centuries, as well as of some other families whose various members are not readily identifiable in the usual books of reference. The lists enumerate chief ministers of great States, governors of important dependencies and colonies, Parliaments and Diets, Congresses and Conferences, Leagues and Alliances, Universities and Societies of learning and research, &c. There is no pretence to completeness at every point: the thing is to supply such information as is likely to be required by a large proportion of students of the period, and to include every personage of any historical importance. It has been a very laborious and exacting work to compile this volume. It will be found extremely helpful for reference.

CAROLINE LITERATURE.

"The Cambridge History of English Literature."—Vol. VII, *Cavalier and Puritan*. 9s. net. Cambridge University Press.

If the literary works surveyed in the present volume seldom rise to the height of great literature, the variety is remarkable, and the interest strong and continuous; and the workmanship of the contributors maintains a high level throughout. The most eminent name of the period is Milton, and it is the protagonist of the contributors, Prof. Saintsbury, that essays to assess Milton and Milton's poetry and prose. The handling is firm, but generous, and it is marked alike by ample study and by balanced judgment. "Nothing but amiable paralogism can give Milton an amiable character, inasmuch as the intensity of his convictions and the peculiar complexion of these almost necessitated a certain asperity"; but his temperament was not essentially or uniformly morose. As regards the first marriage—"this thrice unfortunate adventure, tragical in all its aspects, if tragi-comical in some—there has perhaps been a little unfairness to Milton: there has certainly been much to his wife." The stories of Milton's alleged harshness to his daughters and of their undutifulness to him are found contradictory and "quite obviously what would have been told whether true or not." The series of divorce pamphlets was an utterly foolish business; and his controversial methods generally are severely condemned. Except "Areopagitica," there is hardly a piece of Milton's prose "worthy of its author as a piece of literature"; "yet it may be questioned whether from any literary point of view one can wish that it had not been written." But he is "almost the central figure in the whole history of our verse"; and "in loftiness—sublimity—of thought and majesty of expression, both sustained at almost superhuman pitch, he has no superior, and no rival except Dante."

Prof. Saintsbury also reviews the lesser Caroline poets, and the Antiquaries (Browne, Fuller, Izaak Walton, and Sir Thomas Urquhart). Prof. Sorley deals luminously and pointedly with Hobbes and the other philosophers of the period. He says "Hobbes is one of a succession of English writers who are as remarkable for their style as for the originality of their thought," the others being Bacon, Berkeley, and Hume. Hobbes's exposition was certainly lucid and precise, but we should have liked some indication of the relation of his theory of the State to the theories of direct predecessors and successors.

The Cavalier Lyrists, the Caroline Divines, and the Sacred Poets form compact groups, and are efficiently treated. An interesting chapter is devoted to Writers of the Couplet, and Edmund Waller gets more discriminating credit than he enjoyed in his lifetime for bringing about a revolution in English verse. John Bunyan and Andrew Marvell are somewhat unequally yoked together, but each of them is well characterized. The Historical and Political Writings of the period—a complicated and troublesome subject—Dr. A. W. Ward, the senior editor of the work, himself handles in two divisions: (1) State Papers and

Letters, (2) Histories and Memoirs. He makes a judicious selection "of writings marked out as possessed of typical or individual interest," and comments on them with his accustomed scholarship and acumen. Rushworth's Collections, Cromwell's Letters, the Verney Letters, Howell's Familiar Letters, Bacon's "Reigne of Henry VII.," Lord Herbert of Cherbury's Works, Ludlow's Memoirs, Colonel Hutchinson's Memoirs, Whitelocke's Memorials, and especially Clarendon's History—"the masterpiece of the historical works of the age": these are the more outstanding elements of the enormous mass of materials handled. Prof. Spingarn, of Columbia University, deals vigorously with Jacobean and Caroline criticism. He finds it interesting for its direction rather than for its accomplishment: "it revolutionized aesthetic principles, but accomplished little or nothing in the field of concrete criticism." Prof. Foster Watson writes ably on the Scholars and the Scholarship of the period (1600-60): Mr. J. Bass Mullinger describes the conditions of English grammar schools; and Mr. J. B. Williams contributes a most interesting chapter on the beginnings of English Journalism—a paper exhibiting a vast amount of research. The final chapter hails the advent of modern thought in popular literature, including an account of the witch-controversy pamphleteers. The bibliography is immense, and the index full.

ALGEBRA.

Algebra.—Part II. By K. P. Chottoraj, M.A. R. 1.12.
Calcutta: A. K. Chottoraj.

The present volume is one that possesses marked educational value, internal evidence going far to show that the author is both an expert in his subject and an able and enthusiastic teacher. The discussion of many of the theorems and of fully worked illustrative examples is essentially excellent and suggestive. Indeed, the very thoroughness of the instruction afforded by the pages of the treatise—a feature that constantly makes itself felt and appreciated—renders the work liable to slightly adverse criticism, for the reader cannot but get the impression that the text is over-elaborated. Such, at any rate, is the thought which naturally arises in the mind as we recall some of the standard manuals in use in our English colleges, and draw a mental comparison between them and the one now considered. The textbook which leaves out many steps of an argument at the risk of unduly taxing the powers of the average student, who is expected to fill up the gaps, is responsible for a large unnecessary expenditure both of energy and time, and may even be the cause either of imperfect comprehension of some piece of demonstration or of absolute failure to grasp its meaning. On the other hand, the treatise which leaves nothing to be supplied by the intelligence or the imagination of the reader errs in the contrary direction. It may be regarded as keeping the student constantly in the lecture room, constantly in the position of one listening to repeated explanations in all their fullness. Moreover, the style that loads the pages of a manual with excessive detail has this further disadvantage—namely, that it either swells the size of the volume till it is quite out of proportion to the scope of the contents, or it interferes with the best display of the type in order to avoid the former evil. In the present work, Part II (a volume to itself) opens with the consideration of quadratic equations, and nearly one-third of some four hundred and sixty pages has been exhausted before the subject of "Problems leading to Simultaneous Quadratic Equations" is finally dismissed at the close of Chapter X. We are aware that certain equations of degree higher than the second claim some attention, but that does not stultify the above comment. The subjects dealt with in the subsequent chapters principally embrace Surds and Imaginaries, Variation, Progressions, the Binomial Theorem, together with the algebraic theories that lead up to it, and Logarithms with Logarithmic and Exponential Series, and the application of these to the discussion of Interest and Annuities. As will be seen from the enumeration of the portions of algebra dealt with by the writer, the work is planned so as to cover the ground corresponding to the demands made by the latest regulations issued to candidates for the Intermediate and Previous examinations of the various Indian Universities. A number of the question papers set for such examinations in the course of the last twenty years are reproduced at the close of the work. The results of the questions contained in these papers are not published in the book before us, but the answers to the numerous sets of exercises scattered through the textbook have been furnished. Various unimportant misprints and instances of im-

perfect type occur at intervals, but these may very easily be corrected if, as it is reasonable to anticipate, future editions of a valuable treatise on elementary algebra are required.

DYNAMICS.

A Treatise on Dynamics, with Examples and Exercises. By Prof. Andrew Gray, LL.D., F.R.S., and James Gordon Gray, D.Sc. 10s. net. Macmillan.

The six hundred pages of this book are packed full of information, in such a form as to make the subject of higher dynamics relatively easy to diligent students. The work is intended for students of engineering, physics, or astronomy, and, to a large extent, the exercises have been drawn from practical affairs, and have been chosen more for the sake of illustration of physical principles than for their mathematical interest. We can well understand that the book will appeal to the engineer or the physicist, but we doubt whether it will prove of much use to the astronomer except in a purely elementary way. The references to the Newtonian Theory and Kepler's Laws, and to orbital motion generally, will be found in any book on particle dynamics, and would, of course, be studied by the mathematician as such. To the specialist in astronomy, however, there is not much of value, though the tables of correction of Kepler's third law by the theory of gravitation are interesting. The trouble is that the authors only whet our appetite for lunar and planetary astronomy without gratifying it. On the other hand, as a treatise on dynamics, the book will prove invaluable to engineers and others who go beyond mere rule of thumb and inquire into general principles. The mathematics of the engineer can never be quite the same as the mathematics of the mathematician, and there is as much of the latter kind as the advanced and competent engineer (who, of course, must have a working knowledge of calculus and differential equations) will want.

The general statement of the problems of Kinematics of moving points is well and clearly set out, and the paragraphs in the first chapter on directed quantities referred to moving axes are very useful, though not, we believe, novel. In the second chapter, on dynamical principles, the arrangement is excellent, and the discussion on the laws of motion is well worthy of note. This part of the subject does not admit of great originality, but there is a piquant freshness and clearness of treatment. The discussion of speed in a resisting medium is very capable. The authors acknowledge the contributions of Sir George Greenhill to this branch of science, and one or two problems on the most effective displacements and horse-power of modern steamers are most remarkable. For the mathematical student the exercises on harmonic and cycloidal motion will prove extremely useful.

The best part of the book is the treatment of the Dynamics of Rigid Bodies (Chapters V to X inclusive). The authors, of course, acknowledge their indebtedness to such writers as Jacobi, Appell, and Routh; but, in some cases, we prefer their method to Routh's. They give practical illustrations of the application of principles to concrete facts, and they have not been slow to seize their opportunity. The motion of railway carriages on an incline is well worked out, and so also is the dynamic of a vehicle on a curve. The most abstruse section is the handling of the rotational motion of tops and of gyrostats generally. The problem of the top is well done, and here again the authors have very properly acknowledged the enduring researches of Sir George Greenhill. A discussion of recondite mathematical functions is not attempted, though pure mathematicians might come to our help here in no small degree. The diagrams on precession of a top are most instructive, and, of course, a discussion on gyrostats generally would not be complete without an explanation of the Brennan monorail car and the gyrostatic action of turbines in steamers. We should have liked to see more pages devoted to the practical applications here, but apparently the exigencies of space have prevented it. The tenth chapter is devoted to the General Dynamical Theory of Lagrange and Hamilton. We should have been pleased indeed to see Lagrange's general equations brought earlier into use, as they often prove of auxiliary service to the mathematician in working problems. Personally, however, we prefer the way in which Routh exhibits Lagrange's result.

The last chapter is devoted to some problems in statics, which come in here well as special dynamical cases. On the whole, then, we can confidently recommend this book to students in Universities and technical colleges. Next edition, we hope, will be provided with a general index.

HYDROSTATICS.

A Treatise on Hydromechanics. Part I, Hydrostatics. By W. H. Besant, Sc.D., F.R.S., and A. S. Ramsey, M.A. 7s. 6d. net. G. Bell.

This is a seventh edition. The book is replete with elegant and suggestive problems that exemplify the best Cambridge School of Natural Philosophy. It is, indeed, remarkable to find such a quantity of useful work in its 270 pages; and, with a view to further study, valuable references to the classical writings of famous mathematicians of the past are given in foot-notes. The chapters on Capillarity and Revolving Liquids are, in our opinion, the best in the book. In the former some use has been made of the Weierstrassian forms—a useful new addition. English mathematicians, especially those of the applied school, are too much inclined to be content with their Jacobi and to lose sight of the fact that much newer work in pure mathematics may be utilized, while the pure mathematician is too apt to be careless of the value of the physical applications of his work and will not trouble to leave it in a form that may be at once ready to the hand of the physicist. There are several problems on surface tension, but we should have liked to see some description of the work of recent researchers (Lord Rayleigh and others). The book has always erred in being too much mathematical and too little physical: a happier mean may be attained in a later edition. Some interesting work has been done in the stability of soap bubbles, but we have not seen any reference to this; in particular, the behaviour of bubbles in an electro-magnetic field might have been mentioned. The chapter on Revolving Gravitating Liquid has been partly rewritten, and some notice of recent researches has been included. Interesting problems on the subject of the Figure of the Earth might be followed up after a perusal of this chapter, but of course within the limits of the book the authors could hardly do more than scratch the surface of that subject. Many of the old problems have very properly been included; some others have been taken out and newer ones substituted for them. On the whole, there is still room for improvements in the direction of practical utility: in particular, more might be made of the chapters on the stability and oscillations of floating bodies in reference to the behaviour of ships. At the same time no student that aims at high honours in mathematics can afford to neglect the book: it brings so much within easy reach of the man that has comparatively limited time to spare.

GENERAL NOTICES.

MATHEMATICS.

Practical Arithmetic. By R. S. Osborne. 2s. 6d. net. Effingham Wilson.

A little book capable of forming the basis of a useful course in arithmetic. The instruction—more particularly in certain portions of the subject—needs at times to be amplified by careful oral explanations. The pupil is made familiar with many of the terms having a definite connexion with business transactions; moreover, a number of arithmetical rules that at first sight do not appear to be related to each other are shown to be simple applications of a limited number of important general principles. In some of the details the text is liable to adverse criticism. For example, the process of resolving a number into its prime factors is performed most scientifically, and with the least risk of error, when the prime divisors (repeated as often as they occur) are taken in their natural, and not, as here, in any promiscuous, order. The expert, *ceteris paribus*, adopts the natural order, and the beginner should invariably follow it. Again, in framing questions dealing with ratio and proportion, it is obviously a mistake to select numbers that necessitate the consideration of fractions of persons. Thirdly, errors, not always due to the compositor, occur here and there. We shall look for improvement in these respects in another edition.

“Suggestive” *Arithmetical Test Questions* (Class II and Class VII).

Paper, 1d. each net; cloth, 2d. each net. McDougall.

Specimens of a series of little books corresponding to the work of Standards II to VII of the elementary school. The booklets of questions are designed for use with any set of arithmetics; most suitably, perhaps, they may be employed in connexion with the series bearing the companion title and issued by the same publishing firm. The exercises—between six and seven thousand in number—are generally concrete in character. A consideration of problems taken at random from the mass of material suggests the comment that questions ought invariably to be worded in such a manner as to leave no doubt as to the meaning intended: some of those examined on the plan indicated are not free from ambiguity. The answers to the problems are not given in the little

volumes, but books containing them may, we understand, be obtained separately at a trifling cost.

A Logical Notation for Mathematics. By Robert T. A. Innes, F.R.A.S. Cape Town: S.A. Association for the Advancement of Science.

The above is the title given to a very interesting article culled from a recent issue of the *South African Journal of Science* and published as a separate pamphlet by the S.A. Association for the Advancement of Science. Theoretically, the principles advocated by the author have much to recommend them, and any real advance towards the radical simplification of the language of symbols is sure to be welcomed. The writer admits that the growth of an entirely satisfactory system must of necessity be slow. In some of the cases where his suggestions for fresh modes of notation appear to be original, they seem to offer distinct improvements; in other instances they are not equally happy. Thus to take a single example only: to the letter *E* as a symbol of operation a definite meaning has already been assigned, and $E(x)$ as at present understood is not equivalent to e^x , though this would be its interpretation—still as a symbol of operation—if employed in accordance with the writer's plan. We refrain from further detailed comment, for Mr. Innes's paper is so short that it is obviously preferable to leave the consideration of it to readers of the article in its entirety.

The first number of the *Journal of the Association of Teachers of Mathematics for the South-eastern part of England* (1s. 6d., Hon. Sec., The School, Tonbridge), is filled by Dr. A. N. Whitehead's Presidential Address on “The Place of Elementary Mathematics in a Liberal Education”—a trenchant and most suggestive paper. Three numbers are to be issued in each year, the papers and discussions being limited to “the teaching of elementary mathematics in schools of every type.”

An elaborate article on “The Attraction of a Homogeneous Spherical Segment,” by Sir George Greenhill, appears in the October number (1911) of the *American Journal of Mathematics*.

SCIENCE.

Senior Chemistry. By G. H. Bailey, D.Sc. Lond., Ph.D. Heid., Lecturer in Chemistry at the Victoria University, Manchester, and H. W. Bonsor, M.A., late Scholar of Clare College, Cambridge. 4s. 6d. Clive (University Tutorial Press).

Mr. Bonsor has prepared this volume on the basis of Dr. Bailey's well known “Tutorial Chemistry,” extending the contents and varying the methods of treatment. The result is “a clear and adequate account of the elements of systematic chemistry and of the fundamental chemical laws, together with a good supply of experimental illustrations which the student can work through in the laboratory.” The Cambridge Senior Local Examination would represent the standard aimed at. The exposition is simple and pointed, and the questions placed at the end of each chapter are judicious and suggestive. The experiments (216) are thoughtfully designed. There are 94 figures. Answers to numerical questions and to the questions on chemical calculations (the subject of the last section and chapter) are appended. The index is usefully full. A very careful, practical, and helpful manual.

Elementary Quantitative Analysis. By F. M. Oldham, B.A., late Scholar of Trinity Hall, Cambridge, Senior Science Master at Dulwich College. 1s. 6d. Mills & Boon.

About two-thirds of the book is devoted to volumetric analysis and the rest to gravimetric analysis. The explanations and directions are brief and pointed, and the experiments are extremely well calculated to ensure a solid foundation, while practical exercises appended to the chapters drive home the teaching of the text. The book is intended for students preparing for natural science scholarships at the Universities, for the London Intermediate Science Examination, and for the First Medical Examination. Of course, it is suitable as an introductory work, apart altogether from consideration of examinations. Eleven diagrams.

An Intermediate Text-book of Botany. By Ernest Evans, Natural Science Master, Technical Institute, Burnley. 6s. Longmans.

Mr. Evans writes from large teaching experience and with a constant eye to practical training, arranging the matter so as to simplify the practical work and to advance gradually from the simpler to the more complex forms. The treatment is systematic and ample. The standard in view is the Intermediate B.Sc. of the London University and the Second Stage Syllabus of the Board of Education, and the book offers an excellent second year's course for students generally. Revision questions are appended to the several chapters, and some recent Board of Education questions are given at the end of the volume. There are over three hundred figures admirably drawn and reproduced. An exceptionally good text-book.

A Textbook of Botany, by J. M. Lowson, M.A., B.Sc., F.L.S., Head Master of the Burgh Technical School and Head of the Science Departments in the High School and the Royal Academy, Inverness, appears in a seventh impression (fifth edition), revised and enlarged (6s. 6d., Clive—University Tutorial Press). The revision has been thoroughgoing and some new diagrams have been introduced. Numerous test questions are appended and there is an ample index. An extremely good introductory textbook.

The fourth volume of *The Journal of the Municipal School of Technology*, Manchester, records a large number of investigations undertaken by members of the teaching staff and students of the school during the year 1910. The subjects are widely varied, and the treatment is most capable.

FRENCH.

A Book of French Verse. Collected by St. John Lucas.
3s. 6d. Clarendon Press.

"The Oxford Book of French Verse" and "The Oxford Book of Italian Verse" have already proved the taste and the scholarship of Mr. Lucas, and both qualities are confirmed by this collection. The selections (155) range from the fourteenth century down to the present day—from Enstache Deschamps and Charles d'Orléans down to de Banville and Verlaine. A prefatory "Note on French Lyric Poetry" is really a tasteful little essay, marked by scholarly discrimination. There is also a brief outline of the rules governing the construction of French verse, which will not be found superfluous. The notes appended are both biographical and explanatory; and there is an index of first lines. It is a pretty little handy volume that the French scholar, even of moderate attainment, will frequently dip into with ever renewed pleasure.

"Oxford Higher French Series."—(1) *Une Année dans le Sahel.* By Fromentin. Edited by L. Morel, LL.D., Professeur à l'Université de Paris. (3s. 6d. net.) (2) *Etudes Françaises et Anglaises.* By E. Scherer. Edited by Francis Storr. 2s. 6d. net. Clarendon Press.

(1) "Je n'étonnerai personne," wrote Sainte-Beuve, "en disant que M. Fromentin, malgré ses pages si neuves de description et si ardents, malgré ses avidités et ses audaces d'incursion dans le désert, n'est qu'un classique, raffiné peut-être, mais vif et sincère, un classique rajenni." Prof. Morel gives a long introduction (in French), tracing the career of Fromentin, and commenting upon his work as a painter and a writer, and particularly on the present book. Sahel, he tells us in his useful notes, "is an Arabic word meaning coast, shore," and "it is the name given to that strip of land which, on either side of Algiers, spreads north of the plain of the Mitidja." The narrative is bright and engaging, and the descriptions vivid. (2) The "studies" are literary portraits of de Tocqueville, George Eliot, Michelet, Chateaubriand, Thiers, Prévost-Paradel, John Stuart Mill, and Sainte-Beuve—a sufficiently varied and interesting group. The introduction is comparatively brief, but quite adequate; it is biographical and critical, and pointedly estimates Scherer's characteristics and rank as a critic. The notes, which are pretty full, will be extremely helpful. An admirable edition of an excellent selection for advanced students.

Siepmann's French Series for Rapid Reading. General Editors: Otto Siepmann and Engène Pelliessier. 1s. each. Macmillan.

This series is intended to provide suitable material for rapid reading, whether in class or in private; and of course the books can also be studied more leisurely and in detail, according to circumstances. There is an Elementary Section and an Intermediate-and-Advanced Section. In the latter section we have: (1) *Le Genre de Monsieur Poirier* (Angier and Sandean), (2) *La Vendetta* (Balzac), (3) *Voyage en Grèce* (Chateaubriand), (4) *Voyage en Espagne* (Gautier), (5) *Le Tailleur de Pierres de Saint-Point* (Lamartine), (6) *Voyage autour de ma Chambre* (X. de Maistre), (7) *La Jacquerie* (Mérimée), (8) *Histoire de la Révolution Française* (Mignet), (9) *Charlotte Corday* (Ponsard), and (10) *Bataille de Dames; ou, un Duel en Amour* (Scribe and Legouvé). The matter is most varied and excellent. Some of the works are necessarily abridged and adapted to the space available. The volumes are all furnished with suitable introductions and notes, and with the usual Siepmann apparatus of words and phrases. They are beautifully printed, and substantially bound in limp cloth. An admirable addition to the resources of the French classroom.

GERMAN.

"Oxford German Series." Edited by Julius Goebel, Ph.D., Professor of Germanic Languages in the University of Illinois. 3s. net each volume. Oxford University Press, London: Henry Frowde.

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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.

16670. (Hon. G. R. Dick, M.A.)—Every conic passing through the in- and ex-centres of a triangle ABC is a rectangular hyperbola which always touches four fixed straight lines. The centres of all these hyperbolas lie on the circum-circle and their foci on the curve

$$X^{-1} + Y^{-1} + Z^{-1} = 0,$$

where $X = x(-x^2 \cos A + yz + zx \cos B + xy \cos C)$, $Y = \dots$, $Z = \dots$, the co-ordinates being trilinear and the given triangle that of reference.

Additional Solution by Professor NANSON.

The degenerate conics of the system are pairs of perpendicular lines. Hence all the conics are rectangular hyperbolae. The centre locus is a conic bisecting the join of any two centres, and is therefore the circum-circle of ABC. The conics are clearly $\Sigma lX^2 = 0$, where $\Sigma l = 0$, and if xyz is a focus, then the tangents $\Sigma(yz - Yz)^2/l = 0$ from xyz must be identical with the isotropic lines through xyz . Thus, if these isotropics are $(\Delta BCFGH)(XYZ)^2 = 0$, we have

$$yz/l : zx/m : xy/n = F : G : H,$$

so that the locus of the foci is the sextic $\Sigma 1/Fx = 0$. In trilinears the relation between the co ordinates λ, μ, ν of an isotropic line is

$$\Sigma \lambda^2 = 2 \Sigma \mu\nu \cos A.$$

Hence, replacing λ by $yz - Yz$, we see that

$$F = -x^2 \cos A + yz + zx \cos B + xy \cos C.$$

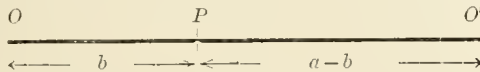
So in general the foci of the conic $\Sigma lx^2 = 0$, where $\phi(l, m, n) = 0$, lie on the curve $\phi(yz/F, zx/G, xy/H) = 0$. Thus the foci of the range of conics touching the four lines $\pm p, \pm q, \pm r$ lie on the cubic $\Sigma p^2 Fx = 0$. See *Reprint*, Vol. IV, p. 20, Old Series.

17202. (Professor J. C. SWAMINARAYAN, M.A.)—Two centres of force are situated at O and O' ($OO' = a$) exerting forces of attraction equal mu (distance) n and mu' (distance) n respectively. A particle rests in OO' in equilibrium under the action of the two forces. If the particle is slightly displaced from its position of equilibrium, show that it oscillates, the time of a complete oscillation being

$$2\pi/\sqrt{\{(\mu\xi)^{n-1} \mu n + (\mu'\xi)^{n-1} \mu' n'\}},$$

where ξ satisfies the equation $(\mu\xi)^n + (\mu'\xi)^n = a$.

Solution by FREDERICK PHILLIPS, F.C.P., B.Sc. (Lond.), F.C.S.



Let P be the position of equilibrium at distance b from O. Then, from the law of attraction,

$$mub^n = m'u'(a-b)^{n'} \dots\dots\dots (i).$$

Write $b \equiv (\mu\xi)^{1/n}$, then equation (i) easily becomes

$$(\mu\xi)^{n'} + (\mu'\xi)^{n'} = a \dots\dots\dots (ii).$$

If mass be displaced towards O' the resultant force is in the opposite direction; let small displacement be x .

Then resultant force is

$$m\{\mu(b+x)^n - \mu'(a-b-x)^{n'}\} \\ = m\{\mu b^n(1+x/b)^n - \mu'(a-b)^{n'}[1-x/(a-b)]^{n'}\}.$$

Expanding $(1+x/b)^n$ and $[1-x/(a-b)]^{n'}$ and retaining only the first two terms in each, we have

$$\text{Resultant force} = m\left\{ub^n - \mu'(a-b)^{n'} + \frac{ub^n nx}{b} + \frac{\mu'(a-b)^{n'} n' x}{a-b}\right\} \\ = mx\{n\mu b^{n-1} + n'\mu'(a-b)^{n'-1}\};$$

therefore Motion is harmonic, and

$$T = \frac{2\pi}{\sqrt{\{n\mu b^{n-1} + n'\mu'(a-b)^{n'-1}\}}};$$

or, putting $b = (\mu\xi)^{1/n}$,

$$T = \frac{2\pi}{\sqrt{\{n\mu(\mu\xi)^{n-1} + n'\mu'(\mu\xi)^{n'-1}\}}},$$

where ξ satisfies $(\mu\xi)^n + (\mu'\xi)^n = a$.

Tucker Triangles and Circles.

By W. GALLATLY, M.A.

1. In reference to the article on "The Inscribed and Circumscribed Triangles of a given Triangle" (Vol. XX, p. 26, of the *Reprint*), it is here proposed to discuss the case in which the Brocard points Ω and Ω' are taken for the Pivot Points, the triangles DEF, D'E'F' being then called Tucker triangles.

$$\text{In this case, } D = d = B, \quad E = e = C, \quad F = f = A, \\ D' = d' = C, \quad E' = e' = A, \quad F' = f' = B.$$

Denote by Z the centre of the common pedal circle of Ω, Ω' , and by Z' the common circumcentre of DEF, D'E'F'.

The line of centres ZZ', bisecting $\Omega\Omega'$ at right angles, falls on OK.

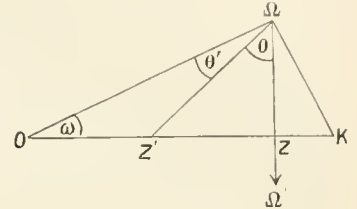
$$\text{We have } \theta = D\Omega d = Z\Omega Z'.$$

Let $\Omega\Omega Z' = \theta'$;

$$\text{then } \theta + \theta' + \omega = \frac{1}{2}\pi,$$

$$\theta' = \frac{1}{2}\pi - \omega - \theta.$$

Fig. 1.



Since $\Omega Af = \omega = \Omega OZ$ and $f\Omega F = \theta = Z\Omega Z'$; therefore $\Omega\Omega F = \theta' = \Omega\Omega Z'$; so that $\Omega\Omega'F, \Omega\Omega Z'$ are similar. And finally $\Omega\Omega'F, B\Omega d, C\Omega e, \Omega\Omega'e'E', C\Omega'd'D', B\Omega'f'F'$ are each similar to $\Omega\Omega Z'$.

Now the radius of the pedal circle of $\Omega\Omega' = \rho_0 = R \sin \omega$.

Since angle $d\Omega D = \dots = \theta$ and $d'\Omega'D' = \dots = \theta$, it follows from the article referred to above that

$$\rho = \rho_0 \sec \theta = R \frac{\sin \omega}{\sin(\omega + \theta)} = R \cdot \Omega Z' / OQ \\ = 1/e \cdot \Omega Z' [\Omega\Omega = eR = \sqrt{(1-4 \sin^2 \omega)} R].$$

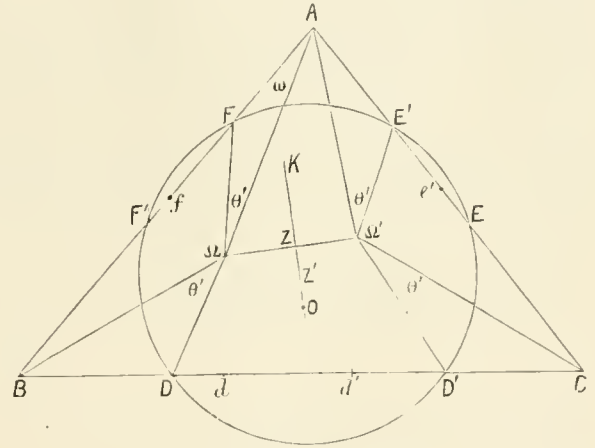


Fig. 2.

2. The quadrilateral $BD\Omega F$ being cyclic, BFD or $F'FD = B\Omega D = \theta'$; therefore the arcs DF', FE', ED' subtend each an angle θ' at the circumference, and are therefore equal.

Hence the chord $E'D$ is parallel to AB , $F'E$ to BC , $D'F$ to AC , and a circle with centre Z' and radius $= \rho \cos \theta'$ will touch the three equal chords.

In the cyclic quadrilateral $E'EDF$, $AE'F = EDF = B$; so that the equal chords are anti-parallel to the corresponding sides of ABC .

$$\text{Angle } DE'D' = F'E'D' - F'E'D = A - \theta',$$

$$F'E'E = F'E'D' + D'E'E = A + \theta'.$$

Hence the chord EE' parallel to BC

$$= 2\rho \sin(A + \theta') = 2R \frac{\sin \omega}{\sin(\omega + \theta')} \sin(A + \theta').$$

The chord DD' cut from BC

$$= 2\rho \sin(A - \theta') = 2R \frac{\sin \omega}{\sin(\omega + \theta')} \sin(A - \theta').$$

Also, if $(\alpha\beta\gamma)$ be the normal coordinates of Z' ,

$$\alpha = \rho \cos \frac{1}{2}DZ'D' = \rho \cos DE'D' = R \sin \omega / \sin(\omega + \theta') \cdot \cos(A - \theta').$$

The following list of formulæ will be found useful:—

(a) Radius of circle $DD'EE'FF' = \rho = R \cdot \frac{\sin \omega}{\sin(\omega + \theta')} = (1/e) \cdot \Omega Z'$.

(b) Coordinates of Z' ; $\alpha = R \sin \omega / \sin(\omega + \theta') \cdot \cos(A - \theta')$.

(c) Length of equal anti-parallel chords $= 2R \sin \omega / \sin(\omega + \theta') \cdot \sin \theta'$.

(d) Radius of circle touching these equal chords

$$= p = R \frac{\sin \omega}{\sin(\omega + \theta)} \cos \theta.$$

(e) Chord DD' cut from BC = 2R sin ω/sin(ω + θ) · sin(A - θ').

(f) Chord EF' parallel to BC = 2R sin ω/sin(ω + θ) · sin(A + θ').

[Rest in Reprint.]

Proposed Extension of an Old Method of Factorization, so as to make it applicable to larger numbers.

By D. BIDDLE, M.R.C.S.

The Old Method may thus briefly be set forth :

$$N = S^2 + A = xy = (S + u)(S - v) = (6p \pm 1)(6q \pm 1) = H^2 - h^2,$$

where H, h are respectively the half-sum and the half-difference of the factors. $H = S + k = S + \frac{1}{2}(u - v)$, $h = \frac{1}{2}(u + v)$, and we obtain the old formula

$$h = (k^2 + 2Sk - A)^{\frac{1}{2}} \dots \dots \dots (a).$$

Our present purpose is to extend this by taking

$$m(x + y) = N + r = 2mH = 2m(S + k).$$

Let $S + i$ = the half-sum of $2m$ and $S + k$, and $k - i$ = the half-difference. Then

$$2m = S - (k - 2i),$$

where $k < 2i$, and we have $(S + k)\{S - (k - 2i)\} = N + r$,

whence we obtain the following formula, corresponding to (a),

$$k - i = (i^2 + 2Si - A - r)^{\frac{1}{2}} \dots \dots \dots (b).$$

It must be remarked, however, that the value of i is integral only when H is even, that is to say, when $N \equiv -1 \pmod{4}$. When H is odd [and $N \equiv +1 \pmod{4}$], i is fractional, ending in $\frac{1}{2}$. But if this be borne in mind, there need be no difficulty in utilizing the new formula for either case. When resolved, it at once gives k and H. Moreover, i is always small compared with k .

All would be plain sailing if only r could readily be found. In many cases it is small, but in others it is too large to be found by mere inspection and trial of possible values of $N + r$. But, since by (b) we have

$$2m + (i^2 + 2Si - A - r)^{\frac{1}{2}} = S + i,$$

we find that

$$4m\{S + i - m\} = N + r.$$

Consequently, we have $N + r \equiv 0 \pmod{4}$ whenever m is even, or i integral; and in the latter case, that is to say, when $N \equiv -1 \pmod{4}$, we have $N + r \equiv 0 \pmod{4m}$.

Let us, however, marshal the equations, five in number (and there may well be more), which seem to point to the possible advent of a direct method of factorization :

- (i) $N = xy$, (ii) $y = lx + s$, (iii) $m(x + y) = N + r$,
- (iv) $lr + ms = ny$, (v) $(l + 1)m + s = y + n$.

They deal with seven unknown quantities, namely, x, y, m, r, l, s, n . The following are examples, in which the said values, with k and i also, are revealed :

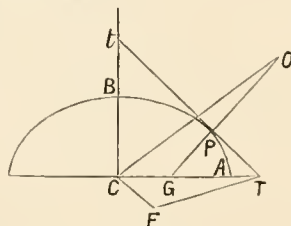
N	S	A	x	y	m	r	l	s	n	k	i
1843	42	79	19	97	16	13	5	2	1	16	3
11771	108	107	79	149	52	85	1	70	25	6	1
150809	388	265	239	631	174	571	2	153	44	47	$\frac{3}{2}$

N.B.—Where x is minute compared with y , or it is desired to find if N be prime, we can multiply m by 2^e , dividing H by 2^{e-1} , so as to bring the resulting quantities as near S as possible. But, if so, great care must be taken as to the fraction in $H/2^{e-1}$.

17211. (S. NARAYANAN, B.A., L.T.)—If a system of confocal conics be reciprocated with respect to an arbitrary point P, show that all the reciprocal conics have the same Apollonian hyperbola with respect to P.

Solution by R. F. DAVIS, M.A.

Let P be a point on an ellipse, the normal PG at which passes through a given point O, and TPt the tangent at P. Take a point F so that CF, CO are equally inclined to CA (upon opposite sides of it), and $CF \cdot CO = CS^2$.



Then, since $CO \cdot CF = CS^2 = CG \cdot CT$,
 $CF : CT = CG : CO$,

the triangle CFT is similar to CGO, and the angle CFT = the angle CGO. But CGO is the supplement of CtP, since CGPt is cyclic; therefore CFT = supplement of CtT and the circum-circle of CTt always passes through F.

Hence the tangent at P also touches a parabola whose focus is F, directrix CO, to which CA, CB are tangents. This parabola is the same for all confocals. (See Dr. C. Taylor's *Geometry of Conics*, 1881,

No. 990; also *Reprint*, Vol. XLV, Appendix III, Section 16, by the writer.)

The present theorem follows by reciprocation from O, remembering that, if $OU \cdot OU' = k^2$ and $UL, U'L'$ are at right angles to OUU' , then UL corresponds to U' and UL' to U . Therefore, if the normal at U passes through O, so also does the normal at U' .

17204. (Lt.-Col. ALLAN CUNNINGHAM, R.E.)—Can any integers N be expressed at once in all the four forms following?—

$$N = t_1^4 - 2u_1^2 = t_2^2 - 2u_2^4 = 2u_3^4 - t_3^2 = 2u_4^2 - t_4^4.$$

If so, give examples; and state, if possible, the conditions necessary.

Partial Solution by the PROPOSER.

$$\text{Let } N_1 = t_1^4 - 2u_1^2, N_2 = t_2^2 - 2u_2^4, N_3 = 2u_3^4 - t_3^2, N_4 = 2u_4^2 - t_4^4.$$

It is obvious that a first necessary condition is that N must be of the form $N = c^2 - 2f^2 = 2f'^2 - c'^2$; and must therefore be of one of the linear forms $N = 16n \pm 1, 16n \pm 9$.

Now, it has been proved in the author's solutions of Questions 16617, 16644 (which lead up to the present Question) that

$$N = 16n + 9 \neq N_1 \text{ and } N = 16n - 9 \neq N_1.$$

This limits the present case to the two forms $N = 16n \pm 1$.

Also, of the form $N = 16n + 1$, it was there shown that

$$N = a^2 + (4\omega)^2 \neq N_1 \text{ and } N = c^2 + 2(2\omega)^2 \neq N_3,$$

where ω denotes an odd number; these two forms are therefore to be excluded from $N = 16n + 1$.

This shows the present state of the Question, as far as proof has yet been found (so far as known to the writer). What follows is empirical. After much trial, of all primes $> 2,000$, and of all composites $> 1,000$, of the forms not excluded by the above, the only cases found of N in all four forms were—

$$\begin{aligned} N = 287 &= 5^4 - 2 \cdot 13^2 = 17^2 - 2 \cdot 1^4 = 2 \cdot 4^4 - 13^2 = 2 \cdot 12^2 - 1^4, \\ N = 511 &= 9^4 - 2 \cdot 55^2 = 319^2 - 2 \cdot 15^4 = 2 \cdot 4^2 - 1^2 = 2 \cdot 16^2 - 1^4, \\ N = 623 &= 5^4 - 2 \cdot 1^2 = 25^2 - 2 \cdot 1^4 = 2 \cdot 8^4 - 87^2 = 2 \cdot 1432^2 - 45^4. \end{aligned}$$

No general rule is at present known; but it is noticeable that these numbers are all composites of form

$$N = 16n - 1 = (16n' - 9)(16n'' + 9),$$

and are each the product of two factors of opposite kinds and of the excluded forms.

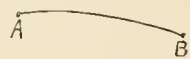
Knots and Twists.

By A. W. H. THOMPSON.

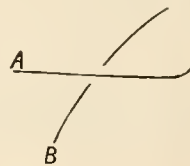
1. Consider a string with ends A, B. In what follows we suppose the string in one or two dimensions.

The sense of the string is positive when traced from A to B.

A crossing in the string is formed when the string crosses itself thus :

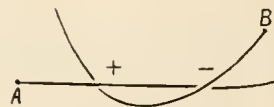


The crossing is positive if, tracing the string along its positive sense, it first crosses above as in figure.



The crossing is negative if otherwise.

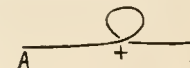
An interlace is the combination of a positive and a negative crossing, thus :



The interlace takes the sign of the first crossing. Thus the sign of the interlace in the figure is positive.

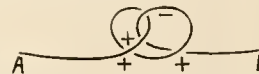
An interlace of the nth order is n interlaces of the same sign.

A loop in the string is the circuit formed by a single crossing, thus :



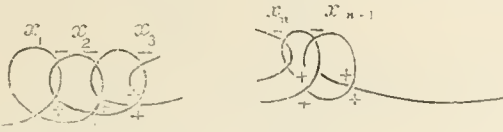
In considering the sign of a loop, we must make the loop come on one specified side of the string. We suppose loops to occur above the string. The loop then takes the sign of the crossing.

Definition of a common knot.—The result of two positive loops being interlaced positively, with no more crossings in the string, is a common knot. The sign of the knot is positive. Thus :



A common knot of nth order is the result of n + 1 position loops, x_1, x_2, \dots, x_{n+1} being interlaced: x_1 with x_2, x_2 with x_3, \dots, x_n with

x_{n-1} . Thus:



2. Next, consider string with width. Take a strip of paper with parallel edges A_1B_1, A_2B_2 .

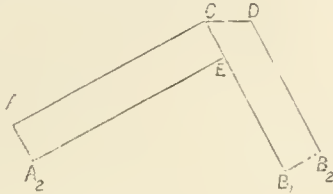


We have the same definitions for a strip as we have for a string. For a strip we have a further property of a twist.

A twist is formed by making a crease in the paper; for convenience, we shall suppose the line of the crease to make 45° with the edges, thus:

The strip is said to have a twist.

It will be noticed that the effect of the crease is to make the outer edge A_1C (see figure) become the inner edge DB_2 , and the inner edge A_2E become the outer edge EB_1 .



A ring of a strip is formed by joining corresponding corners together. Thus, when there are no twists in the strip, the ring is formed by joining the ends A_1B_1, A_2B_2 together: A_1 on the other side of B_1 , and A_2 on the other side of B_2 . When there is a twist in the strip we join A_1 to the other side of B_2 , and A_2 to the other side of B_1 ; and so on when there are any number of twists. The ring is then said to have the same number of twists.

Note.—The creases must all be formed in the same rotation. Two twists of opposite rotations neutralize each other.

17083. (Professor NANSON.)—Eliminate x, x' from

$$ax^2 + 2hx + b = 0, \quad a'x'^2 + 2h'x' + b' = 0, \quad a''xx' + h''(x + x') + b'' = 0.$$

Remarks by the PROPOSER.

Denoting $ax^2 + 2hx + b$ by u , and so on, the eliminant $Ax^2 + 2Hx + B$ in the second solution is obviously

$$\Theta u'' - \Delta'' u' \dots \dots \dots (1),$$

where Δ'' is the discriminant of u'' and Θ is the harmonic invariant of u', u'' .

Now the discriminant of (1) is clearly

$$\Theta^2 \Delta''^2 - \Theta \Delta'' \Theta + \Delta''^2 \Delta',$$

that is, $\Delta' \Delta''^2$ and the harmonic invariant of u and (1) is $\Theta \Theta' - \Delta'' \Theta''$. Hence, using the Boolean form of the eliminant of two quadratics, the eliminant of u and (1), that is the required eliminant, is

$$4\Delta\Delta' \Delta''^2 - (\Theta \Theta' - \Delta'' \Theta'')^2.$$

The nine-line determinant in the first solution vanishes identically.

QUESTIONS FOR SOLUTION.

17238 (A. L. ATKIN, B.A.)—The determinant (see Maxwell, *Electricity*, §280)

$$D \equiv \begin{vmatrix} K_{11} & K_{12} & \dots & K_{1, n-1} \\ K_{21} & K_{22} & \dots & K_{2, n-1} \\ \dots & \dots & \dots & \dots \\ K_{n-1, 1} & K_{n-1, 2} & \dots & K_{n-1, n-1} \end{vmatrix}$$

and its co-factors of the type D_{pq} , the co-factor of K_{pq} , arise in connexion with the theory of a system of $\frac{1}{2}n(n-1)$ linear conductors. In this determinant

$$K_{r, r} = -(K_{r, 1} + K_{r, 2} + \dots + K_{r, r-1} + K_{r, r+1} + \dots + K_{r, n}).$$

In the Appendix to Chapter VI of Maxwell, D and D_{pq} are said to be obtainable by the following rules:— D is (numerically) the sum of the products of the conductivities taken $(n-1)$ at a time, omitting all those terms which contain the products of the conductivities of the branches which form closed circuits. D_{pq} is (numerically) the sum of the products of the conductivities taken $(n-2)$ at a time, omitting all those terms which contain the conductivities of the branches $A_p A_n$ or $A_q A_n$, or which contain products of conductivities of branches which form closed circuits either by themselves or with the aid of $A_p A_n$ or $A_q A_n$.

[In the theory, A_1, A_2, \dots, A_n are the n points connected by the $\frac{1}{2}n(n-1)$ conductors, and K_{pq} is the conductivity of the conductor $A_p A_q$. $-Q_p \cdot D_{pq}/D$ is the potential of A_p when A_n is maintained at zero potential and where a current Q_p flows into A_p .]

Can any reader prove these rules?

Note.—The determinant D is shown in Jean's *Electricity*, and may easily be proved, to be equal to the co-factor of any principal diagonal term of the determinant

$$\begin{vmatrix} K_{11} & K_{12} & \dots & K_{1n} \\ K_{21} & K_{22} & \dots & K_{2n} \\ \dots & \dots & \dots & \dots \\ K_{n1} & K_{n2} & \dots & K_{nn} \end{vmatrix}$$

17239. (M. SATYANARAYANA, M.A.)—Find the value of the determinant

$$\begin{vmatrix} \cos(x+y+z-u) & \sin(x+y+z-u) \\ \cos(y+z+u-x) & \sin(y+z+u-x) \\ \cos(z+u+x-y) & \sin(z+u+x-y) \\ \sin(u-x) \sin(u-y) \sin(u-z) + \cos u \sin(2u-x-y-z) \\ \sin(x-u) \sin(x-y) \sin(x-z) + \cos x \sin(2x-y-z-u) \\ \sin(y-x) \sin(y-z) \sin(y-u) + \cos y \sin(2y-x-z-u) \end{vmatrix}$$

17240. (R. F. DAVIS, M.A.)—If n is a prime number greater than 3, prove that $(n-1)! \{ \frac{1}{1} + \frac{1}{2} + \frac{1}{3} + \dots + 1/(n-1) \}$ is divisible by n^2 .

17241. (A. A. KRISHNASWAMI AIVANGAR, B.A.)—Divide 29,524 into ten such parts that by suitable addition or subtraction of some or all of the parts, all the numbers from 1 to 29,524 may be formed.

17242. (B. A. SWINDEN.)—Will somebody give a convincing proof that the equation $4x^3 - y^3 = 3x^2y^2$ is insoluble in positive integers?

17243. ("SOLIDUS.")—Write down the equation whose roots are $\alpha/\beta, \beta/\alpha, \alpha/\gamma, \gamma/\alpha, \alpha/\delta, \delta/\alpha, \beta/\gamma, \gamma/\beta, \beta/\delta, \delta/\beta, \gamma/\delta, \delta/\gamma$, where $\alpha, \beta, \gamma, \delta$ are the roots of $x^4 + px^3 + qx^2 + rx + s = 0$.

17244. (Professor E. J. NANSON.)—If s_r is the sum of the r -th powers of n positive quantities, and p_r is the sum of their products r together, then

$$(n-1) s_n + n p_n > s_3 s_{n-1},$$

unless (1) the quantities are all equal or (2) $n = 2$.

17245. (Professor NEUBERG.)—Étant donné un tétraèdre ABCD dont les hauteurs AA', BB', CC', DD' se coupent en un même point, démontrer que la somme des puissances d'un même point P par rapport aux deux sphères décrites sur deux arêtes opposées comme diamètres est la même pour les trois couples d'arêtes opposées.

17246. (A. W. H. THOMPSON.)—Prove the following theorems:—(1) A ring, which has $2n+1$ twists, is cut along the middle. The result is one ring, with a knot of the n -th order and $2n+4$ twists. (2) A ring which has $2n$ twists is cut along the middle. The result is two rings with $2n$ twists each, connected by an interlace* of the n -th order.

17247. (Communicated by C. M. ROSS, B.A.)—(1) The equations of a cubic curve are

$$x/T_1 = y/T_2 = z/T_3,$$

where

$$T_\mu = p_\mu t^3 + q_\mu t^2 + r_\mu t + s \quad (\mu = 1, 2, 3);$$

prove that the equation giving the values of the parameter at the double point is

$$\begin{vmatrix} t^2 & -t & 1 \\ P & Q & R \\ Q & R & S \end{vmatrix} = 0,$$

where P, Q, R, S are the determinants contained in the matrix

$$\begin{vmatrix} p_1 & q_1 & r_1 & s_1 \\ p_2 & q_2 & r_2 & s_2 \\ p_3 & q_3 & r_3 & s_3 \end{vmatrix}$$

17248. (C. E. YOUNGMAN, M.A.)—A hyperbola has one focus at the centre of a given circle and the other on the circumference; and one asymptote bisects a given radius of the circle. Prove that the hyperbola envelopes a cardioid, and the chord of contact a cissoid.

17249. (W. F. BEARD, M.A. Suggested by Question 17176.)—CP, CD are conjugate semi-diameters of an ellipse; the chords of curvature at P, D meet at O. Prove that (i) O lies on the circle CPD, (ii) the locus of O is a sextic through the meets of the tangents at the ends of the axes, and touching the axes at C.

17250. (N. SANKARA AIYAR, B.A.)—If one conic has double contact with another, then every confocal of one has double contact with some one confocal of the other, and the four common tangents to any confocal of the first and any confocal of the second all envelope a circle.

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.

17252. (A. M. NESBITT, M.A.)—TP, TQ are tangents to a parabola, focus S; and the diameters through P and Q meet the directrix in M, N. If $MN^2 = 3TS^2$, find the magnitude of the angle PTQ. Also find the locus of T.

* We have defined an interlace for a single string (see page 80). It is easy to apply the definition to two strings.

17253. (C. E. McVICKER, M.A.)—A circle touches the sides of a triangle ABC at L, M, N, and the nine-point circle at F. Prove that the images of F in the sides of LMN have the same centroid as L, M, N, and are collinear with the centres of both circles ABC, LMN.

17254. (Professor SANJANA, M.A.)—ABC is a triangle right-angled at C: a straight line IK is drawn parallel to the bisector of the angle A to meet BC in K, and X is taken in BC so that BK : BX = BX : BC. If XI parallel to AC meet IK in I and N be the mid-point of AB, prove that NI = BN - IX. Examine the result for varying positions of IK.

17255. (Professor J. C. SWAMINARAYAN, M.A.)—O is the circum-centre of $\triangle ABC$; P, Q, R divide AO, BO, CO in the same ratio $l : m$. PX, QY, and RZ are drawn, perpendicular to AO, BO, CO, cutting BC, CA and AB in X, Y, Z respectively. Prove that X, Y, Z are collinear.

OLD QUESTIONS AS YET UNSOLVED (IN OUR COLUMNS).

11415. (Professor LÉVY.)—Construire un triangle dont les côtés contiennent les sommets d'un quadrilatère donné et qui soit partagé par les diagonales en quatre parties équivalentes. Il y a une condition de possibilité: la formuler.

12265. (Professor STEGGALL.)—Light is incident on a vertical film whose thickness increases uniformly downwards, but is constant along horizontal lines; a portion is reflected through a vertical slit close to the film, and is projected by a prism and lens into a spectrum. Show that the black bands have for their equation $y^2x = n^2a^3$, where n is any positive integer.

12661. (R. F. DAVIS, M.A.)—On January 1st, 1895, a person forwards by post to his banker in London the following twelve cheques en bloc, forming a total of £199. Os. 6d. :—

£.	s.	d.	£.	s.	d.	£.	s.	d.
15	2	11	19	7	10	12	9	5
22	6	7	10	19	0	8	11	4
43	15	2	5	18	1	17	16	9
7	10	6	14	14	3	20	8	8

On a subsequent reference to his pass-book he finds he has been credited with
 1895, Jan. 2, Cash £78. 1s. 2d.
 " " 4, Country cheques... £120. 19s. 4d.

Ascertain which of the above were country cheques.

12722. (H. J. WOODALL, A.R.C.S.)—Required continued fractions equivalent to the integrals of the expressions

$$\sin av/(m^2 + v^2), \quad \cos av.v/(m^2 + v^2), \quad e^{-av}/(m^2 + v^2), \quad e^{-av}v/(m^2 + v^2).$$

12735. (I. ARNOLD.)—Find a point at a given distance from the vertex of a given triangle, so that the sum of the three perpendiculars from the point on the sides shall be equal to a given line. What are the limits?

12839. (F. S. MACAHLAY, M.A.)—Prove that

$$\sum_{n=1}^{n=\alpha} 2^\alpha / (2n + 1)^2 = 1, \quad \sum_{n=1}^{n=\infty} 2^\alpha / n^2 = 5,$$

where the index α in the numerator of each term is equal to the number of different prime factors (unity included) of the denominator.

NOTICE TO CORRESPONDENTS.

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

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Dr. H. F. Baker, President, in the Chair.

Messrs. L. L. Conant and C. J. T. Sewell were elected members.

Dr. Bromwich, as Secretary, reported that during the Session 1910–11 the number of members had increased from 286 to 293, and that Exchanges of Proceedings had been arranged with four Societies.

The following papers were read :—

Prof. W. H. Young : On Successions of Integrals and Fourier Series.
 Prof. W. H. Young : On Multiple Fourier Series.

Messrs. G. H. Hardy and J. E. Littlewood : On a New Condition for the Truth of the Converse of Abel's Theorem relating to Power Series.

Lt.-Col. A. Cunningham : On Mersenne's Numbers.

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Magnetism and Electricity.

1. { Dixon, C. H. Wellington College, Shropshire
Domville, S. T. Oakes Institute, Walton, Liverpool.

Chemistry.

1. Ivens, F. W. Wellington College, Shropshire
2. Seymour-Jones, F. L. Wellington College, Shropshire

Natural History.

1. Macqueen, J. M. Tollington School, Muswell Hill, N.
2. Hollingworth, R. E. Tollington School, Muswell Hill, N.

Drawing.

1. Biggs, Miss C. M. Crouch End High School, Hornsey.
2. { Farrant, Miss W. L. Private tuition.
Newbery, Miss M. Wellington College, Hastings.
Nokes, Miss C. M. Crouch End High School, Hornsey.

Shorthand.

1. Halsall, A. Private tuition.
2. Clift, V. L. The Jersey Modern School, St. Heliers.

Domestic Economy.

1. { Edwards, Miss A. L. Clark's College, Cardiff.
Lunt, Miss N. E. Private tuition.

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:—

<i>a.</i> = Arithmetic.	<i>du.</i> = Dutch.	<i>gr.</i> = Greek.	<i>ma.</i> = Magnetism & Electricity.	<i>s.</i> = Scripture.
<i>al.</i> = Algebra.	<i>e.</i> = English.	<i>h.</i> = History.	<i>ms.</i> = Measurement.	<i>sc.</i> = Elementary Science
<i>b.</i> = Botany.	<i>f.</i> = French.	<i>he.</i> = Hebrew.	<i>mn.</i> = Music.	<i>sh.</i> = Shorthand.
<i>bk.</i> = Book-keeping.	<i>g.</i> = Geography.	<i>i.</i> = Italian.	<i>nh.</i> = Natural History.	<i>sp.</i> = Spanish.
<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.		

The small figures ¹ and ² 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.

Dixon, C.B. *s.c.h.a.ol.gm.tr.m.f.t.mn.*
Wellington Coll., Shropshire

Domville, S.T. *a.ol.gm.tr.m.ms.ma.ch.*
Oakes Inst., Walton, Liverpool

Seymour-Jones, F.L. *s.e.v.gm.tr.f.ch.*
Wellington Coll., Shropshire

Rogans, J.A. *al.gm.m.os.*
Oakes Inst., Walton, Liverpool

Whipp, P.S. *e.v.al.gm.m.bk.ms.*
Shoreham Gram. S.

Damsell, G.F. *e.a.ol.m.ms.*
Oakes Inst., Walton, Liverpool

Hollingworth, R.E. *s.e.g.o.ph.*
Tollington S., Muswell Hill

Waylett, J.R. *al.gm.*
High S. for Boys, Croydon

Page, P. *e.v.ol.gm.sh.* St. Leonards Coll. S.

Hargreaves, C. *gm.ms.*
Oakes Inst., Walton, Liverpool

Ivens, F.W. *o.ch.d.*
Wellington Coll., Shropshire

Jemison, N.L. *gm.m.f.ch.*
Wellington Coll., Shropshire

Macqueen, J.M. *s.ph.*
Tollington S., Muswell Hill

Roberts, W.A. *e.a.gm.* Penketh School

Waulser, R.P. *ch.* Newcastle Modern S.

Mitchell, G.A. *e.h.a.ol.gm.*
Oakes Inst., Walton, Liverpool

Sanders, F.E. *a.gm.*
Oakes Inst., Walton, Liverpool

Hollingworth, H.M.C.L. *ch.g.ol.gm.*
Tollington S., Muswell Hill

Coleman, G.H. *ge.* St. Mary's Coll., Harlow

Clift, V.L. *a.sh.*
The Jersey Modern S., St. Heliers

Garside, G.C. *c.f.d.*
Wellington Coll., Shropshire

Manthel, W.J.L. *a.ol.gm.bk.*
Shoreham Gram. S.

Pepin, C.L.B. *f.*
Oxenford H., St. Lawrence, Jersey

Binn, H.C. *a.* Highfield S., Muswell Hill

Gough, R.I. *c.* Wellington Coll., Shropshire

FIRST CLASS [or SENIOR].

Pass Division.

Dyson, S.W. *f.* Wellington Coll., Shropshire

Thomas, I.W. *e.g.ch.* Penketh School

Leicester, C.H. *S.h.al.* Portsmouth Gram. S.

Tanton, C.H. *a.* St. Leonards Coll. S.

Anderson, B.A. *s.e.*
High S. for Boys, Croydon

Tonkin, F.C. Private tuition

Williams, C.H. *s.* Clyde H., Hereford

Hersey, G.B. *e.* Sutton Park S., Sutton

Rix, S.M. *gm.bk.ms.* Shoreham Gram. S.

(Lewis, H.W. *a.* High S. for Boys, Croydon

Porter, H. *s.* Southport Modern S.

Willoughby, A.J. *e.g.d.* Private tuition

Galbraith, D.McK. The High S., Brentwood

Bean, L.P. *a.gm.* High S. for Boys, Croydon

Payne, H.W. Tollington S., Muswell Hill

Craven, G.A. Wellington Coll., Shropshire

Milroy, A.A.

Oakes Inst., Walton, Liverpool

Roper, W.F. *e.* Hoe Gram. S., Plymouth

Stafford, H. *e.gm.*
Wellington Coll., Shropshire

Hill, L.G. St. Mary's Coll., Harlow

Purser, D.M. *gm.* High S. for Boys, Croydon

Fleming, J.G. *e.v.gm.f.*
Wellington Coll., Shropshire

Bradley, E. Tollington S., Muswell Hill

West, F.A. *bk.* Shoreham Gram. S.

Craig, J.G. Gunnersbury S., Chiswick

Owen, M. *gm.* Wellington Coll., Shropshire

Burgess, H. Gram. S., Whitechurch

Morris, R.V. *gm.* High S. for Boys, Croydon

Bell, D.J. Oakes Inst., Walton, Liverpool

Hazell, S.T. Roberough S., Eastbourne

Burche, L.C. *e.* The Palace S., Bewdley

Warren, A.J. *bk.* Shoreham Gram. S.

Horsley, R.N. Tollington S., Muswell Hill

Davies, J. Private tuition

Pomeroy, S.E. *e.a.al.gm.* Private tuition

Carlyle, L.J. *a.al.* Coll. S., Bridgewater

Castellan, F.B. Gunnersbury S., Chiswick

Grohmann, H.E.
Tollington S., Muswell Hill

Alecock, V.P.H. The Palace S., Bewdley

Grayson, R.
Southport Comm. Coll. & Boys' Sec. S.

Potter, G.H. Oakes Inst., Walton, Liverpool

Halsall, A. *bk.sh.* Private tuition

Tucker, S.L. The Ferns, Thatcham

Crouch, W.A. Ryde H., Ripley

Dowding, H.N. Weston-s.-Mare College

McAllister, K.
Oakes Inst., Walton, Liverpool

Dean, G.S.s. Grasmere, Appledore, Ashford

Kendall, F.P. *a.* Private tuition

Starbuck, W.A.
St. John's Coll., Green Lanes, N.

Tackley, R.C. *ph.*
Tollington S., Muswell Hill

Hastings, J.O.
Wallingbrock S., Chulmleigh

Madders, E. Gram. S., Whitechurch

Davy, E.R. *g.gm.* Penketh School

Wells, T. *s.a.ph.* Margate Comm. S.

Davies, T.W.M.
Wellington Coll., Shropshire

Olliver, J. *s.ph.* Margate Comm. S.

Roberts, J.E. The Palace S., Bewdley

Bishop, W.F. *gm.* Gram. S., Whitechurch

Cole, A.F. Campbell H., Cotham

Francis, C.D.
St. John's Coll., Green Lanes, N.

Green, H.J. Private tuition

Carbines, J.C.
Oakes Inst., Walton, Liverpool

Smith, E.R. Tollington S., Muswell Hill

Ayres, F.W.B. Tollington S., Muswell Hill

King, A.F. St. Mary's Coll., Harlow

Blankley, C.H. *al.* St. Leonards Coll. S.

Coombe, R.H. Private tuition

Lee, L.S. Tollington S., Muswell Hill

Manning, G. *v.* Tollington Pk. Coll., N.

Adams, B.P. Private tuition

Clarke, W.C. Castle Hill S., West Ealing

Faulkner, F.L. Gram. S., Whitechurch

Lewis, T.A.M. Steyne S., Worthing

Hastings, A.H.
St. John's Coll., Green Lanes, N.

Reakes, G.R. High S. for Boys, Croydon

Heap, J.H. Southport Comm. Coll. & Sec. S.

Dane, E.S. Private tuition

Jenkins, W.H.
Advanced Elem. S., Merthyr Tydhi

Ellis, O.R. Private tuition

Iron, C.S. Tudor Hall, Hawkhurst

Montgomery, R.L.
Northgate S., Bury St. Edmunds

Wood-Smith, A.G. *e.*
Tollington S., Muswell Hill

Pitt, C.A. *d.* Private tuition

King, A.G. Private tuition

Hasloch, J. Private tuition

Moore, C.H. *e.*
St. Martin's Gram. S., Scarborough

Bristow, E.D. *s.* Margate Comm. S.

Hayward, L.D. St. Helens Coll., Southsea

Norden, F. High S. for Boys, Croydon

Dexter, L.W. Ryde H., Ripley

Harper, C.H. Private tuition

Lupton, F. Private tuition

Owen, R.F.L. Private tuition

Parkes, A.E. Private tuition

Ransdale, G.H. Shoreham Gram. S.

Brown, E.H. Tollington Park Coll., N.

Butler, C.O. Tollington Park Coll., N.

Davies, I.G. Taunton School

Grierson, J.D. Hoe Gram. S., Plymouth

Thurgood, H.L. St. Mary's Coll., Harlow

Young, C. Shoreham Gram. S.

Beeson, W.G. Broomy Hill Acad., Hereford

Highton, C.L. Southport Modern S.

Grossart, D.B.
Oakes Inst., Walton, Liverpool

Lees, E.A. *M.* Private tuition

Rees, D.M.
Clark's Coll., Newport Rd., Cardiff

Reynolds, F.N. Private tuition

Deau, F.E. High S. for Boys, Croydon

Miller, D.H. Tollington S., Muswell Hill

Bittles, W.G. Private tuition

Turner, A.E.G. Shoreham Gram. S.

Banks, J.B. Grosvenor Coll., Carlisle

Duffy, K. *e.* Private tuition

Morgan, G.E. Private tuition

Jones, S.C.C. Private tuition

Melville, N.R. Tollington S., Muswell Hill

Morgan, D.B. Weston-s.-Mare College

Scott, J.A.A.P. Private tuition

Sharp, T. *d.* Private tuition

Fothergill, S.J.R. Weston-s.-Mare College

Moore, E.L. Private tuition

Slater, G.A. Ellesmere S., Harrogate

Ross, J.H. Private tuition

Flesher, F.A. Ripon Gram. S.

(Davies, T. Private tuition

Dunch, C.R. Tollington S., Muswell Hill

Prowse, F. Tollington S., Muswell Hill

Barnes, L.C. Private tuition

Potter, C.T. Froebel H., Devonport

James, T.G. Private tuition

Griffith, H. Private tuition

Roberts, L.D. Christ's Coll., Blackheath

(Flack, L.J. St. John's Coll., Green Lanes, N.

Jacker, A.H. Richmond Hill School

Perry, E.L. Willow H., Walsall

SECOND CLASS [or JUNIOR].

Honours Division.

Darrah, H. *s.e.h.ol.gm.f.*
Mount Radford S., Exeter

Witting, S.N. *s.e.a.ol.ms.*
Scarborough Gram. S.

Kernick, O. *ol.ms.f.* Newquay College

Hubbard, J.W. *s.e.al.f.*
Castle Hill S., West Ealing

Bradley, W. *a.al.gm.*
Tollington S., Muswell Hill

Arnold, T.J.B. *a.d.gm.f.*
Norwich High S. for Boys

Fazackerley, R.J. *a.*
The Jersey Modern S., St. Heliers

Frampton, R.E. *s.e.a.al.*
Steyne S., Worthing

Degois, L.H. *g.gm.ms.f.* Shoreham Gram. S.

Fromow, A.S. *al.gm.f.d.*
Gunnersbury S., Chiswick

Faux, A.V. *s.f.ma.* Southport Modern S.

Haslam, C.C. *g.a.al.*
Tollington S., Muswell Hill

Proctor, R.F. *ms.f.d.* Victoria S., Heaton

Tuhill, F.V. *al.ms.f.*
St. Mary's Coll., Harlow

Dyer, J. *e.al.gm.bk.ms.* Shoreham Gram. S.

Turvey, N. *f.ch.* Penketh School

Yetton, J.L. *a.* Mercers' S., Holborn, E.C.

Christmas, L.F. *gm.ms.d.*
Shoreham Gram. S.

Prior, H.R.T. *f.* Norwich High S. for Boys

Gowers, C.A. Tollington S., Muswell Hill

Dean, N.E. *ms.f.* St. Mary's Coll., Harlow

Milburn, A. *ms.f.* Argyle H., Sunderland.

King, C. *g.* Tollington S., Muswell Hill

Mason, R.G. *a.f.t.*
Wellington Coll., Shropshire

Long, R.M. *gm.ms.* Shoreham Gram. S.

Soutter, L.J. Tollington Park Coll., N.

Trevorrow, J.P. *ms.t.* Newquay College

Lyon, A.V.H. *bk.ms.*
The High S., Brentwood

Doré, C.U. *gm.ms.* Shoreham Gram. S.

Pugeman, W.A. *ch.*
Tollington S., Muswell Hill

Grimsditch, H.B. *f.*
Oakes Inst., Walton, Liverpool

BOYS, 2ND CLASS, HONS.—Continued.

Mitchell, L.A. ad. ch. Municipal Coll., Portsmouth
Norman, R. Wellington Coll., Shropshire
Worthington, D.H. s.f. High S. for Boys, Croydon
Stewart, R.J. f. Tollington S., Muswell Hill
Shapland, N.H. Hadfield H., St. Leonards-on-Sea
Hewitt, J. s.ms. Grosvenor Coll., Carlisle
MacDonald, A.C. gm. Tollington S., Muswell Hill
Burnet, S.G. al.f. Mercers' S., Holborn, E.C.
Staring, J.E. f. Tollington S., Muswell Hill
Staples, E.A. d. St. John's Coll., Green Lanes, N.
Toomey, D.P. al.f. Tollington S., Muswell Hill
Olswang, M. us.f. Argyle H., Sunderland
Soldan, W. f.ge. Mercers' S., Holborn, E.C.
McConnell, W.F. Shoreham Gram. S.
Robertson, C.H. Highfield S., Muswell Hill
Waycott, J.C. s.ms. Hoe Gram. S., Plymouth
Gorrie, W.C. Oakes Inst., Walton, Liverpool
Smith, N.R. f. St. Mary's Coll., Harlow
Taylor, R.H. f. Wellington Coll., Shropshire
Langrish, T.H. bk.ms. Shoreham Gram. S.
Holmes, H.W.H. al.f. Cheltenham College
Darrah, N. f. Mount Radford S., Exeter
Livermore, I.O. f. St. Mary's Coll., Harlow
Williams, R.M. f.ch. Wellington Coll., Shropshire
Cervigon, A. gm.f.sp. Leighton Hall S., Carnforth
Marchant, C.V. a. Richmond Hill School
Jones, C.B. ms. Oakes Inst., Walton, Liverpool
Morrison, H. cal.f. New Coll., Harrogate
Slater, A.W. Mercers' S., Holborn, E.C.
Townley, S.G. ef. Simon Langton S., Canterbury
Barton, A.Q. al.ma.ch. Private tuition
Cowlin, S. Oakes Inst., St. Mary's Coll., Harlow
Green, A.S. f. New Coll., Harrogate
Nitz, F.A.C. St. John's Coll., Green Lanes, N.
Shorter, L.V.H. a.al.f. Mercers' S., Holborn, E.C.
Finch, J. al.gm. Oakes Inst., Walton, Liverpool
Firkin, R.E. f. St. Mary's Coll., Harlow
Love, J.S.R. Mercers' S., Holborn, E.C.
Manger, C.A. Shoreham Gram. S.
Phillipps, R.S. al.lt. Tollington S., Muswell Hill
Warburton, A.G. g. Tollington S., Muswell Hill
McTavish, J.D. a.m. Wellington Coll., Shropshire
Oliver, B. gm.ms. Shoreham Gram. S.
Sander, E.H.L.f. Mercers' S., Holborn, E.C.
Archbold, C.B. f. Castle Hill S., West Ealing
Banks, C. al.f. Wellington Coll., Shropshire
Ellis, J.O. ms. Weston-s.-Mare College
Firth, E.H. al.bk. Steyne S., Worthing
Tregar, T.R. al. Colebrook H., Bognor
Gresty, F.C. Penketh School
Hickman, J.G. f. Tudor Hall, Hawkhurst
Reid, G.F. f. Southport Modern S.
Gankroger, J.L. f. Wellington Coll., Shropshire
Hadriil, C.I. ms. Tollington Park Coll., N.
MacGregor, J.A. a.al.ms. Oakes Inst., Walton, Liverpool
Davidson, H.H. Wellington Coll., Shropshire
Platt, D.J.M. Shoreham Gram. S.
Waring, L. al.f. West Leeds High S., Armsley
Webber, E.L. Shoreham Gram. S.
Bastable, O. h.f. Private tuition
Davey, B.C. f. Oxenford H., St. Lawrence, Jersey
Rushton, G. Southport Modern S.
Mitchiner, H.G. High S. for Boys, Croydon
Parwell, E.C. Mercers' S., Holborn, E.C.
Welsb, E.L. d. Tollington S., Muswell Hill
Hunter, J. Tollington S., Muswell Hill
Montgomery, D. f. Wellington Coll., Shropshire
Thomson, D.A. Mercers' S., Holborn, E.C.
Gatehouse, A.H. f.d. Wellington Coll., Shropshire
Latham, F.C.B. e.ma. Shoreham Gram. S.
Schaeffer, H.G. s. St. John's Coll., Green Lanes, N.
Truman, F.C. e. Private tuition
Bye, E.A. s.a. Margate Comm. S.
Moore, J.R. ms. The Palace S., Bewdley
Richards, R.T. f. Leighton Hall S., Carnforth
Skitt, H.G. ch. Wellington Coll., Shropshire

Davey, N.H. al.gm.f. New Coll., Harrogate
Deane, G.L. al. Tollington S., Muswell Hill
Ellis, S.H.T. Portsmouth Boys' Sec. S., Southsea
Hatton, W.D. f. Clark's Coll., Lewisham High Rd., S.E.
McWhinnie, C.R. gm. Tollington S., Muswell Hill
Oldham, B.C. The College, Beccles
Trenance, E.J. Shoreham Gram. S.
Espley, A. lt. Wellington Coll., Shropshire
Jonas, G.J. f. 30 Compton Avenue, Brighton
Soutter, J.L. Tollington Park Coll., N.
Taylor, T. Tollington S., Muswell Hill
Wonnacott, T.H. f. Hoe Gram. S., Plymouth
Cox, J.R. f. Private tuition
Somerset, R.M. f. Private tuition
Thruswell, H. s.ph. Margate Comm. S.
Wilson, F.W. al.f. Leighton Hall S., Carnforth
Flint, J.W.R. f. Tollington Park Coll., N.
Peter, J. Park Private S., Plymouth
Willner, E.J. Mercers' S., Holborn, E.C.

SECOND CLASS [or JUNIOR].

Pass Division.

Christopher, F.S. bk.sh. Private tuition
Greenwood, L.W. a. St. John's Coll., Green Lanes, N.
Jennison, S.A. Wellington Coll., Shropshire
Schwahe, C. Tudor Hall, Hawkhurst
Carling, A. sf. Private tuition
Cope, E.L. The Palace S., Bewdley
Duerden, W. Southport Modern S.
Fowler, F.C. Colebrook H., Bognor
James, H.C. The High S., Brentwood
Mihoy, R. Oakes Inst., Walton, Liverpool
1Noek, H.S. The Palace S., Bewdley
Waight, F.C. al. Commercial S., Maidstone
Willcocks, P.S. Portsmouth Boys' Sec. S., Southsea
Lyon, C.C. ms. Hoe Gram. S., Plymouth
Richards, R.A. ms. University S., Southport
Dothoit, R.L. al.ms. St. Martin's Gram. S., Scarborough
Fenn, H.R.B. f. Private tuition
Monro, H.O. f. Wellington Coll., Shropshire
1Naylor, S.H. Ramshaw's Civil Service & Business Coll., Kensington
Parsell, J.E. Oakes Inst., Walton, Liverpool
Percy, A. F. f. Private tuition
Pratt, F.J. Tollington Park Coll., N.
Skelton, H. a.ms. St. Martin's Gram. S., Scarborough
Troup, H.B. d. St. Paul's S., W. Kensington
Bell, W.D. ms. Oakes Inst., Walton, Liverpool
Croft, B.E. ms. Shoreham Gram. S.
1Le Gresley, F.H. The Jersey Modern S., St. Heliers
Le Moignan, P.G. Harleston H., St. Lawrence, Jersey
Leppard, L.P. Private tuition
Sturridge, F.A.L. f. St. Paul's S., W. Kensington
Flitcroft, N. e. Kilgrimol S., St. Annes-on-Sea
Gregory, F.A. ms. Stoke Road Middle Class S., Gosport
Padmore, E.H. f. Wellington Coll., Shropshire
Page, J. ms. Oakes Inst., Walton, Liverpool
Rainsford, H.B. Tollington S., Muswell Hill
Alabaster, E.B. a. Private tuition
Bardrick, H.G.V. Shoreham Gram. S.
Derbyshire, H.A. s.f. Scarborough College
Hodgson, E.C. ms. Oakes Inst., Walton, Liverpool
Newton, L.H. Mercers' S., Holborn, E.C.
Rider, J.R. Skerry's Coll., Newcastle-on-T.
1Romeril, G.H. e.f. The Jersey Modern S., St. Heliers
Collins, W.C. Tollington S., Muswell Hill
Lanyon, E.B. St. Leonards Coll. S.
Smith, E.L. Tollington S., Muswell Hill
Strohmeinger, G.R. Tollington S., Muswell Hill
Tolman, C.J. Colebrook H., Bognor
Wesson, R.A. f. Cusack's Coll., Putney
Bingham, C.H. Wellington Coll., Shropshire
Bransby, H. Penketh School
Girton, G. ms. Oakes Inst., Walton, Liverpool
Harrison, C. Penketh School

Crook, W.E. Brondesbury Coll., Willesden Lane, N.W.
Greaves, G.H. ma. Commercial Coll., Acton
Horscroft, S. Brunswick H., Maidstone
Thomas, H. St. Winifred's, Torquay
Warren, C.H. d. Brunswick H., Maidstone
Lane, C.A. Northampton H., Cheltenham
Mackenzie, J.W. f. Peter Symonds' S., Winchester
Norris, A.G. Chichester Gram. S.
Rowse, E.A. Newquay College
Taylor, E.C. d. Brunswick H., Maidstone
Thompson, B. Penketh School
1Tweedie, S. Shoreham Gram. S.
Coles, R.J. s. Emwell S., Warminster
Cox, A.R. Oxenford H., St. Lawrence, Jersey
Ramsden, D.F. Commercial Coll., Acton
Suffield, N.L. g. Private tuition
Wade, H.L. Norwich High S. for Boys
Warlow, C. f. Wellington Coll., Shropshire
Dixon, G.W. Wellington Coll., Shropshire
LeSauter, E.E. s. Oxenford H., St. Lawrence, Jersey
Lester, C.F. f.d. Wellington Coll., Shropshire
Older, R.C. f. St. Mary's Coll., Harlow
Raineck, C.W. Shoreham Gram. S.
1Seferian, A.M. Chorlton-cum-Hardy Gram. S.
Wakeford, K. bk. Private tuition
Atwell, H. Tollington S., Muswell Hill
Marsh, J. The Palace S., Bewdley
Vincent-Brown, C. f. St. George's Coll., Weybridge
De Lacey, J.M. f. Newcastle Modern S.
1Horncastle, H.J. Avenue H., Sevenoaks
Milne, D.W. Mercers' S., Holborn, E.C.
Pearson, C.N. f. Private tuition
Salmon, A.R. Bridlington College
1Colling, C.W.B. St. Leonards Coll. S.
Honey, W.A.O. Mercers' S., Holborn, E.C.
Longmuir, G.A. Mercers' S., Holborn, E.C.
1Maxted, A.H. Brunswick H., Maidstone
Mercer, E.C. al.ms. Oakes Inst., Walton, Liverpool
Merrie, B. Weston-s.-Mare College
Miller, R. ef. Grosvenor Coll., Carlisle
1Pearman, J.C. The Palace S., Bewdley
Thomas, G. McK. Private tuition
Worth, G.P. Richmond Lodge, Torquay
Creswell, E.J. al. Leighton Hall S., Carnforth
Crompton, J.A. Winchester H., Bristol
Fair, A. f. Mercers' S., Holborn, E.C.
King, R.T. The High S., Brentwood
Prya, R.H.C. f. Portsmouth Gram. S.
Wright, W.S. St. Winifred's, Torquay
Cbalmr, H.P. Derwent H., Bamford
Eady, K.W. f. St. Mary's Coll., Harlow
Lane, G.J. Portway S., Bath
Oxburgh, E. al.ms. Oakes Inst., Walton, Liverpool
Trickett, J.S. Wellington Coll., Shropshire
Foulston, E. Private tuition
Griffiths, B.M. Southport Modern S.
Jones, I.W. e. Private tuition
1Pitchford, A.R. Shoreham Gram. S.
Runciman, V. Barton S., Wisbech
Wickens, C.A.H. Steyne S., Worthing
1Bunnell, S.A. Shoreham Gram. S.
Cooper, W.A. Southport Modern S.
Nash, D.R. f. Waterloo Coll., Cosham
Parry, R.G.W. Tollington S., Muswell Hill
Smyther, H.D. Shoreham Gram. S.
Wilson, F. Derwent H., Bamford
File, R.M. Wellington Coll., Shropshire
Gray, J.D. f. Steyne S., Worthing
Macfarlane, K.D.L. f. Private tuition
Buck, D. d. The College, Beccles
Burton, S. f. Private tuition
Hennerich, E.R. gm. Tollington S., Muswell Hill
Hern, W.R.H. University Coll. ge. S., Hampstead
Johnson, W.H. Southport Comm. Coll. & Sec. S.
Moore, R.A. e.f. Private tuition
Sheppard, E.A. Tonbridge School
1Walker, J.H. Shoreham Gram. S.
Douglass, E.W. Bridlington College
Haydon, F.L. Brynmelyn S., Weston-s.-Mare
Jones Evanson, T.A. E. f.lt. Wellington Coll., Shropshire
Prentice, H.V. f. Steyne S., Worthing
Richards, E.H. f. St. George's S., Eastbourne
Wat, J.B. al.ms. Oakes Inst., Walton, Liverpool
White, G.R. Oakes Inst., Walton, Liverpool
Brondesbury Coll., Willesden Lane, N.W.
Whiten, A.J. Gram. S., Ongar

Carter, G.D. f. Hutton S., near Preston
Glass, G.L. Margate Comm. S.
Gray, J.P. f. Private tuition
Hamilton, D.E. ms. Shoreham Gram. S.
Moring, A.J.P. ma. Clyde H., Hereford
Page, J.O. The Palace S., Bewdley
Robb, G.E. a. Barton S., Wisbech
Yonde, F. Penketh School
Dolanore, A.W. j. St. Paul's S., W. Kensington
Grindey, J.W. d. Tankerton Coll., Whitstable
Hatson, C.W. Barton S., Wisbech
Pamplin, C.W. Mercers' S., Holborn, E.C.
Shippey, F. ms. St. Martin's Gram. S., Scarborough
Sivyer, F.G.H. f. Portsmouth Gram. S.
Vander Pant, L.H. f. Private tuition
White, J.T. f. High S. for Boys, Croydon
1Adams, T.R. The College, Beccles
Bell, W.S.B. al. Barnstable Gram. S.
1Cooper, H. Southport Comm. Coll. & Sec. S.
Dean, D.J. y.d. Grasmere, Appledore, Ashford
Harrington, F.L. f. Boys Coll. S., Aldershot
Moore, S. The Palace S., Bewdley
Archdale, W. Wellington Coll., Shropshire
1Beeson, A.J. Broony Hill Acad., Hereford
Clough, F.R. ms. Scarborough Gram. S.
Marsh, W.R. Oakes Inst., Walton, Liverpool
Sewell, A. Grosvenor Coll., Carlisle
Cooke, M.D. Brondesbury Coll., Willesden Lane, N.W.
Crundall, W.F. al.f. Tudor Hall, Hawkhurst
Cubison, R.P. d. Schorne S., North Marston, Winslow
Ellett, B.W. The Jersey Modern S., St. Heliers
Nesbit, C.H. F. d. Commercial S., Maidstone
Pearson, E.A. Private tuition
Pipon, E.G. Harleston H., St. Lawrence, Jersey
Smith, G.B. al.f. St. Leonards Coll. S.
Tuddenham, D.A. Norwich High S. for Boys
Webster, E.L. Scarborough College
1Crundall, E.D. Tudor Hall, Hawkhurst
Job, H. s. The Philosophical S., Southsea
Manfred, F.S. f. St. Mary's Coll., Harlow
Mason, F.M. al.f. Wellington Coll., Shropshire
Milton, A. f. High Harrogate Coll., Harrogate
Panes, H. E. Wallingbrook S., Chulmleigh
Taylor, G.E. St. Aubyn's, Woodford Green
1Webber, M. bk. Wallingbrook S., Chulmleigh
Brown, F.A.S. d. Norwich High S. for Boys
Hands, R.H.J. St. Leonards Coll. S.
Howard, N. Gram. S., Eccles
Porter, N. Leighton Hall S., Carnforth
Campbell, G. f. Scarborough College
Card, E.T. al.gm. Private tuition
Cory, J.R. s. Hoe Gram. S., Plymouth
1Hveson, J.A. St. Martin's Gram. S., Scarborough
Pointing, A.D. Portway S., Bath
Robertson, T.R. al. Oakes Inst., Walton, Liverpool
Smith, D.A. Private tuition
1Taylor, L.G. High S. for Boys, Croydon
1Taylor, W.C. The High S., Brentwood
Baek, E.W.A. Mercers' S., Holborn, E.C.
Fyson, R. Private tuition
1Leptinstall, R. Tollington S., Muswell Hill
Pool, F.E. ms. Newquay College
Swanton, S.H.H. Margate Comm. S.
Yeoman, J.H. f. Greystones, Scarborough
Bailey, H.D. Southport Comm. Coll. & Sec. S.
Ballan, N. Private tuition
Crossley, T. al.f. Halifax Council Secondary S.
Hughes, E.N. Private tuition
Lee, S.E. Coll. S., London Rd., Reading
MacKay, D. Walton H., Swindon
Regan, L.W.A. ms. St. Peter's Choirs, Eccleston St. East, S.W.
Richardson, A.H. Dulwich College
Ridout, L.G. f. Private tuition
Ryland, R.J. The Douglas S., Cheltenham
Bewsher, F.A. The Philosophical S., Southsea
Brooks, R.J. s. Grosvenor Coll., Carlisle
Jagger, J. E. Schorne S., North Marston, Winslow
Kelsall, A.E. Wilmslow College
LeBrocq, J.P. f. Harleston H., St. Lawrence, Jersey
Brown, F.P. al. Southport Comm. Coll. & Sec. S.
Cresswell, G.M. e. Private tuition
Lever, A.J. Shoreham Gram. S.
1Taplin, W. Private tuition

BOYS, 2ND CLASS, PASS—Continued.

Tattan, E.J. Schorne S., North Marston, Winslow Private tuition
Vinson, A. Private tuition
Young, H.C. al.f. Finsbury Park Coll., Stoke Newington

Cory, S.S. Hoe Gram. S., Plymouth
Grossart, A.C. ms. Oakes Inst., Walton, Liverpool
Ide, H.L. Private tuition
Metcalf, J.F. Mercers' S., Holborn, E.C.
Potter, H.R. The College, Beeches
Samuel, K.C. Tollington S., Muswell Hill

Armstrong, W.A. St. Martin's Gram. S., Scarborough
Bell, G.J. al. Private tuition
Carry, H.A. Argyle H., Sunderland
Crook, F.W. Christ's Coll., Blackheath
Dunham, A. St. Leonards Coll. S.
Goldstein, S. Lawrence's Coll., Birmingham
Skeggs, B.L. Private tuition
Tanton, K.F. St. Leonards Coll. S.
Taylor, E. Gram. S., Ongar
Wilks, H.G. Rnthin Coll., Easington, Sheffield
Willecocks, S.A. St. Dunstan's Coll., Margate
Yates, E.R. al. Wellington Coll., Shropshire

Condell, T.H. Shoreham Gram. S.
Fishburn, J. Shoreham Gram. S.
Fletcher, G.M. Wellington Coll., Shropshire
Morris, A.D. Wellington Coll., Shropshire
Patterson, F.H. Brunswick H., Maidstone
Taggart, R. ms. Castletown Gram. S.
Taylor, G.C. The Palace S., Bury
Travis, W. al. gm.f. Private tuition
Wragg, T.J. Derwent H., Bamford

Escritt, F.K. Dulwich College
Hardy, O.K. f. Private tuition
Harris, E.G. Private tuition

Bushby, J.A.G. Gram. S., Penistone
Davey, A.G. Selwyn H., Hove
Davies, F.L.S. St. Helens Coll., Southsea
Hoskins, A. f. Laughtarne S., Southsea
Hves, A.C.I. Northgate S., Bury St. Edmunds
Light, O.F. The Philological S., Southsea

Breareley, J.R. Wellington Coll., Shropshire
Dymoek, W.G. Wiochester H., Bristol
Mandsley, A.G. Private tuition
Watts, R.A. Tollington S., Muswell Hill

Bather, J.R. Oakes Inst., Walton, Liverpool
Bright, L.J. f. St. Mary's Coll., Harlow
Dudfield, H.M.L. s.f. Castle Hill S., West Ealing
Griffiths, W.N. Southampton Modern S.
Hammond, L.D. Scarborough College
Herring, T.C. Laughtarne S., Southsea

Palfree, J.W.B. Belper Gram. S.
Smith, A.B. Gram. S., Ongar
Snowball, W.L. f. Scarborough College
Walter, S.S. Mercers' S., Holborn, E.C.
Wilson, C.R. Stoke Road Middle Class S., Gosport

Bowditch, D.A. H. High S. for Boys, Croydon
Head, J.F. Craven Park Coll., Harlesden
Higson, V.E. al. ms. Oakes Inst., Walton, Liverpool
Holmden, S. f. The Modern S., E. Grimstead
Hosken, C. Newquay College
Kirby, W. E. K. St. Paul's S., W. Kensington
Le Marquand, E.C. Harleston H., St. Lawrence, Jersey
Morris, W.F. Mercers' S., Holborn, E.C.
Rowe, F.A.P. St. Leonards Coll. S.
Whittingham, T.C. g. Private tuition

Chandler, W.E. Private tuition
Hayman, W.D. Winchester H., Bristol
Hosler, A.C.V. Campbell H., Cotham
Hoyle, F.W. Oakes Inst., Walton, Lpool
Sanson, J.R. Taunton School
Shaw, J.A. Private tuition
Torres, A. de S.M. f. St. Paul's S., W. Kensington

IBetts, S. Weston-s.-Mare College
Collier, T.L. St. Dunstan's Coll., Margate
Hooper, G.S. The Ferns, Thatelham
Lyons, G.J. High S. for Boys, Croydon
Simons, G.E. L. f. Private tuition
Sutton, E.S. Hoe Gram. S., Plymouth
Wright, C. The College, Beeches

Baker, J.H. Tollington S., Muswell Hill
Hughesdon, R.H. Tollington S., Muswell Hill
Johnson, D.C. Wellington Coll., Shropshire
Lofts, E.D. Northgate S., Bury St. Edmunds
O'Brien, K.R. Private tuition
Painton, J. Private tuition
Pawlyn, N.D. Hoe Gram. S., Plymouth

Butt, G.E. Bourne Coll., Quinton
Flanagan, G.A. Private tuition
Horton, J.E. Private tuition
Hurst, B. f. Holt H., Cheshunt

Jenner, H. St. Leonards Coll. S.
Johnson, S.H. Leighton Hall S., Carnforth
Jones, B.M. Old College S., Carnarthen

Codner, C.C. Private tuition
Howard, H. Norwich High S. for Boys
Kallend, R.W. Upton Coll., Bexley Heath
Marshall, G.H. d. Colebrook H., Bognor
Murray-Shreff, G. Private tuition
Neighbour, W.H. J. d. Upton Coll., Bexley Heath

Schumann, C.L. G.J. f. Oxford H., Junction Rd., N.
Shaw, T. St. Martin's Gram. S., Scarborough
Turner, T.L. Western Coll., Harrogate
Whitefield, F.A. s. Campbell H., Cotham
WYatt, G.G. Gram. S., Whitechurch

Danby, F.G. Scarborough Gram. S.
Edge, E. s. Kelvin Coll., Penarth
Faul, J.L. Hoe Gram. S., Plymouth
Harrison, R. St. Dunstan's Coll., Margate
Moffatt, C. Private tuition
Pegler, H. High S. for Boys, Croydon
Pugh, H.N. Chorlton-cum-Hardy Gram. S.
Sharpe, F.G.G. Schorne S., North Marston, Winslow

Bakes, W.E. Private tuition
Carr, H. Ousegate S., Selby
Hatcher, H.B. Private tuition
Ratcliffe, P.J.S. Tudor Hall, Hawkhurst
Robbins, S.A. Private tuition
Shukry, A.A. Private tuition
Stansby, J.W. Gram. S., Ongar
Stanton, H.M.A. Barton S., Wisbech
Thomas, D.U. St. Aubyn's, Woodford Green
Wearing, G.L. ms. St. Martin's Gram. S., Scarborough
Woodroffe, B.C. h.ge. Private tuition

Davies, J.R. Higher Grade S., Mountain Ash
Fry, R.H. f. Wellington Road S., Taunton
Godfrey, E.G. St. John's Coll., Green Lanes, N.

Jopson, R.K. Thornton Heath S., Bensham Manor Rd.
Martin, G.C. Barton S., Wisbech
Masters, H. Dinglewood, Colwyn Bay
Matthews, H.J. Gram. S., Ongar
Shield, T.C. s. Clark's Modern S., Forest Gate

Stockwell, P. Bridlington College
Tait, W.N. High S. for Boys, Croydon

Byers, J.A. Private tuition
Hammett, B.W. High S. for Boys, Croydon
Plevin, N. f. Private tuition
Smith, W.A. f. Private tuition

Blackwell, P.B. al.f. Private tuition
Kite, H.A. C. f. Private tuition
Lavery, W. Keele's Acad., Liverpool
Lewis, B.P. Leighton Hall S., Carnforth
Smith, H.N. Brunswick H., Maidstone

Bartholomew, H.M. Littleton H., Knowle
Davies, T.H. Shoreham Gram. S.
Davis, D.C. Beekenhall County S.
Freer, A.E. St. Martin's Gram. S., Scarborough
Hamilton, T. Ripon Gram. S.
Ingram-Johnson, R.J. T. f. Skerry's Coll., Newcastle-on-T.

Lee, F.A. High S. for Boys, Croydon
Robb, D. The College, Beeches
Shaw, A.H. Private tuition

Hamel-Smith, L.F. High S. for Boys, Croydon

King, L.W. St. Peter's Choir S., Ecclestone St. East, S.W.
Lea, E.L. al. Private tuition
Mickelwright, R.A. f. Gungersbury S., Chiswick
Nicholson, J. Grosvenor Coll., Carlisle
Orlton, S.R. Private tuition
Oldham, F.E. s. High S. for Boys, Upper Hornsey Rise, N.

Palmer, H.B. Norwich High S. for Boys
Park, A.E. f. Private tuition
Slight, C.A. d. Fitzroy S., Crouch End
Wilkins, R.J.M. Hoe Gram. S., Plymouth

Deall, J.S. Barton S., Wisbech
Cole, L.W. Shoreham Gram. S.
Dunn, A.G. f. Fitzroy S., Crouch End
Leonard, W.K. Kilmorie, St. Margaret's Bay
Lewis, J.S. St. Paul's S., W. Kensington
Lloyd, D.M. High S. for Boys, Croydon
Roberts, W.A. Ellesmere S., Harrogate
Rogers, H. Wellington Road S., Taunton
Stanton, R.H. gm. Tollington S., Muswell Hill

Vaughan, F.H.W. Wellington Coll., Shropshire

Haggiag, S. f. Ellesmere S., Harrogate
Stephens, A.H. f. Clyde H., Hereford

Bloomer, A.C. Private tuition
Davey, C. Shoreham Gram. S.
Stacey, B.J. Private tuition

Bevis, C.E. f. Portsmouth Gram. S.
Jessop, V.T. Northampton H., Cheltenham
Lee, H.C. Private tuition

Watkins, T.R. 76 Richmond Rd., Cardiff
Whitlock, L.A. Private tuition

Champion, N.L. Lancaster Coll., W. Norwood
Healey, T.F. Private tuition

Godwin, F.H. Gran. S., Macclesfield
Hand, D. Orals. forth. Deaf, Fitzroy Sq., W.
Paterson, J. Oakes Inst., Walton, Liverpool
Pratt, F.H. f. Private tuition
Rogers, W.B. Oakes Inst., Walton, Liverpool

Starbuck, P.R. St. John's Coll., Green Lanes, N.
Tadman, T. Greystones, Scarborough
Walker, J.W. Thornton Heath S., Bensham Manor Rd.
Whitaker, A.W. f. Private tuition
Woodford, F. Greystones, Scarborough

Bolland, W.F. Ellesmere S., Harrogate
Cornish, J.E. Hoe Gram. S., Plymouth
Graves, W.J. Finsbury Park Coll., Stoke Newington
Jones, L.B. Emlyn Gram. S., Newcastle Emlyn
Ludlow, L.L. Tollington Park Coll., N.
Taylor, A.B. Arnold H., South Shore, Blackpool

Barker, L.H. Private tuition
Blain, J. al. Private tuition
Crichton, S.T. St. Helens Coll., Southsea
Founerker, L.F. Dulwich College
Hateher, L. Wellington Road S., Taunton
Hateher, E. Ousegate S., Selby
Traise, E.F. Eversley S., Stamford
Westaway, F.J. H. Collegiate S., Winchmore Hill

Callow, F.R. Littleton H., Knowle
Clark, E.H. Private tuition
Clokje, J.A. G. Arlington Park Coll., Chiswick

Hinnous, L.F. Private tuition
Marchington, C.L. Tollington S., Muswell Hill

Dockree, G.A. Clovelly Prep. S., Clapham
Hugill, V.F. H. Tonbridge Gram. S.
Kamil, M. Mile End H., Portsmouth
Kent, N.V. Private tuition
King, E.H. Private tuition
Lynn, F.R. Gram. S., Cowfold
Mesny, H.C. Oxenford H., St. Lawrence, Jersey

Patterson, R.W. Private tuition
Pillow, E.S. Norwich High S. for Boys

Betts, F. Private tuition
Byggott, E. Gram. S., Whitechurch
Farnale, W.J. Ellesmere S., Harrogate
Hbbotson, E. Clifton Coll., North Shore, Blackpool
Kirkbride, F.J. Private tuition
Miller, J. f. Private tuition
Monds, C.R. Private tuition
Queleh, J.A. Private tuition
Rees, J.M. Collegiate S., Pontypridd
Robartes, H. High S. for Boys, Croydon
Short, J. McL. d. Maidja Vale S., W.
Snell, L.M. Wilton H., Exeter
Thomas, A.B. al. Private tuition

Bramwell, J.T. Wellington Coll., Shropshire
Brough, R.F.W. Sutton Park S., Sutton
Turner, A.E. The Jersey Modern S., St. Heliers

Agnew, W.R. Wellington Coll., Shropshire
Kieldens, F.T. Private tuition
Lawrence, F. Private tuition
Lloyd, F.B. School of Commerce, Grey Friars Road, Cardiff
Mitehell, A.C. St. Helens Coll., Southsea
Platt, D.G. Tankerton Coll., Whitstable
Tremlett, G.H. Finsbury Park Coll., Stoke Newington

Chambers, C.J. Heanor Secondary S.
Cox, W.O. Private tuition
Hollubowicz, C. d. Margate Gram. S.
Moore, F.K. Castletown Gram. S.
Schuler, W.E.D. Lancaster Coll., W. Norwood

Taylor, G.C. Holt H., Cheshunt
Youngson, A. Private tuition

Bates, A.T. High S. for Boys, Croydon
Bouck, H.E. Shoreham Gram. S.
Denson, H. Private tuition
Fowlds, E.D.A. f. Private tuition
Mann, L.S. The College, Beeches
Nelson, R.S. The Mount Acad., Malton
Rowe, B. Private tuition
Sansbury, H.P. Castletown Gram. S.
Whiting, R.H. f. St. James' Sec. S., Bargate, Grimsby

Brain, P.G. Private tuition
Cropley, W. Northgate S., Bury St. Edmunds
England, A.J. Shoreham Gram. S.
Haines, A. Clyde H., Hereford
Shiriffs, G. Private tuition

Grimshaw, G. Ousegate S., Selby
Holman, H.R. d. Clark's Coll., Uxbridge Road, W.
Horne, R.M. The College, Beeches
Luke, J. Taunton School
Lywood, H.M. Dunheved Coll., Launceston
Pearce, S. f. Private tuition

Northcott, C.S. Dunheved Coll., Launceston
Apps, S.F. Margate Gram. S.
Williams, W.G. Private tuition

Campbell, K.R. Private tuition
Chapman, P. f. Private tuition
Dyer, P.M. Bradley High S. for Boys, Newton Abbot
Giles, L.F. Cambridge H., Caunden Rd., N.
McLennan, K.D. High S. for Boys, Croydon

Reid, S.J. Maidja Vale S., W.
Seones, D.A. Selwyn House, Hove
Waddington, F. Leighton Hall S., Carnforth

Allen, W.A. Thornton Heath S., Bensham Manor Rd.
Annon, R.C. High S. for Boys, Croydon
Downer, G.F.A. Private tuition
Evans, D.E. Private tuition
Evans, E.R. Private tuition
Gaulter, C.P. Arnold H., South Shore, Blackpool

Howard, F.G.C. Arlington Park Coll., Chiswick
Jupp, H.J. Hillmartin Coll., Camden Rd., N.W.
Smithies, R.B. Private tuition
Warren, H.P. Holt H., Cheshunt
Woodford, W. Greystones, Scarborough

Ashford, C.F. Waterloo Coll., Cosham
Finch, R.F. Private tuition
Lewis, L.D. Private tuition
Vale-Iladen, G.E. Margate Gram. S.
Wommaott, E. Hoe Gram. S., Plymouth

Brookes, A.R. Clifton Coll., North Shore, Blackpool
Copenau, P.A. The College, Beeches
Dunstan, T.E. Private tuition
Hall, N. Sandford Acad., Newcastle-on-Tyne
Harris, D. Maidja Vale S., W.
Marshall, W. Private tuition
Martin, J.N. Dunheved Coll., Launceston

Marks, B.A. The College, Clevedon
Seogins, L.W. Highfield S., Muswell Hill
Talaat, A.H. Private tuition

Chapman, E. Private tuition
Davys, V.J. Avenue H., Sevenoaks
Harper, T. Civil Service Acad. Victoria Buildings, Manchesther
Hutchings, D.A. Waterloo Coll., Cosham

Crockett, A.E. Private tuition
Harmer, T.W. Gungersbury S., Chiswick
Reakes, S.R. High S. for Boys, Croydon

Chappell, E.F. Finsbury Park Coll., Stoke Newington
Hunter, J.K. Private tuition
Phillips, J.L. Willow H., Walsall
Priestley, H. Private tuition

Jewel, F.T. Newquay College
Jones, C.S. Bourne Coll., Quinton
Ragy, M.A. Private tuition

Ansell, C.H. Holt H., Cheshunt
Nichols, G.W. Private tuition

Flint, C.C. Margate Gram. S.
Phillips, P. Ipswich Municipal Sec. S.
Baekham, E. The College, Beeches
Stanton, R.G.O. Barton S., Wisbech

Ollive, V.J. Margate Gram. S.
Baker, F.P. Gram. S., Ongar
Brown, S.P. Thornton Heath S., Bensham Manor Rd.
Newmau, E.J. Private tuition
Walker, L.B. Leighton Hall S., Carnforth

Dalley, D. Private tuition
Green, L.H. A. Private tuition
Watson, D.T. Private tuition
Dyer, W.C. Ryde H., Ripley

Hodgson, N.W. s.e.h. q.a. al. d. nu. York Minster Choir S., York
Boudoin, L.A. ms. f. Clair-Val S., Gorey
Anderson, G.F. s.e.h. q.a. al. gm. f. High S. for Boys, Croydon
Jeffery, A.L.P. s.e.a. nu. d. St. John's Coll., Green Lanes, N.

THIRD CLASS. Honours Division.

BOYS, 3RD CLASS, HONS.—Continued.
 Watson, C.B. s.e.a.d. St. John's Coll., Green Lanes, N. Fuller, D. e.a.d.g.m. J.g.e. Shoreham Gram. S.
 Cliff, W.A. h.a.d.g.m. The Jersey Modern S., St. Heliers
 Heaton, C.D. g.a.d.m.u. York Minster Choir S., York
 Howells, W.J. a.s.h. Barry Commercial Acad., Holton Rd.
 Riley, E.W. e.g.a.al. TOLLINGTON PARK COLL., N.
 Wigfield, D.W. MacD. s.e.h.g.o.al. TOLLINGTON PARK COLL., N.
 Taylor, W.H. s.a.al. Oakes Inst., Walton, Liverpool
 Gordon, M. s.e.h. Margate Jewish Coll.
 Peel, S. s.e.g.d.m.u. York Minster Choir S., York
 Shepherd, F.R. e.a.d.m.u. York Minster Choir S., York
 Coverdale, A. a.g.m.bk.d. The High S., Brentwood
 Le Gresley, S.E. e.a.l.f. Clair-Val S., Gorey
 Mortimore, H. e.h.g.s.c. Penketh School
 Godel, E.F. s.e. Harleston H., St. Lawrence, Jersey
 Anthooy, A.A. a.al. Oakes Inst., Walton, Liverpool
 Smith, H.T.B. h.a.d. The Jersey Modern S., St. Heliers
 Agate, B. s.e.al. Shoreham Gram. S.
 Bell, W.R. s.a.al. Oakes Inst., Walton, Liverpool
 Cooney, R.J. S. e.g.a.g.m. St. Winifred's, Torquay
 Deap, H.R. g.a.al. TOLLINGTON PARK COLL., N.
 Brooker, A.S.L. s.e.a. The Modern S., E. Grinstead
 Davison, L. s.e.a.g.m. Grosvenor Coll., Carlisle
 Lewis, H.L. e.a.al. Highbury Park S., N.
 Mason, C.W. e.al.bk. Ryde H., Ripley
 Saroo, A.J. e.al. Blackpool High S.
 Hobson, T.B. al.ge. Bickerton H., Birkdale, Southport
 Sutton, O. e.a.al. Highbury Park S., N.
 Wade, R. al.g.m. Leighton Hall S., Carnforth
 Crumpler, H.S. s.e.al. Boys' High S., Wareham
 Priestley, C.L. g.m.d. Richmond Lodge, Torquay
 Wallace, H. e.h. Argyle H., Sunderland
 Billot, J. e.h.f. The Jersey Modern S., St. Heliers
 Green, J.F. e.a.d. Argyle H., Sunderland
 Palmer, H.G. al.f. Clair-Val S., Gorey
 Pike, E.J. e.a.al. Raleigh Coll., Brixton
 Border, A.E. a.al. Argyle H., Sunderland
 Hamby, W.H. a.al. The Jersey Modern S., St. Heliers
 Tozer, H.H. s.e.h. Boys' High S., Wareham
 Wright, L.H. e.h. Westbury H., Southsea
 Ahler, C.F. e.f. The Jersey Modern S., St. Heliers
 Barnes, E. h. St. Peter's Choir S., W. Eccleston St. East, S.W.
 Belt, F. a. The Haughton S., York
 Shaw, R.H. s.g.d. Monkton H., Streatham
 Bettinson, S. e.a. Barton S., Wisbech
 Goldie, W.L. a.al. Oakes Inst., Walton, Liverpool
 King, F.W. s.a.al.d. Shoreham Gram. S.
 Norris, C.A. e.a.al. Bickerton H., Birkdale, Southport
 Spark, E. s.h. Argyle H., Sunderland
 Wood, C.C. e.g.al. Priory Coll., Hornsey
 Carruthers, G.S. e.g.m. Grosvenor Coll., Carlisle
 Mourant, C. e.al. The Jersey Modern S., St. Heliers
 Piper, N. s.a. Argyle H., Sunderland
 Potter, G.A. a.al. Oakes Inst., Walton, Liverpool
 Trenbath, D.R. a Bickerton H., Birkdale, Southport
 Conway, H. ms. Southampton Boys' Coll. and High S.
 Edwards, D.T. a. Commercial Coll., Acton
 Guebel, M. e.d. High S. for Boys, Croydon
 Heywood, A. al. High School, Torquay
 Ledebor, D.H. al. Commercial Coll., Acton
 Patterson, J.R. al. Oakes Inst., Walton, Liverpool
 Sadler, T. a.al. The Palace S., Bewdley
 Walton, R.N. s. Penketh School
 Bradford, S.V. a.al. Southdown Coll., Willington, Eastbourne
 Clough, E.D. d. Shoreham Gram. S.
 Richardson, R. al. Scarborough Coll. S.
 Stevens, A. bk. Shoreham Gram. S.

Warner, A. e.d. Brompton Boys' S., The Churchyard, Brompton
 Forsyth, C. a. Southampton Boys' Coll. & High S.
 McCartney, R. R. al. Wellington Coll., Shropshire
 Williams, R.P. Richmond Lodge, Torquay
 Adie, F.W. s.h. The Palace S., Bewdley
 Clough, B.G. s.d. Shoreham Gram. S.
 Curtis, W.H. s.e.h. Summerleaze Coll. S., East Harptree
 Morris, D. al.d. Colebrook H., Bognor
 Scott, W.K. l. Park H., Broadstairs
 Berry, G.W. a.al. Oakes Inst., Walton, Liverpool
 Black, R.C. s. Shoreham Gram. S.
 Clisholm, S.M. s.h. St. Aubyn's, Woodford Green
 Hancock, B.J. Oxenford H., St. Lawrence, Jersey
 Pim, C.F. d. High S., Torquay
 Rivers, W.E. Peachfield, Eltham
 Smith, B.C. e.al. Clair-Val S., Gorey
 Turvey, J.H. s.e.v. Penketh School

THIRD CLASS.
Pass Division.

2Pelham, G.F.L. m.u. St. John's Coll., Green Lanes, N.
 2Rowe, I.A. Newquay College
 2Ling, W.B. Norwich High S. for Boys
 2Mabbott, A. Scarborough Coll.
 2Watson, D. The High S., Brentwood
 2James, W.P. Shoreham Gram. S.
 2Wilsoo, H.E. m.o. St. John's Coll., Green Lanes, N.
 2Lewis, W.A. f. St. Mary's Coll., Harlow
 2Buckley, H.L. Wellington Coll., Shropshire
 2Brooks, H.C. TOLLINGTON PARK COLL., N.
 2Lacey, D.E. St. John's Coll., Green Lanes, N.
 2Cope, B.H. The Palace S., Bewdley
 2Perkins, H.A. High S. for Boys, Croydon
 2Ballard, E.S. Shoreham Gram. S.
 2King, W.F. Margate Comm. S.
 2Robins, E.J.H. TOLLINGTON PARK COLL., N.
 2Tye, E.G. Tudor Hall, Hawkhurst
 2Hosken, C.N. Newquay College
 2Bell, E.H. Derwent H., Bamford
 2Clifton, D.G. Tudor Hall, Hawkhurst
 2Fitzsimons, T. Cawley S., Chichester
 2Hammond, W.R. Skerry's Civil Service Coll., High Holborn, W.C.
 2Ashwell, H.F. Brunswick H., Maidstone
 2Peel, J. Grosvenor Coll., Carlisle
 2Julyan, H.W.H. s. Private tuition
 2Weeden, W.A. TOLLINGTON S., Muswell Hill
 Bodenham, J.R.W. h.al. The Palace S., Bewdley
 Boulton, C.H.J. e.a.al.g.m. Wellington Coll., Shropshire
 Bontle, C.S. s. Dalkeith H., Anerley
 Buchan, R.E.V. a. Steyne S., Worthing
 Evans, E.F. Eccleston St. East, S.W.
 Marshallsay, G.R. e. Boys' High S., Wareham
 Wenninger, C.P. gm.bk. Wallingbrook S., Chulmleigh
 Bacon, L.G. a.al. Tudor Hall, Hawkhurst
 2Bryant, A.E. J. Margate Comm. S.
 2Mortimore, L. Penketh School
 2Relfe, W.E. e.a.al. St. Leonards Coll. S.
 2Thomas, K. e.a.al. Wellington Coll., Shropshire
 2Vigurs, J.T. al. Newquay College
 2Williams, M.H. Private tuition
 2Williams, R.M. g.al. Manor H., Clapham Common
 Daniels, G.A. Oakes Inst., Walton, Liverpool
 Dickinson, J. cl. Scarborough Coll.
 2East, B. Brunswick H., Maidstone
 2Rendell, S.J. St. Aubyn's, Woodford Green
 2Rowe, A. Chichester Gram. S.
 2Wilmot, A.W. gm. Richmond Lodge, Torquay
 Bircham, R.F. e.h. Cambridge H., Norwich
 Evans, H. s.e. Newquay College
 Gardiner, S. Southport Modern S.
 2Kightly, C.S. s. Shoreham Gram. S.
 2Kee, W.H. ms. Castletown Gram. S.
 2Lane, M.W. al.f. St. Mary's H., St. Heliers
 2Newman, A.W. gm. Wellington Coll., Shropshire
 2Thurlow, R.G. Gram. S., Ongar
 2Benoliel, M. e.ol. Margate Jewish Coll.
 2Blake, A.L. e. Barton S., Wisbech
 2Cutburt, R.V. St. John's Coll., Green Lanes, N.

Fisher, A.N. Wellington Coll., Shropshire
 2Harvey, C. Belper Gram. S.
 Kienast, F.M. s. Oxenford H., St. Lawrence, Jersey
 2Ladbroke, H.A. TOLLINGTON PARK COLL., N.
 Parris, W.H. Oxenford II., St. Lawrence, Jersey
 2Wells, J.R.L. Anerley College
 2Young, R. s. Shoreham Gram. S.
 Castens, G.W.E. s. Peachfield, Eltham
 Coates, F.H. a.al. St. Martin's Gram. S., Scarborough
 2Cooke, W.J. f. Wellington Coll., Shropshire
 2Cory, G.R. s. West End S., St. Heliers
 2Foden, S. Belper Gram. S.
 2Gautier, M.L.A. f. St. James' Coll. S., St. Heliers
 Haddock, J. a.al. The Palace S., Bewdley
 Lambert, S.T. Barton S., Wisbech
 2Morley, E.L. cf. Shoreham Gram. S.
 2Morris, A.F. St. Leonards Coll. S.
 2Priestley, F.W. d. Richmond Lodge, Torquay
 2Symonds, F.R. St. Winifred's, Torquay
 2Wells, A.M. l. Castletown Gram. S.
 2Argent, N.A. The High S., Brentwood
 Fisher, J. Norwich High S. for Boys
 2Gould, C.F. a. Wallingbrook S., Chulmleigh
 Lane, J. West End S., St. Heliers
 2Mitchell, J.H. Clyde H., Hereford
 2Noel, G.G. d. Clair-Val S., Gorey
 2Oliphant, L. a.al. Southend Gram. S.
 2Oliver, G.S. s.e.g. Margate Comm. S.
 2Ortner, E.R. Beverley School, Barnes
 2Restall, G.M. al. Waterloo Coll., Cosham
 2Small, J.D. e. Tudor Hall, Hawkhurst
 2Taylor, F.R. Shoreham Gram. S.
 2Tuhau, N.C. Priory Coll., Hornsey
 Broadley, T.H. r. The Modern S., E. Grinstead
 2Dancey, M. Beverley School, Barnes
 2Figgins, H.H. h.a.al. Manor H., Clapham Common
 2Freagar, J.G.L.g. TOLLINGTON PARK COLL., N.
 2Gill, A.S. e. Shoreham Gram. S.
 2Jackson, G.E. ms. Scarborough Gram. S.
 2Jardin, G.D. gm. The High S., Brentwood
 2Lacey, A.V. St. John's Coll., Green Lanes, N.
 2Phillips, I. I. Emlyu Gram. S., Newcastle Emlyn
 2Ross, J. The Palace S., Bewdley
 2Sercombe, H.B. al. St. Mary's Coll. Harlow
 2Smith, F.L. Brunswick H., Maidstone
 2Wilding, J.M. s.a.al. Oakes Inst., Walton, Liverpool
 Angell, J.W. al. Oakes Inst., Walton, Liverpool
 2Boulton, N.V. s.a.al. Norwich High S. for Boys
 2Burbridge, J.H.G. Laughtarne S., Southsea
 2Conisbee, E.G. s. Ryde H., Ripley
 2Cooper, R.H. e. Barton S., Wisbech
 2Linton, D.S.T. h. Shoreham Gram. S.
 2Monk, N.C. s.e.al. Schorne S., North Marston, Winslow
 2Norman, G.C. d. Oxenford H., St. Lawrence, Jersey
 2Paterson, G. h.a.al. Finsbury Park Coll., Stoke Newington
 2Bland, E.M. TOLLINGTON PARK COLL., N.
 2Camus, V.P. a. Gram. S., Ongar
 2Croft, R.H. Chichester Gram. S.
 2Dews, A.H. s. St. Martin's Gram. S., Scarborough
 2Dicks, F.J.N. The Douglas S., Cheltenham
 2Donovan, C.A. St. Aloysius Coll., Highgate
 2Ellis, R.J. Chichester Gram. S.
 2Hayton, H. Grosvenor Coll., Carlisle
 2Herd, S.D. Oakes Inst., Walton, Liverpool
 2Kirtin, R.C. Paddington High S.
 2LeMoine, H.G. al.f. St. Mary's H., St. Heliers
 2Miller, J.P. a. Oakes Inst., Walton, Liverpool
 2Moon, F.W. The Modern S., E. Grinstead
 2Polhill, O.C. High S. for Boys, Croydon
 2Treasure, G.W. Wellington Coll., Shropshire
 2Turner, A.R. TOLLINGTON PARK COLL., N.
 2Birch, W. a. Wellington Coll., Shropshire
 2Burnett, E.J. g. Steyne S., Worthing
 2Buswell, A.L. Laughtarne S., Southsea
 2Judge, J.H. Montgomery Coll., Sharrow, Sheffield
 2Moat, D.K. a.al. Shoreham Gram. S.
 2Rasch, F.H.S. St. Helens Coll., Southsea
 2Smart, D.P. Brondesbury Coll., Willesden Lane, N.W.
 2Smith, C.B. St. Aubyn's Woodford Green
 2Sutton, W.D. o. TOLLINGTON PARK COLL., N.
 2Warden-Stevens, R. al. The College, Eccles
 2Witting, P.A. Weston-s.-Mare College
 2Wilson, R.L. Shoreham Gram. S.
 2Baldwin, H.F.G. e. Steyne S., Worthing
 2Dunnell, C.S. al. Avenue H., Sevenoaks
 2Foster, A.S. Onsegate S., Selby

2King, L.A. Gram. S., Ongar
 2Smith, G.S. Derwent H., Bamford
 2Ashton, F.R. e.al. Avenue H., Sevenoaks
 2Barrington, R. Bickerton H., Birkdale, Southport
 2Dean, G.G. a. Shoreham Gram. S.
 2Ellison, C.O. Wellington Coll., Shropshire
 2Galloway, W.J. a. Bickerton H., Birkdale, Southport
 2Kalber, F.W. The Jersey Modern S., St. Heliers
 2Marshall, W.H.W. Brunswick H., Maidstone
 2Milligan, J.H. Colebrook II., Bognor
 2Sheaves, E.G. al. St. Mary's Coll., Hailow
 2Shufflebottom, E. Academy, Crewe
 2Southgate, C.J. Southampton Boys' Coll. & High S.
 2Whitehead, J. Kilgrimol S., St. Annes-on-Sea
 2Field, W.C.B. Scarborough Coll.
 2Hodgson, T.D. s. Grosvenor Coll., Carlisle
 2Kingham, G.P. h. Coll. S., London Rd., Reading
 2Lewis, A.E. a.al. Southdown Coll., Willington, Eastbourne
 2Macauly, J.H. o.al. Oakes Inst., Walton, Liverpool
 2Norgate, R. s.a. Norwich High S. for Boys
 2Pealling, T.A. TOLLINGTON PARK COLL., N.
 2Peckham, W.A. Southampton Boys' Coll. & High S.
 2Pontin, S.C.M. Highbury Park S., N.
 2Rollinson, G.R.P. Scarborough Gram. S.
 2Symonds, S.L. Northgate S., Bury St. Edmunds
 2Vigurs, R.C. al. Tudor Hall, Hawkhurst
 2Atkinson, R.C. St. Martin's Gram. S., Scarborough
 2Baxter, E.B. Clifton Coll., North Shore, Blackpool
 2Cartledge, S. s. Shoreham Gram. S.
 2Cross, C.S. Northgate S., Bury St. Edmunds
 2Fox, C.H. al. Wellington Coll., Shropshire
 2Goebel, L.F. Private tuition
 2Honeycombe, J.W.A. a. The Modern S., E. Grinstead
 2Sinclair, G.S. Ryde H., Ripley
 2Syms, J.E.L. Stoke Road Middle Class S., Gosport
 2Walker, E. al. Wellington Coll., Shropshire
 2Brooks, E.K. e.h. The Ferns, Thatchem
 2Byrne, F.B. s. Shoreham Gram. S.
 2Cox, V.F.W. gm. Gram. S., Ongar
 2Down, L. Shoreham Gram. S.
 2Edwards, A.W. a.al. Avenue H., Sevenoaks
 2Garrett, H.F. d. High S. for Boys, Croydon
 2Kewley, J. Oakes Inst., Walton, Liverpool
 2King, H.R.E. e. Gram. S., Ongar
 2Page, P.C.H. The High S., Brentwood
 2Warburton, J.B. Chorlton-cum-Hardy Gram. S.
 2Alison, T.F. Belper Gram. S.
 2Allao, R. Bickerton H., Birkdale, Southport
 2Allen, J. High S. for Boys, Croydon
 2Buckland, J.A. Wellington Rd. S., Taunton
 2Carpenter, E.R. d. St. John's Coll., Green Lanes, N.
 2Catchpole, F.E. The College, Beccles
 2Chandler, J.F.W. The Ferns, Thatchem
 2Chubb, A.J.V. h. Campbell H., Cotnam
 2De La Haye, N. The Jersey Modern S., St. Heliers
 2Farmer, J.V.W. Gram. S., Bewdley
 2Foster, J.W. a. St. Martin's Gram. S., Scarborough
 2Gruart, A. f. Hoe Gram. S., Plymouth
 2Harris, C. al. Newquay College
 2Hughes, L. al. Oakes Inst., Walton, Liverpool
 2Lewer, H.R. Shoreham Gram. S.
 2Allen, W.H. Clark's Modern S., Forest Gate
 2Andrew, J.W. Steyne S., Worthing
 2Bisson, C.J. s. Harleston H., St. Lawrence, Jersey
 2Bliss, D.G. d. The High S., Brentwood
 2Collingburn, J. al. Blackpool High S.
 2Cutler, W.A. Richmond Park Coll. S., Bournemouth
 2Defriez, E.H. Licensed Victuallers' S., Upper Kennington Lane, S.E.
 2Fardell, D.V. The College, Beccles
 2Ford, M.F. High S., Torquay
 2Miller, A. The Ferns, Thatchem
 2Morgan, L. Argyle H., Sunderland
 2Richardson, J. Colebrook II., Bognor
 2Willie, L. Mount Radford S., Exeter
 2Wise, W.S. al. Wellington Coll., Shropshire
 2Bailey, J. Weston-s.-Mare College
 2Blackmore, W.A. St. Helens Coll., Southsea
 2Fretwell, A.R. Derwent H., Bamford
 2Halsall, C.B. a. Bickerton H., Birkdale, Southport
 2Hare, P.V. Wellington Road S., Taunton
 2Hawkins, F.W. al. Comm. Coll., Acton
 2Holt, N.C. e. Clair-Val S., Gorey

BOYS, 3RD CLASS, Pass—Continued.
 2Mansfield, B. Beverley School, Barnes
 Newman, C.V. a.d. The College, Beccles
 Opperman, E.G. Tollington Park Coll., N.
 Rainey, V.T.J. Gunnersbury S., Chiswick
 Robinson, F.W.
 Bickerton H., Birkdale, Southport
 Stiles, K.C. a. Shoreham Gram. S.
 Taylor, J.W. a.d. Oakes Inst., Walton, Liverpool
 Weninger, W.C.
 Wallingbrook S., Chulmleigh
 Williams, R.J. H. e. Wellington Coll., Shropshire

Cornwell, H. Shoreham Gram. S.
 2Cripps, H.A. Hoe Gram. S., Plymouth
 Danley, H.W. s. Shoreham Gram. S.
 2Lack, L.W. Gram. S., Ongar
 2Lyne, F.G. County S. for Boys, Ramsgate
 Simpson, J. Greystones, Scarborough
 Sinclair, W.K. a.l. Ryde H., Ripley
 2Spencer, H.D. Belper Gram. S.
 Walker, J.H. Shoreham Gram. S.

2Batty, D.H. St. Leonards Coll. S.
 Bland, J.O. W. s. Peachfield, Eltham
 Carter, D.R. Newquay College
 2Dawson, T.
 Finsbury Park Coll., Stoke Newington
 Engerran, V.L. a.l.
 Arlington Park Coll., Chiswick
 Gilkes, N.S. g. Dulwich College
 Glazebrook, W.P. Shoreham Gram. S.
 Hicks, H. a.l. Shoreham Gram. S.
 Jolliffe, E.W. a. Commercial S., Maidstone
 Murray, W.J. a.l. Tollington Park Coll., N.
 Robathan, L. s.
 Northgate S., Bury St. Edmunds
 Smith, G.E. Southport Modern S.

2Baker, J.W. Wellington Coll., Shropshire
 Carbine, H.W.
 Oakes Inst., Walton, Liverpool
 Carter, H.W. Norwich High S. for Boys
 2Carter, I.P. Newquay College
 2Clark, W.L. Lulworth H., Caerleon
 Crozier, J.G. Scarborough College
 Darling, L.S. Mount Radford S., Exeter
 Fordham, W.H.F.
 Manor H., Clapham Common
 Gair, H. gm. Gram. S., Ongar
 2Land, E.L. Margate Gram. S.
 2Pollard, J.C. Selwyn H., Hove
 Price, A. Wellington Coll., Shropshire
 Schouhut, H. d.
 Ruthin Coll., Eeckington, Sheffield
 Shirley, T.E.B. f. Shoreham Gram. S.
 van Heel, J.A. Monkton H., Streatham
 Young, H.G. High S. for Boys, Croydon

Anderson, G. d. Norwich High S. for Boys
 Bagley, S.A. c. Gram. S., Ongar
 Broughton, O.G.E. Windsor H., Worthing
 Chapman, C.C. Richmond Lodge, Torquay
 Clayton, W.H.P. a.l.
 Bickerton H., Birkdale, Southport
 Collingwood, E.J.
 Cary Coll., Southend-on-Sea
 Down, R. a.l. Littleton H., Knowle
 Firth, L.H. Scarborough College
 Freeman, G.W.
 Manor H., Clapham Common
 2Ogden, A.G. High S. for Boys, Croydon
 Tulhan, V.C. a.d. Priory Coll., Hornsey
 Watt, J.A. a. Shoreham Gram. S.
 Woodham, R. a.l. Bourne Coll., Quinton

2Adams, B. Private tuition
 Baker, C.J. Richmond Hill School
 2Baker, E.T. Richmond Hill School
 Bew, J.A.R. Chichester Gram. S.
 Bridges, H.J. Commercial S., Maidstone
 2Caslake, F.L. Margate Gram. S.
 Clarke, F.B. St. Aubyn's, Woodford Green
 Davies, D.V. Castle Hill S., West Ealing
 2Glegg, R.A. Margate Gram. S.
 Lowe, A. Southampton Boys' Coll. & High S.
 Penman, C.D. Shoreham Gram. S.
 2Saffery, L.G. Gunnersbury S., Chiswick
 Wyatt, K.S. Manor H., Clapham Common

Atkinson, G.W. Scarborough Gram. S.
 Campa, A.A. Gram. S., Sale
 Davies, E.C.H. The College, Beccles
 Foxton, A. St. Martin's Gram. S., Scarborough
 Heaton, E.A. a.
 Kilgrimol S., St. Annes-on-Sea
 Holdsworth, J.F. Tudor Hall, Hawkhurst
 Pickford, H.A. Shoreham Gram. S.
 Seward, J.B.
 Thornton Heath S., Besham Manor Rd.
 Siddall, S.M. Tollington Park Coll., N.
 Williamson, H.E. Castletown Gram. S.

Hutton, S.C. e.a.d. Richmond Hill School
 Johnson, W.I. bk.
 Brunswick H.S., Maidstone
 Lewthwaite, A.T. Norwich High S. for Boys
 Rogers, R.S. a. Oakes Inst., Walton, L'pool
 Wright, J.S. Southport Modern S.

Colbourne, A. Shoreham Gram. S.
 Foy, E.R. St. Helens Coll., Southsea
 Hickinbottom, F.W.
 The Modern S., Streatham
 2King, C.L. d. Ryde H., Ripley
 Lancaster, E.R. Langharne S., Southsea
 Liprot, F.W. Academy, Crewe
 McArd, J.E. Castletown Gram. S.
 2Russell, T.R. Bourne Coll., Quinton
 2Sheldon, R.E. Belper Gram. S.
 Stephen, J.
 Bickerton H., Birkdale, Southport
 Ward, A.R. a.l. bk. Highbury Park S., N.
 Whiteley, S.E.
 Chorlton-cum-Hardy Gram. S.

Anderson, W.E. a. Oakes Inst., Walton, Liverpool
 Bew, R.E.M. Chichester Gram. S.
 Bloomer, H.P.
 Kilgrimol S., St. Annes-on-Sea
 Booth, J. Grosvenor Coll., Carlisle
 De La Bue, C.F. e.a.d.
 Oxenford H., St. Lawrence, Jersey
 Emmott, R.St.B. St. Helens Coll., Southsea
 Forsyth, D.C. St. Aubyn's, Woodford Green
 Long, F.J.B.C.
 Thornton Heath S., Besham Manor Rd.
 Oakes, F.W.
 St. Peter's Choir S., Eccleston St. East, S.W.
 Poole, L.F. Littleton H., Knowle
 Rivers, W.H. d.
 Kilgrimol S., St. Annes-on-Sea
 Verrall, L.G. Commercial S., Maidstone
 Wilson, J.H.A. The Douglas S., Cheltenham
 Wilson, R.
 Southport Comm. Coll. & Boys' Sec. S.
 Wright, R.W. a.l.
 Oakes Inst., Walton, Liverpool

Bodenhan, S.W. Weston-s-Mare College
 2De Carteret, F.S.
 Oxenford H., St. Lawrence, Jersey
 Heal, F.W. Wellington Road S., Taunton
 2Knoblauch, C.H.A.
 Lancaster Coll., W. Norwood
 Knowlden, W.E. Brunswick H., Maidstone
 Lawton, S. St. Leonards Coll. S.
 Pike, H.W. s. Margate Comm. S.
 Rainer, G.H. e.g.m.
 Thornton Heath S., Besham Manor Rd.
 Ratcliff, A. d. Derwent H., Bamford
 2Spears, J.W. Collegiate S., W. Inchoore Hill
 2Swan, G.A. Margate Gram. S.
 Wheaton, S.J. Wilton H., Exeter
 2Willard, S.H. St. Leonards Coll. S.
 Wright, E.N. Tudor Hall, Hawkhurst

Butterworth, J.W. d. Academy, Crewe
 Cook, H.A. Cliftonville Coll., Margate
 Gibson, H. e.h. The Mount S., Harrogate
 Green, E.V.
 Southdown Coll., Willington, Eastbourne
 2Grey, J.M. Skerry's Coll., Newcastle-on-T.
 Heywood, W.J. a. d.
 Chorlton-cum-Hardy Gram. S.
 Marshall, C. Wellington Coll., Shropshire
 2Mould, L.A.
 St. Peter's Choir S., Eccleston St. East, S.W.
 Neame, T.W. a.l.
 Oakes Inst., Walton, Liverpool
 Rondel, A.C.
 Harleston H., St. Lawrence, Jersey
 Walker, J.L.C. s. Shoreham Gram. S.

Best, F.F. a.l. Chorlton-cum-Hardy Gram. S.
 2Bree, C.H.
 Oxenford H., St. Lawrence, Jersey
 Brewer, C.H. Newquay College
 England, H. Barton S., Wisbech
 Harding, V.L.W. Weston-s-Mare College
 Hayward, G.W.
 Arlington Park Coll., Chiswick
 2Martin, H.E. Commercial S., Maidstone
 Nyren, C.V. a. High S. for Boys, Croydon
 Pierce, F.C. Oakes Inst., Walton, Liverpool
 Randall, R.H.L.
 The Modern S., E. Grinstead
 Salmon, C.C. d. Bridlington College
 Torrance, R.G. Margate Gram. S.
 Wightwick, R.S.
 Tankerton Coll., Whitstable

Hughes, E.C. Penketh School
 Jones, E.L.B. a.l. Avenue H., Sevenoaks
 Moyle, M. The High S., Brentwood
 Pinks, A. St. Peter's Choir S.,
 Eccleston St. East, S.W.
 Seward, W.H.
 Thornton Heath S., Besham Manor Rd.
 2Tiffin, W.L. Grosvenor Coll., Carlisle
 Walker, L.W. Scarborough College
 Wortley, C.E.
 Thornton Heath S., Besham Manor Rd.
 Barnes, R. s. Grosvenor Coll., Carlisle
 Brown, G.H.
 Clifton Coll., North Shore, Blackpool
 Clark, J. St. Michael's S., Hitchin
 Coates, D.M. Kilgrimol S., St. Annes-on-Sea
 Cole, D.D.W. Peachfield, Eltham
 Curties, S.L.
 Thornton Heath S., Besham Manor Rd.
 Hurst, J. bk. Grosvenor Coll., Carlisle
 Mellor, F.S. c.
 Southport Comm. Coll. & Sec. S.
 2Paterson, R.A. Gram. S., East Finchley
 Sankey, W.C. Margate Comm. S.
 Walsh, A.G. Oakes Inst., Walton, Liverpool

Amos, A.J.A. Manor H., Clapham Common
 Berry, E.C. Gram. S., Ongar
 Board, R.D. s. Weston-s-Mare Coll.
 2Dickins, F.R. s.
 Schorne S., North Marston, Winslow
 Eckersley, C.R.F. Gram. S., Sale
 Gill, E. Chorlton-cum-Hardy Gram. S.
 Gloster, A.E. Ryde H., Ripley
 Goulbourn, R.H.
 Oakes Inst., Walton, Liverpool
 Hodgson, A.E.S.
 Wellington Coll., Shropshire
 Jones, R.D. Gram. S., Ongar
 2Mancey, L.W. High S. for Boys, Croydon
 2Martin, H.G. Margate Gram. S.
 Newton, H. Highfield S., Muswell Hill
 Payne, R. Weston-s-Mare College
 Poole, S. Kilgrimol S., St. Annes-on-Sea
 Whitehouse, T.C. a. Castletown Gram. S.
 Woodridge, S.W.
 Beucroft H., Muswell Hill

Blenkins, A.V. High S. for Boys, Croydon
 Cass, G.W.G. Scarborough College
 Davison, E.T. Monkton H., Streatham
 2Dickins, A.J.E.
 Schorne S., North Marston, Winslow
 Labern, A.R. The College, Beccles
 Pattinson, T. Oakes Inst., Walton, Liverpool
 Robbins, W.B. The High S., Brentwood
 Scott, R.H. Castle Hill S., West Ealing
 Tollenache, D. c. Shoreham Gram. S.
 Willson, C.V. St. Aubyn's, Woodford Green

Ashley, D. Margate Jewish Coll.
 Barnfield, B. Gram. S., Bewdley
 Bradley, G. Western Coll., Harrogate
 Chapman, C.H. Gram. S., Sale
 Dalton, R.M. St. Leonards Coll. S.
 Farmer, E.G.W. Weston-s-Mare College
 Hartley, E.
 Bickerton H., Birkdale, Southport
 Ledson, C. a. Oakes Inst., Walton, L'pool
 Meadowcroft, A.
 Clifton Coll., North Shore, Blackpool
 Moore, B.H. Bourne Coll., Quinton
 Robson, R.W.
 Oakes Inst., Walton, Liverpool
 Rowe, J. c. Oakes Inst., Walton, Liverpool
 2Vine, H.J. Private tuition
 Williams, T.W. a.l.
 Wellington Coll., Shropshire

Adams, C. Chichester Gram. S.
 2Ashford, S.D.F.
 Waterloo Coll., Cosham
 Chipp, F.C. Tollington Park Coll., N.
 Clayton, B.F. Paddington High S.
 Clegg, J. Kilgrimol S., St. Annes-on-Sea
 Gibson, J.R.B. Leighton Halls, Carnforth
 Harrison, H. Derwent H., Bamford
 Jones-Howell, A.C. Littleton H., Knowle
 Nightingale, W.C.
 Leighton Hall S., Carnforth
 Ormiston, W.R. Grosvenor Coll., Carlisle
 2Oyler, O.G. Holt H., Cheshunt
 Sallai, V. c.f. St. James' Coll. S., St. Heliers
 Smith, H. High S. for Boys, Croydon
 2St. John, H.E. Henfield Gram. S.
 Sykes, T.L.T. Holt H., Cheshunt
 Thompson, F.N.E. s. Scarborough College
 Wheldon, E.D. Tollington Park Coll., N.
 Wiles, J.R. Chichester Gram. S.
 Wright, W.M. Scarborough Gram. S.

Bainbridge, E.A. Oakes Inst., Walton, Liverpool
 Buck, M.W. Paddington High S.
 Dale, E.A. Chorlton-cum-Hardy Gram. S.
 Ellison, B.J. c. Cambridge H., Norwich
 Gugenheimer, J. ge.
 St. John's Coll., Green Lanes, N.
 Lawes, R.F. Paddington High S.
 Mundy, A.V.
 Oxenford H., St. Lawrence, Jersey
 Rabbetts, C.H. Raleigh Coll., Brixton

Sharp, N.T.C. a. a.l. Oakes Inst., Walton, Liverpool
 Simonsen, T.C. Colebrook H., Bognor
 2Wainsley, R.Y. Margate Gram. S.
 Willetts, L. Southend Gram. S.
 Young, C. a.l. Southend Gram. S.

Cooper, W.H. Beverley School, Bangor
 Duck, W.M. Gram. S., Ongar
 Dyer, K. St. Leonards Coll. S.
 Harrison, T. Leighton Hall S., Carnforth
 Jones, L. St. Leonards Coll. S.
 Lambert, S. a. Brompton Boys' S.,
 The Churchyard, Brompton
 Manning, G. d. High S. for Boys, Croydon
 Morgan, K.J. The Douglas S., Cheltenham
 Moulard, W.E. e.
 Southampton Boys' Coll. and High S.
 Peacocke, W.T.
 Bickerton H., Birkdale, Southport
 Tims, R.J. e. Manor H., Clapham Common
 2Wood, H.L. Avenue H., Sevenoaks

2Barden, G.W. St. Leonards Coll. S.
 Hewitson, D.A.J. Norwich High S. for Boys
 Lett, G.O.
 Richmond Park Coll. S., Bournemouth
 Littleboy, V.H. Norwich High S. for Boys
 McCreary, F.L. St. Peter's Choir S.,
 Eccleston St. East, S.W.
 Moar, A.J.J. Littleton House, Knowle
 Muggleton, C.F. High S. for Boys, Croydon
 Pickworth, J. The Palace S., Bewdley

Bousfield, H.H. Grosvenor Coll., Carlisle
 2Cartwright, H.C. Derwent H., Bamford
 Clatworthy, H.E. Mary Street H., Taunton
 Crowther, R. Greystones, Scarborough
 Gape, A.F. Clair-Vale S., Gorey
 2Gaster, A.E. Maida Vale S., W.
 Gray, K.H. Castle Hill S., West Ealing
 Jennings, C.E. s. Margate Comm. S.
 Lalouette, P.A.H. s. Margate Comm. S.
 Nunn, F.M. Norwich High S. for Boys
 Powlesland, N.W.
 Wallingbrook S., Chulmleigh
 Ramsay, W.A. Norwich High S. for Boys
 2Sandcock, C.L. Newquay College
 Taylor, W.N. Castletown Gram. S.
 Thomas, J.P. Gram. S., Bewdley
 Watson, L.A.
 Southport Comm. Coll. & Sec. S.
 Wild, R.E. Shoreham Gram. S.

Ashdown, O.W. Wallingbrook S., Chulmleigh
 Church, L. Tankerton Coll., Whitstable
 Earle, G.H. s. Mary Street H., Taunton
 Edwards, I.D. Chichester Gram. S.
 2Green, D.E. Christ Coll., Blackheath
 Kenshole, T.R.
 Kingsholm S., Weston-s-Mare
 Land, E.W. Gram. S., Ongar
 Rudge, A.E. Mary Street H., Taunton
 Salt, E.O. Leighton Hall S., Carnforth

Adams, R.J. Southport Comm. Coll. & Sec. S.
 Broomfield, H.W. Kingsholm S., Weston-s-Mare
 Harbord, A.E. Wallingbrook S., Chulmleigh
 Lanfer, L.C. Tollington Park Coll., N.
 Morgan, G.A. Gram. S., Ongar
 Palmer, W.E.R. St. Aubyn's, Woodford Green
 Rayner, J.W. Maida Vale S., W.
 Shaw, A.G. Manor H., Clapham Common
 2Steward, H.C. High S. for Boys, Croydon
 Washington, W.F. High S. for Boys, Croydon
 Williams, A. Oakes Inst., Walton, Liverpool

Asbridge, T. Grosvenor Coll., Carlisle
 Austen, T.C. Margate Comm. S.
 Davis, G.J. Tudor Hall, Hawkhurst
 2Fulford, W.W. Highfield S., Muswell Hill
 Raby, J.N. Hoe Gram. S., Plymouth
 Travis, J.L. Victoria Park S., Manchester
 Wood, C.R. Southport Comm. Coll. & Sec. S.

Bailey, C.B. Arlington H., Caeran Park, Newport
 Batcheller, S.C. Tudor Hall, Hawkhurst
 2Boorman, A.R.C. Commercial S., Maidstone
 Collinson, A.F. Cliftonville Coll., Margate
 2Crowther, J.F.A. St. Martin's Gram. S., Scarborough
 Fisher, H.B. Holt H., Cheshunt
 Gavey, A.J. Oxenford H., St. Lawrence, Jersey
 Hooker, A.H. Brunswick H., Maidstone
 Kirkham, J.D. Gram. S., Bewdley
 McClay, A.R. Oakes Inst., Walton, Liverpool
 Naylor, A.W. Scarborough College
 O'dell, C.W. Waterloo Coll., Cosham
 Ralling, S.T.L. d. Wilton H., Exeter
 Terheggen, H. Grosvenor Coll., Carlisle

BOYS, 3RD CLASS, PASS—Continued.
 Ahier, O. f. Charing Cross S., St. Heliera
 Bricknell, E. J. Clair-Val S., Gorey
 Chan, K. W. Mount Badford S., Exeter
 Swiffen, C. R.
 Montgomery Coll., Sharrow, Sheffield
 Taylor, G. D. Arlington Park Coll., Chiswick
 Thedham, C. R.
 Finsbury Park Coll., Stoke Newington

Begbie, I. M. Wellington Road S., Taunton
 Bullworthy, S. E. Priory Coll., Hornsey
 Burrell, A. G. Shoreham Gram. S.
 Cookesley, G. o. Weston-s.-Mare College
 Marshall, G. E. Shoreham Gram. S.
 Miller, J. H. Greystones, Scarborough
 O'Leary, F. Peachfield, Eltham
 Record, V. G. Brunswick H., Maidstone
 Stanley, W. Gram. S., Ongar

Barrington, W. All Saints Choir S., Clifton
 Daniels, P. F. Norwich High S. for Boys
 Jarman, S. T. Greystones, Scarborough
 Pierce, T. G. L. St. Leonards Coll. S.
 Smith, P. H. A. St. Placid's, Ramsgate
 Watkins, E. A.
 Thornton Heath S., Bensham Manor Rd.
 Whitelock, R. B.
 Southport Comm. Coll. & Sec. S.

(Axbey, H. S. Priory Coll., Hornsey
 Blurton, E. B. Cliftonville Coll., Margate

Bond, G. P. Lancaster Coll., W. Norwood
 Cottle, H. Wellington Coll., Shropshire
 d'Almeida, du Roy
 Fauntleroy, St. Leonards-on-Sea
 Densham, W. J. Margate Comm. S.
 Farley, L. R. Chichester Gram. S.
 Featherstone, F. W. McW.
 Manor H., Clapham Common
 Rolls, C. W. Beneroft H., Muswell Hill
 Walters, W. J. G.
 Manor H., Clapham Common
 Watson, H. W. H.
 Wellington Coll., Shropshire
 2 West, G. Private tuition

Fieldhouse, H. M. Wellington Coll., Shropshire
 Gritten, E. M. T. Manor H., Clapham Common
 Harris, K. M. Wellington Road S., Taunton
 Marshall, C. E. W. d. Southport Comm. Coll. & Sec. S.
 Norfolk, E. L. Langhorne S., Southsea
 Potter, H. T. Northgate S., Bury St. Edmunds
 Powell, A. L. Arlington H., Caerau Park, Newport
 Simpson, J. E. Greystones, Scarborough
 2 Strangeway, L. A. Western Coll., Harrogate
 Todd, D. The College, Beccles

Ariff, I. G. H. Ightham Rectory
 Bew, T. C. Chichester Gram. S.
 2 Buckley, A. W. Ashland High S., Wigan
 2 Evans, B. Old College S., Carnarthen
 Nevard, B. H. St. John's Coll., Brixton
 Penfold, F. H. High S. for Boys, Croydon
 Polyblank, W. P. Gram. S., Ongar
 Senior, J. B. Arlington H., Caerau Park, Newport
 Way, G. B. C. St. Helens Coll., Southsea
 Webster, M. E. Oakes Inst., Walton, Liverpool
 Williams, R. C. Wellington Coll., Shropshire

(Snowden, R. H. Gram. S., Ongar
 Williams, G. D. Scarborough Gram. S.

(Brown, S. R. York H., Reading
 2 Eckford, C. G. Margate Gram. S.
 Kohring, W. J. Fairlawn S., Leytonstone
 Parslow, H. H. Scarborough College
 Swinney, G. E. Waterlooville Coll., Cosham

Cooper, A. F. Ruthin Cell., Eckington, Sheffield
 Dunn, L. F. R. Monkton H., Streatham
 Hemmerle, C. E. Gram. S., Ongar
 Hibbs, G. S. Boys' High S., Wareham

(Chilton, O. H. Maida Vale S., W.
 Collins, A. E. L. Tudor Hall, Hawkhurst

Curtis, A. Beverley School, Barnes
 Marklew, I. G. All Saints' Choir S., Clifton
 McOwan, J. Corner H., Godstone
 Siddiqui, B. A. Manor H., Clapham Common
 Watkins, A. S. H. Shoreham Gram. S.

(Batten, A. J. O. St. Peter's Choir S.,
 Eccleston St. East, S. W.
 Holmes, A. Southport Comm. Coll. & Sec. S.
 Lowe, H. F. Ellesmere S., Harrogate
 Stewart, C. W. Oakes Inst., Walton, Liverpool

(Dade, O. P. The College, Beccles
 Gloag, J. Beverley School, Barnes
 Hamel, F. C. Newquay College
 Holden, J. B. Leighton Hall S., Carnforth
 Winterburn, R. Ellesmere S., Harrogate

(Driver, H. The College, Beccles
 Newmarch, G. L. St. Helens Coll., Southsea
 Penney, D. C. Langhorne S., Southsea

(Cornford, L. F. Steyne S., Worthing
 Grennan, G. Southport Comm. Coll. & Sec. S.

Walker, D. S. Clark's Coll., Uxbridge Road, W.

CLASS LIST—GIRLS.

(For list of abbreviations, see page 88.)

FIRST CLASS [or SENIOR].

Honours Division.

Nokes, C. M. s. e. h. a. b. k. f. l. d. Crouch End High S., Hornsey
 Biggs, C. M. s. e. a. f. d. Crouch End High S., Hornsey

FIRST CLASS [or SENIOR].

Pass Division.

Pole, J. T. s. h. Collegiate Schools, Winchmore Hill
 Griffiths, M. s. e. a. v. d. o. Advanced Elem. Girls' S., Merthyr Tydfil
 Hart, D. M. s. f. d. o. English High S. for Girls, Constantinople
 Dodsworth, V. A. s. g. d. o. Private tuition
 Winbush, D. E. s. e. g. d. Private tuition
 Doubleday, M. s. e. Grasmere, Appledore, Ashford
 (Harty, H. s. Friern Manor Coll., E. Dulwich
 Summers, M. E. R. f. Redcliffe H., E. Southsea
 Harrison, D. G. s. d. o. Crouch End High S., Hornsey
 Waterhouse, E. L. St. Joseph's Coll. S., Totland Bay
 Pape, H. S. e. Rock Hill S., Chulmleigh
 Lewis, M. c. Advanced Elem. Girls' S., Merthyr Tydfil
 Hubert, P. L. f. St. James' Ladies' S., Jersey
 Davies, M. Edith do. Advanced Elem. Girls' S., Merthyr Tydfil
 Brauer, E. A. f. g. e. d. Private tuition
 Inayetian, A. s. e. f. d. o. English High S. for Girls, Constantinople
 Lunt, N. E. s. d. o. Private tuition
 Travis, K. s. e. d. o. Norma S., Waterloo
 Andrews, M. P. s. The Roystons, Penge
 Evans, E. ch. Private tuition

Nagou, A. s. English High S. for Girls, Constantinople
 Evans, N. Private tuition
 Vasilades, A. English High S. for Girls, Constantinople
 Skeates, E. W. Friern Manor Coll., E. Dulwich
 Papazian, A. f. English High S. for Girls, Constantinople
 Jones, M. H. Advanced Elem. Girls' S., Merthyr Tydfil
 Cahedo, M. Loreto Conv., St. Francis Xavier s, Gibraltar
 Hebblethwaite, F. M. d. Liverpool Coll., Huyton
 Lewis, E. Advanced Elem. Girls' S., Merthyr Tydfil
 Thomas, G. ch. Private tuition
 Edwards, A. L. e. d. o. Clark's Coll., Newport Rd., Cardiff
 West, E. P. Rock Hill S., Chulmleigh
 Simcox, A. W. Private tuition
 Matthews, V. s. Private tuition
 Jones, M. E. a. Private tuition
 Little, A. M. do. Gilaredge S., Eastbourne
 Nafel, S. e. d. Liverpool Coll., Huyton
 Owen, J. Private tuition
 Vignot, M. English High S. for Girls, Constantinople
 Hoskins, F. G. Private tuition
 James, G. A. Private tuition
 Banlett, E. M. do. Private tuition
 Parry, J. Llanon Council S.
 Russell, M. H. s. Private tuition
 Stephens, E. A. Private tuition
 Davies, A. M. Advanced Elem. Girls' S., Merthyr Tydfil
 Roberts, M. Holyhead County S.
 Lewis, M. English High S. for Girls, Constantinople
 Banger, G. M. A. Private tuition
 Clark, N. s. Ladies' Coll. S., Tavistock
 Steele, B. Private tuition
 Farrimond, F. M. Private tuition
 Rider, M. S. Leeds Girls' High S.
 Williams, K. Private tuition

Ancott, M. K. St. Duastan's Coll., Margate
 Goodall, J. Private tuition
 Rowlands, S. A. Advanced Elem. Girls' S., Merthyr Tydfil
 Dealtry, A. J. Private tuition
 Jones, M. A. Llanon Council S.
 Wolstenholme, L. Private tuition
 Mountford, M. H. Private tuition
 Harries, J. B. Tutorial S., New Quay, Cardigan
 Denison, D. A. Leeds Girls' High S.
 Rawling, M. Private tuition
 Eilgonr, D. Private tuition
 Tilley, M. J. Pengwern Coll., Cheltenham
 Hill, M. Pengwern Coll., Cheltenham
 Laycock, R. Pengwern Coll., Cheltenham
 Marshall, M. Victoria Coll., Belfast
 Evans, R. Old College S., Carmarthen

SECOND CLASS [or JUNIOR].

Pass Division.

1 Gunton, H. C. s. Grasmere, Appledore, Ashford
 1 Hawson, D. do. Ravensworth S. for Girls, Scarborough
 Greenway, D. M. Oakover Girls' S., Burnham
 Taylor, S. B. Stapleton Hall S., Crouch Hill
 Skinner, H. M. St. Hilda's, Beltinge, Herne Bay
 (Bibby, F. K. s. Entry H., Diss
 Butterfield, E. R. f. High S., Waltham Cross
 Gradwell, M. G. A. s. f. Private tuition
 Cartar, C. I. s. h. Howard Coll., Bedford
 Pyle, H. E. Carden S., Peckham Rye
 Oxford, E. R. f. m. u. Granville Coll., W. Croydon
 (Clark, E. A. Laton H., Hastings
 Cowdroy, M. D. Elm H., Ealing
 Warrington, N. s. Bridge H., Sandbach
 Newbery, M. d. Wellington Coll., Hastings
 1 Davies, G. w. d. o. Private tuition
 Whittington, R. D. S. d. St. Helens S., Streatham
 (Chauntler, D. L. f. Streatham Modern Coll.
 Hall, A. D. f. Private tuition
 Vlassopoulos, A. f. English High S. for Girls, Constantinople
 Poulton, F. K. s. Academy of the New Church, Brixton
 (Jenkinson, D. M. d. Longsight H., Hornchurch
 Munton, W. N. Towcester School
 Pearman, M. G. I. s. e. f. Calvea H., Wallingford-on-Thames
 Vinicombe, V. K. English High S. for Girls, Constantinople

SECOND CLASS [or JUNIOR].

Honours Division.

Biggs, I. L. s. e. a. f. d. Crouch End High S., Hornsey
 Saul, W. E. L. s. f. d. m. u. Down End S., Clifton
 Lane, E. E. c. f. m. u. Steyne Girls' High S., Worthing
 (Browning, E. s. e. a. f. Clarendon Girls' S., Bath
 Kendrick, M. E. s. d. Oakover Girls' S., Burnham
 (Diamant, N. ge. English High S. for Girls, Constantinople
 Tidswell, A. C. s. f. m. u. Hollygirt, Nottingham
 Batley, B. V. s. e. f. Steyne Girls' High S., Worthing
 Polcar, M. f. English High S. for Girls, Constantinople
 (Brinkman, P. L. s. d. o. Crouch End High S., Hornsey
 Marshall, G. M. f. m. u. Hollygirt, Nottingham

GIRLS, 2ND CLASS, PASS.—Continued.
 Crawford, J. Private tuition
 Underwood, E.M. f. St. Leonards, Ealing
 Biggar, E.M. s. Stapleton Hall S., Crouch Hill
 Crouch, A.L. Ryde H., Ripley
 Hunter, M. s. Hill Croft S., Bentham
 Jackson, K.M. d. St. Helens S., Streatham
 Billham, E.M. s. Hill Croft S., Bentham
 Lever, B.M. Glenarm Coll., Ilford
 Andrews, L.M. Private tuition
 Baideley, B.K. f. Hill Croft S., Bentham
 Pettigrew, F.E. Harley S., Hereford
 Gould, E.A. West View S., Alstonefield
 Lloyd, N. d. Steyne Girls' High S., Worthing
 Botting, A.L.E. s. Gram. S., Cowfold
 Morley, F.L. s. St. Mary Church High S., Torquay
 Robinson, W.E. s. Private tuition
 Seferian, J.M. f. English High S. for Girls, Constantinople
 Bryan, K.M. mu. Oakover Girls' S., Burnham
 Verinder, G.L. f. Holmwood S., Sidecup
 Levi, E.L. f. English High S. for Girls, Constantinople
 Roberts, J. Private tuition
 Garner, A.A. f. s. Rock Hill S., Chulmleigh
 Hall, A.A. f. Private tuition
 Ramsay, C. English High S. for Girls, Constantinople
 Harty, E.M. English High S. for Girls, Constantinople
 Greenfield, J.A. Private tuition
 Meyrick, A.M. Alleyn Coll., Margate
 Williams, K.M. Southernhay S., Exeter
 Hancock, M.G. Crouch End High S., Hornsey
 Mason, A.L.G. f. Dudley H., Stoke Newington
 Butcher, D.M. Finsbury Park High S.
 Gould, S.E. West View S., Alstonefield
 Cole, P.M. Harley S., Hereford
 Waller, D.K. f. Richmond Park Coll. S., Bournemouth
 Wheeler, D.M. St. Joseph's Coll. S., Totland Bay
 Cooper, E. Streatham Modern Coll.
 Fowles, P. Cloughton Coll., Romford
 Hodgson, D. d. do. Norma S., Waterloo
 Price, J. Private tuition
 Sandler, G.C. f. English High S. for Girls, Constantinople
 Stambolian, Z. f. English High S. for Girls, Constantinople
 Bentley, N. Baliol S., Sedbergh
 Cottrell, N. Hill Croft S., Bentham
 Mayne, E.K. I. Private tuition
 Parkes, B. Private tuition
 Usher, E.A. Private tuition
 Wycherly, I. High S., Westminster St., Crewe
 Ansell, G.M. Alexandra Coll., Shirley
 Ferrer, D.M. s. The Poplars, Small Heath
 Hatswell, D.M. Clenthorpe S. for Girls, Redland
 Hemsworth, E.C. Upper Standard S., Pontypridd
 Farrant, W.L. d. Private tuition
 Fletcher, C.J. Private tuition
 Mason, D. Searisbrick Coll., Birkdale, Southport
 Roberts, A. Private tuition
 Ansell, D.M. Alleyn Coll., Margate
 Duffett, M. Private tuition
 Hansard, L.M. Gosberton Hall Coll., nr. Spalding
 Le Gros, E.J. s. f. The Crown S., St. Martin's, Jersey
 Fraser, E.S. Private tuition
 Piper, E.W. f. Wellington Coll., Hastings
 Primrose, F. Private tuition
 Hardman, E.E. Inglewood S., Moberley
 Kendrick, A.L. Private tuition
 Oram, S.M. f. Wellington Coll., Hastings
 Sturgeon, I.M. Westbark S., Dulwich
 Baker, M.S. Elm H., Ealing
 Caldwell, B.E. d. Carden S., Peckham Rye
 Castelli, M.N. f. English High S. for Girls, Constantinople
 Fairfield, J.M. Minerva Coll., Dover
 Kelly, I. Private tuition
 Perryman, L. do. Private tuition
 Smith, M. Conv. of the Ladies of Mary, Scarborough
 Taylor, E.M. Pengegnern Coll., Cheltenham
 Webb, F.M. Private tuition
 Whiting, D. Ryde H., Ripley

Jollyman, W.M. f. Leigh Girls' Coll., Leigh-on-Sea
 Lagan, B. The Newlands Conv., Middlesbrough
 Owen, E.E. Norton Lodge, Small Heath
 Smith, H. d. Conv. of the Ladies of Mary, Scarborough
 Hale, D.F. Cloughton Coll., Romford
 Lawrence, D.M. Oakover Girls' S., Burnham
 Frazer, D.M. f. Montpelier H., Brentwood
 Mossop, M. Norma S., Waterloo
 Richard, A.M. f. St. James' Ladies' S., Jersey
 Glanville, A.P. Glenarm Coll., Ilford
 Goodman, E.M. Ryde H., Ripley
 Ujeskins, J. Private tuition
 Keegan, M. St. Mary's R.C. S., Cannock
 Ellis, D. Hollygirt, Nottingham
 Griffiths, G. do. Private tuition
 Marsden, C.A. Private tuition
 Miles, E.F. M. f. Claremont Coll., Corsham
 Redcliffe, E. g. Ladies' Coll. S., Tavistock
 Sellers, M.E. Ravensworth S. for Girls, Scarborough
 Williams, A. Private tuition
 Da Costa, A.G. Minerva Coll., Dover
 Veale, F. s. Ladies' Coll. S., Tavistock
 Bolanchi, E. Ryde H., Ripley
 Sedgley, D.M. s. The Dulwich Hamlet Girls' S., S.E.
 Marchant, D.L. High S., Buxton Rd., Chingford
 Tyrrell, G.M. Entry H., Diss
 Avery, F.M.L. s. Private tuition
 Ellis, F.M.E. St. Helens S., Streatham
 Score, N.G. f. High S., Waltham Cross
 Scarborough, A. Milton H., Sunderland
 Lascelles, D.G. Steyne Girls' High S., Worthing
 Hopkins, R.A. Private tuition
 Cleeton, F.E. Heath Hayes Infants Council S., Cannock
 Lancelley, G. f. Private tuition
 Beck, G.M. Longsight H., Hornchurch
 Murray, K.L. Hill Croft S., Bentham
 Bisson, E.M. f. St. James' Ladies' S., Jersey
 Davies, S. Private tuition
 Griffiths, A. f. Old College S., Carmarthen
 Sandbach, W. Private tuition
 Childs, M.E. High S., Westminster St., Crewe
 Sherbon, D. mu. Ryde H., Ripley
 Thomas, G. Highercroft S., Barry
 Arthurs, G.E. Stapleton Hall S., Crouch Hill
 Kandt, L.L. Cambridge H., Camden Rd., N.
 Cook, E.M. St. Joseph's Conv., Red Hill
 Walters, A. Ladies' Coll. S., Tavistock
 Raywood, P.G. Harley S., Hereford
 Parker, B. Private tuition
 Woolcott, E.C. The Dulwich Hamlet Girls' S., S.E.
 Reeves, M. Benlath House High S., Upper Tooting
 Savage, M.A.K. f. Tintern H., Forest Hill
 Regan, M. The Newlands Conv., Middlesbrough
 Needle, R.M. Grain. S., Cowfold
 John, M. Old College S., Carmarthen
 Harvey, G.H. Whitville Coll., Nottingham
 Davies, M.H. London Coll. Goodmayes
 Murray, J. Aston Park S., Birmingham

Clayson, P.M. e.h. Crouch End High S., Hornsey
 Holmes, O.S. English High S. for Girls, Constantinople
 Vickers, L.M. s.h. Roanoke Coll. S., Palmer's Green
 Crookes, M.E. e. Hillside Modern S., Wealdstone
 Hogg, E.V. s.a.a.d. Ryde H., Ripley
 Papadopoulos, A. e. English High S. for Girls, Constantinople
 Aslin, G.E. s. Crouch End High S., Hornsey
 Barrett, M.L. Wellington Coll., Hastings
 Davies, E. d. Sherwood S., Timperley
 Ongley, G. s.h.g.d. Norma S., Waterloo
 Blake, J.L. s.e. 35 Southtown, Gt. Yarmouth
 Rose, R.F. e. Lancelfield Coll., Southend-on-Sea
 Edwards, M. s. Stapleton Hall S., Crouch Hill
 Whittington, I.C.A.S. s.h. St. Helens S., Streatham
 Carter, W. e.h.a. Keston H., W. Kilburn
 Cohen, F.L. The Limes, Richmond Hill
 Craig, G.I. Coll. S., Hawkhurst
 Evans, D.M. Monplaisir Coll., Paignton
 Jones, E.D. e.d. Highfield, Wallington
 Salibian, A.s.a.f. Alexandra Coll., Shirley
 Unwin, G.W. Harley S., Hereford
 Blake, M.L. s.e.a.f. 38 Southtown, Gt. Yarmouth
 Buzaglo, A. f. Loreto Conv., St. Francis
 Xavier's, Gibraltar
 Doukovevsky, A. e.f. English High S. for Girls, Constantinople
 Reeves, M.E. Sunnyland, Henley-on-Thames
 Britton, D.A. s.e. St. Helens Coll., Seven Kings
 Evans, D.A. s. Monplaisir Coll., Paignton
 Seldjubiloff, S. English High S. for Girls, Constantinople
 Austin, C.S. e.d. Highfield, Wallington
 Bedwell, E.E. s. Pemberton Coll., Upper Holloway
 Roe, D. e.f. Ravensworth S. for Girls, Scarborough
 Smith, K. e. Birkdale Ladies' Coll.
 Lewis, E. English High S. for Girls, Constantinople
 White, M.C. s.a.d. Crouch End High S., Hornsey
 Bradley, P.L. mu. do. Ravensworth S. for Girls, Scarborough
 Pickstock, L.O. Rockhill S., Chulmleigh
 Hills, G.A. Highfield S., Croydon
 Bowman, R.B. Gosberton Hall Coll., nr. Spalding
 Camner, E.M. s. St. Mary Church High S., Torquay
 Anderson, M.A. Alexandra Coll., Shirley
 Oakden, M.A. f. High S., Buxton Rd., Chingford
 Wire, D.E. Laton II., Hastings
 Orme, D.I. Academy of the New Church, Brixton
 Shepherd, M.G. do. Gosberton Hall Coll., nr. Spalding
 Downing, M.J. s.e. Coll. S., Hawkhurst
 Holmes, M.V. e.h. Holmlen Girls' S., Ongar
 Papps, H. English High S. for Girls, Constantinople
 Phillips, B.R. e.d. Highfield, Wallington
 Wheatley, J. Girls' High S., Rothwell
 Aslan, N. e.f. English High S. for Girls, Constantinople
 Lowy, E. e. Private tuition
 Spratley, L.E. s. Pemberton Coll., Upper Holloway
 Ward, D. Gosberton Hall Coll., nr. Spalding
 Wilkinson, W.N. s. Alexandra Coll., Shirley
 Langford, J.W. s. Harley S., Hereford
 Whipples, D.A. s.e.h. Carisbrooke Coll., Walthamstow
 Bradley, R.F. s.a.d. Ravensworth S. for Girls, Scarborough

Djermakian, A. English High S. for Girls, Constantinople
 Salisbury, E.E. s.e.f. Mount H., Melbourne, Derby
 Turner, N.A.M. Private tuition
 Wells, V.H. Wellington Coll., Hastings
 Baker, B.E. Old Palace Girls' S., Maidstone
 Combes, D.K. e.d. Clatford House, Southampton
 Galimidi, A. English High S. for Girls, Constantinople
 Murray, D.M. d. Hill Croft S., Bentham
 Whalley, F.A. s.f. Westminster French
 Protestant S., Shaftesbury Avenue, W.C.
 Clegg, D. s. St. Helens, Clifton
 Hobson, M.F. Pengegnern Coll., Cheltenham
 Inmaas, A. s. Cambridge H., York
 Poole, I. Birkdale Ladies' Coll.
 Tucker, B.R. Laton H., Hastings
 Coffin, W.J. Holmwood S., Sidecup
 Feinberg, K. Bourne H., Eastbourne
 Fraser, L.E. Longroad S., Hastings
 MuirSmith, K.G. Hill Croft S., Bentham
 Phillips, E. Private tuition
 Keates, A.D. Ryde H., Ripley
 Lappin, K. The Newlands Conv., Middlesbrough
 Leahy, A.M.K. f.g.e. Private tuition
 King, K.M. a.bb. Dinnore S., St. Leonards-on-Sea
 Lynch, K. The Newlands Conv., Middlesbrough
 Nicholls, C.G.M. s. Steyne Girls' High S., Worthing
 Barnes, I.I. e. Alexandra Coll., Shirley
 Botting, W.M. Gram. S., Cowfold
 Caton, N. Burlington H., Ballam Pk. Rd., S.W.
 Chance, J.E. e. Harley S., Hereford
 Davies, I.B.H. e.f. Granville Coll., W. Croydon
 Day, I.J. a. Ryde H., Ripley
 Le Suenr, W.E. s. Coll. S. for Girls, St. Heliers
 Whiting, E.E. Ryde H., Ripley
 Hope, W.M. Alexandra Coll., Shirley
 Oxtoby, D.E. Carden S., Peckham Rye
 Bryant, M. Oxford H., Swindon
 Coleman, A.M. St. Peter's S., Bournemouth
 Donald, G.H. St. Helens, Clifton
 Hunter, M.B. s.a.g. Pengegnern Coll., Cheltenham
 Mather, H. Private tuition
 Russell, A. Milton H., Sunderland
 Coena, F. f. English High S. for Girls, Constantinople
 Golby, E.A. Crouch End High S., Hornsey
 Harrison, D.E. K. Wellington Coll., Hastings
 Hersey, M.F. Stapleton Hall S., Crouch Hill
 Hunter, R.M. Hill Croft S., Bentham
 Clare, D. St. Helen's S., Streatham
 Falkner, D.L. d. Highfield, Wallington
 Harrison, K. Onsegate S., Selby
 Noyce, G. e. Granville S., Southsea
 Probert, T.M. St. Margaret's, Richmond Rd., Cardiff
 Smith, K.L. Eversleigh High S., Sheffield
 Tucker, A.C. Laton H., Hastings
 Vail, O.I. s. Carden S., Peckham Rye
 Collins, D.E. s. Hillside Modern S., Wealdstone
 Crowther, A.S.A. Metfield, Southport
 Skinner, D.E. e. St. Hilda's, Beltinge, Herne Bay
 Symmons, E.M. c. Priory Coll., Hornsey
 Coates, K.M. Private tuition
 Felce, E.M. St. Helen's S., Streatham
 Liptrot, R.E.B. Academy, Crewe
 Manning, D.M. s. Licensed Victuallers' S., Upper Kennington Lane, S.E.
 Nerney, J.E. Lancelfield Coll., Southend-on-Sea
 Ryley, Y. Private tuition
 Sanders, K.F.E. s. St. Helen's S., Streatham
 Sherratt, D. s. Bridge H., Sandbach
 Ades, A.R. e. Elm H., Ealing
 Berry, D.M. s. Glendale H., Westcliffe-on-Sea
 Biddlecombe, M.M. 44 Portland Road, Hove
 Dollond, K.B. s. Montpelier H., Brentwood
 Foreman, M.F. H. Crouch End High S., Hornsey
 Gedryel, N.F. St. Margaret's, Richmond Rd., Cardiff
 Hobbs, V. Private tuition

THIRD CLASS.
Pass Division.

THIRD CLASS.
Honours Division.

Demersessian, S. s.e. al. gm. English High S. for Girls, Constantinople
 Dell, D.H. s.h.a. Crouch End High S., Hornsey
 Munster, A.L. s.e.f. Upper Grove S., S. Norwood
 Harvey, M.A. s.e.h.g.a.d. Steyne Girls' High S., Worthing
 Allbon, G.A. s.a.a.d. Crouch End High S., Hornsey
 Reffel, C.M. mu. Ryde H., Ripley
 Friday, E.M. e.h.a.a.l. Carden S., Peckham Rye
 Rasell, M.E. e.f. d. Eastrop H., Chichester
 Randall, E. al. gm. Penketh School
 Walton, D. s.e. Girls' Gram. S., Levenshulme
 Sutcliffe, D. s.e.g.a. Pencraig S., Newport
 Heath, G.M. s.h. Steyne Girls' High S., Worthing

GIRLS, 3RD CLASS, PASS—continued.
 Instone, E.A. Conway H., Farnboro'
 Matthews, M. Private tuition
 Potter, I.E.V. Burstead H., Billericay
 Sayer, M.A. c. Private tuition
 Stephen, B. Hill Croft S., Stamford Hill
 Wiley, M.L. s.
 Pemberton Coll, Upper Holloway
 Zula, Z. Stapleton Hall S., Crouch Hill
 Dawson, I.C.E.s. Mootpelier H., Brentwood
 Greenwood, I.K. Olive House, Hawes
 Grosse, M.G. The Roystons, Penge
 Hughes, L. Burstead H., Billericay
 Rushbrook, M.C. Burstead H., Billericay
 Webb, H.F. Oxford H., Swindon
 Young, K.C. High S., Waltham Cross
 Gibson, A.L. Academy, Crewe
 Grandio, M.de C. s.
 Coll. S. for Girls, St. Heliers
 Keeling, L.M.
 Heath Hayes Infants' Council S., Cannock
 Moorehead, M. Penketh School
 Ritchie, V.E. s. Belair Girls' S., Herne Hill
 Sturgeon, A.M. s. Glenarm Coll., Ilford
 Jones, M.F. Academy, Crewe
 Kelsey, Bamber, B.
 Chiltern H., Teddington
 Knights, W.M. s.d.
 St. Helens S., Streatham
 Botting, G.M. Trinity H., Bexhill-on-Sea
 Grey, E.L. s. Homeland, Hastings
 Besley, M.E. Highfield, Wallington
 Corke, V.E. s.
 Hillside Modern S., Wealdstone
 Hammans, K.M.
 Calvea H., Wallingford-on-Thames
 Lawrence, W. Bridge H., Sandbach
 Walker, V.M.A.
 Cambridge H., York
 Atkins, K.B. Wellington Coll., Hastings
 Austin, M.
 Colne Valley S., Rickmansworth
 Delmedico, E.f.
 English High S. for Girls, Constantinople
 Jamieson, A.L.
 English High S. for Girls, Constantinople
 Lander, M.B. d.
 Evelyn High S., Upper Holloway
 Gay, P.M. Carden S., Peckham Rye
 Kettlewell, L.F.M. s.e. Private tuition
 Russell, V.M. Alexandra Coll., Shirley
 Sadgrove, E.K. Bourne H., Eastbourne
 Weinberger, E. Private tuition
 Williams, L. s. Claremont Girls' S., Bath

Cabot, M.B. f. St. Lawrence Elem. S., Jersey
 Le Marquand, I.E.
 Coll. S. for Girls, St. Heliers
 Marshall, I.C. s. Private tuition
 Snyder, C.G. Collingwood Coll., Lee
 Baker, M.I. Clark's High S., Tufnell Park
 Cawkwell, D.
 Roanoke Coll. S., Palmer's Green
 Hart, N.A. Private tuition
 Klisser, D.E. e. Clark's High S., Tufnell Park
 Tyler, K.M. Glenarm Coll., Ilford
 Bradley, D.E. Hill Croft S., Bentham
 Collard, E.K. c.
 St. Hilda's, Beltinge, Herne Bay
 Cox, M. Guntton Cliff S., Lowestoft
 Hallam, M.D. s. Monplaisir Coll., Paignton
 Hastings, M.F.N.
 Fauntleroy S., St. Leonards-on-Sea
 Lally, G. e.
 Conv. S., Hazelwood Cres., Kearsal Rd., W.
 Adlam, W.E. s. Alexandra Coll., Shirley
 Dawe, H.A. Holmwood S., Sidcup
 Pape, M.H. Rock Hill S., Chulmleigh
 Worthington, W.M. Harley S., Hereford
 Harris, L.E. Lithend S., Bishops Waltham
 Harris, T.M. Lithend S., Bishops Waltham
 Ives, D. St. Hilda's, Beltinge, Herne Bay
 Jay, F.I. D. Collingwood Coll., Lee
 Parker, E.L. Harley S., Hereford
 Bansom, O.A. Penketh School
 Todd, G. e. Highfield, Wallington
 Tuckniss, L. s. Birkdale Ladies' Coll.
 Cowen, D.M. Sherwood S., Timperley
 Dawe, H.A. s.
 Hillside Modern S., Wealdstone
 Rickard, A.M. North Park, Albaston
 Smith, G.E. s.h. Alwyne Coll., Canonbury
 Benion, M.M.
 Chadsmoor National S., Cannock
 Salmoo, C.I.
 St. Margaret's, Richmond Rd., Cardiff
 Dry, W.P.
 Richmond Park Coll. S., Bournemouth
 Fitzmaurice, N.
 Cornwallis High S., Hastings
 Platt, L.B. e. Glenarm Coll., Ilford
 Heycock, L.M. St. Helens S., Streatham
 Middleton, K. Temple S., Aylesbury
 Smith, D.M.
 St. Hilda's, Beltinge, Herne Bay
 Thornton, G.M. Hopefield H., Norwich
 Verity, D.E.M. Carden S., Peckham Rye
 Collins, F.E. d. Highfield S., Croydon
 Cosserat, I. d. Claremont Girls' S., Bath

Lovegrove, B.D. Minton H., Padworth
 Sharp, G.A. a. High S., Waltham Cross
 Ager, G.
 Beulah House High S., Upper Tooting
 deMeza, W.C.
 Clark's High S., Tufnell Park
 Dent, O.C. s. Westminster French
 Protestant S., Shaftesbury Avenue, W.C.
 Nicolle, L.A.
 Six Roads S., St. Lawrence, Jersey
 Thompson, L.A.
 High S., Westminster St., Crewe
 Chambers, D.E. Wellington Coll., Hastings
 Holme, A.M.R. Hill Croft S., Bentham
 Howard, E.S. Alexandra Coll., Shirley
 Rogers, W.F.L. St. Mary's Coll., Barnes
 Slater, C. s. Elmhurst High S., Burgess Hill
 Stedman, D.M.F. Lulworth H., Caerleon
 Tozer, N.K. Avenue Lodge S., Torquay
 Walker, M. Highfield S., Croydon
 Appleby, K.
 The Newlands Coov., Middlesborough
 Hill, D. Temple S., Aylesbury
 Le Gros, G. Zelzah H., St. Heliers
 Lewis, L.W.
 Newry Lodge S., St. Margaret's-on-Thames
 Bacon, S. Collingwood Coll., Lee
 Persse, D.L.
 Stoke Rd. Middle Class S., Gosport
 Tomlinson, H.M. High S., Waltham Cross
 Cranstone, M.K. Private tuition
 Crowther, H.
 Ravensworth S. for Girls, Scarborough
 Parnacott, E.S. The Roystons, Penge
 Galbreath, J.B. Carden S., Peckham Rye
 Marney, A.M.E.
 Hillside Modern S., Wealdstone
 Oloff, F.E. Holmwood S., Sidcup
 Shillcock, E.
 Grosvenor House High S., Cricklewood
 Crawford, M.F. Belair Girls' S., Herne Hill
 de la Perrelle, B.D.
 Clatford House, Southampton
 Dyer, A.E. de D. d.
 Calvea H., Wallingford-on-Thames
 Hawkins, M.I. Camden H., Biggleswade
 Mills, D.R.
 High Trees Coll., West Southbourne
 Scott, W.B. s.
 St. Mary Church High S., Torquay
 Beffe, E.L.
 Beulah House High S., Upper Tooting
 Sargeant, P.M. Carden S., Peckham Rye
 Schwella, H.C. Collingwood Coll., Lee

Sonter, P.M. Highfield S., Croydon
 Thomas, J.G.
 St. Margaret's, Richmond Rd., Cardiff
 Waymouth, D.L. Avenue Lodge S., Torquay
 Woodhams, F. Private tuition
 Layton, A.N. Lyndhurst, Portsmouth
 Lewis, G. The Grove, Horley
 Berry, I.A. Clark's High S., Tufnell Park
 Davies, S.M. Private tuition
 Milward, R. Pencaira S., Newport
 Phillips, D.L. Liceased Victallers' S.,
 Upper Kennington Lane, S.E.
 Scutt, M.C. Minton H., Padworth
 Curry, R.W. Holmlea Girls' S., Ongar
 McSweeney, E.J.
 Beulah House High S., Upper Tooting
 Wade, S.D. Private tuition
 Wilson, A.M.
 Colne Valley S., Rickmansworth
 Russell, M.H. Collingwood Coll., Lee
 Smith, D. Temple S., Aylesbury
 Souther, C.A. Highfield S., Croydon
 Baker, E.L. Belair Girls' S., Herne Hill
 Walker, D.E. Dudley H., Stoke Newington
 Codlio, E.
 Grosvenor House High S., Cricklewood
 Hall, M.E. Harley S., Hereford
 Hirst, C. Birkdale Ladies' Coll.
 Mehmet-Ali, N.
 English High S. for Girls, Constantinople
 Quambusch, M. Chichester H., Mortimer
 Schwartz, B. Finsbury Park High S.
 Zula, D. Stapleton Hall S., Crouch Hill
 Andrews, E. Highfield S., Croydon
 Arnold, P.M.L. Longroad S., Hastings
 Dymock, M. Camden H., Biggleswade
 Walker, L.D. 38 Southton, Gt. Yarmouth
 Cooke, E. Pencaira S., Newport
 Simpson, H.M.
 Beulah House High S., Upper Tooting
 Fozzard, M.G.H. Glenarm Coll., Ilford
 Redmore, E.M. Avenue Lodge S., Torquay
 Hanson, F.M. Crouch End High S., Hornsey
 Hart, B.V. Private tuition
 Peim, B.M. Cambridge H., Camden Rd., N.
 Woodhams, M. Private tuition
 Markham, E.M.
 Gosberton Hall Coll., nr. Spalding
 Syngros, M.
 English High S. for Girls, Constantinople
 Wood, M.N.L. Private tuition

LOWER FORMS EXAMINATION. — PASS LIST, CHRISTMAS, 1911.

BOYS.

Abensur, S. Margate Jewish Coll.
 Abrahams, B.B. The Vale S., Maida Vale
 Abrahams, R.M. Richmond Hills, Richmond
 Adams, G.D. Herne Bay College
 Aldworth, S.W. St. John's Coll., Brixton
 Alms, E.L.W.H. Wellington Roads, Taunton
 Anderson, N.W.K.
 Waterloo Coll., Cosham
 Arnison, R.L.
 Eccles Prep. S., Moor Lane, Kersal
 Arnold, H.G. Norwich High S. for Boys
 Arthur, H.F.
 Oxenford H., St. Lawrence, Jersey
 Ashworth, J.H. Nutley Gram. S.
 Aston, A.H. Eton H., Southend-on-Sea
 Atkinson, F.R. New Coll., Harrogate
 Atkinson, R. Grosvenor Coll., Carlisle
 Atkinson, T.L. Grosvenor Coll., Carlisle
 Atwill, W. Boys' High S., Wareham
 Aucott, D.J. St. Dunstan's Coll., Margate

Ayers, A. Wellington Coll., Shropshire
 Badger, S.H. Kilgrimol S., St. Annes-on-Sea
 Bailey, H.C. Barton S., Wisbech
 Bailey, W.
 Clifton Coll., North Shore, Blackpool
 Baker, C. Shoreham Gram. S.
 Baker, C.G.H. Wellington Coll., Shropshire
 Bardsley, J.N. Wellington Coll., Shropshire
 Bartow, G. Arierley College
 Barritt, M.M. Nutley Gram. S.
 Base, K.W. Norwich High S. for Boys
 Bass, A. Metfield, Southport
 Bass, G. Ryde H., Ripley
 Batterham, A.E.N. Tollington Park Coll., N.
 Baxter, H. Leighton Hall S., Carnforth
 Baynes, P.D. Steyne S., Worthing
 Becker, S.A. Private tuition
 Bell, F.G. Herne Bay College
 Bennett, W.H. Tollington Park Coll., N.
 Bensley, E.F. Wellington Coll., Shropshire

Benton, R.H.S. Southport Modero S.
 Berger, C.C.
 Oxenford H., St. Lawrence, Jersey
 Berger, J.D.
 Oxenford H., St. Lawrence, Jersey
 Bevan, J.M.
 Grosvenor S., Dennington Park Rd., N.W.
 Richard, A.S.
 The Jersey Modero S., St. Heliers
 Billey, W.R. The Douglas S., Cheltenham
 Binet, P.E. Maida Vale S., W.
 Bingham, C. Herne Bay College
 Bioning, A. Streatham Gram. S.
 Blackburn, W.H. Grosvenor Coll., Carlisle
 Blacklock, R.A. Arzyle H., Sunderland
 Blagrove, H.C. Manor H., Clapham, Common
 Blauk, W. de Craven Park Coll., Harlesden
 Blok, S.M. Tollington Park Coll., N.
 Blumenthal, J. Margate Jewish Coll.
 Bludell, A.G. Blackpool High S.

Boorman, K. Ryde H., Ripley
 Booth, C. Wellington Coll., Shropshire
 Booth, R.G. Herne Bay College
 Borthwick, A.J. Tollington Park Coll., N.
 Bottrell, A.H. Newquay College
 Boulton, E.E.H. ^{the "}
 Grasmere, Appledore, Ashford
 Boursot, R.A. P. Richmond Hills, Richmond
 Bontillier, W.
 The Jersey Modero S., St. Heliers
 Bradbeer, E.G. Mount Badford S., Exeter
 Bradford, H.J. Southdown Coll., Willingdon, Eastbourne
 Brandreth, G.E. Southport Modero S.
 Bridge, E.K. Southport Modero S.
 Brighouse, C.J. Belper Gram. S.
 Britton, J. The Jersey Modero S., St. Heliers
 Broad, B.H.E. Chiftonville Coll., Margate
 Broughton, J.W. ^{the "}
 Southport Comm. Coll. & Boys' Sec. S.

BOYS, LOWER FORMS—Continued.
 Brown, G.A. Mutley Gram. S.
 Buckley, L.W. Steyne S., Worthing
 Buckley, W.W. Wellington Coll., Shropshire
 Burgess, H.C. Clapham Gram. S.
 Burke, F.W.
 Southport Comm. Coll. & Boys' Sec. S.
 Butler, C.E. Brunswick H., Maidstone
 Butler, F.H. Anerley College
 Butler, H.J. Westcliff H., Tulse Hill
 Buxton, C.L.E. Belper Gram. S.
 Cable, G.H. Wellington Coll., Shropshire
 Cabot, C. The Jersey Modern S., St. Heliers
 Cain, J.M. Castletown Gram. S.
 Cairns, S. Grosvenor Coll., Carlisle
 Campion, W. Barton S., Wisbech
 Cann, P.H.M. Richmond Lodge, Torquay
 Casnick, C.W.
 30 New Trinity Rd., E. Finchley
 Cantrill, F.W. Victoria Park S., Manchester
 Cape, J.S. Grosvenor Coll., Carlisle
 Carlyon, B.R. Margate Comm. S.
 Carpenter, R.
 Plympton Higher Prep. S., Mutley
 Carradas, L.S. Belper Gram. S.
 Carver, S.M. West End S., St. Heliers
 Castle, G. St. Peter's S., Lee
 Cavanagh, J.P.
 30 New Trinity Rd., E. Finchley
 Chapman, W.E. Richmond Hill S., Richmond
 Chatterton, L.B. St. Dunstan's Coll., Margate
 Chaventré, A.
 Grosvenor S., Dennington Park Rd., N.W.
 Christmas, C.G. Shoreham Gram. S.
 Clark, L. Grosvenor Coll., Carlisle
 Clarke, A.G. Barton S., Wisbech
 Clarke, W.R. Barton S., Wisbech
 Claydon, D.H. Priory Coll., Hornsey
 Clift, B. The Jersey Modern S., St. Heliers
 Coburne, I.E.M.
 Wellington Coll., Shropshire
 Cogger, R.W. Commercial S., Maidstone
 Cole, H.V. Tothill S., Plymouth
 Colebrook, E.H. Colebrook H., Bognor
 Coleman, W.C. Chichester Gram. S.
 Coles, A.B. Holt House, Cheshunt
 Coles, B.A. Barton S., Wisbech
 Constable, C.C.
 Northgate S., Bury St. Edmunds
 Constanduros, C.G. Shoreham Gram. S.
 Cooke, J.M. Preston Gram. S., Brighton
 Corrie, A.G. Wellington Coll., Shropshire
 Corrie, B.J.B. Wellington Coll., Shropshire
 Gosway, R. Penketh School
 Cowen, S. Victoria Park S., Manchester
 Cox, S. Wellington Coll., Shropshire
 Cox, W.J.B. Chichester Gram. S.
 Coxwell, C.M. Cliftonville Coll., Margate
 Craig, J.N. Cliftonville Coll., Margate
 Crawford, L.W. St. John's Coll., Brixton
 Crewe, W.K. Bridlington College
 Critchley, R.P. Grosvenor Coll., Carlisle
 Croucher, B.L. Chichester Gram. S.
 Curtis, R. Worcester Coll., Westcliff-on-Sea
 Dalton, G. Streatham Gram. S.
 Dark, A.R. Ryde H., Ripley
 Darlington, A.H. Kelvin Coll., Penarth
 Dauncey, H.F. Drayton High S., Newport
 Davenport, J. Belper Gram. S.
 Davy, A.G. Penketh School
 Day, J. Cliftonville Coll., Margate
 Deacon, J.A. Lancaster Coll., W. Norwood
 Deao, H.V. Grasmere, Appledore, Ashford
 Dean, J.N. Herne Bay College
 De Carteret, E.G.
 Oxenford H., St. Lawrence, Jersey
 Deeks, P.J.H.
 Northgate S., Bury St. Edmunds
 De Gruchy, C.B. West End S., St. Heliers
 De Gruchy, E.J.
 Oxenford H., St. Lawrence, Jersey
 De la Rue, H.M.
 Oxenford H., St. Lawrence, Jersey
 Denton, H.A.
 Southport Comm. Coll. & Boys' Sec. S.
 De Sauty, S. Steyne S., Worthing
 Dewhurst, H. New Coll., Harrogate
 Dixon, H. Ashland High S., Wigan
 Down, A.W. Mount Radford S., Exeter
 Drabble, A.J. Westbury H., Southsea
 Dumble, L.J. Richmond Hill S., Richmond
 Dunfee, W.V. St. Aubyn's, Woodford Green
 Duthoit, F.G. Godwin Coll., Margate
 Duval, G.D. Tankerton Coll., Whitstable
 Earnshaw, B. Argyle H., Sunderland
 Edmondson, N.P. Leighton Hall S., Carnforth
 Edmunds, A. Shoreham Gram. S.
 Edmunds, H.E. Shoreham Gram. S.
 Edwards, F.A.B. Wellington Coll., Shropshire
 Eldred, H.E. Tollington Park Coll., N.
 Ellerington, L.
 Church of England S., Naburn, York
 Ellett, J. The Jersey Modern S., St. Heliers
 Ellicott, J.T. Commercial Coll., Acton
 Ellis, J. Penketh School
 Elson, A.
 Southdown Coll., Willingdon, Eastbourne
 Emelens, K.G. St. Leonards Coll. S.
 Emptage, A.A. Mutley Gram. S.
 Emus, A.E. St. John's Coll., Brixton
 Emus, S. St. John's Coll., Brixton
 Enoch, S.A. Weston-super-Mare College
 Epps, S.M. Upton Coll., Bexley Heath

Evans, G.C. Mary Street H., Taunton
 Evans, H.A.J. Eton H., Southend-on-Sea
 Evans, L.F. Kilgrimol S., St. Amnes-on-Sea
 Ewald, H.P. Herne Bay College
 Fayers, R.E. Tollington Park Coll., N.
 Fido, C.H.A. Manor H., Clapham Common
 Field, R.G. Chichester Coll., Shropshire
 Findlay, D.N. Wellington Coll., Shropshire
 Fitzgerald, M.
 Clifton Coll., North Shore, Blackpool
 Fletcher, C. Godwin Coll., Margate
 Fletcher, L.G.
 8 Eskdale Terrace, Newcastle-on-Tyne
 Flint, D.R. Anerley College
 Follett, A.J. Priory Coll., Hornsey
 Fox, J. Bridlington College
 France, T.R.
 Southport Comm. Coll. & Boys' Sec. S.
 French, W.J.K.
 The Modern S., Streatham Common
 French, W.W. Wellington Road S., Taunton
 Frost, A. Wellington Coll., Shropshire
 Fuller, F.E. Steyne S., Worthing
 Fullwood, C.E.W. Anerley College
 Gallimore, C. Kelvin Coll., Penarth
 Gardner, H.B. Leighton Hall S., Carnforth
 Gates, A.B. Northgate S., Bury St. Edmunds
 Gathercole, G. Streatham Gram. S.
 Gibbs, W.E. Norwich High S. for Boys
 Gibson, L.M. Southport Modern S.
 Goacher, J.R.G. Godwin Coll., Margate
 Gorman, H.
 Plympton Higher Prep. S., Mutley
 Godfrey, L.E. Wellington Road S., Taunton
 Gottlieb, D. Margate Jewish Coll.
 Gould, S.H. St. Leonards Coll. S.
 Grainger, G.G. Steyne S., Worthing
 Green, A.W. The Modern S., E. Grinstead
 Green, C. Manor H., Clapham Common
 Greengrass, L.H. Norwich High S. for Boys
 Greenway, R.C. Herne Bay College
 Greenwood, C. Oxford Coll., Waterloo
 Griffiths, C.L.R. Chichester Gram. S.
 Groves, E.E. Highbury Park S., N.
 Haley, W.J.
 Oxenford H., St. Lawrence, Jersey
 Hall, E.D. St. Mary's, Roinford
 Hamper, F.G.R. Scarborough Gram. S.
 Hampson, J. Kilgrimol S., St. Amnes-on-Sea
 Hancock, G.M.
 Oxenford H., St. Lawrence, Jersey
 Hannay, J.M. Steyne S., Worthing
 Harding, H.G. Margate Comm. S.
 Harling, J.C.W. Barton S., Wisbech
 Hardy, W.E. Eton H., Southend-on-Sea
 Harrington, H.W. The High S., Brentwood
 Harrison, H.S. Argyle H., Sunderland
 Hart, G. St. Aubyn's, Woodford Green
 Hartley, J.B. New Coll., Harrogate
 Harvey, W. Belper Gram. S.
 Hastings, S.R. Norwich High S. for Boys
 Hatcher, C. Wellington Road S., Taunton
 Hatherly, R.E. Herne Bay College
 Havers, K.F. St. Placid's, Ramsgate
 Hawkins, R.G. Margate Comm. S.
 Hawkins, R.N. Herne Bay College
 Hawkins, W.S. Steyne S., Worthing
 Hay, R.L.
 8 Eskdale Terrace, Newcastle-on-Tyne
 Haynes, G. The Jersey Modern S., St. Heliers
 Healy, J.F. Upton Coll., Bexley Heath
 Heddle, W. Eton H., Southend-on-Sea
 Henry, N. Streatham Gram. S.
 Heyes, J.S.
 Clifton Coll., North Shore, Blackpool
 Hicks, H. Cliftonville Coll., Margate
 Hirst, F.C. New Coll., Harrogate
 Hitch, N.G. Upton Coll., Bexley Heath
 Hitchcock, C.G.
 Northgate S., Bury St. Edmunds
 Hodges, C.J. Mutley Gram. S.
 Hodson, F.H. The Gram. S., Sale
 Hodson, G.S. Cliftonville Coll., Margate
 Holbrook, G.L. Shoreham Gram. S.
 Holdaway, A.J. Monkton H., Streatham
 Holdaway, E.D.W. Monkton H., Streatham
 Holden, C.H.J.
 Schorne S., North Marston, Winslow
 Holmes, G.B.
 Southdown Coll., Willingdon, Eastbourne
 Holmes, H.
 Southport Comm. Coll. & Boys' Sec. S.
 Holmes, J.F.
 Southdown Coll., Willingdon, Eastbourne
 Holt, J.S.T. Victoria Park S., Manchester
 Hooper, J.A. St. John's Coll., Brixton
 Hooper, W.C. Shoreham Gram. S.
 Horan, J. Bridlington College
 Horne, K. Eton H., Southend-on-Sea
 Horner, C.H. The Modern Coll., Harrogate
 Horsfield, J.K. Littleton House, Knowle
 Horton, L.W.A. Chichester Gram. S.
 Houghton, H.B.P.
 Wellington Coll., Shropshire
 House, L. Weston-super-Mare College
 Howell, L.E. The Modern S., E. Grinstead
 Hubble, D.V. Linton, Southend-on-Sea
 Hubble, L.H. Tollington Park Coll., N.
 Huddell, A.E. Ryde H., Ripley
 Humphreys, A. Margate Comm. S.
 Humphreys, O.W.
 Tankerton Coll., Whitstable
 Hutchins, C. Wellington Coll., Shropshire

Isaac, S.E. Eton H., Southend-on-Sea
 Isbester, J.E. Penketh School
 Ivens, R. Steyne S., Worthing
 Jeorrett, J.C. Ryde H., Ripley
 Jermyn, J. Shoreham Gram. S.
 Johns, A.R.B. Monkton H., Streatham
 Johnson, A.J. Norwich High S. for Boys
 Johnson, F.W.
 Southport Comm. Coll. & Boys' Sec. S.
 Johnson, S.S. Barton S., Wisbech
 Jones, J.F. Kelvin Coll., Penarth
 Jones, M.B.
 The Modern S., Streatham Common
 Jones, R. Montgomery Coll., Sharrow, Sheffield
 Kastner, J. Kilgrimol S., St. Amnes-on-Sea
 Kelly, C. 30 New Trinity Rd., E. Finchley
 Kelly, J. Castletown Gram. S.
 Kemsley, R.H. St. Aubyn's, Woodford Green
 Kennedy, H.
 Southport Comm. Coll. & Boys' Sec. S.
 Kent, G.R. West End S., St. Heliers
 Kestell, B.E. Mutley Gram. S.
 King, C.W. 93 Maison Dieu Rd., Dover
 King, J.A.H. Lancaster Coll., W. Norwood
 Knight, T.S. New Coll., Harrogate
 Laing, F.C. The Modern S., E. Grinstead
 Langford, C.J. Ashland High S., Wigan
 Larbaestier, M.
 Oxenford H., St. Lawrence, Jersey
 Larman, M.L. Eton H., Southend-on-Sea
 Laurens, S.
 Harleston H., St. Lawrence, Jersey
 Lavergne, R.P.
 Cambridge II, Camden Rd., N.W.
 Lea, H.B. Belper Gram. S.
 Leavey, M.E.P.J. Eton H., Southend-on-Sea
 Le Brocq, A.S.
 Harleston H., St. Lawrence, Jersey
 Le Brocq, P.
 Harleston H., St. Lawrence, Jersey
 Le Chasseur, G.K. West End S., St. Heliers
 Lee, E. Oxenford H., St. Lawrence, Jersey
 Lee, P.C. Herne Bay College
 Leeks, L.A.L. Richmond Hill S., Richmond
 Lees, E.C.L. Brunswick H., Maidstone
 Leelanam, F. St. Placid's, Ramsgate
 Legge, S.G. Upton Coll., Bexley Heath
 Le Marquand, B.P.
 Harleston H., St. Lawrence, Jersey
 Le Ruez, W.G.
 Harleston H., St. Lawrence, Jersey
 Lester, E.S.
 Schorne S., North Marston, Winslow
 Letley, L.W. Clapham Gram. S.
 Levett, C.E. Anerley College
 Lewis, F. Chichester Gram. S.
 Ley, H.W. Margate Comm. S.
 Lidington, H.L. Upton Coll., Bexley Heath
 Lillywhite, F.D. Ryde H., Ripley
 Lloyd, C.J. St. Leonards Coll. S.
 Locke, H.V. Victoria Park S., Manchester
 Lockwood, F. New Coll., Harrogate
 Lonax, H. Kilgrimol S., St. Amnes-on-Sea
 Long, C. Oxenford H., St. Lawrence, Jersey
 Long, H.E.
 Southport Comm. Coll. & Boys' Sec. S.
 Lord, J.S. Kilgrimol S., St. Amnes-on-Sea
 Lowe, L.J. Eton H., Southend-on-Sea
 Lowenstein, L. Margate Jewish Coll.
 Lucas, W.S.N. Mutley Gram. S.
 Ludski, J.C. Highbury Park S., N.
 Luford, J.L. Minton H., Padworth
 Lyons, L.A. Commercial Coll., Acton
 MacDowell, M.A.
 Crouch End High S., Hornsey
 MacKeenan, R.K.
 Crouch End High S., Hornsey
 MacQueen, J.M. Cliftonville Coll., Margate
 Mallett, C. The Jersey Modern S., St. Heliers
 Mann, G.A. Mutley Gram. S.
 Marett, L. The Jersey Modern S., St. Heliers
 Marshall, H.L. Grosvenor Coll., Carlisle
 Martin, R.H. Wellington Coll., Shropshire
 Mather, J. Southport Modern S.
 Matthews, G.M. New Coll., Harrogate
 Mattingly, S.V. Highbury Park S., N.
 Maver, E.A.
 Fawntleroy, St. Leonards-on-Sea
 Mayne, S.H. Margate Comm. S.
 Mayne, W.E.K. Private tuition
 Mead, J.D. St. Aubyn's, Woodford Green
 Melford, J.K.G. Richmond Hills, Richmond
 Mendoza, P. Margate Jewish Coll.
 Messenger, W.A. Southport Modern S.
 Meyrick, E.
 Grosvenor S., Dennington Park Rd., N.W.
 Midgley, J.H.
 Schorne S., North Marston, Winslow
 Miller, W.D. Grosvenor Coll., Carlisle
 Milnes, D. St. Peter's S., Lee
 Moir, A.P.H. Anerley College
 Mole, A.D. Holt House, Cheshunt
 Morgan, F.C. The Douglas S., Cheltenham
 Morley, C.L. Anerley College
 Morley, W.L.
 Northgate S., Bury St. Edmunds
 Morris, M.V. Shoreham Gram. S.
 Morris, S.W. Eton H., Southend-on-Sea
 Morrison, C.F. Tollington Park Coll., N.
 Morris, H.
 Southdown Coll., Willingdon, Eastbourne
 Munday, W.H. Southport Modern S.

Newham, G.G. St. Placid's, Ramsgate
 Nichol, W.C. Grosvenor Coll., Carlisle
 Nicklin, H.
 Southport Comm. Coll. & Boys' Sec. S.
 Nieper, D.R. Steyne S., Worthing
 Nimmo, C.D. Shoreham Gram. S.
 Nunn, S.A. Ion H., East Molesey
 Nuttall, W.V. Penketh School
 Ollivant, G.D. Belper Gram. S.
 Oliver, L. Mutley Gram. S.
 Orrett, C.C. Commercial Coll., Acton
 Ottaway, N.A. Norwich High S. for Boys
 Oyster, T.W. Holt House, Cheshunt
 Page, G. Worcester Coll., Westcliff-on-Sea
 Pain, G.E. Weston-super-Mare College
 Pain, R.A. Anerley College
 Palmer, C.C. Froebel H., Devonport
 Palmer, C.W. Penketh School
 Palmer, E.K. Sherwood, Timperley
 Palmer, L.C.G.
 Southdown Coll., Willingdon, Eastbourne
 Parker, G.B. Western Coll., Harrogate
 Parkinson, H.P. Blackpool High S.
 Parkinson, T.S. Penketh School
 Parsons, A.F. Boys' High S., Warham
 Parsons, L.J. Boys' High S., Warham
 Partridge, W.H. Tollington Park Coll., N.
 Patching, S.W. Ion H., East Molesey
 Payne, A. Anerley College
 Payton, C.E. Shoreham Gram. S.
 Peacock, F.B. Manor H., Clapham Common
 Pearl, H.A. Margate Comm. S.
 Pearson, J. Grasmere, Appledore, Ashford
 Peckley, E.W. Tankerton Coll., Whitstable
 Pickett, S.J. Godwin Coll., Margate
 Pierce, E.O. St. Leonards Coll. S.
 Pigott, H.E. Manor H., Clapham Common
 Pillingier, S.W.
 Southdown Coll., Willingdon, Eastbourne
 Platt, J.H. Gram. S., Hyde
 Pledger, E. Worcester Coll., Westcliff-on-Sea
 Poppe, W.J. Oakover Girls' S., Burnham
 Porritt, J.C. Tothill S., Plymouth
 Porter, T.D. Western Coll., Harrogate
 Powell, J. Wellington Coll., Shropshire
 Pring, C.J. Wellington Road S., Taunton
 Proctor, H.N.J. Kelvin Coll., Penarth
 Pullen Barry, H.T. Steyne S., Worthing
 Pyne, G.J. Mount Radford S., Exeter
 Pyne, R.J. Shoreham Gram. S.
 Randle, A.I.R. St. Leonards Coll. S.
 Rapson, D.S. Eton H., Southend-on-Sea
 Read, J.H. Norwich High S. for Boys
 Rees, A.L.B. Kelvin Coll., Penarth
 Revis, N.C. Argyle H., Sunderland
 Rhodes, W.E.G. Wellington Coll., Shropshire
 Riche, E.L.H. St. Aubyn's, Woodford Green
 Richards, I. Winchester H., Bristol
 Riley, A.G.V. Littleton House, Knowle
 Riley, C.M. Tollington Park Coll., N.
 Rix, R.W. Shoreham Gram. S.
 Roberts, M.L. Kelvin Coll., Penarth
 Robinson, B.St.J.
 Oxenford H., St. Lawrence, Jersey
 Robinson, N.M. Leighton Hall S., Carnforth
 Robinson, W.G. Leighton Hall S., Carnforth
 Robson, L.H.
 Southport Comm. Coll. & Boys' Sec. S.
 Rogers, H.C.B. St. Mary's Coll., Ramsgate
 Rogers, R.H.P. Preston Gram. S., Brighton
 Rosen, M. Southport Modern S.
 Routledge, J.P.
 Southport Comm. Coll. & Boys' Sec. S.
 Rowe, E.P. Preston Gram. S., Brighton
 Rutherford, G.T. Steyne S., Worthing
 Russell, C.T. Argyle H., Sunderland
 Ryley, P. Private tuition
 Salmon, S.N. Avenue H., Sevenoaks
 Salt, W.R. Belper Gram. S.
 Salter, A. Steyne S., Worthing
 Sangster, R. Worcester Coll., Westcliff-on-Sea
 Saunders, G.C. Littleton House, Knowle
 Saunders, S.N. West End S., St. Heliers
 Sawyer, C. Streatham Gram. S.
 Schweinitz, H.
 Oxenford H., St. Lawrence, Jersey
 Scott, H.V. Clapham Gram. S.
 Scott, M.K. Park H., Broadstairs
 Seale, W.J.V. Ion H., East Molesey
 Sellick, C. Plympton Higher Prep. S., Mutley
 Sellick, W.L. Mutley Gram. S.
 Sherwell, A.E. Littleton House, Knowle
 Sherwood, F.C.
 The Modern S., Streatham Common
 Shoobridge, J.C. Herne Bay College
 Skelton, H.O. Blackpool High S.
 Slater, A.E.C. Drayton High S., Newport
 Smart, D.
 Southport Comm. Coll. & Boys' Sec. S.
 Smith, A.C. Bridlington College
 Smith, E. Commercial Coll., Acton
 Smith, J.S. Manor H., Clapham Common
 Smith, J.T. The Douglas S., Cheltenham
 Smith, N.S.
 Clifton Coll., North Shore, Blackpool
 Smith, R. Worcester Coll., Westcliff-on-Sea
 Smith, R. Leighton Hall S., Carnforth
 Smith, W.E. Kingsholme S., Weston-super-Mare
 Snyter, T.V. Shoreham Gram. S.
 Snell, G. Commercial Coll., Acton
 Suchson, V.L. Wellington Coll., Shropshire
 Southin, J.R. Shoreham Gram. S.

BOYS, LOWER FORMS—Continued.
 Sparks, L.G.
 Montgomery Coll., Sharrow, Sheffield
 Speck, E.H. Greystones, Scarborough
 Spencer, J. Kilgrimol S., St. Annes-on-Sea
 Springate, C.W. Clair Val S., Gorey
 Squirrell, B.N.
 Northgate S., Bury St. Edmunds
 Stafford, N.W. Kilgrimol S., St. Annes-on-Sea
 Stanley, L.G. Wellington Coll., Shropshire
 Stansbury, W.S. Blackpool High S.
 Steel, A. Argyle H., Sunderland
 Stevens, R.C. Shoreham Gram. S.
 Steevens, V.S. Cliftonville Coll., Margate
 Stockwell, D.B. Bridlington College
 Stone, T.E.H. Mount Radford S., Exeter
 Strong, C.J. Newquay College
 Stubbs, H.L. Steyne S., Worthing
 Suddaby, W. Greystones, Scarborough
 Swallow, J.A. Shoreham Gram. S.
 Sweetling, D.C.H. St. John's Coll., Brixton
 Sydal, W.E. Avenue H., Savonaks
 Symonds, H.E.
 Northgate S., Bury St. Edmunds
 Tabb, J.F.L. Kilgrimol S., St. Annes-on-Sea

Tadgell, W.C. Tollington Park Coll., N.
 Tadmam, R.S. Shoreham Gram. S.
 Tassell, C. Southport Modern S.
 Tatton, C.W. Shoreham Gram. S.
 Taylor, J. Brunswick II., Maidstone
 Taylor, R. Southport Comm. Coll. & Boys' Sec. S.
 Taylor, W.H. Wellington Coll., Shropshire
 Terry, J.E. New Coll., Harrogate
 Thomas, W.C. Wellington Coll., Shropshire
 Thompson, F.I.H.
 The Modern S., Streatham Common
 Thomson, J. 15 Queen Street, Aspatria
 Thorne, C.S. Brunswick H., Maidstone
 Tomkins, J.R. Eton H., Southend-on-Sea
 Tomlinson, J. Holt House, Cheshunt
 Tremble, J.M. Grosvenor Coll., Carlisle
 Tucker, W. Anerley College
 Turner, G.S.D. Eccles Prep. S., Moor Lane, Kersal
 Twyman, F. Penketh School
 Vantier, B.C. Oxenford H., St. Lawrence, Jersey
 Vibert, P. Oxenford H., St. Lawrence, Jersey
 Viney, S. Boys' Prep. S., Maidstone

Wade, B.M. Leighton Hall S., Carnforth
 Wade, J. The Gram. S., Sale
 Wainwright, C. Southport Comm. Coll. & Boys' Sec. S.
 Walker, J.A. Holt House, Cheshunt
 Wall, C.J.W.J. Clapham Gram. S.
 Walmisley, T. Southport Modern S.
 Wardle, P.R. Cambridge H., Camden Rd., N.W.
 Waterson, W. Fauntleroy, St. Leonards-on-Sea
 Watmough, D. Worcester Coll., Westcliff-on-Sea
 Watson, C.N. Argyle H., Sunderland
 Watson, D. Leighton Hall S., Carnforth
 Watson, J. St. Leonards Coll. S.
 Watts, F.N.J. Steyne S., Worthing
 Watts, G. Winchester H., Bristol
 Webb, R.W. Oakover Girls' S., Burnham
 Webb, J.R. Mary Street H., Taunton
 Wells, G.E. Shoreham Gram. S.
 Westrop, B.M.J. St. Placid's, Ramsgate
 Wetherell, R.G. Western Coll., Harrogate
 Whitaker, R.D. Wellington Coll., Shropshire
 White, E.A. Steyne S., Worthing

Whitley, A.P. Oxenford H., St. Lawrence, Jersey
 Wideman, E.L.F.K. Kelvin Coll., Penarth
 Willlake, W.H. Weston-super-Mare College
 Wilcox, E. Southport Modern S.
 Wilkins, S.R. Norwich High S. for Boys
 Williams, D.S.H. Wellington Coll., Shropshire
 Williamson, R.T. The Douglas S., Cheltenham
 Wilson, C.L. Linton, Southend-on-Sea
 Wilson, E.F. Commercial Coll., Acton
 Wilson, S.E. Grosvenor Coll., Carlisle
 Winshurst, A.L. Arlington Park Coll., Chiswick
 Wise, C.M. Eton H., Southend-on-Sea
 Wood, R.H. The Modern S., E. Grinstead
 Woodford, P.V. Cliftonville Coll., Margate
 Worthington, R.J. Shoreham Gram. S.
 Wright-Living, V. Eton H., Southend-on-Sea
 Yates, A.E. Manor H., Clapham Common
 Young, A.L. Argyle H., Sunderland
 Young, A.R. Southport Modern S.
 Young, W. Worcester College, Westcliff-on-Sea

GIRLS.

Adkins, M.M. Minton H., Padworth
 Agnew, F.M. Brentwood, Southport
 Alger, M.S. Drayton High S., Newport
 Allen, E. Redcliffe S., Teddington-on-Thames
 Allen, M. Brentwood, Southport
 Anjel, F. English High S. for Girls, Constantinople
 Ansell, A.M. Alexandra Coll., Shirley
 Anstiss, G.I. Temple S., Aylesbury
 Arthur, L.M. Strathmore H., St. Mary's, Jersey
 Ashby, M. Steyne Girls' High S., Bath
 Atchley, G. Clarendon Girls' S., Bath
 Avery, L.D. Belair Girls' S., Herne Hill
 Bainbridge, M. Grosvenor House High S., Cricklewood
 Bauham, I.D. Lancelfield Coll., Southend-on-Sea
 Barber, M.M. Hopfield H., Norwich
 Barrette, E.A. Six Roads S., St. Lawrence, Jersey
 Barnes, D.B. Alexandra Coll., Shirley
 Barnett, E. Camborne House, Torquay
 Basil, M.C. English High S. for Girls, Constantinople
 Batten, M.D. Home S. for Girls, Bath
 Baylis, L.E. Eastop H., Chichester
 Bebb, J.M. Harley S., Hereford
 Beckley, O.L. Moseley High S., Birmingham
 Belasco, V. Grosvenor House High S., Cricklewood
 Belton, I. Gosberton Hall Coll., Nr. Spalding
 Bermau, M. Clarendon Girls' S., Bath
 Blandford, P.M. Drayton High S., Newport
 Blythe, D. Norma S., Waterloo
 Bois, M. The Grove, Ilorley
 Bolingbroke, V.V. Cornwallis High S., Hastings
 Borow, E.G. QueensThorpe, Cosham
 Byle, K.F. Friern Manor Coll., East Dulwich
 Brayton, A.V. St. Clare S., Southwick
 Brazier, F.K. Steyne Girls' High S., Worthing
 Brearley, E. Oriel Bank High S., Davenport
 Brewer, B.W. Oakover Girls' S., Burnham
 Brie, G.A. Margate Coll. for Girls
 Brown, M.W. Laton H., Hastings
 Brown, W. Alexandra Coll., Westcliff-on-Sea
 Browne, W. Hopfield H., Norwich
 Brunton, M.M. Redcliffe H., E. Southsea
 Burcham, M.E. Drayton High S., Newport
 Burcham, P.M. Drayton High S., Newport
 Butler, D.E. Cornwallis High S., Hastings
 Cabedo, E. Loretto Convent, Gibraltar
 Calway, W.M. Sealands High S., Knowle, Bristol
 Carter, R. The Limes, Buckhurst Hill
 Castelli, V.M. English High S. for Girls, Constantinople
 Castells, E.L. English High S. for Girls, Constantinople
 Cattell, D.E. Norton Lodge, Small Heath
 Cayley, I.B. Private tuition
 Chambers, P.M. Norfolk House High S., Muswell Hill

Chrispiu, K.H. Brentwood, Southport
 Clark, P. Private tuition
 Clarke, D.K. Guntun Cliff S., Lowestoft
 Clarke, M.R. Guntun Cliff S., Lowestoft
 Clitherow, D.V. Girls' Gram. S., Levenshulme
 Clier, P. Priory Coll., Hornsey
 Collett-White, M.E. Lancelfield Coll., Southend-on-Sea
 Collier, C.B. Eversleigh High S., Sheffield
 Collier, C.E. Ashlea H., Northampton
 Collier, E.M. Castle Hall S., Northampton
 Corbel, J.M. Zelzah H., St. Helier's
 Cornelius, R. Moreland H., Bexhill
 Crag, M. St. James' Ladies' S., Jersey
 Croym, C. Notre Dame Conv. Day S., Birkdale, Southport
 Critchley, M.E. Highfield Coll., Blackpool
 Cromar, J.M. Queen's S., Cliftonville, Margate
 Cumberbatch, L.M. English High S. for Girls, Constantinople
 Cundick, G.H. Glenarm Coll., Iford
 Cunnew, D. Hedingham, Wallington
 Dallas, D. Temple S., Aylesbury
 Daaby, D.E. Ravensworth S. for Girls, Scarborough
 Danino, M.L. Loretto Convent, Gibraltar
 Davenport, D.E. Ryde H., Ripley
 Davenport, E.G.V. Roanoke Coll. S., Palmer's Green
 Davey, I.B. Lancelfield Coll., Southend-on-Sea
 Davys, E.B. Oakover Girls' S., Burnham
 De la Perrelle, E.M. Clatford H., Southampton
 Denneso, V.W. Alexandra Coll., Shirley
 Dermerguertchian, A. English High S. for Girls, Constantinople
 Dodd, M.H. Derby Road S., Heaton Moor
 Dodsworth, F.F. Sunnyside, Thirsk
 Doig, E.M. St. Mildred's S., Pinner
 Doubleday, D.G. Western H., Nottingham
 Douglas, M.M.W. Margate Gram. S.
 Drake, F. Girls' High S., Castleford
 Drewry, D.M. Western H., Nottingham
 Duckett, D.L. Oakover Girls' S., Burnham
 Dunkley, S.L. Somerville H., Northampton
 Dunn, V.A. Newry Lodge S., St. Margaret's-on-Thames
 Edwards, E. Home S. for Girls, Bath
 Elliott, B.I. Lancelfield Coll., Southend-on-Sea
 Ellis, G.M. Alexandra Coll., Westcliff-on-Sea
 Ellison, G.E. Scarisbrick Coll., Birkdale, Southport
 Entwistle, F.M. Oriel Bank High S., Davenport
 Epenetos, H.L. English High S. for Girls, Constantinople
 Evans, E. Private tuition
 Evans, Q. Lulworth H., Caerleon
 Farrer, W. Crouch End High S., Hornsey
 Farrington, B. Hill Croft S., Stamford Hill
 Farrow, V.M. Hillside Modern S., Wealdstone
 Feather, D.L. Hainault High S., Iford
 Feilden, D.E.R. Private tuition
 Feinberg, C.L. Bourne H., Eastbourne
 Fisher, A. Temple S., Aylesbury

Fordhan, E.W. Camden H., Biggleswade
 Foreshe, M. Highfield S., Croydon
 Foster, M. Newcastle H., Lewes
 Fox, E.D. Clare H., Northampton
 Fox, M.B. Clare H., Northampton
 Fraser, E.M. Roanoke Coll. S., Palmer's Green
 Fripp, W.B. Brentwood, Southport
 Garbarino, M. Loretto Convent, Gibraltar
 Gibson, C.V. Eversleigh High S., Sheffield
 Gibson, M.M. Norfolk House High S., Muswell Hill
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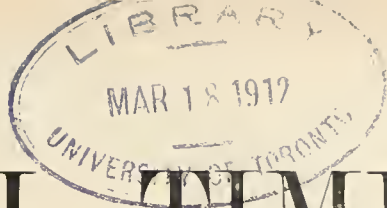
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Vol. LXV.] New Series, No. 611.

MARCH 1, 1912.

{Published Monthly, price, to Non Members, 6d.; by Post, 7d. Annual Subscription, 7s.

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MEMBERS' MEETING.

The next Monthly Meeting of the Members will take place on Wednesday, the 20th of March, at 7 p.m., when M. W. KEATINGE, Esq., M.A., University Reader in Education, Oxford, will read a Paper on "The Danger of Esthetics in Schools."

A discussion will follow the reading of the Paper. Members have the privilege of introducing their friends.

LECTURES FOR TEACHERS.

The First Course of Lectures (Fortieth Annual Series), by Prof. J. ADAMS, M.A., B.Sc., LL.D., F.C.P., on "The Psychology essential to Efficient Work in School," commenced on Thursday, February 8th, 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 145.

The Lectures will be delivered on Thursday Evenings at 7 o'clock, at the College, Bloomsbury Square, W.C.

EXAMINATIONS.

Diplomas.—The Summer Examination of Teachers for the Diplomas of the College will commence on the 26th of August, 1912.

Practical Examination for Certificates of Ability to Teach.—The next Practical Examination will be held in May, 1912.

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 25th of June, 1912.

Lower Forms Examinations.—The Midsummer Examination will commence on the 25th of June, 1912.

Professional Preliminary Examinations.—These Examinations are held in March and September. The Spring Examination in 1912 will commence on the 5th of March.

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The Educational Times.

STEPHEN REYNOLDS and Bob and Tom Woolley are responsible for the opinions expressed in a recent *A Working-Class View of Education*. Mr. Reynolds is the actual writer of the book, but he maintains that the two others are in the fullest sense co-authors with him. This is important; for, since they are genuine working men, their effective share in the book gives force to its writer's claim that he is expressing the veritable views of the genuine working class. Naturally we are not here concerned with the political questions dealt with in the volume. But the views of its author on education cannot fail to interest our readers. Unfortunately we learn little that is pleasant for teachers to hear. "It does seem to us [the working class] that education is the biggest fraud ever forced upon us; and the most dangerous too; for it has been held forth so persistently and so loudly as a cure-all that even the poor themselves have been very largely deceived." This is a bad beginning, and we cannot comfort ourselves by assuming that the diatribe is a disguised political attack. The authors attempt to justify their condemnation by adducing educational arguments. Like so many other critics, they object to the continual discussion of curricula. "Blessed word, 'curriculum'! Always in the mouths of bad teachers, because it sounds so large and means so little."

But, as so frequently happens in educational discussions, the contemner of the word cannot help entering upon a discussion that is really a discussion of curricula. "They don't teach them nort useful, and they puts 'em off learning for themselves." There we have it. Even the working class cannot keep their tongues off the curriculum. The charge is that the education received at school is not useful, and takes up the time and attention that might be given to matters that are of real importance in the life-work of the masses. Something is said in the volume in lukewarm praise of certain continuation evening schools that have a vocational bias. But clearly the bias is not sufficient to meet the wishes of the working classes as represented by Bob and Tom Woolley. Among certain classes there is a cult of the unuseful. Not many years ago a writer in

Blackwood's Magazine maintained that one of the most powerful arguments in favour of retaining the medieval curriculum of the old Universities was the uselessness of the subjects it contained. Lady Verney would no doubt reason with the Woolleys and try to persuade them that the school period is the only time when their youngsters will ever have the chance of acquiring knowledge that is valuable merely in itself, and that there will be plenty of opportunities during the rest of life for the picking up of what is technically known as useful knowledge. But, if we are to believe this book, the working classes are determined to have useful knowledge in the people's schools and to have it at once.

If the Woolleys are really representative of the opinions of their class there is balm in store for the wounded spirits of those who have watched with alarm the recent advances of democracy. Here we have the comforting side of the picture: the working classes determined to keep themselves to themselves, and to bring up their young people to follow in their own footsteps. Here there is no desire to seize at every opportunity to rise above the humble state to which they are born. Mr. Benjamin Kidd, in his "Social Evolution," emphasizes the conflict that has always taken place between the upper and the lower class.

Citizen and slave, patrician and plebeian, fendal lord and serf, privileged classes and common people, leisured classes and working masses, have been steps in a process of development. In the "educated classes" and the "uneducated classes" we have only the same distinction under subtler and even less defensible form; for the right to education in its highest forms now remains largely independent of any other qualification than the possession of mere riches to secure it; it constitutes, in fact, one of the most exclusive, and at the same time one of the most influential, of the privileges of wealth.

Mr. Kidd is convinced that higher education, which is "one of the last principal strongholds of the retreating party," will be ultimately captured by the masses. But the time is evidently not yet, if Bob and Tom Woolley are true witnesses. Higher education is a fraud, and they will none of it.

But the short-sighted policy of the Woolleys is met by the benevolent foresight of educational administrators. Huxley's educational ladder with one end in the gutter and the other in the University has captured the imagination of the generous-minded British public, and there is no lack of scholarships to enable the intellectually capable poor boy or girl to climb the ladder in comparative comfort. The difficulty is sometimes said to be to find a sufficient number of

really capable young people who have the necessary lack of means to qualify them for the aid prepared for them.

But may not the Woolley doctrine be less short-sighted than it appears? While practically every one agrees that no gifted child should now be left without an opportunity of developing his powers to their utmost, there are many who fear that intellectual training is being forced, in undue measure, upon those for whom it is little suited. Mr. Reynolds, in his book, emphasizes the relative unimportance of the intellectual as compared with the intuitional, and in his preface has much satisfaction in calling in M. Henri Bergson as a witness on his side. This view he has probably instilled into his two working men friends; but it does not seem that any philosophical view is at the root of their opinions. They want their offspring to be good working men, who will be worthy successors to themselves; and who shall say that they are wrong, provided their prejudice does not prevent the more bookishly inclined among their youngsters from having the chance of following a natural bent? Our general education is no doubt too bookish, yet there is, just now, a reaction against books that should warm the Woolley hearts. But it must not be forgotten that, at the present moment, there is also a reaction in the United States in favour of the older culture studies at the Universities. This action and reaction between book work and practical work is natural and indeed inevitable. But there is no reason why the fight should not be carried on within the same school. There is a struggle going on at present in America to introduce a certain amount of not merely manual, but definitely vocational, work into the high schools, and that as much to preserve the culture subjects as to further the useful. The alternative is said to be flourishing high schools with a vocational element, or languishing high schools side by side with flourishing trade schools from which culture is eliminated. The unknown ideal that the Woolleys ignorantly worship is a public elementary school in which a vocational bias is given to a course that is as full of general culture as is possible in the case of pupils of the tender age that comes under the compulsory clause.

NOTES.

THE question of an adequate supply of teachers in the public elementary schools has again been raised with some urgency. In the end of January an important Conference on the Supply and Training of Teachers for Public Elementary Schools, attended by representatives of Local Education Authorities all over the North of England, was held at Leeds. The Conference adopted a resolution affirming the inadequacy of the number of bursars and pupil-teachers that have been entering the teaching profession in recent years to meet the requirements in the areas of the Authorities, if the staffing of the schools is to remain sufficient. It also passed a resolution calling upon the Government to provide funds to enable Local Education Authorities to grant maintenance allowances to children selected to meet the percentage of free places in secondary schools required by the Board. The London County Council, too, has been con-

sidering how to stop the "considerable falling off in the number of candidates coming forward for the preliminary stages of the teaching profession." A sub-committee of the Education Committee reported that any restriction on admission other than those necessary to secure a satisfactory standard of character, health, intellect, and attainments, should be temporarily suspended. So pupils from schools of established reputation, though not on the Board of Education list of "efficient secondary schools," should be considered on their merits for the Council's scholarships for intending teachers, the existing rule, requiring three years' previous attendance in an "efficient secondary school," being suspended. Another suggestion is to render it easier for uncertificated teachers to enter college; and so "we are of opinion that uncertificated teachers in the London service who enter a training college should be regarded as eligible for the Council's college allowance of £15 (women) or £18 (men), as the case may be." Palliatives, no doubt; but the whole question presses for statesmanlike consideration on large grounds and with bold outlook.

THE space that has been opened up between the extension of the British Museum and Torrington Square appears to be very suitable for the new buildings in view for the University of London. It would establish the business premises in a very central position, and bring them into close connexion with University College, the most important of the constituent institutions of the University, leaving open the opportunity of an eventual consolidation. We shall heartily welcome such a distinguished educational neighbour. But we must repeat, with all possible emphasis, that, however necessary a new building may be for clerical and ornamental purposes, the first charge upon fresh funds must be the adequate endowment of the teachers—the vital part of the University—too many of whom are still very insufficiently provided for. Buildings do not make a University; and teachers that have to find their living in other pursuits cannot be expected to contribute their share of original work, which alone will maintain the honour of the institution. It is strangely difficult to get people to understand this, but Lord Haldane and his Commission can have no illusions on the point.

THE Senate of the University of Durham propose to admit Nonconformists to their Divinity degrees; and, if we mistake not, the Theological Faculty has, over and over again, expressed its opinion in favour of such a course. But the thing cannot be done without the sanction of the Visitor of the University, who happens to be the Bishop of Durham. The Bishop has wrestled with the question for some time, consulting the minority in the Senate and other more or less important persons, meditating on the practice elsewhere, and carefully refusing to be guided by any opinion of his own. At last he has decided to veto the proposal. Apparently he has been largely influenced by the example of Oxford and Cambridge, which, he thinks, should lead the

*Supply
of
Teachers.*

*Close Divinity
Degrees.*

way. The world, however, does not wait ceremoniously upon the leading of Oxford and Cambridge, and there is little reason for surprise at the vigour of criticism that has been poured upon the Bishop's decision. Degrees are but small things in critical company; but, still, it does seem ridiculous that, in the year of grace 1912, they should not be open to everybody on equal terms.

The Government grants to the University Colleges, though recently largely increased, are far from corresponding with the needs, or with the reasonable claims, of the various participants. The Welsh educationists, some of whom are at their wits' end for funds, also discern an inequality of distribution. They see that Leeds gets over £14,000, while Bangor has to be content with £1,130, and Cardiff with £3,200, and they feel hurt. The Board of Education, however, will not draw the purse-strings till the Local Authorities have raised a certain equivalent—an attitude that is at this moment the despair of Hartley University College as well as of Cardiff. There is a sound basis of practical reason in this attitude of the Board; but the virtue of rigidity may be carried too far. Indeed, Principal Griffiths has noted that Mr. Birrell applied a different rule to Ireland. "In Wales," says Dr. Griffiths, "help is not to be given save in consequence of local generosity. In Ireland, help is to be given in order that generosity may be aroused." Here then arises "a flagrant anomaly," all through the perversity of Ireland. The fact is that the question is a national question, and demands to be treated on principles flexible enough to satisfy the reasonable claims of institutions in different conditions.

SUMMARY OF THE MONTH.

THE British Association meets this year at Dundee on September 4 under the presidency of Prof. E. A. Schäfer, Edinburgh. The sectional presidents will be: Mathematical and Physical Science: Prof. H. L. Callendar. Chemistry: Prof. A. Senier. Geology: Dr. B. N. Peach. Zoology: Dr. P. Chalmers Mitchell. Geography: Sir C. M. Watson. Economic Science and Statistics: Sir H. H. Cunyngame. Engineering: Prof. A. Barr. Anthropology: Prof. G. Elliott Smith. Physiology: Mr. Leonard Hill. Botany: Prof. F. Keeble. Educational Science: Prof. J. Adams. Agriculture: Mr. T. H. Middleton. Agriculture will form the subject of a full section for the first time. Prof. W. H. Bragg and Prof. A. Keith have been appointed to deliver the evening discourses.

At the Teachers' Guild Holiday Courses last year, held at Honfleur, Lübeck, and Santander, there were in all 102 students as compared with 92 in 1910, and this in spite of the fact that the proposed course at Neuwid had to be abandoned through lack of entries. Of these students 38 were at Honfleur, 59 at Lübeck, and 5 at Santander. The students were as a whole regular in their attendances at the lectures and classes, and certificates of attendance were granted to 37 at Honfleur, 50 at Lübeck, and all at Santander. Very few entries were received for the examinations—4 at Honfleur, of whom 2 took the written as well as the oral, 8 for the oral only at Lübeck.

THE London Education Committee have decided that the ultimate establishment of the higher technical staff of the Education Officers' Department shall comprise the following:—A Deputy Education Officer with a salary of £800 a year, rising

by annual increments of £50 to £1,000 a year; a Chief Clerk with a salary of £800 a year, rising by annual increments of £50 to £900 a year; two Assistant Education Officers with salaries of £500 a year, rising by annual increments of £25 to £800 a year; and six Principal Assistants, four with salaries of £400 a year, rising by annual increments of £25 to £600 a year, and two with salaries of £400, rising to £500 a year. The ultimate cost will be £6,900 a year, as against £6,200 at present.

THE building of an addition to the Imperial College of Science and Technology—namely, the Botanical Institute in Prince Consort Road—has been already begun. Sir Aston Webb, R.A., has designed a four-story building, about 120 ft. long by about 50 ft. deep. It is intended to be ready for occupation by the opening of the next session. The two lower floors will be devoted to the general botanical work of the College, which is now carried on at the Royal College of Science in Exhibition Road. The two upper floors have been expressly designed for the new department of Plant Physiology and Pathology. A feature of the top floor will be the greenhouse laboratory, 25 ft. by 20 ft., the first of its kind in the United Kingdom. With a cement floor and glass roof it will combine the advantages of a greenhouse and a laboratory. On the same floor will be a physiological laboratory and a professor's room, and a research laboratory for him as well as one for his assistant, besides five other research rooms. On the floor below will be a bio-chemical laboratory, pathological laboratory, a bacteriological laboratory, a constant temperature room, and two more research rooms. The whole building is estimated to cost about £14,000. The aim is to make the department a centre for research of scientific and economic importance as well as to equip students for appointments throughout the Empire. Hitherto the demand for such men has been in excess of the supply from the United Kingdom, and it has been necessary to go to Germany for fully qualified men.

THE fourteenth Annual Meeting of the Moral Education League was held at the Royal Society of Arts (February 13). The Annual Report recorded a steady increase of support at a time when the "religious difficulty" in education was not actively before the country, and as a result of purely educational work apart from political conflicts of the hour. During the year the League's official Demonstrator, Mr. F. J. Gould, had delivered over fifty Demonstration Moral Lessons in many parts of Great Britain and Ireland, and nearly the same number of lessons in leading cities of the United States of America. These included lessons before the staffs and students of ten training colleges in England and Wales, and before three University Summer Schools in the United States of America. Among the audiences were persons of the greatest variety of religious, political, and social opinions. The League claims to have exercised during the year a not inconsiderable influence in India, France, Tasmania and the United States of America. In France a Moral Education League, under the most representative and influential auspices, had been created; in India the League's book of moral lessons for use in schools and families in India ("Youth's Noble Path," published in May by Messrs. Longmans) had been adopted by the University of Calcutta, the Government of Bengal, and, in large part, by the Government of Bombay. The Tasmanian Education Department had provided for moral lessons in all grades of its primary schools, and had adopted for this instruction two of the League's publications; while in the U.S.A. active steps had been taken toward the foundation of an American Moral Education League. The Report states incidentally that the League has members in twenty-one countries outside the United Kingdom, and that the membership includes Catholics, Anglicans, Nonconformists, Jews, Unitarians, Ethicists, Rationalists, Positivists, Hindus, Mohammedans, Parsees, and Buddhists. The Annual Address was delivered by Mrs. Bryant, D.Sc., Litt.D., on "The Many-Sidedness of Moral Education." (See p. 114 below.)

A MEETING of the Leicester, Leicestershire, and Rutland Association of Secondary School Teachers was held at Leicester on February 10, Mr. W. A. Brockington, President, in the Chair.

Mr. Brockington gave an address on the Report of the Board of Education Consultative Committee as to Examinations in Secondary Schools. The following resolutions were adopted: (1) "That, in the opinion of this Association, the multiplicity of Competitive Examinations should be corrected, and a definite attempt made by the Board of Education by means of conferences to unify the demands of the Universities and other examining bodies." (2) "That, while regarding external examinations as a wholesome stimulus and a healthy objective in secondary-school life, this Association is of the opinion that they should be based as closely as possible on the teachers' syllabus (of a definite standard); and that their results should be corrected, especially in border-line cases, by the school record, and supplemented with interview examinations by the Inspectors of the Board of Education." (3) "That the abolition of an external examination of the Junior Local standard is not desirable." (4) "That, in the event of a Central Examinations Council being established, the Universities should remain separate school-examining bodies, under general control."

THE Attorney-General presided at a dinner in support of the funds of the Education Aid Society (February 10) in the Savoy Hotel. The Society, which was formed by a Committee of Maccabæans, has been in existence four years and, as Sir Rufus Isaacs explained, its object is to help to promote, develop, and preserve talents possessed by members of the Jewish community which otherwise might be wasted. Persons who were specially gifted were hindered, harassed, and very often prevented by straitened means from pursuing careers for which they were eminently fitted in connection with music, science, literature, or art. The funds of the Society were used to assist budding culture in such a way as to obtain the best possible return for the money spent, so that they might be said to exercise philanthropy in a businesslike spirit. A committee of experts considered the qualifications of the various applicants for assistance as regards ability, capacity, and, above all, character, which was a most important element in all their considerations, selecting only those with special gifts who were likely to become ornaments of the community. It was announced that subscriptions had been promised to the amount of £5,200, with a further £100 on condition of the total sum of £6,000 required being raised in the course of the week.

A STATEMENT in reference to the operation of the Rhodes Scholarship Scheme during the past year has been issued. The number of scholars in residence at Oxford in the course of the year was 176, of whom 77 were from the Dominions, 89 from the United States, and 10 from Germany. The scholars in residence were distributed among the different courses of study in the University as follows:—Advanced or Specialized Courses—Law (B.C.L. Degree) 11, Letters (B.Litt. Degree) 10, Medicine 10, Science (B.Sc. Degree) 6; Honour Schools for the B.A. Degree—Literæ Humaniores 14, Jurisprudence 44, Natural Science 23, History 18, Theology 10, English Literature 8, Mathematics 6, Modern Languages 3; Diplomas—Economics 11, Forestry 6, Anthropology 2, Geography 1, Rural Economy 1; Indian Civil Service 1. The examination results show two First Class in Final Honour schools, one in Natural Science and the other in Jurisprudence. Lists of those who proceeded to degrees and of athletic distinctions are given. The following list indicates the lines of work taken up by Rhodes Scholars who left Oxford during the five years 1906-1910 inclusive:—Education 84, Law 66, Religious Work 19, Civil Service (Germany) 13, Medicine 11, Scientific Work 9, Business 8, Journalism 5, Mining and Engineering 5, Agriculture 3, Diplomatic Service (Germany) 3, Diplomatic and Consular Service (U.S.A.) 2, Indian Civil Service 2, Forestry 2, Consular Service (British) 1, Colonial Service 1, Army 1, Secretarial Work 1, Miscellaneous and Unknown 10.

THE Education Committee of the London County Council have consented, at the request of the Royal Society of Arts, to undertake the supervision of the Society's Examinations within the limits of the Administrative County of London. It is hoped that the additional authority added to the Examinations by the influence of the Education Committee will in-

crease the value of the certificates, and it is also expected that, by placing the supervision of the Examinations in the hands of one responsible body instead of a number of Local committees, the completely satisfactory conduct of the Examinations will be ensured. The number of candidates examined last year in the County of London was upwards of 10,000.

THE class lists of the Cambridge Local Examinations held in December last show that the total number of candidates entered was 9,557, exclusive of 3,870 candidates who were examined at Colonial centres. In the Senior Examination 876 boys and 917 girls satisfied the examiners, 75 boys and 10 girls being placed in the First Class; 439 boys and 169 girls showed sufficient merit to entitle them to exemption from one or both parts of the Previous Examination. Of the Junior candidates 1,685 boys and 1,038 girls passed, the numbers of those placed in the First Class being 117 and 12 respectively. In the Preliminary Examination 1,306 boys and 815 girls passed. The awards of scholarships and prizes, the examiners' reports, and the tables showing the success or failure of the individual candidates in each section, will be published in March.

WE regret to record the death of Miss Rosa Morison, Lady Superintendent of Women Students at University College Hall since 1883. Miss Morison began her educational career at Queen's College, London, where she was an associate, and afterwards a tutor. There she met Miss Eleanor Grove, and the two women became lifelong friends and co-workers in the cause of women's education. They were associated in the founding of College Hall, Byng Place, as a hall of residence for the students of the School of Medicine for Women, and for women students of University College, London. They presided over College Hall for eighteen years—from 1882 to 1900—Miss Grove in the capacity of Principal and Miss Morison for nearly the whole period in that of Vice-Principal. Miss Morison's sphere of activity was enlarged when in 1883, on the creation of the office of Lady Superintendent of Women Students at University College, she was elected to that post. Miss Morison's policy throughout has been to act as guide and friend to the students under her charge, and to promote the sense of responsibility and self-government that should characterize University students. Her large-hearted wisdom and kindly outlook on life were perhaps her outstanding characteristics. At the time of her death she was busily engaged in furthering the scheme for the rebuilding of College Hall.

THE REV. DR. FAIRBAIRN, Principal-Emeritus of Mansfield College, Oxford, died in London in his seventy-fourth year. A native of Edinburgh, he laboured at Bathgate (West Lothian) and in Aberdeen, as Principal of Airedale College (1877-86), and as first Principal of Mansfield College (1886-1909). He was Muir Lecturer in Edinburgh University (1879-82); Gifford Lecturer in Aberdeen University (1892-94); Lyman Beecher Lecturer at Yale (1891-92); and Haskell Lecturer (1898-99) in India. He was an honorary M.A. and D.Litt., Oxford; honorary D.D. Edinburgh, Yale, Wales, and Manchester; LL.D. Aberdeen; D.Theol. Göttingen; and an original Fellow of the British Academy. He published numerous works in philosophy and theology.

DR. FREDERIC SEEBOHM died at Hitchin at the age of seventy-nine. His "Oxford Reformers: Colet, Erasmus, and More," published in 1867, his best work, still remains fresh and indispensable. "The Era of the Protestant Revolution" (1874) in Longmans' "Epochs of Modern History" was a sort of continuation of the same line of study—an excellent comprehensive survey of the sixteenth century. "The English Village Community" (1883) destroyed the German theory of the Mark, but has itself been undermined by the more recent studies of Vinogradoff, Maitland, and other scholars. Dr. Seebohm also wrote stimulating works on "The Tribal System in Wales" and "The Tribal Custom in Anglo-Saxon Law." He was LL.D. of Edinburgh, Litt.D. of Cambridge, and D.Litt. of Oxford.

WE regret to report the death of Mrs. Margaret Byers, LL.D., at Belfast, in her seventy-ninth year. She was the widow of the Rev. John Byers, M.A., and the mother of Sir John Byers, of Queen's University, Belfast. The founder and since 1859 the Principal of Victoria College, Belfast, she has been prominent in pioneer educational work, and contributed largely to the movement for the promotion of the higher education of women in Ireland. Mrs. Byers was the first Ulster woman to receive an honorary degree from a University—the degree of LL.D. being conferred upon her by the Royal University of Ireland a few years ago. A member of the Senate of the Royal University, Mr. Byers was founder, in connexion with other ladies, of the Belfast Ladies' Temperance Union and Christian Workers' Union, out of which sprang the Belfast Prison Gate Mission for women and the Victoria Homes for the reclamation and training of neglected and destitute girls. In 1905 Mrs. Byers was presented with a testimonial by old pupils and personal friends in recognition of her long, courageous, and successful efforts in the cause of education.

DR. MARTIN HOWY IRVING, son of Edward Irving, the celebrated preacher and founder of the Catholic Apostolic Church, died in his 81st year. He received his early education at King's College School, London, where he gained a scholarship in Classics and Mathematics, and afterwards, in November, 1848, matriculated at Balliol College, Oxford, of which he became a scholar in the same year. Later he gained a University Mathematical scholarship and graduated with a First Class in Classics and a Second Class in Mathematics. On leaving Oxford he was appointed second master at the City of London School, but within a year or so he went to Victoria, Australia, and was appointed to the Chair of Classics and English in the University of Melbourne, which he filled until 1871, when he accepted the Head Mastership of Wesley College, Melbourne. This post he occupied for about five years, and then became Head Master of the Hawthorn Grammar School. When, in 1884, the control of the Civil Service of Victoria was removed from the domain of politics and placed in the hands of a permanent body called the Public Service Board, Professor Irving was nominated a Commissioner, and he acted in that capacity for a period of eight years. He was Chairman of the Melbourne Board of the Australian Mutual Provident Society for some years, and after serving for some time in the Volunteers was commanding officer of the 1st Battalion Victorian Militia from 1884 to 1890. The honorary degree of LL.D. was conferred on him by Glasgow University in 1902.

UNIVERSITIES AND COLLEGES.

(From our own Correspondent).

MORE endowments. The spoil of the tax-payer is coming our way, and the Agricultural Department is thankful for this beginning of good things. The astounding fact is that the Board of Agriculture have extracted from the Treasurer a large sum to be expended on us and by us in the way of establishing research institutions. The subjects of this research are plant breeding and animal nutrition. A capital grant of £18,000 and a yearly subscription of about £4,000 are no mean things to extract from any Government department, but there is absolutely no doubt the outlay will bring back a return of a thousandfold. Prof. Wood and Prof. Biffen are both competent persons, in spite of their Professorships.

Without any fuss or blowing of trumpets, Dr. Jamieson Hurry has founded a Research Studentship in Physiology, and with characteristic modesty wishes the studentship to be associated with the name of Sir Michael Foster, who did so much for the study of physiology in the University. Of course it is heresy, but it is just possible that as much valuable work will be done by any one of these research students as would be achieved by some professors during their whole professorial life. Again, be it noted that every department of the scientific side in Cambridge is going strong. Our teachers are strenuous and self-sacrificing, while the results are a splendid enthusiasm and, what is better, the appreciation of the outside world.

There is a little discussion going on about the remodelling of the Classical Tripos. A great deal of argument centres round the burning question of Hexameters and Iambics: shall our young men do verse or worse—Extinction or alternatives? Some

are for one, some for the other. The spirit of the age says men must learn something that pays before they leave Cambridge. Composition prose and verse merely puts a fine finish on the intellectual apparatus; you cannot gauge its value in £. s. d. So it will go.

The publication of the reports anent the special examination reveals the fact that last June roughly 49 per cent. of the candidates were plucked in Part I of the Law Special and 43 per cent. in the Second. Three of the four examinees are being replaced this term by new men; so we may hope for a return to the normal.

It seems quite settled that the Solar Physics Observatory will be established in Cambridge, and that the Treasury will give £5,500 on capital account in addition to a maintenance grant of £3,000 a year. It is a good thing for us that one of our representatives is Sir Joseph Larmor.

Yet another benefaction. There is to be a new Lectureship created on the subject of Experimental Morphology, and as Prof. Gardiner is providing the stipend of £50 for five years, the appointment will be made forthwith. Mr. C. Shearer, M.A., of Clare, is to be offered the post; he has just returned to Cambridge, and will thus, under official sanction, carry on the work in the field of research associated with the names of Loeb and Driesch.

The number of matriculations for the current academical year has now reached 1,140, including a larger number than usual of our friends from the Orient. As we are a seat of learning addicted to mathematical studies we may justly pride ourselves on the fact that numbers count—and pay fees.

An interesting debate has been held at the Union. Naval topics were up for discussion. Mr. R. Yerburch, M.P., advocated the "two keel to one" policy, while the chief speaker on the other side was Mr. Norman Angell, of "great illusion" fame. Mr. Angell's speech was an intellectual treat, and excited the enthusiasm of a house which was not altogether in agreement with his views.

In matters political we have had much movement, and expect more. Lord Selborne, as the guest of the new Carlton Club, delivered a political oration which has won applause from friends and foes alike, and is billed to speak again on the last day of February on the subject of the vote for women.

The Fabian Society continues its course of unobtrusive usefulness in preaching the doctrines which the more moderate of the party do not care to profess in public.

The Association match was a welcome break in the continuity of Cambridge disasters, but the Boat Race will probably damp our rising hopes. There is some chance of a race. Up to the time of writing, the crew have been taking a short holiday, and in all probability practice will be renewed with a crew which will include D. C. Collins and Arbutnot, the President, in lieu of Dobb and Ayliff. The last named is a hard working and trustworthy oar, and it is a pity a place cannot be found for him. In accordance with a prophecy in these notes, Swann is duly installed at stroke, and this is an element of hopefulness.

Appros of the race the following is a true story. One of the crew last year was returning by late train from Mortlake. Casual stranger asks him if he had been to the Boat Race. "Yes." "Did you see it well?" "Saw some of it." "Where did you see it from, the bank or Barnes Bridge?" "From a boat," was the reply. "Ah," said the casual stranger, "and got left behind as usual." "Ahem, yes—" said the Blue.

There is a slight epidemic of measles; several colleges are affected, and some cases have been serious. The skating epidemic was severe while it lasted. Now there is thaw and much Cambridge mud.

While these notes are being written the last races are in progress. Jesus are likely to slog ahead, but First Trinity are a better and faster boat, and will make it lively for them.

Prof. Verrall's countless friends will be glad to hear that his serious illness has taken a turn for the better, and we hope soon to see the invalid at work again.

A variety theatre in Barnwell, having barred the attendance of undergraduates, is able to announce to its patrons that "a well conducted and orderly entertainment is assured."

We go down on March 15—without any feelings of regret.

IN spite of the bad weather there was a large gathering at Ruskin College, Oxford (February 8), on the occasion of the laying of the foundation stones of the new buildings of the College in Walton Street. The buildings will cost something over £9,000 and will consist of a hall, to be known as the

Buxton Memorial Hall, in memory of the late Mr. C. S. Buxton, formerly Vice-Principal of the College, who bequeathed £5,000 to it unconditionally: a large lecture room; accommodation for fifty students and a vice-principal's residence. Mr. W. A. Appleton, Secretary of the General Federation of Trade Unions, presided. The first stone was laid by Mrs. A. L. Graffin (co-foundress of the College with the late Mr. Walter Vrooman), who had travelled from Baltimore to be present. Miss M. P. Giles, a member of the staff since the foundation, laid the second stone. Mr. Sydney Buxton laid the third stone. He said it was obvious they could not give the education or the experience given there to the many, and it must be necessary to select a few. One special object which the promoters had in view was to fit those who came there for the responsibilities of citizenship and to equip them to take their share in the various administrations in their own trade unions and co-operative societies, to take a share in Local Government work, and they hoped in many cases in the future in the work of the Imperial Parliament. He was a great believer in the education given at this College, and he wished it every possible success. Mr. Bowerman, having laid the fourth stone, gave a retrospect of the history of the College. He said they accepted with gratitude the assistance which was offered by many distinguished teachers of the University, who were men of warm democratic sympathies. But they kept the control of the College absolutely in their own hands as a sacred trust held by the Council and Executive on behalf of the Labour movement. They wanted what Ruskin College now did on a small scale to be done on a far greater scale. They wanted the movement to spread, and they wanted to win back the Universities for the workers.

PRINCIPAL SIR OLIVER LODGE says, in his report to the Court of Governors: "Among the pressing major needs, as soon as funds are available, I feel bound once more to place a Chair of Greek in the forefront. The whole subject of Greek as a branch of education has been very much before the public during the past year, but the anticipated and desired removal of compulsion in the ancient Universities must not be allowed to result in, or even to tend towards, a neglect of Greek as a vital item in human education and higher culture—not at least until the human race has devised some instrument capable of taking its place with equal efficiency." The Principal also mentions among other needs an increase in the number of the junior staff, especially in the subjects of the Faculty of Arts; the development of agricultural education and research; and a hall of residence for men students. The accounts show the expenditure for the year to have been £60,265, being in excess of the income by £4,841. This makes an accumulated deficiency of £37,748.

THE COLLEGE OF PRECEPTORS.

MEETING OF THE COUNCIL.

A MEETING of the Council took place at the College, Bloomsbury Square, on February 17. Present: Sir Philip Magnus, President, in the chair, Dr. Armitage Smith, Mr. Bain, Mr. Barlet, Rev. J. O. Bevan, Rev. J. B. Blomfield, Mr. Brown, Mr. J. L. Butler, Mr. Charles, Mr. Cholmeley, Miss Crookshank, Miss Dawes, Prof. Dixon, Mr. Eagles, Mrs. Felkin, Mr. Hawe, Mr. Pendlebury, Miss Punnett, Mr. Rushbrooke, Rev. Dr. Scott, Mr. Starbuck, Mr. White, and Mr. Wilson.

The Secretary reported that the resolutions respecting Private Schools, which had been adopted by the Council at their last meeting, had been sent to the Board of Education and to the Local Education Authorities, and that a number of replies had been received.

The diploma of Associate was granted to Mr. A. Hndson, who had satisfied the prescribed conditions.

Mr. R. P. Charles was appointed one of the representatives of the College on the Federal Council, in place of Mr. E. A. Butler, resigned.

Diplomas were granted to the successful candidates at the recent Christmas Examination of Teachers. (For list, see page 118.) The prize for Theory and Practice of Education was awarded to Mr. G. R. Bowes, and the prizes for Mathematics and Natural Sciences to Mr. C. W. Rogers.

On the recommendation of the Examination Committee, Miss W. C. Cullis, D.Sc. Lond., and Mr. H. P. Newsholme, M.A., M.B., M.Ch. Oxon., were appointed additional Examiners in Physiology, and Mr. E. Drabble, D.Sc. Lond., an additional Examiner in Botany.

On the recommendation of the Finance Committee, four annuitants were appointed under the Hopkins Benevolent Fund for Teachers, and a grant of £10 was made from the Benevolent Fund of the College. The names of four members of the College were removed from the members' list, on account of non-payment of subscriptions.

Sir Philip Magnus was re-elected President of the Council, and the Rev. Canon Bell, Mr. E. A. Butler, and the Rev. Dr. Scott were re-elected Vice-Presidents.

Mr. W. G. Rushbrooke was appointed Dean of the College.

Dr. Armitage Smith was appointed Treasurer.

The Moderators, Examiners, Revisers, and Inspectors for the year 1912 were appointed.

The four Standing Committees were appointed, with their respective chairmen.

The following persons were elected members of the College:—

Mr. A. Conpton-Ellis, B.A. Lond., L.C.P., 48 Temple Sheen Road, Mortlake, S.W.

Mr. E. J. Denne, L.C.P., The School House, Sheldwich, Faversham.

Mr. T. Douthwaite, A.C.P., 126 St. James's Road, Blackburn.

Mr. J. Duggan, B.A., L.C.P., River View Hotel, Ennis, Co. Clare.

Mr. W. G. Edwards, A.C.P., 32 Carson Road, West Dulwich, S.E.

Mr. E. E. Foxwell, M.A. Camb., St. John's College, Cambridge.

Mr. C. H. Greene, M.A. Oxford, The School House, Berkhamsted.

Mr. H. W. O. Hagreen, B.A. Lond., Wellington College, Berks.

Mr. A. G. Harman, A.C.P., The Lindens, Aldington, Hythe, Kent.

Mr. J. A. Joerg, 12 Vincent Square Mansions, Westminster, S.W.

Mr. W. H. Meadows, 3 Woodford Road, Watford.

Miss G. E. Merriek, A.C.P., The Limes, Warminster, Wilts.

Mr. S. T. Shovelton, M.A. Oxford, 8 Holly Park Gardens, Finchley, N.

Mr. P. Simpson, M.A. Camb., 324 Hither Green Lane, S.E.

Mr. F. W. Stevens, 15 Chatham Road, Norbiton, Kingston-on-Thames.

Mr. G. E. Stockall, B.Sc., L.C.P., 14 Dongola Road, Bristol.

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

By the AUTHOR.—Beaven's Key to Godfrey and Siddons's Solid Geometry.

By the BOARD OF EDUCATION.—Report of the Consultative Committee on Examinations in Secondary Schools.

By A. & C. BLACK.—Black's Literary Readers, Book VI; Barnard's How Other People Live.

By BLACKIE & SON.—Blackie's Experimental Arithmetics, Book IV, and Teacher's Guide to same; Browning's Shorter Poems; Bruce's English Exercises for Intermediate Classes; Jackson's Botanical Experiments for Schools; Magee's *Le Petit Bonhomme*; Martin and Manley's Educational Handwork (Intermediate Course); Rodger's Introduction to the Use of Common Logarithms; Saunio's *Dumas' Napoleon à l'île d'Elbe*; Sheridan's *The Rivals and The School for Scandal*; Warner and Marten's *Groundwork of British History*.

By the CAMBRIDGE UNIVERSITY PRESS.—Robertson's *Lessing's Nathan der Weise*.

By W. B. CLIVE.—London Matriculation Directory, January 1912; Collins and Robinson's Senior Latin Course; Edmund's Senior Course of English Composition; Flecker's Acts of the Apostles, Part II; Jackson's Practical Lessons in Book-keeping; James's Senior French Reader; Walker and Shuker's Gospel of St. Matthew; Weekley and Gilli's Senior French Course; Wyatt and Collins's Milton's Samson Aonistes.

By MACMILLAN & Co.—Fowler's Book of English Prose, 1470-1900; Modlen's *The Roman Conquest of Britain (from Tacitus)*; Wallis's *Geography of the World*.

By METHUEN & Co.—Hilditch's First Year Physical Chemistry; Knox's *Physico-Chemical Calculations*; Millis's *Technical Arithmetic and Geometry*; Shipley's *English Church History for Children, A.D. 1500-1911*.

By J. MURRAY.—Fletcher's *Making of Western Europe, Vol. I, The Dark Ages*; Halcy's *Noiraud, Guignol, et Deux Cyclones*.

By the OXFORD UNIVERSITY PRESS.—The Oxford Book of German Verse; Littledale's *Lyrical Ballads of Wordsworth and Coleridge*; Mair's *Junior Mathematics*; Onions's *The Oxford Shakespeare Glossary*; Thomas's *Celtic Stories*.

By MR. W. RICE.—*Journal of Education*, 1911.

By RIVINGTONS.—Savory's *Hauff's Die Karawane (Fatmes Errettung)*, and *Zedelius' Geleite, die Draussen Sind!*

Calendar of the University of Wales.

Calendar of the University College of Wales, Aberystwyth.

Calendar of the University College, Nottingham.

Calendar of the University of Liverpool.

Calendar of the Pharmaceutical Society of Great Britain.

THE NEGLECT OF GERMAN IN OUR SCHOOLS.
APPEAL TO PARENTS AND PUBLIC MEN.

[From the *Westminster Gazette*.]

ALL those who believe that the maintenance of not only correct, but good relations between England and Germany is a matter of supreme importance for both nations will rejoice that the political horizon has at last begun to clear up, and they will no doubt be anxious to do everything in their power to improve during the year that has just begun the existing Anglo-German relations. But is the average British parent, or are even our leading statesmen, members of Parliament, county councillors, and men of business, aware of the fact that a real "German danger" is still menacing us—not the bugbear of an imminent German invasion, but the real danger of a rapid and alarming retrogression of the study of the German language in Great Britain and Ireland, and this at the very time when the study of English is encouraged in German schools of every type?

The grave danger of the rapid decline of German in our secondary schools for girls no less than for boys has indeed, during the last seven years, been pointed out from time to time at educational meetings, and in the short reports of such meetings in the Press, but the words of warning uttered on these occasions by persons fully acquainted with the facts have not found a ready response. And yet it is a matter that allows no longer of delay. Here is a question worthy of the serious attention of public men and governing bodies, and it is one on the handling of which members of all political parties can well agree. If the British parent can once be aroused to the urgency and importance of this educational problem to himself, his children, and his country, there is little doubt that he will insist on a speedy change of the present deplorable state of things. The prevailing and increasing ignorance of German can hardly have been realized by most Britons, or else a reaction against it would have set in long ago. Most educated German men can read English, and not a few speak it really well. All German women of the better classes (few of whom are made to learn Latin) are being taught English efficiently at school, and as a matter of course. The percentage of British boys and girls learning German at all seriously at our schools is extremely small. The percentage of people who can hold friendly intercourse with the Germans in their own tongue is rapidly diminishing. How many military and naval officers at the present moment are able to read German easily and to speak it readily? How many public speakers and writers are acquainted with the true spirit of Germany that can only be gleaned from a first-hand knowledge of German books and papers? Men in responsible positions are thus debarred from forming an independent judgment on international problems of vital importance and are forced to rely altogether on representations of foreign opinion, not always either accurate or unbiased, that are provided for them by writers in the daily Press, or in books the trustworthiness of which they have no means of testing. The present writer knows for certain that even a very large number of English scholars are at present deprived of all the help obtainable from German research in every field of human science by ignorance of the German language, a knowledge of which they ought to have acquired at school. As so many medical, scientific, and technical works of supreme importance are year by year published in the German-speaking countries, the advantages of the teachings of such books and of the numberless scientific periodicals published in German are lost to the overwhelming majority of educated English men and women, and wide worlds of thought remain closed to them.

Certainly this is a serious national danger. This neglect is all the more strange as Great Britain seems to be the only country of importance where the study of German is thus neglected. Everywhere else a very different state of things prevails. In the United States, France, and Scandinavia especially, great weight is attached by parents and educational authorities to the thorough teaching of this language.

And not only in our twentieth century should German be studied in England on account of its literary and scientific, industrial and commercial value, as to which there can be no difference of opinion, but it should be strongly insisted on by all those interested in the improvement of Anglo-German relations as one of the surest means of ultimately bringing about a better understanding between the two peoples. To my mind a working knowledge of German is not to be acquired to serve, as it were, as a kind of useful fencing-blade in order to ward off any attack from a better equipped adversary and thus forcibly

to protect our own lives, but rather in order to be able to communicate directly with the German, to secure a real understanding of his thought and work, his needs and aims, his experience and advice, to allay groundless suspicion and mistrust, and thus to prepare the minds of the rising generation for whole-hearted appreciation and co-operation.

At the present moment, when German in our schools is as a tender plant left out in the cold, it is necessary for the public to urge on the responsible authorities that it should receive special protection and most careful fostering, and that the study of the German language at our schools and other educational institutions should no longer be left to chance, but should receive distinct encouragement. Schools, Universities, the Board of Education, the Public Services, and other influential agencies should be strongly urged to give to this question their immediate attention. At the schools no doubt the question of the time-table constitutes a real difficulty, but experience has shown that it can be overcome. "Where there is a will there is a way." At the present day head masters and head mistresses ought to give all their pupils a good chance of learning German at school, and they ought *not* to arrange the time-table in such a manner as to make the children choose between Latin and German, as is now done in a large number of schools, especially in high schools for girls. Latin should no longer be exacted from those who have little taste or aptitude for it, to the exclusion of German. Bright children with marked linguistic ability can, beside a careful study of their mother-tongue, well learn to read more than two foreign languages at school; for those with no special gift for languages it should now be freely admitted that the two foreign languages they ought to learn at school should be the two *modern* languages—French and German. For pupils brought up in the large number of State-aided schools, who leave school as a rule before the age of seventeen, German is without doubt, educationally and practically, a language of the first importance. And with regard to boys and girls sent to the Universities by the best of our secondary schools there is the deplorable fact that very many bright youths anxious to attain to Honours work are quite ignorant of German. The majority of them never learn the language at the University, while the best soon realize how seriously they are hampered by this defect. They lose much valuable time by beginning to struggle with the elements of German at a time of life when they ought to be free to pursue higher scientific or literary studies. They are thus obliged to do school work at the University. A good reading knowledge of German should before long be made compulsory by all Universities for all Honours students of any subject. In Army and Navy examinations, and also in other examinations for the Public Services, a much more important position should be allotted to German. Only then will it be taken up seriously by most of our schools.

It is very much to be desired that in the future the men and women of this country, instead of reading eagerly certain newspaper articles of an inflammatory nature, will take the trouble to turn to some good books about Germany and the Germans, such as those written by Sidney Whitman, W. H. Dawson, or Mrs. Alfred Sidgwick, and will see to it that, if they cannot learn German themselves, at least their children shall be sure to receive while at school a thorough instruction in the kindred language that is now spoken and written by nearly a hundred millions of Germans, Austrians, and Swiss. The good results will soon become apparent in more than one way. It has been well said by the broad-minded Friedrich Rückert:

Nur Sprachenkunde führt zur Weltverständnisung,
Denn sinne spat und früh auf Sprachenbändigung.

SAPERE AUDE.

GREAT hopes are now entertained, says the *Daily Telegraph*, that all difficulties in the way of the establishment of the proposed Teachers' Registration Council will shortly be removed. At the same time, it is impossible, as yet, to say that the necessary preliminaries have been finally settled, though the negotiations with the Treasury regarding the finance of the scheme, which is naturally a matter of the first importance, are making favourable progress. Unless some unforeseen hitch should occur, these are likely to have a satisfactory issue; and, as the Board of Education is known to be desirous of meeting the wishes of the teaching profession on the subject of registration, it may safely be assumed that, once Treasury sanction is definitely assured, no time will be lost in obtaining the necessary Order in Council. How soon the negotiations may be expected to reach a conclusion is a matter which leaves room for plenty of speculation, but it is something, at any rate, for those who have worked so hard to secure the creation of the Council to know that there is a good prospect of success ultimately crowning their efforts.

THE MANY-SIDEDNESS OF MORAL EDUCATION.

MRS. BRYANT, D.Sc., Litt.D., delivered the address at the Annual Meeting of the Moral Education League. She pointed out that one of the most important aspects of moral education was the training of character as such—the development of a person vague in motive, feeble in purpose, and incalculable in action, into a personality of determinate character on which one could count, with steady life-purposes implying a life-ideal to the realization of which all particular desires were subordinated. But everything depended on the nature of the life-ideal under which this efficiency had been acquired. If the result attained by parent or teacher were merely the “men of character,” the egoists, who “get on in the world,” little worth mentioning had been achieved. Hence there emerged a further demand on the moral educator for the rescue of these capable persons from their egoistic fate. The wiser parent or teacher would have duly provided for the development of character along the lines of altruistic motive, social purposes and a full composite ideal of life and personality.

The problem of the egoist remained in any case. Since human nature tended not a little to develop on egoistic lines, a scheme for moral education should on one of its sides make appeal to the individual's desire for his own good in some sense that he understood. It was not necessary that this should be the sense of ease or pleasure. Man the individual, no less than man the social member, needed the moral life. In the language of Hebraic thought he needed it as righteousness, cleanness of heart, singleness of purpose. In the history of Hebraic religion he found it (1) as identification of the individual will with the purpose that rules the universe, and (2) he identified this divine purpose with the winning over of the human race to righteousness. This was the process of moral education *as religious*—from the individual athirst for personal righteousness to the idea of co-operation with the purposes of God, and thence to the realization of that idea in practical self-devotion to the service of the commonweal. In Greek thought, on the other hand, there appeared from the outset the modern scientific spirit. The language was secularist; the method was from premise to inference, cogent, logical. It was undeniable that each man sought his own good: the wise man, however, sought it with careful inquiry into its nature and found it to consist in the life of the soul lived in accordance with that reason which is the characteristic of man as Man. So the Greek sage set out on that quest for perfection which is the counterpart of the Hebrew prophet's thirst for righteousness. And we moderns might learn much for moral education by studying the systematic ideal of personal virtue in the pages of Plato and Aristotle.

The deeper and wider human experience of the modern world was, however, necessary for the development of an ethical science that would appeal to the common man as well as to the sage. The egoist referred to was eager for life, not a mere pleasure-seeker: he could appreciate the idea of a life ruled by the pursuit of noble ends. He found the object of his devotion ready to his hands in the commonwealth of persons by whom he was surrounded. The object of Personal Life was the Ideal of Social Service. The way of life for him was by development of his community with his fellows, and he came to see that this community with his fellows was not only his own best way of life, but was theirs also. Thus a sense of mutual responsibility developed. Scientific ethics left the matter there, but it was open to the plain man to set at the back of his ethical faith a simple pragmatic philosophy conveying the assurance that his labours were not in vain.

Pausing first to suggest that in moral education neither the Way of Religion nor the Way of Reason should be neglected, the lecturer proceeded to summarize the principal directions in the development of moral character in the young:—(1) the transformation of wayward impulse into a system of steady purpose; (2) the evolution of altruism side by side with normal egoism in wholesome social life; (3) training to sense of duty, a freely moving conscience, liberality in submitting within limits to the social will; and—last but not least—(4) the self training of character to independent initiative and sturdy adhesion to purposes freely chosen.

CORRESPONDENCE.

[We do not hold ourselves responsible for the opinions expressed by our correspondents.—Ed. E.T.]

MURAL PAINTINGS IN SCHOOLS AND OTHER BUILDINGS.

To the Editor of “The Educational Times.”

SIR,—Will you allow us to bring to the notice of your readers a scheme of which the enclosed circulars supply further information? The Committee whose names are there given, representing the interests of art and of education, has been formed to promote the practice of mural painting in schools, churches, hospitals, and other public institutions, more especially by young artists and students, a scheme long ago propounded by Mr. Watts. Several schools and other buildings have already offered wall-spaces for experimental treatment, and the Committee is about to issue the final particulars of a Competition, designs from which will be selected by the authorities of those institutions or by private patrons for execution in the given spaces. These designs along with other forms of decoration for school walls will be exhibited at Crosby Hall in the latter part of May, and submitted to public criticism before any choice is made. It is believed that students and young artists will welcome the opportunity of practice in the art of large decorative painting for the sake of the training thus obtained; but the Committee invites subscriptions towards a fund for giving chosen painters a modest remuneration. They will also welcome further offers of wall-spaces in schools and other buildings. The Contemporary Art Society is among the subscribers already received, and is prepared to organize similar exhibitions later in provincial centres. Subscriptions may be sent to the Hon. Treasurer, Mr. John Ross, C.A., at Crosby Hall, Cheyne Walk, Chelsea, and information obtained from the Hon. Secretaries at the same address. We are, Sir, &c.

D. S. MACCOLL, Chairman.
CHARLES AITKEN, } Hon. Secretaries.
WILFRID WALTER, }

Crosby Hall, Cheyne Walk, Chelsea, S.W.

February 2, 1912.

HOME MUSIC-STUDY UNION.

To the Editor of “The Educational Times.”

SIR,—We shall be much obliged if you will kindly allow us, through your columns, to draw attention to the work and progress of this organization. For several years its Executive Committee has been arranging annual courses of study suited to various classes of music lovers, amateur as well as professional. In its official organ, *The Music Student*, the Union publishes special articles dealing with these courses, and emphasizing special points of interest which they contain. The Union also issues textbooks on musical history and theory, and thus provides many students of music with assistance which they otherwise could not readily obtain. “Music Circles” for the study of the courses exist in many towns, and the Young People's Section (especially suitable for the purposes of schools) has been greatly developed during the last two years. There are now about forty centres connected with the Union and about nine hundred members working under its direction. Conditions of membership and all further particulars may be obtained by application to the Central Office: 12 York Buildings, Adelphi, London, W.C.—We are, Sir, &c.,

W. H. HADOW, President.
ARTHUR SOMERVELL } Vice-Presidents.
C. HARFORD LLOYD }
PERCY C. BUCK }

January 30, 1912.

THE Association for the International Interchange of Students has arranged to hold a conference in London on Friday, June 28, and it is announced that representatives from the Universities throughout the English-speaking world will be in attendance. Coming as it does immediately before the Congress of the Universities of the Empire, which commences its sittings on Tuesday in the week following, the conference will doubtless be the means of providing much valuable information concerned with the educational methods which have already been put into practice.

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MARCH, 1912.

AMONG MY BOOKS. (iv.)

FREDERIC HARRISON.

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91, Ivanhoe Street,
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Dear Mr. Clough,

I am pleased to inform you that at the recent A.C.P. Examination I was successful in all the subjects which I took and obtained **Honours** in **Algebra** and **Arithmetic**.

Allow me to thank you for your splendid papers, which I found extremely useful; in fact, most of the questions were anticipated in your Test Papers.

Yours faithfully,
J. J. BAGGOTT.

1 Jubilee Street,
Woodstone, Peterborough.
2nd Feb., 1911.

Dear Mr. Clough,

Please find enclosed the **receipt for £10**, the prize awarded to me for gaining the Full A.C.P. Diploma at the recent Examination with **Honours in Animal Physiology, English Language and Geography**.

I heartily thank you for the same. I shall always recommend your Classes to those who wish for expert guidance in preparing for examination. I have always found that one great feature of your Classes is the success with which you anticipate the actual examination questions. I am convinced that, but for the help afforded by your excellent tuition, I could not have succeeded nearly so well as I have done. I trust that the well-deserved popularity of your Classes may continue and steadily increase in the future.

Thanking you once more for your valuable assistance,

Believe me,
Yours sincerely,
CHAS. STEVENSON.

"Ellesmere,"
Fletton Avenue, Peterborough.
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G. B. Clough, Esq.

Dear Sir,

At the Christmas Examination of the College of Preceptors, I entered for the Arithmetic and Mathematics Papers of the Associate Grade.

I have pleasure in informing you that I have passed, obtaining **Honours in Arithmetic and Algebra**.

With thanks for your papers.

Yours faithfully,
SYDNEY C. HOWES.

12 Alfred Road,
Sparkhill, Birmingham.
31st Jan., 1912.

Dear Mr. Clough,

Once again I wish to record my hearty thanks to you and your tutors for the efficient guidance and help I have received.

The A.C.P. result reached me this morning and I am very glad to say that I have passed in Education, thus qualifying for the full diploma, as I was exempted from the other subjects because of the Distinctions gained at Certificate under your tuition.

The complete answers to all questions in Physiology and Psychology were of great benefit to me, and I shall always be delighted to recommend your Classes to my friends.

Thanking you for your able instruction,

I am, yours very sincerely,
JACK T. ELDRIDGE.

424, Moat Road, Warley,
Langley, Birmingham.
31st Jan., 1912.

Mr. G. B. Clough.

Dear Sir,

You will be pleased to hear I have passed in the Science group at L.C.P. with **Honours in Botany**.

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Thanking your Botany Tutor for his valuable help.

I remain, yours truly,
STANLEY C. LEWIS.

Doncaster Road,
Thrybergh, Rotherham.
2nd Feb., 1912.

Mr. G. B. Clough.

Dear Sir,

I am very pleased to inform you that I have qualified for the Diploma of A.C.P. with **Honours in Botany**.

I must thank you for your splendid Course for the Examination. The whole series of notes and solutions were excellent. You will notice that you forecasted the last question on the Botany Test Paper.

With heartiest wishes for the continued success of your College,

I remain, yours sincerely,
H. J. BROOKS.

**TWO of the THREE most distinguished Candidates at the
JAN. 1912 A.C.P. EXAM.**

were members of

Clough's A.C.P. Class

(viz., Mr. J. J. BAGGOTT and Mr. S. C. HOWES, each of whom gained double Honours—in Arithmetic and in Algebra).

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For full particulars of any of CLOUGH'S CLASSES—

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THE COLLEGE OF PRECEPTORS.—TEACHERS' DIPLOMA EXAMINATION.

CHRISTMAS, 1911.

THE Christmas Examination commenced on the 1st of January, and was held in London and at the following Local Centres:—Belfast, Birmingham, Bristol, Dublin, Leeds, Liverpool, Manchester, Newcastle-on-Tyne, Plymouth, Scalloway; Gibraltar; Bombay and Peshawar (India); Adams and Calitzdorp (S. Africa); Buguma (S. Nigeria); Hong-Kong and Anking (China).

The total number of candidates examined was 448.

The following are the names of the 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:—

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Smith, R. H.
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Williams, H. F. L. (*hon. alg.*)
Williams, J. T.
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Yeoman, G. D. (*hon. alg.*)

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e. = Higher English.
f. = French, *g.* = German,
i. = Italian, *l.* = Latin.

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Dennys, Brother *f.i.* (*hon.*)

LICENTIATESHIP.

Douthwaite, T. *e.f.*
Earnshaw, J. W. *f.l.*
Edley-Morton, C. *e.f.*
Humphreys, P. E. *e.l.*
Lowther, C. *e.f.*
Noake, J. E. *f.g.* (*hon.*)
Pitt, H. *f.l.*
Pridham, H. *f.l.*
Seabrook, H. S. *f.l.*
Smith, C. H. *f.l.*
Tindle, G. D. *e.f.*
Wrigley, Miss C. M. *f.l.*

ASSOCIATESHIP.

Arkwright, J. S. *g.*
Bottrill, S. N. *f.*
Brook, F. *f.*
Clarence, M. *f.*
Conradie, A. F. *l.*
Cooper, L. W. T. *f.*
Doughty, F. H. *f.*
Gachet, W. R. *f.*
Hankin, Miss K. *f.*
Hopkins, Miss A. E. *f.*
Long, Miss M. E. *f.*
MacLennan, T. *f.*

Martin, J. A. W. *f.*
Moore, Miss G. M. *f.*
Mundy, Miss R. K. *f.*
Phillips, H. A. *l.*
Senior, B. *f.*
Sidey, W. H. *f.*
Stephens, H. E. *f.*
Vinal, L. 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.

Rogers, C. W. *n.ch.*

LICENTIATESHIP.

Campbell, A. D. *m.a.*
Chesterfield, H. W. *ph.b.*
Clarke, A. F. *p.ch.*
Douthwaite, T. *ch.ph.*
Eades, F. D. *ph.b.*
Finch, Miss D. A. *m.b.*
Foster, C. H. *m.a.*
Hemmings, F. J. *m.ph.*
Jones, E. *m.a.*
Lewis, S. G. *ph.b.* (*hon.*)
Skeckell, N. G. *a.ph.*
Sykes, V. H. *a.ph.*
Wear, W. *p.ch.*

ASSOCIATESHIP.

Baxter, Miss E. E. *ph.b.*
Brooks, H. J. *ph.b.* (*hon.*)
Carrick, A. C. *ch.ph.*
Cole, Miss E. *ph.z.*
Evaus, F. *ph.g.*
Gentry, C. W. *ph.b.*
Lawrence, Miss H. *ph.* (*hon.*) *b.*
Lewis, L. C. *ph.b.*
Mauder, A. G. D. *p.* (*hon.*) *ch.* (*hon.*)
Robinson, W. R. *ph.b.* (*hon.*)
Rowland, F. *ch.ph.*
Sindall, G. A. *ph.b.*
Thompson, G. F. *ph.b.*
Vickery, L. E. *p.ph.* (*hon.*)
Washington, T. *ph.b.*
Williams, B. G. *ch.ph.*
Young, Miss M. S. *ch.ph.*

Diplomas were awarded to the following, who had satisfied all the prescribed conditions:—

FELLOWSHIP.

Jones, R. A.

LICENTIATESHIP.

Bowes, G. R.
Brosnan, T.
Burnett, Miss M. M.
Campbell, A. D.
Cruickshank, R.
Laniel, J.
Davies, B. J.
Davies, W. J.
Dickie, J. D.
Douthwaite, T.
Edley-Morton, C.
Edwards, E. J.
Elliott, C. W.
Evans, E. P.
Freeman, A. J.
Gardner, E. H.
Gaskin, H.
Gooch, S.
Gunnis, A. A.
Hale, H. W.
Harrison, E. H.
Hemmings, F. J.
Hopkyns, H. C.
Hoskins, C. R.
Ingham, H.

James, E. W. H.
Jones, W. J.
Monkhouse, J. A.
Moore, G.
Osborne, O. J.
Pitt, H.
Pooley, J. E.
Pugnire, S.
Rayner, P. R.
Robins, H. T.
Scott, G.
Stockton, W. B.
Thomas, H. E.
Wrigley, Miss C. M.

ASSOCIATESHIP.

Allen, Miss F. E.
Allwood, T. E.
Atkinson, E. J.
Badminton, A. S. B.
Barry, Miss C.
Bartlett, C. T.
Beare, W. G.
Benton, H. W.
Blanchard, F.
Boardman, S.
Bottomley, J. W.
Boyden, E. H.
Bradfield, W. J.

Bradley, J. W.
Bradley, W. L.
Brooks, H. J.
Brown, Miss M. M.
Bullew, F.
Ballock, H. A.
Burus, R.
Champion, S.
Clayton, Miss M. M.
Cole, Miss E.
Croot, B. W.
Cunningham, J. D.
Daniels, G.
Davies, Miss M. A.
Dodd, Miss J. E.
Doughty, F. H.
Elcombe, E. E.
Eldridge, J. T.
Enright, T. J.
Evans, F.
Fenwick, J. R. D.
Fleming, R. M.
Gachet, W. R.
Gentry, C. W.
Godfrey, Mrs. F. E.
Goode, J. F.
Grout, W. J.
Hall, Miss E. E.
Hambleton, Miss E. K.
Hamm, A.
Harris, J. R.

Hatton, A. E.
Hawke, J. A.
Hodds, F. F.
Hogan, Miss F. F.
Howells, F. J.
Hull, H. J. P.
Hunkin, Miss E.
Hussey, T. A.
Hutchinson, N. M.
Hutton, J.
Hiffe, J.
Isherwood, R.
Jennings, M. F.
Jones, L.
Jones, Miss M.
Kelly, R.
Kilshaw, W.
Lawrance, H. J.
Lee, Miss J. B.
Leese, C. E.
Le Gros, C. L.
Le Manquais, J. C. R.
Lewis, F. C.
Lewis, L. G.
Lloyd, T.
MacLean, Miss A. K.
Matthias, E.
McAllen, H. J. P.
Milne, H. B.
Mitchell, M.

Moloney, Miss N. M.
Morgao, A. S.
Nairn, G. A.
Newman, Miss H. M.
Patten, A. W.
Pinkney M. R.
Pipe, J.
Piper, A. G.
Pugnire, Miss G. E.
Riley, H.
Robinson, W. R.
Rowland, F.
Ryder, A. F. W.
Simpson, A.
Skurr, W.
Smith, E. A.
Smith, Miss O. W.
Stephens, Miss E.
Stewart, H. E.
Thompson, G. F.
Thompson, W.
Turner, T.
Vinal, L. J.
Washington, T.
Watkins, C. P.
Way, W. T.
Whitehouse, S.
Williams, B. G.
Williamson, Miss L. A.
Willing, E. J.
Wood, Miss C. J.

The Prize for **Theory and Practice of Education** was awarded to George Robert Bowes, and the Prizes for **Mathematics** and **Natural Sciences** were awarded to Charles William Rogers.

CLASS LISTS

OF CANDIDATES WHO HAVE PASSED THE CERTIFICATE EXAMINATION OF THE COLLEGE OF PRECEPTORS.—CHRISTMAS, 1911.

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.	du. = Dutch.	gr. = Greek.	ma. = Magnetism & Electricity.	sc. = Elementary Science.
al. = Algebra.	e. = English.	h. = History.	ms. = Mensuration.	sh. = Shorthand.
b. = Botany.	f. = French.	he. = Hebrew.	mu. = Music.	sp. = Spanish.
bk. = Book-keeping.	g. = Geography.	i. = Italian.	nh. = Natural History.	t. = Tamil.
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.	ll. = Light and Heat.	phys. = Elementary Physics.	z. = Zoology.
		m. = Mechanics.	s. = Scripture.	

The small figures ¹ and ² 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, Founnd. = 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.

[Bracketing of names denotes equality.]

BOYS.

FIRST CLASS [or Senior]. Pass Division.

Oosthuizen, J.A. <i>du.d.</i>	Marist Bros.' Coll., Uitenhage
Bodley, W.G.L.	Marist Bros.' Coll., Uitenhage
Buckman, J. <i>s.e.</i>	Mfantsipim S., Cape Coast Castle
Sylvester, C.St.B.	Private tuition
Kasumu, E.A.	Abeokuta Gram. S.
Dically, W.D. <i>ph.</i>	Private tuition
Sikuade, I.O.	Abeokuta Gram. S.
Israel, P.D.	Central Coll., Colombo
Maclear, N.W.	Marist Bros.' Coll., Uitenhage
van der Stuij, E.H. <i>du.</i>	Private tuition
Holmes, H.O. <i>gm.</i>	Marist Bros.' Coll., Uitenhage
Palmer, A.	Marist Bros.' Coll., Uitenhage
Manikavelu, A.	Norris Coll., Rangoon
Fuller, R.N.	Marist Bros.' Coll., Uitenhage
Dickson, A.B.	Mfantsipim S., Cape Coast Castle

SECOND CLASS [or Junior]. Honours Division.

Schultz, H.J.E. <i>du.</i>	Marist Bros.' Coll., Uitenhage
Yohaum, A. <i>ct.</i>	Norris Coll., Rangoon
Masou, C. <i>du.t.</i>	St. Aidan's Coll., Grahamstown
Paramanayagampulle, K. <i>ol.</i>	Eton Coll., Colombo
Adams, J.L. <i>s.sh.</i>	Private tuition
Paul, R. <i>ol.gm.t.</i>	Norris Coll., Rangoon

SECOND CLASS [or Junior]. Pass Division.

Ferera, S.S. <i>f.</i>	Central Coll., Colombo
Ellis, S.S. <i>s.</i>	Mfantsipim S., Cape Coast Castle
De Saxe, M. <i>al.ms.</i>	Marist Bros.' Coll., Johannesburg
Pitt, R.J.L.	Private tuition
Sylvester, N.G. <i>f.</i>	Private tuition
Seneviratna, J.P. <i>w.</i>	Central Coll., Colombo
Sunthshum, E. <i>t.</i>	Norris Coll., Rangoon
Long, H.	Marist Bros.' Coll., Uitenhage
Tillaka, H.M.G.	Eton Coll., Colombo
Markin, B.	Mfantsipim S., Cape Coast Castle
Doherty, T.A. <i>s.</i>	Abeokuta Gram. S.
Pedris, J.	Central Coll., Colombo
Manassewitz, J.	Marist Bros.' Coll., Johannesburg
McMillan, A.N. <i>e.</i>	Eton Coll., Colombo
Winslow, C.N.	Eton Coll., Colombo
Smith, J.P.	Marist Bros.' Coll., Uitenhage
(du Basson, C. E. <i>du.</i>	Marist Bros.' Coll., Uitenhage
Scott, J. E. <i>mc.</i>	Private tuition
Ferdinando, D. C. G.	Eton Coll., Colombo
Mendelsohn, S. L. <i>al.ms.</i>	Marist Bros.' Coll., Johannesburg
Ameratunga, L. P.	Eton College, Colombo
Candappa, C. A.	Eton Coll., Colombo
de Mel, D.	Central Coll., Colombo
E., H.	Norris Coll., Rangoon
Noel, E. A.	Private tuition
Davis, B. C.	Mfantsipim S., Cape Coast Castle
Edwards, A. C.	Marist Bros.' Coll., Uitenhage
Gordon, H. S. <i>he.</i>	Marist Bros.' Coll., Johannesburg
Peries, P. L.	Eton Coll., Colombo
Thoung, S.	Norris Coll., Rangoon
Quartey, A. C.	Acera Gram. S.
Bingham, W. H.	Augustinian Conv., Ladysmith
Paterson, A. R. G.	Marist Bros.' Coll., Uitenhage
Longman, F.	Marist Bros.' Coll., Uitenhage
Thurnham, P.	Marist Bros.' Coll., Cala
Van Gorkom, W. <i>du.</i>	Marist Bros.' Coll., Johannesburg
Abeysuriya, A. P. F.	Eton Coll., Colombo
Goldberg, J.	Marist Bros.' Coll., Johannesburg
Ingram, G.	Marist Bros.' Coll., Johannesburg
Müller, S.	St. Aidan's Coll., Grahamstown

FIRST CLASS [or Senior]. Pass Division.

Chee-A-Tow, G. E.	St. Joseph's Inter. S., Lacytown, Georgetown, B. Guiana
Munro, A. J.	Marist Bros.' Coll., Uitenhage
Spence, H. R.	Marist Bros.' Coll., Uitenhage
Becker, J.	Marist Bros.' Coll., Johannesburg
Ogunbayo, E. B.	Abeokuta Gram. S.
Anum, P. D.	Marist Bros.' Coll., Johannesburg
de Mel, A.	Central Coll., Colombo
Froneman, E. E.	Marist Bros.' Coll., Uitenhage
Cohen, B.	Private tuition
Knola, N. A.	Abeokuta Gram. S.
Areher, D.	St. Aidan's Coll., Grahamstown
Grant, F. C. F.	Mfantsipim S., Cape Coast Castle
Solomon, J.	Marist Bros.' Coll., Johannesburg
Thau, M. B. <i>d.</i>	Eton Coll., Colombo
Karanapala, D. D.	Eton Coll., Colombo
Legg, E. A.	Marist Bros.' Coll., Uitenhage
Liknaitzki, J.	Marist Bros.' Coll., Johannesburg
Morris, H. R.	Private tuition
O'Donoghue, E.	Marist Bros.' Coll., Johannesburg
Kuforiji, C. V. F.	Abeokuta Gram. S.
MacNay, H. F.	Marist Bros.' Coll., Uitenhage
Muthukumarasamy, P.	Norris Coll., Rangoon
Sanyade, T. P.	Abeokuta Gram. S.
Maung, M. P.	Central Coll., Colombo
Chellaturaj, S.	Central S., Batticaloa
Power, J. P.	Marist Bros.' Coll., Uitenhage
Gardner, L.	Marist Bros.' Coll., Uitenhage
Gopal, J. S.	Private tuition
Akyempon, J. H.	Mfantsipim S., Cape Coast Castle
Mensah, H. A.	Mfantsipim S., Cape Coast Castle
Fernando, W. F.	Eton Coll., Colombo
McCusker, A.	St. Aidan's Coll., Grahamstown
Perera, S. W.	Central Coll., Colombo
Yates, J. B.	St. Aidan's Coll., Grahamstown
Mafe, J. B.	C.M.S. Gram. S., Lagos
Freud, L.	Private tuition
Ogun, F. A.	C.M.S. Gram. S., Lagos

THIRD CLASS. Honours Division.

Neustadt, E. C. B. <i>e.a.al.ge.d.</i>	Marist Bros.' Coll., Uitenhage
Featherstone, D. <i>e.a.al.gm.du.</i>	Marist Bros.' Coll., Uitenhage
Hart, H. <i>e.h.a.al.gm.</i>	Marist Bros.' Coll., Johannesburg
Nepburne, J. C. <i>a.al.</i>	Private tuition
Stow, F. <i>a.al.gm.du.</i>	Marist Bros.' Coll., Uitenhage
Kuriapper, M. S. <i>s.g.m.</i>	Central S., Batticaloa
Hunter, H. R. <i>e.a.al.du.</i>	Marist Bros.' Coll., Uitenhage
John, A. K. <i>a.bk.</i>	Private tuition
Watson, C. C. H. <i>s.e.</i>	Augustinian Conv., Ladysmith
Ashfield, B. W. C. <i>e.a.du.</i>	Marist Bros.' Coll., Uitenhage
Hagan, H. <i>s.e.al.</i>	Mfantsipim S., Cape Coast Castle
Davies, E. <i>a.du.</i>	Marist Bros.' Coll., Uitenhage
Einkamerer, A. <i>e.a.al.gm.d.</i>	Marist Bros.' Coll., Uitenhage
Findlay, G. C. <i>sh.</i>	Private tuition
Jensen, O. <i>e.h.al.</i>	Marist Bros.' Coll., Johannesburg
Allpass, B. <i>e.a.al.gm.</i>	Marist Bros.' Coll., Johannesburg
Chinery, R. C. C. <i>e.</i>	Mfantsipim S., Cape Coast Castle
Hart, B. <i>e.al.du.</i>	Marist Bros.' Coll., Johannesburg
Caesar, E. <i>w.s.</i>	Private tuition
McGuire, J. J. <i>e.a.</i>	Marist Bros.' Coll., Uitenhage
McMaster, C. V. <i>a.bk.</i>	Private tuition
Plange, J. W. D. <i>u.al.gm.</i>	Mfantsipim S., Cape Coast Castle
Joseph, M. C.	Private tuition
Reuvid, L. <i>e.a.al.d.</i>	Marist Bros.' Coll., Johannesburg
Adison, E. M. <i>e.</i>	Mfantsipim S., Cape Coast Castle
Biccard, C. <i>e.a.d.</i>	Marist Bros.' Coll., Johannesburg
Hussain, K. M. M. <i>al.d.</i>	Central Coll., Colombo
Peters, J. L. <i>a.</i>	Norris Coll., Rangoon

THIRD CLASS. Pass Division.

2Fernando, L. M. L.	Central Coll., Colombo
2Lindsay, W. W. O.	Mfantsipim S., Cape Coast Castle
2Arold, T. M.	Marist Bros.' Coll., Uitenhage
2Kobrio, N. <i>al.</i>	Marist Bros.' Coll., Johannesburg
2Rennie, A.	Marist Bros.' Coll., Johannesburg
2Chelladore, M.	Eton Coll., Colombo
Davidson, A. <i>al.f.</i>	St. Joseph's Inter. S., Lacytown, Georgetown, B. Guiana
2Holey, G.	Marist Bros.' Coll., Cala
2Amartey, J. W.	Mfantsipim S., Cape Coast Castle
Frickel, H. <i>c.</i>	Marist Bros.' Coll., Johannesburg
Powell, C. <i>e.a.al.gm.</i>	Marist Bros.' Coll., Johannesburg
Arthur, B. S.	Mfantsipim S., Cape Coast Castle
2Coker, B.	St. Aidan's Coll., Grahamstown
Koller, C. <i>a.al.</i>	Marist Bros.' Coll., Johannesburg
Lenaghan, T. <i>e.a.</i>	Marist Bros.' Coll., Uitenhage
Girndt, E. R. C. <i>a.du.</i>	Marist Bros.' Coll., Uitenhage
Stewart, E. a.	St. Aidan's Coll., Grahamstown
Fraser, W. O. <i>h.</i>	St. Joseph's Inter. S., Lacytown, Georgetown, B. Guiana
Downes, A. <i>al.</i>	Marist Bros.' Coll., Johannesburg
Hodlinoth, R. W. <i>s.g.</i>	Government S., Nairobi
John, C. A.	Private tuition
Kayode, D. A. <i>al.</i>	Abeokuta Gram. S.
Mahon, W. S.	Private tuition
Mortimer, R. a.	Marist Bros.' Coll., Johannesburg
Cowen, L. <i>al.</i>	Marist Bros.' Coll., Johannesburg
Wall, N. R. <i>e.a.</i>	Marist Bros.' Coll., Uitenhage
2Meadows, V. O.	Abeokuta Gram. S.
Morgan, S. <i>al.</i>	Marist Bros.' Coll., Johannesburg
Morrison, S. E.	Mfantsipim S., Cape Coast Castle
Alexander, A. J. <i>e.d.</i>	Marist Bros.' Coll., Uitenhage
Bankole, D. O. s.	Abeokuta Gram. S.
Biney, H. B. <i>al.gm.</i>	Mfantsipim S., Cape Coast Castle
2Carter, A.	Private tuition
Dick, W. R. <i>al.</i>	Private tuition
Sagoe, H.	Mfantsipim S., Cape Coast Castle
Anderson, J. <i>e.al.gm.</i>	Marist Bros.' Coll., Johannesburg
2De Silva, T. A.	Central Coll., Colombo
Edmunds, J. P. <i>e.du.</i>	Marist Bros.' Coll., Uitenhage
Enchill, K. B. <i>e.</i>	Mfantsipim S., Cape Coast Castle
Godfrey, E. <i>a.al.gm.</i>	Marist Bros.' Coll., Johannesburg
Hirst, G. a.	Marist Bros.' Coll., Johannesburg
Leighton, K. G. <i>e.al.</i>	Mfantsipim S., Cape Coast Castle
Allis, H.	Marist Bros.' Coll., Johannesburg
Prescod, G. T.	Private tuition
2Remington, A. N.	St. Joseph's Inter. S., Lacytown, Georgetown, B. Guiana
Skinner, G. a.	Marist Bros.' Coll., Uitenhage
2Thagarajah, V.	Private tuition
2Duffey, A.	Marist Bros.' Coll., Cala
Hodes, J. z.	Marist Bros.' Coll., Johannesburg
Sirimane, H.	Central Coll., Colombo
Solagbade, J. T. <i>al.f.</i>	Abeokuta Gram. S.
2Benjamin, S. D. C. <i>f.</i>	Private tuition
2Chowles, G.	Marist Bros.' Coll., Uitenhage
Elliott, R. E. <i>d.</i>	Marist Bros.' Coll., Uitenhage
Harris, D. a.	Marist Bros.' Coll., Uitenhage
2Kuforiji, C. B. A.	Abeokuta Gram. S.
2Kuforiji, W. A. A.	Abeokuta Gram. S.
2Arkaah, J. K.	Mfantsipim S., Cape Coast Castle
James, B. R. a.	Private tuition
Knight, J.	Marist Bros.' Coll., Uitenhage
Sherry, H.	Marist Bros.' Coll., Johannesburg
2Wijakoon, D. W.	Eton Coll., Colombo
2Effen, T. a.	Marist Bros.' Coll., Johannesburg
2Kinna, T. a.	St. Aidan's Coll., Grahamstown
2McDonald, G. Z. a.	Private tuition
2Fadipe, A. O.	Abeokuta Gram. S.

BOYS, 3RD CLASS, PASS—continued.

Hammond, F.T. al. Mfantsipim S., Cape Coast Castle
Albertijn, B. Marist Bros.' Coll., Uitenhage
Appulamy, H.D. a. Central Coll., Colombo
Cobbina, D.A. bk. Mfantsipim S., Cape Coast Castle
Cobbina, F.I. Mfantsipim S., Cape Coast Castle
Cohen, L. Marist Bros.' Coll., Johannesburg
Kelly, J. Marist Bros.' Coll., Johannesburg
Marsh, F. Government S., Nairobi
Plange, J.B. e. Mfantsipim S., Cape Coast Castle
Quero, J.W. e.a.al. Wesleyan Boys' High S., Bathurst
Raja, C. Central Coll., Colombo
Nel, P.J. Marist Bros.' Coll., Uitenhage
Newman, E. a.al. Marist Bros.' Coll., Cala
Olayoku, W.M. al. Abeokuta Gram. S.
Cochrane, L. Marist Bros.' Coll., Johannesburg
Davis, R. St. Aidan's Coll., Grahamstown
Mends, E.K. e. Mfantsipim S., Cape Coast Castle
Parr, M. a.al. Norris Coll., Rangoon
Tin, T. a.d. Norris Coll., Rangoon
Rankow, N. Marist Bros.' Coll., Johannesburg
Skues, T. McK. Mfantsipim S., Cape Coast Castle
Acquaah, I.A. e. Mfantsipim S., Cape Coast Castle
Gunaratin, P.P. Eton Coll., Colombo
Henry, V.R. C. St. Joseph's Inter. S., Lacytown, Georgetown, B. Guiana
James, J.A. D. e.al. St. Joseph's Inter. S., Lacytown, Georgetown, B. Guiana
Lipman, M. Marist Bros.' Coll., Johannesburg
McKay, W. a.al. Marist Bros.' Coll., Cala
Ingram, A. Marist Bros.' Coll., Johannesburg
Jibowu, J.O. Abeokuta Gram. S.
Papenfus, N. e. Marist Bros. Coll., Uitenhage
Raeburn, S. e. a. Private tuition
Stahl, A. St. Aidan's Coll., Grahamstown
van der Meulen, D.R. Marist Bros.' Coll., Uitenhage
Alexander, J. Marist Bros.' Coll., Johannesburg
Ekanayake, V. e. Central Coll., Colombo
Eke, R. a.al. Marist Bros.' Coll., Johannesburg
Estruoso, I.A. s. Abeokuta Gram. S.
Burke, S.E. s. Private tuition
Coker, A.O. Abeokuta Gram. S.
Oluymeni, A.O. Abeokuta Gram. S.
Williams, I.O. Abeokuta Gram. S.
Hagan, J. e. Mfantsipim S., Cape Coast Castle
Kerwood, G.C. Comenius Sec. S., Georgetown, B. Guiana
St. Hill, S.O. St. Joseph's Inter. S., Lacytown, Georgetown, B. Guiana
Connellan, E. Marist Bros. Coll., Uitenhage
Dairs, M.L. s. Government S., Nairobi
Malcomson, R. Marist Bros.' Coll., Cala
Rajakariar, E. s. Jaffna National Acad., Manepay
Smith, V. al. Marist Bros.' Coll., Cala
SornaYadivel, S. Jaffna National Acad., Manepay
Ziegler, R. Marist Bros.' Coll., Johannesburg
Atitebi, D.E. C.M.S. Gram. S., Lagos
Davidson, T. Government S., Nairobi
Gibbens, H. e.a. Marist Bros.' Coll., Uitenhage
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CURRENT EVENTS.

At the Members' Meeting of the College of Preceptors, on March 20, a paper will be read by Mr. M. W. Keatinge, M.A., Oxford University Reader in Education, on "The Danger of Æsthetics in Schools."

* * *

Mlle D'ORLIAC will address the Société Nationale des Professeurs de Français at the College of Preceptors on March 2, at 4 p.m., on "La Culture française en Angleterre."

* * *

THE Teachers' Guild Modern Language Holiday Courses will be held this year at Honfleur, Santander, and Lübeck, commencing in the first week of August. They are specially arranged for English-speaking students, and emphasis is laid on phonetics. For information address the Teachers' Guild, 74 Gower Street, W.C. A handbook will be issued presently.

* * *

THE London Branch of the Incorporated Association of Assistant Masters in Secondary Schools is organizing a meeting, to be held at 3 p.m. on Saturday, March 9, at which the Insurance Act, with special reference to secondary teachers, will be explained. The Association, in conjunction with other Associations, is taking steps to form an approved Society for Secondary and University Teachers. All University, secondary, and technical teachers (of both sexes) in London are invited to the meeting. The place of meeting will be announced later. Particulars may be obtained on application to Mr. H. P. Lunn, the County Secondary School, Holloway; Hilldrop Road, Camden Road. N.

* * *

MR. BEN. H. MORGAN, F.S.S., will complete his series of six addresses on "The Trade, Industry, and Finance of the British Empire" at the London School of Economics: March 6, "South Africa"; March 20, "India and the Crown Colonies"; March 27, "The Empire's Resources." The hour is 5 p.m.

* * *

MISS C. VON WYSS will address the School Nature-Study Union at the London Day Training College, Southampton Row, W.C., on March 15, at 7.45 p.m., on "The Ways of Pond Animals."

* * *

MISS MARGARET McMILLAN will address the Fabian Education Group at Clifford's Inn Hall on March 5, at 8 p.m., on "What the Worker Wants"—the third of a series of lectures on "The Higher Education of Working People."

At a Group Meeting on March 14, at 7.30, Mrs. Dice will offer "Some Reflections on the need for Further Training for Class Teachers and Special Training for Head Teacherships."

* * *

THE International Commission on Mathematical Educa-

tion will meet at Cambridge on August 22-28, on occasion of the fifth International Congress of Mathematicians.

The educational subjects proposed for discussion are the following :— (1) Intuition and experiment in mathematical teaching at secondary schools, in particular the use of drawing, measurement, and calculation (numerical and graphical) in the upper classes of schools that prepare for the Universities; (2) mathematics as needed in the study of physics. In preparation for these discussions, information is being collected as to the conditions prevailing in different countries.

* * *

THE Child Study Society announces that a Conference of the combined societies will be held at the University of London on May 9-11 under the presidency of Sir James Crichton-Browne, F.R.S.

* * *

AN Exhibition of Designs for Mural Painting and for the Decoration of Schools and other Public Buildings will take place at Crosby Hall, Chelsea, in the latter part of May. Competition is limited to artists and students living in London and vicinity. All designs must be delivered to the Hon. Secretaries by May 1. Subscriptions to the Hon. Treasurer, Mr. John Ross, C.A., University Hall of Residence, Cheyne Walk, Chelsea, S.W.

* * *

At the Polyglot Club (4 Southampton Row) the following lectures, &c., will be given (8.30 p.m.) :—March 2, "La Nature et la Morale," by M. M. Deshumbert; March 4, "Peru the Cradle of South America," with limelight views, by Mr. Oscar V. Salomon; March 9, *Serata Italiana*; March 11, German (not yet arranged); March 16, "Le Sonnet en France au XIXe Siècle," by Prof. L. M. Brandin; March 18, Debate, "That the Music Hall is the only Present-day Survival of True Art"; March 21, "El Poeta de Europa," by Señor Don Ramon Basterra; March 24, "Musica e Poesia," by Cav. Tullio Sambucetti; March 25, Annual General Meeting; March 28 (Russian), "The Binoenlar Vision and Human Psychology: some Fantastic Speculations," by Mr. A. Bakshy; March 30, *Diner Français*. Hon. General Secretary: George Young, 5 and 6 Clement's Inn, Strand, W.C.

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HONOURS. THE Weldon Memorial Prize, Oxford University, has been awarded to Prof. Karl Pearson, F.R.S., LL.D., who, however, has renounced the honour. "I feel strongly," he writes to the Vice-Chancellor of Oxford University, "that, whatever the formal wording of the statutes may be, the intention of the donors and the spirit of the late Prof. Weldon, which influenced their foundation, was the encouragement of younger men, to whom timely recognition may mean an all-important indication that their work is appreciated and their chosen path a fitting one."

* * *

THE Senatus Academicus of the University of St. Andrews have resolved to confer the following honorary degrees at the public graduation ceremonial to be held on July 17:—

D.D.—Rev. J. S. Clemens, B.D., Principal of the United Methodist College, Ranmoor, Sheffield; Prof. James Mackinnon, Ph.D., Professor of Church History at Edinburgh; the Rev. T. Sinton, Minister of Dores, Inverness; the Rev. A. D. Sloan, M.A., B.Sc., Minister of Hope Park U.P. Church, St. Andrews, Chairman of the St. Andrews Burgh School Board.

LL.D.—Mr. J. M. Anderson, Librarian of the University; Sir Ralph W. Anstruther, Bart., of Balcaiskie, Pittenweem; Geh. Reg. Professor Georg F. L. P. Cantor, Professor of Mathematics at the Friedrichs University, Halle; Sir Thomas Boor Crosby, Lord Mayor of London, M.D. (St. Andr. 1862); Mr. W. K. Dickson, Keeper of the Advocates' Library; Dr. G. G. Henderson, M.A., D.Sc., Professor of Chemistry in Glasgow Technical College; Prof. J. P. Kneuen, of Leyden, formerly Professor of Physics in University College, Dundee; Mr. Alexander Shewan, M.A. Aberd., St. Andrews, formerly of the Indian Civil Service; and Sir John Batty Take, M.D., who for many years represented the Universities of Edinburgh and St. Andrews in Parliament.

A MEMORIAL tablet to the late Principal John Marshall Lang, C.V.O., D.D., presented by his family, has been placed in King's College Chapel, Aberdeen.

* * *

SIR EDWIN RAY LANKESTER, Vice-Chancellor M. E. Sadler, and the Duke of Northumberland have been elected honorary Students of Christ Church, Oxford.

* * *

THE REV. DR. EDWIN A. ABBOTT has been elected an Honorary Fellow of St. John's College, Cambridge.

* * *

DR. A. E. SHIPLEY, Master of Christ's College, Cambridge, has been presented with his portrait in oils, painted by Mr. William Nicholson, in recognition of his services to zoological teaching and research and his eminent usefulness to the University and to his college.

* * *

MR. A. Y. BABKOV, B.A., St. Petersburg, has been appointed Honorary Research Fellow in the Economic Conditions of the Russian Empire in the University of Liverpool.

* * *

DR. PERCY PICKERILL, Director of the Dental School of the University of Otago, formerly Lecturer in Dental Histology and Pathology in Birmingham University, has been awarded the Cartwright Prize of the Royal College of Surgeons of England—a bronze medal and £70.

◆◆◆

THE Goldsmiths' Company has made the following grants to the University of London:—£10,000 for the Building Fund of King's College for Women; £5,000 for the Endowment Fund of Bedford College for Women; and £1,000 for the Building and Equipment Fund of the Chemical Department of University College.

The Company has also made a grant of £1,000 to the National Physical Laboratory at Teddington for the equipment of the Metallurgical Department.

* * *

REGULATIONS have been adopted for the administration of the Medical Research Fund for which provision was made in the will of the late Dr. Charles Graham. The income of the fund, about £1,250 a year, will be devoted to aiding research in the School of Advanced Medical Studies connected with University College Hospital, London. A Director of Research will be appointed at a salary not exceeding £400 a year; there will be a Scholarship in Pathology of the value of £200 a year, tenable for two years; and provision is further made for the award of a gold medal for pathological research, for making grants to workers in the laboratories, and for defraying the expenditure on apparatus, &c., required for the purposes of the trust.

* * *

THE Birmingham Education Committee has recommended the City Council to make a grant annually to the University equal to the net produce of a penny rate, which is estimated to realize about £16,000. It was also recommended that the University should offer annually fifteen major scholarships entitling the holders to a remission of fees, together with a maintenance grant in case of necessity of not more than £30 per annum; further, that junior lecturers in Economics, History, Literature, and other subjects for working-class circles, should be appointed, the lecturers to give evening lectures to adult workers.

THE coalowners of the South Midlands are providing £250 a year for five years for a Lecturer on Mine Rescue Work in the Mining Department of Birmingham University.

* * *

THE University of Manchester has issued an urgent appeal for funds for the Faculty of Commerce. An additional income of £1,500 a year is needed.

* * *

THE LATE MISS HELEN SWINDELLS, of Birkdale, has left £5,000 to Manchester University for the promotion of Cancer Research.

* * *

THE Building and Endowment Fund of Bedford College of Women has been raised to £115,000 by a munificent gift of £30,000 by an anonymous donor.

* * *

MR. CLEMENT STEPHENSON, Veterinary Inspector for Northumberland, has given £5,000 towards the erection of buildings for a new Agricultural Department in Armstrong College, to undertake advisory work among farmers in the north of England.

* * *

Lloyd's Register has given three scholarships of £50 a year for three years to Armstrong College. Open to British subjects under twenty-three.

* * *

MISS EMILY DAVIES, LL.D., for many years the Hon. Secretary of Girton College, was presented, by over 1,300 of her admirers and friends, with 700 guineas "for disposal as she might think fit." The Mistress of Girton, in making the presentation, announced that a tablet, with the words "Emily Davies Court," has been put up over the oldest part of the College Buildings. Miss Davies has since offered the sum of money to the fund for completing the East Wing.

* * *

DR. J. B. HURRY, of Reading, has offered to endow a Research Studentship in Physiology at Cambridge—£100, tenable for one year and available every two years.

* * *

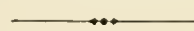
MRS. ELIZABETH FARMER-ATKINSON, Epsom, has left £500 to the Leys School, Cambridge, subject to her husband's life interest.

* * *

MR. J. GRIFFITH JONES, of Pontypridd, has subscribed another £100 (making £600 in all) for two "Caradog" Scholarships in Music, of £25 each for two years, at University College, Cardiff.

* * *

MR. T. R. FERENS, M.P., has given the Hull City Council £1,250 to provide an Exhibition of £50 to a British University.



Scholarships and Prizes.

In Oxford, University Scholarships, Exhibitions, &c., are offered by various Colleges, as follows. Classics: March 19,

Magdalen; March 25, Worcester; May 14, Pembroke.—Mathematics: March 5, Magdalen, Brasenose, Christ Church, Worcester.—Natural Science: March 5, University, Lincoln, Magdalen, St. John's; March 12, Keble; March 19, Merton, Exeter, New College, Corpus Christi; July 2, Brasenose.—History: March 19, Exeter; March 25, Worcester; May 14, Pembroke; June 11, Non-Collegiate students.—French: March 25, Worcester.—Music: March 19, Keble.

ST. JOHN'S COLLEGE, Oxford, offers a number of exhibitions in Language and Literature (£40 to £60 a year), open without limit of age to persons in need of assistance. Examination begins June 18.

* * *

CLARE COLLEGE, Cambridge, offers an Organist Studentship, £65 a year, on March 19.

* * *

A COMBINED examination for Entrance Scholarships and Exhibitions, tenable at University College, King's College, and East London College, will be held in London by the London Inter-Collegiate Scholarships' Board on May 28 and following days. Apply for forms of entry to the Secretary of the Board, University College, Gower Street, W.C. Forms to be returned by May 1.

* * *

THE John Bright Scholarship for Research in English Literature is offered for competition by Manchester University to persons that have taken the degree of Bachelor in the University within the past five years. Apply to the Registrar by June 1.

* * *

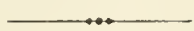
CHELTHENHAM COLLEGE offers at least 8 Entrance Scholarships of £80 to £20, and some House Exhibitions, to candidates not already in the college. Also, open to all, 3 Army Scholarships, 2 Old Cheltonian Scholarships, and 1 Francis Wylie Scholarship. Some nominations for Sons of the Clergy, £30 a year, open next term. Apply to the Bursar.

* * *

FRAMLINGHAM COLLEGE, Suffolk, offers 3 Entrance Scholarships on March 29. Apply to the Secretary.

* * *

SHERBORNE SCHOOL offers Entrance Scholarships to boys under 15 (on August 1). Examination commences July 16. Apply to the Head Master.



It is reported that Sir Charles N. E. Eliot, K.C.M.G., Vice-Chancellor of Sheffield University, has been nominated Principal of Hong-Kong University.

Appointments and Vacancies.

Sir Charles Norton Eliot was educated at Cheltenham and Balliol College, Oxford, and after a very brilliant career at the University entered the Diplomatic Service in 1888. He held posts at St. Petersburg, Constantinople, and Washington, and in Morocco, Bulgaria, Servia, and Samoa. He became Commissioner and Commander-in-Chief of the British East Africa Protectorate in 1900, but resigned, in 1904, in consequence of differences on questions of policy with the Home Government. He was appointed Vice-Chancellor of the University of Sheffield in 1905.

* * *

DR. WILLIAM ODLING, F.R.S., has resigned the Waynflete Professorship of Chemistry at Oxford as from the end of the current session, after some forty years' service.

* * *

SIR GEORGE HARE PHILIPSON, President of the Newcastle College of Medicine, has been appointed Vice-Chancellor of Durham University.

* * *

THE Chair of Semitic Languages and Literature, in Manchester University, is vacant through the premature death of Prof. H. W. Hogg, M.A., B.Litt.

Educated at Dollar Academy, and at Edinburgh University (M.A.). Vice-Principal of the American College at Assiout (where his father, Dr. John Hogg, was Principal) 1888-94; settled at Oxford as contributor to the *Encyclopædia Biblica* 1894; joined

New College, and took degree of B.Litt. for research in Oriental History and Philology; on editorial staff of *Encyclopædia Biblica* 1895-1903; Lecturer in Hebrew and Arabic at Owens College, 1900-1903; Examiner in Honour School of Oriental Studies, Oxford, 1906. Elected Professor at Manchester 1903. Writings numerous and valuable. Age 48.

* * *

MR. EDMUND TAYLOR WHITTAKER, M.A. Cantab., Sc.D. Dubl., F.R.S., Royal Astronomer of Ireland since 1906, has been appointed Professor of Mathematics in the University of Edinburgh, in succession to Prof. Chrystal.

Educated at Manchester Grammar School, and Trinity College, Cambridge. Fellow of Trinity 1896-1907. Secretary to the Royal Astronomical Society 1901-6.

* * *

THE REV. JAMES MOFFATT, D.D., Broughty Ferry, has been appointed to a Professorship in Mansfield College, Oxford.

* * *

PROF. JOHN JOLY, D.Sc., F.R.S., Trinity College, Dublin, has been appointed Huxley Lecturer in Birmingham University for 1912.—Mr. John Farneaux Jordan, M.B., F.R.C.S., has been appointed Ingleby Lecturer.

* * *

DR. A. H. FISON has been appointed Secretary to the Gilechrist Educational Trust, in succession to the late Dr. R. D. Roberts.

* * *

MR. ALFRED SCHWARTZ has resigned the Professorship of Electrical Engineering in Manchester University and the Municipal School of Technology, on appointment to a Staff Inspectorship in Engineering under the Board of Education.

* * *

MR. IVOR THOMAS, Ph.D. Marb., D.Sc. Wales, of the Geological Survey, London, has been appointed an Inspector of Schools under the Board of Education.

Aberystwyth University College: B.Sc. with honours. Master at Wellington College; Science Master, Brynmawr County School. F.G.S.

* * *

AN Assistant Lecturer is required in the Departments for the Training of Men Teachers for Elementary and Secondary Schools in Cardiff University College, in succession to Mr. Caleb Rees, M.A., who has been appointed to a post under the Board of Education. Apply to the Registrar by March 12.

* * *

A PROFESSOR of Political Economy and English is required for Canning College, Lucknow. Honours degree; specialized in Political Economy; experience. Rs. 500 a month, rising by annual increments of Rs.50 to Rs.750 a month. Apply, with copies of testimonials in duplicate, to the Principal, by April 7.

* * *

MR. E. A. BENIANS, M.A., Fellow of St. John's College, Cambridge, has been appointed to a Lectureship in History at the College. He is at present in the East as an "A.K." Travelling Scholar.

* * *

MR. S. J. CRAWFORD, M.A. (R.U.I.), has been appointed Lecturer in English in the University of Bristol, in succession to Dr. F. E. A. Campbell.

* * *

THE Lady-Superintendentship of Women Students at University College Hall, London, is vacant through the death of Miss Rosa Morison, who had held the post for nearly thirty years.

MR. ALAN G. OGILVIE, of Magdalen College, has been appointed Junior Demonstrator in Geography at Oxford, in place of Mr. Osbert G. S. Crawford, of Keble College, resigned.

* * *

MR. JAMES MUNROE, M.A., has been appointed Lecturer on Colonial and Indian History in Edinburgh University.

* * *

MR. E. M. TAYLOR, B.Sc., of the Department of Agricultural Chemistry, Armstrong College, has been appointed Assistant Lecturer in Chemistry at the Harper-Adams Agricultural College, Newport.

* * *

THE Principalship of the Liverpool School of Art is vacant. £600. Apply (official form) to the Director of Technical Education, Central Technical School, Byrom Street, Liverpool, by March 5.

* * *

MR. J. F. REES, B.A., Assistant Lecturer in History, Bangor University College, has been appointed Lecturer in Economic History in the Queen's University, Belfast.

Applications for the Assistant Lecturership in History at Bangor should be made to the Secretary and Registrar by March 16.

* * *

MR. M. H. RENALL, B.Sc., of University College, London, has been appointed Assistant Lecturer and Demonstrator in Physiology and Lecturer in Physiological Chemistry, at University College, Cardiff.

* * *

MR. EDWIN THIRLWALL ENGLAND, M.A., Head Master of King Edward VI School, Bury St. Edmunds, has been appointed Head Master of Exeter School.

Educated at Trinity College, Cambridge. First Class (Second Division) Classical Tripos 1899. Marlborough College; Bury 1908.

* * *

MR. FRANK BOWER, M.A., Senior Master, University School, Southport, has been appointed Head Master of Southport College.

Educated at Lymm Grammar School, and at Owens College. First Class in Final B.A. 1900; Cobden Club Prize 1900; Shuttleworth Prize in Economics 1902; M.A. 1903; Cranmore House School, Wolverhampton, 1901-2; Birkenhead School 1902-6; Halesowen Grammar School 1906-7; H.M.S. Conway 1907-8; University School, Southport, 1908.

* * *

MR. GEORGE L. ROBATHAN, Assistant Master, Cathedral School, Llandaff, has been appointed Head Master of the same school.

Matriolated at London University 1896; Surrey House School, Cliftonville, Margate.

* * *

MR. G. S. THOMPSON, Glengorse School, Eastbourne, has been appointed Head Master of Derwent House School, Bamford.

* * *

MISS C. E. BATTYE (Second Class Final Honours in the School of Natural Science, Oxford), Assistant Mistress, Clapham High School, has been appointed Lady Principal of the Hastings and St. Leonards Ladies' College, in succession to Miss F. A. A. Bishop, who has retired after twenty-five years' service.

* * *

THE Head Mastership of the County Secondary School, Holloway, Hilldrop Road, Islington, N., is vacant. £400,

rising by annual increments of £20 to £600. University degree; Secondary experience. Apply (official form: send stamped addressed foolscap envelope) to the Education Officer, London County Council, Education Offices, Victoria Embankment, by March 4.

MESSRS. GEORGE G. HARRAP & Co. announce Literary. "The Industrial and Social History Series," by Miss Katharine E. Dopp. Ph.D., formerly Director of Training in the Normal Department of the University of Utah. Three volumes are now ready: (1) "The Tree-Dwellers: the Age of Fear"; (2) "The Early Cave-men: the Age of Combat"; (3) "The Later Cave-men: the Age of the Chase." There is also a volume of "Suggestions to Teachers." "The series is written for the express purpose of relating practical activities to all the work done in the elementary school."

* * *

THE Cambridge University Press has decided to issue a series of monographs—"The Cambridge Farm Institute Series"—each containing a summary of the present position of some particular aspect or branch of agricultural science by an expert of acknowledged authority. The general editors of the series are Prof. T. B. Wood, School of Agriculture, Cambridge, and Dr. E. J. Russell, Rothamsted Experimental Station, Harpenden, Herts. The books are intended for senior students, teachers, and investigators.

* * *

MESSRS. LONGMANS will shortly publish "An Introduction to Experimental Education," by Dr. R. R. Rusk, Lecturer in Education to the St. Andrews Provincial Committee. The work is based on Meumann, but incorporates the results of more recent investigation, especially in this country.

* * *

MESSRS. MACMILLAN promise "The Verse of Greek Comedy," by Dr. John Williams White—a systematic study of the metres of Aristophanes.

* * *

MESSRS. CONSTABLE will commence in April the publication of *Bedrock: a Quarterly Review of Scientific Thought*, under the editorship of Mr. H. B. Grylls, with an Editorial Committee consisting of Sir Bryan Donkin, Prof. Poulton, Prof. Turner, and Dr. G. Archdall Reid.

General. THE PRINCE OF WALES will matriculate as an undergraduate at Magdalen College, Oxford, next Michaelmas term.

* * *

THE BISHOP OF DURHAM, as Visitor of Durham University, has decided not to assent to the proposed removal of the restriction limiting degrees in Divinity to persons in priest's orders. The Faculty of Theology has more than once recommended that such restriction should be removed.

* * *

DR. AUGUST WEISMANN proposes to retire from the Chair of Zoology at Freiburg at the close of the winter session.

* * *

THE proposed establishment of a University at Dacca is strongly opposed in Bengal, partly because it would accentuate linguistic and religious difficulties into a more serious separation than the late political partition, partly because the University and the colleges of Calcutta would cease to draw so many students from Eastern Bengal.

THE MIDDLEMAN IN EDUCATION.

AT the Evening Meeting of the members of the College of Preceptors, on February 21, 1912, Prof. J. W. ADAMSON in the chair, Prof. J. ADAMS read a paper on the above subject. He said:

According to Aristotle, politics is architectonic to education. The educator must take his orders from the statesman, because the statesman has to make use of the material worked up by the educator. Accordingly, we who are engaged in the work of education know that we have our masters. But these masters give orders only with regard to the sort of results to be produced; they do not themselves interfere between the educator and his educands. Under modern educational conditions, however, there has arisen a state of affairs in which there appears to be room for an official who is neither statesman nor educator, but is something of both, and who takes up a position of directing the professional activities of the teacher in the State schools.

In order to understand the position and functions of this new official, we must take account of the recent developments in the way of correlating educational work with the economic needs of the time. We are not at present specially interested in what it has become fashionable to call vocational education, but rather in the work being carried on in what are known as vocational bureaux. The aim in these institutions is not so much to regulate the supply and demand of labour in the various trades and professions as to make provision for enabling young people to discover for which occupations they are best fitted. Vocational bureaux are being established primarily in the interests of the young people themselves. The object is not to prescribe what special line of work each person shall follow, but to determine the sort of work for which each is best fitted, and, further, to place before each young person full information about the various occupations for which his (her) qualifications are really suitable. It is felt that in this way there will be no disturbance in the present natural working of the laws of supply and demand, while there will be a great gain in preventing the present lamentable waste of energy through the fitting of square men into round holes.

The methods of discovering the possibilities of the natural endowments of young people are as yet in a rather rudimentary stage. We have a great deal yet to learn. In one of the vocational bureaux at present, for example, the method adopted is to put to the candidate for advice in the choice of a life-work certain questions so as to discover what sort of person he is. But the questions are not yet of a really useful kind. What sort of answers can be expected from a raw boy or girl to such questions as the following?: Are you a good listener? Do you talk a great deal about yourself? If you could get any six things you wished for, what would those six things be? Mention the limitations and defects in yourself.

The third question is the best of the four, and is the sort of thing that must be further developed, while the fourth question represents the sort of thing that must be avoided. No doubt a skilful psychologist of long and specialized experience could learn a great deal from sets of replies even to such imperfect questions. But he would have to work by a process of interpretation by contraries, and of making all manner of allowances. The ordinary vocational adviser could make nothing at all out of the answers unless he knew beforehand the character of the person who supplies the answer, which is precisely what the questions are intended to elicit. The objective standards of natural endowment that will become common in the schools of the future through the development of the quantitative methods of testing will get rid of the present uncertainty and enable the vocational adviser to know, with a fair degree of accuracy, the limits within which the candidate is free to make his choice.

Educational psychologists will watch with very great interest the working of the system of Rhodes Scholarships at Oxford. At present the combination of physical, social, and intellectual qualities that are considered essential for the candidate to obtain full advantage from the scholarships is tested in a more or less unsystematic way. Even under those conditions the record, if carefully kept for half a century, cannot fail to be of practical value; though before fifty years have passed it is more than likely that a much more accurate system of testing will be applied all over. As an indication of the possibilities of the

future it should be noted that there is at present a movement on foot to establish a Royal Commission to inquire into the best ways of testing the fitness of candidates to enter upon certain official and professional careers.*

Prof. Hugo Münsterberg, in his "Problems of To-Day," gives some excellent illustrations of the advantage that would accrue from a definite knowledge of the elements of the mental equipment of candidates for different occupations:—

There are mills in which everything depends on the ability of the working man to watch at the same time a large number of moving shuttles, and to react quickly on a disturbance to any one. The most industrious workman will be unsuccessful at such work if his attention is of the type that prevents him from such expansion of mental watchfulness. The same man might be most excellent as a worker in the next mill, where the work demanded was dependent upon strong concentration of attention on one point. There he would surpass his competitors, just because he lacked dependent attention and had the focusing type.†

When facts of this kind are placed before practical business men they have a way of assuring us that there is no need for such refinement. Men, they tell us, have a convenient way of settling down into those particular parts of the work of a large factory that happen to suit their peculiarities. Now, within limits, there is truth in this, though it is remarkable how long it was before the radical defect of colour blindness forced itself upon the attention of practical men. Speaking generally, men break down conspicuously in work for which they are totally unfitted. But how many can carry on for a lifetime a particular kind of work for which they are unsuited, without actually breaking down, and yet paying for their ignorance of this unsuitability by a strain that would have been absent in some other and apparently not much different work? A particular degree of astigmatism may make certain kinds of work irksome and debilitating. The workman may suffer from headaches that he attributes to work in general, but that are the direct result of his particular kind of work and would disappear if he could change his occupation. The kind of memory in which a candidate is strongest, his preferred sense, his reaction time, all have an important bearing on the kind of work for which he is fitted. What is being done at present in the Vocational Bureau at Boston,‡ and in corresponding bureaux being established elsewhere, is resulting in a body of practical information regarding the various trades and occupations that cannot fail to be of the utmost service to the world. Its importance lies in the fact that it not only differentiates among various occupations in which high personal qualifications are essential, but between occupations that at first sight would appear to be practically the same, since they demand little beyond manual labour. One would think that no special information would be required about a candidate for mere hodwork beyond a general knowledge of his power to lift certain weights and to do his lifting regularly and honestly. There could hardly be any simpler or less differentiated work than the handling of pig-iron. It is

perhaps the crudest and most elementary form of labour which is performed by man. The work is done by men with no other implements than their hands. The pig-iron handler stoops down, picks up a pig weighing about ninety-two pounds, walks a few feet or yards, and then drops it on the ground or upon a pile. The work is so crude and elementary in its nature, that the writer firmly believes that it would be possible to train an intelligent gorilla so as to be a more efficient pig-iron handler than any man could be.§

Yet when the writer quoted, an experienced and specially successful employer of labour, went into the matter in his own works, he found that only one man in eight of those actually engaged in pig-iron handling was really suited for this kind of work. Nor does this mean that the seven men were weak in body compared with the eighth or were intellectually his inferiors, but merely that they did not fit in to this kind of work.

The selection of the man, then, does not involve the finding of some extraordinary individual, but merely the picking out from among very ordinary men the few who are especially suited to this type of work . . .

* See Mr. P. J. Hartog's article on "Examinations" in the *Journal of the Royal Society of Arts* (London), for February 3, 1911.

† *Op. cit.*, page 35.

‡ For an account of the work at present being done at Boston and elsewhere, see the little *Riverside Educational Monograph* by Meyer Bloomfield on "The Vocational Guidance of Youth."

§ This and the following quotations are taken from an article by Frederick W. Taylor on "The Principles of Scientific Management" in *The World's Work* for May, 1911.

we had not the slightest difficulty in getting all the men who were needed, some of them from inside of the works and others from the neighbouring country.

There hardly seems to be an educational question involved. What has education to do with this gorilla work of pig-iron handling? Yet the whole point of the article quoted is to show that at present pig-iron handling is badly done because the men who are engaged in the work do not know enough to make the best use of their strength. The work demands so much science that "it is impossible for the man who is best suited to this type of work to understand the principles of this science, or even to work in accordance with these principles, without the aid of a man better educated than he is."

A man has to be selected who has sufficient strength to do the work and sufficient intelligence to understand an explanation, or, at any rate, to act upon one. He must not have too much intelligence, for in that case he would not consent to remain at this kind of work. Next, he must have a certain amount of ambition, but, again, not too much; just enough to make him want to increase his wages by the more efficient discharge of this low class of work. Having secured a man of this type, the employer sets an intelligent overseer to train him. This overseer has made all the necessary calculations and experiments as to the alternation of rest and work, times of taking refreshment, mode of lifting and depositing the iron. For several days this overseer supervises the pig-iron handler's every movement, and regulates in the greatest detail, by the aid of a watch, every work period and rest period throughout the day. Soon the learner acquires the art of doing the thing in the minutest detail exactly as he has been instructed, and is able to carry on the work on his own account in such a way as to increase his effectiveness nearly fourfold. Under present normal conditions he handles twelve and a half tons per day as a non-trained handler; when he has profited by the directions of the supervisor he can handle forty-seven tons a day. An important point to be noticed is that under pressure of the offer of a much enhanced income from piecework, non-trained handlers greatly increase their original output, but they cannot reach the forty-seven tons at all, and they usually injure themselves by their unintelligent increase of effort and fall back upon their limited output. The trained handlers, on the contrary, are able to keep up the forty-seven tons rate without any overstrain.

All this clearly reduces the educand in this limited course of training to a mere instrument. He is called upon to place his powers at the disposal of another in order that these powers may produce the maximum effect. Left to himself, and free from all restraining economic influences, the workman doing things in his own way might reach a maximum of, say, twenty-five tons a day, or, with considerable danger of overstrain that would ultimately ruin his work capacity, he might attain to something over thirty. Self-realization in this case would seem to be purchasable only at the price of being content with half the production of which the man would be capable if he gave himself up to the domination of another and worked through that other's brain. But, after all, the workman who is thus producing under the direction of another his maximum amount of work consistent with perfect health, is gaining by means of his higher wages a greater amount of freedom in which to exercise whatever individuality he possesses. We must not confound economic ideals with educational. It is enough for education that it enables the man to produce the maximum amount of result for a given outlay of energy. Whether he moves twelve and a half or forty-seven tons per day is educationally of no consequence. Being enabled by education to take the most out of himself that can be safely taken, the educand is at liberty to determine how much of his time is to be devoted to the mere brute work of earning a living, and how much is to be devoted to what even a pig-iron handler may regard as self-realization.

While all this is very interesting in itself to us as educators, it has a direct bearing on the subject that we are at present considering. But in order to understand the connexion it is necessary for us to project ourselves into the future, so as to estimate the probable lines that education will follow, particularly in its economic developments. This will enable us to see whether the methods of the trainer of the pig-iron handler can be applied to the case of the teacher.

Perhaps the most important problem in the educational theory of the future is the place the teacher is to occupy. There are two possible lines of development. The first is that the nation may

at last realize the importance of education, and may raise the profession to such dignity and honour as shall draw to it the best abilities in the State. The enthusiastic educator is never able to eradicate entirely from his dreams those philosopher-kings of the "Republic," those schoolmasters who are made the rulers of men. Not the State actually described by Plato is what the educational enthusiast would now really desire, but a State in which the educator would have the consideration that underlies the Platonic conception. It is rather a humiliating reflection that in order to obtain the best educators it is necessary to give them great consideration. We would almost prefer the custom of the Talmudic times, when the secondary teacher received no payment, but worked at a trade to earn his living,* and taught for the love of God and the glory of teaching. He was paid entirely by the esteem he won from men, just as the secondary schoolmaster in Germany to-day receives a certain portion of his emoluments in the form of public honour. What is wanted is that the teacher should have the status of an educator, and that he should be worthy of that status; that the public should bring to clear consciousness what underlies the general view of teaching, and should grant to the person who combines the double function of teacher and educator the place in public esteem to which his high office entitles him. Perhaps in the future the old fact may be rediscovered, and strengthened by the statistical evidence that the future will no doubt demand, that a genuine educator educates as much by what he is as by what he knows. Direct education may come to its own in a way that it has not yet done. The influence of personality upon personality may be recognized as one of the essentials of real education, and then there may have to be careful search throughout the various countries for the men who are really worthy to be educators. Not every great man is great in the way that is essential in an educator. But one of the duties of the subordinate educational officials may be to invent tests for discovering those who are worthy to rank above them as real educators. There will, in some form or other, be a hierarchy of talents among the educators of the future.

But this hierarchy may be built up on quite other lines. The second possibility now to be described is less attractive in many ways, but it has in it the germs of actuality. It seems more like a development of influences already at work. There can be no doubt whatever that, with the increasing amount of attention given to the subject of education, there will result a great increase in the complication of the work to be done. With a careful survey of the whole field of operations, and the definite settlement of many of the problems that have hitherto remained insoluble, merely because they have never been properly stated, there will arise a degree of certainty in educational operations that at present are carried on largely on empirical lines, and with the greatest possible variety of detail. With the consolidation of the profession, the need for originality on the part of the educator will diminish. Initiative has never been regarded as his strong point, but in the future the need of initiative will be less marked than even at present. If this be the line followed, the profession will become the resort of third-rate men. Why should men of first-rate ability devote themselves to a profession that is so poorly esteemed and gives so little scope for originality. In those days there may be full verity in Mr. Bernard Shaw's hard saying, that at present has only enough truth in it to entitle it to rank as an epigram: "He who can does, he who cannot teaches."

Even a pessimist cannot sit still in view of such a prospect. It is inconceivable that the profession should reach this level of uniform dullness and sub-mediocrity. There must be room for some bright spirits, some equivalent to the philosopher kings. Present tendencies do promise such an equivalent, but in a form that may rouse little enthusiasm. It would appear as if we had reached a stage in civilization at which there is room for a new functionary in all departments, and in education no less than elsewhere. Turning to Auguste Comte we find the following significant passage:—

At the degree of development already reached by our intelligence the sciences are not applied directly to the arts—at any rate, not in the most perfect cases; there exists between these two orders of ideas an intermediate order which, still vaguely determined in its philosophical character, is already more obvious when one considers the social class which is specially concerned with it. Between the *savants* properly so-called and the effective directors of productive operations there is beginning to be formed in our days an intermediary class, that of the

engineers, whose special business it is to organize the relations between theory and practice.*

It may be pointed out how wide this term "engineer" is getting. It is applied to all sorts of mechanical work always with the implied connotation that it represents the intelligent side of that work. Menotti, the specialist in chimneys, would nowadays be called a ventilating engineer. It is Dugas who makes the application of the term to education, but he was anticipated in idea by Münsterberg, who points out the need for an intermediary between the practical psychologist and the practical teacher. "Do we not lay a special linking science everywhere else between the theory and practical work? We have engineering between physics and the practical working man in the mills; we have a scientific medicine between the natural sciences and the physician."†

Further, in practice Dugas has been anticipated by the American school system, in which the school superintendent, or school supervisor,‡ exactly fills the rôle of educational engineer. We have only to read Chapters IV and V of W. C. Bagley's "Craftsmanship in Teaching" to see how closely the school superintendent corresponds to the engineer in the passage from Comte. The following gives a very instructive insight into the functions of those whose business it is to make teachers do their work efficiently:—

As a young principal in a city system, I learned some vital lessons in supervision from a very skilful teacher. She would come to me week after week with this statement: "Tell me what you want done, and I will do it." It took me some time to realize that that was just what I was being paid to do—telling teachers what should be accomplished, and then seeing that they accomplished the task that was set. ‖

From the point of view of the evolution of educational theory one can hardly over-estimate the importance of the state of affairs thus graphically described. We have before us, at a somewhat higher stage, the science of pig-iron handling. We have the lower intelligence of the acting class teacher trained by the higher intelligence of the educational engineer, and the result may be supposed to be quite a considerable increase in the effective power of the class teacher. Naturally, a great deal depends on what the lady meant precisely by her question. She may have wanted only the most general statement of the results to be aimed at. This is rather suggested by the remark that she was "a very skilful teacher." No English head master would regard such a weekly inquirer as a skilful teacher. He would expect her to know the aims and methods of the school at a longer than a weekly range. We cannot suppose that the lady meant any detailed instructions as to methods, and if she did we may be sure that the author of "The Educative Process," with his exceptionally broad outlook, was not the man to give them. No doubt "the courses of study are becoming more and more explicit each year. Vague and general prescriptions are giving place to definite and specific prescriptions"¶; but however detailed the official course of study may be, there must be a margin of freedom left to the class teacher.

In the old schools, there used sometimes to be what was called a "discipline master," whose business it was to main-

* "Cours de Philosophie Positive." 1re Leçon, Exposition.

† "Le Problème de l'Éducation," page 30.

‡ "Psychology and Life," page 138. The name that Münsterberg gives to the intermediary between the practical teacher and the psychologist is "the educational scholar."

§ English readers sometimes get a little confused between school superintendents and supervising principals. The head of a great city school system or a small one is a school superintendent, while the supervising principal has usually only one school to attend to. But the common element in all cases is that none of them do any actual teaching. As experienced teachers, some of them do occasionally take a class by way of demonstration, but responsible teaching is no part of their work. In many of our huge elementary schools—in which the number of pupils approaches in some cases two thousand—the head master occupies somewhat the same position; but even in this case the responsibility of the teaching falls upon the head master, and he is expected to do some teaching himself. The position is made clear by the action of one of the largest School Boards in the country under which there are specially large schools: it changed the title of the head *master* in every case to that of head *teacher*. There are, however, sufficient points of likeness between such head teachers and the American supervising principal to enable English readers to understand the points to be made in the text.

‖ "Craftsmanship in Teaching," page 50.

¶ "Craftsmanship in Teaching," page 52.

* Letourneau, "L'Évolution de l'Éducation," page 367.

tain order while others did the teaching. The problem has been set to a large class of post-graduate students in training to be teachers, whether it is possible to teach on the discipline of another, and the result of the discussion was the opinion that it is possible to teach on the discipline of another, but not to educate on that discipline. The same question may be raised with regard to the educational engineer. Can the professional teacher, who is under the modern conditions definitely expected both to teach and to educate, conduct his work successfully while merely carrying out the ideas of another? There is an adjective that the Americans are getting very fond of in connexion with lecturing, and, to some degree, with teaching. They divide lectures into two main classes—those that give solid instruction in subject-matter, and those that are “inspirational.” Now one can imagine a school engineer doing admirable work along inspirational lines. This is usually the way in which our great English head masters have exercised their influence; but somehow the ideas of engineering and inspiration do not go very happily together. The great engineer is very often himself inspired, but it is no part of ordinary engineering to inspire others. We must not, therefore, allow the mere term to affect our conclusions. The educational intermediary of the future may well be at the same time inspiring and directive.

It is the directive or prescriptive aspect of his work that demands our special attention, inasmuch as it involves a certain loss of initiative on the part of the direct teachers. Can the engineer in the background carry out his ideas through the direct teachers without unduly limiting their personality? At the present moment in this country the direct teachers are carrying on their work under a great variety of restrictions. Not one of them dares to be out and out himself. Every one must, in some direction or other, take advantage of Kant's reluctant toleration of dissembling. Will a professional censorship interfere still more with the effectiveness of the teacher, or is there a possibility that it may act as a relief?

It looks as if in the future we may come to separate in thought the two functions of the direct teacher—the teaching function and the educative. So far as teaching is concerned, it may be quite necessary for the engineer to insist upon uniformity of method. For example, in one of the huge schools to which we are getting accustomed, better teaching results will be obtained by the uniform adoption throughout the school of a somewhat inferior method than by the introduction at different stages of the school course of several methods each intrinsically better than the one imposed from above. So far as his prescriptive power is concerned, the educational engineer will probably develop along the lines of teaching. Naturally this cannot fail to have its educative effect; but on the purely educational side he will probably find it to his advantage to depend on his inspirational influence, and leave the details to the direct teachers.

Education as such cannot well appear as a separate subject on the time-table of a school. It is the resultant of all the processes that go on there and elsewhere. The teacher's personal influence appears throughout all the work of the day. Restrictions as to subjects and methods no doubt exercise their limiting powers, but in the last resort they are only the conditions under which the teacher's activity is exercised, and may be used by the teacher in such a way as to emphasize his individuality. The same method of presenting a subject may be adopted within a whole educational area, with the result that there is a great saving of time and effort that, with the best intentions in the world, might be otherwise misdirected. But, at the same time, an intelligent observer going around among the schools may find the greatest possible variety in the way in which the prescribed methods are applied. Generally speaking, they are used in such a way as to get the full benefit of the ordered arrangement of items. If the teacher is mechanical and without marked individuality, he may as well teach mechanically by a good method as by a bad one; while, if he be a man of some ability and resource, he will get the full benefit of the prescribed method, all the time using it in such a way as to give scope to his own personality. Direct education is always going on in school side by side with indirect.

When it comes to direct education, we are always brought up by the consideration: Is any one worthy to be a direct influence in training the young, to be a model for them? We are apt to be depressed by the excellence of our ideals, forgetting that what is wanted is not a body of almost perfect men and women. Probably the future will find, as the past has done, that the educators of any particular time are as good as it deserves.

Still, for the common schools of the country, it is obvious that the State must do all that it can to get the best material available. Only, it will probably realize more clearly than we do at present that what is wanted of our teachers is good average human nature, with good intellectual qualities and sound wearable virtues. A recently published book* gives the impressions of an Emeritus Chief Inspector of Elementary Schools in England and Wales, of the qualities of the teaching staffs of the schools that were under his inspection during a long official career. His main complaint is that they are “machine-made, and that they are engaged in turning out machine-made scholars, some of whom in the fullness of time will develop into machine-made teachers.”†

There are about 160,000 elementary teachers of all grades at work at the present time under the Board that this Inspector served. Out of these he has found one who comes up to his ideal. Giving her the fanciful name of Egeria, he enters on a glowing account of her school and her work. Then he asks the pertinent question: “Where are we to find Egerias to man our elementary schools?” His answer is evasive: “For the moment this problem does not admit of a practical solution.” But the solution suggested throughout the book is the application of the gospel of self-realization and self-education. Though he is a sort of engineer himself, this Inspector evidently hopes for salvation by an escape from the machine altogether. But the machine shows no signs of disappearing; the indications are all the other way. What the future has to do is to improve the machine. In the educational engineer lies the immediate hope, if only he is left a sufficiently free hand. The ideal is no doubt an army of 160,000 Egerias, but since the man who had the best opportunities in the country for observation can discover only one, we can hardly hope for a rapid solution in that direction. Such a vast body must be made up mainly of ordinary average human beings. With the coming of the engineer there will be a stronger tendency than ever for this body to attract only average people, except the few who intend to become engineers themselves in due course. It is possible that after a long, long course of engineers and average direct teachers, the world may be educated to the idea that only men and women of first-rate calibre should be allowed to become direct teachers. If this stage is ever reached, it will be through a series of intermediate stages in which the number of engineers in proportion to the number of direct teachers is gradually increased, and a certain amount of actual teaching introduced by degrees into the engineer's work. All the present indications, however, point rather to a future in which the profession will be made up of a great mass 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 great capacity and attainments, and with a large amount of initiative.

It is at least possible that this even system may result in a type of finished educand that may not be so attractive individually as it is useful from the point of view of the State. Already we have as the result of our machine-made teachers and our mechanical system the appearance of a peculiar type of child wherever the home influences are not strong enough to counteract the effect of the educational mechanism. This type has already a name on the other side of the Atlantic, but it is familiar on this side, though as yet innominate. Prof. W. Franklin Jones calls it the “institutionalized child,” and points out‡ that such children are not confined to those who have been brought up in orphan's homes and reformatories. What they lack is intimate contact with a partisan personality, with somebody who is always ready to be on their side, with, in a word, a mother. Under the increasingly centralized system that is at present being foreshadowed we find little promise in the future of a diminution in the number of institutionalized children. The tendency is clearly towards increasing the number and intensifying the type. The children that are being educated under public control are being more and more reduced to a common pattern. This indeed is only a prominent example of a movement that is marked throughout the whole civilized world. The ease of communication and transportation is making very striking changes in all our social conditions. The force of imitation is as powerful as ever, and the ease of communication is weakening the separation between the smaller imitation areas

* “What is and What Might Be.” By Edmond Holmes.

† *Op. cit.*, page 273.

‡ “Principles of Education,” page 170.

within which special imitations formerly developed and acquired strength to oppose tendencies that arose outside of the areas. Civilized human beings are becoming daily more like one another all over the globe.

The case of the teacher is only a special exemplification of this universal tendency to uniformity. The educational middleman—call him educational engineer, educational scholar, school supervisor, school inspector, or what you will—is the levelling agent, the introducer of uniformity; and we who are teachers have to reckon with him. Every one who comes between the teacher and his class is an educational middleman, and his possibilities of doing evil increase in the direct ratio to his freedom from responsibility. A head master middleman is much less dangerous than an inspector middleman who confines himself to criticism. But in any case the uniformity that results from the activity of the middleman is not so formidable, because not so real as it looks. What the direct teacher is rightly afraid of losing is his individuality. But there is, after all, much more room for individuality under a uniform system than is generally supposed. Too frequently individuality is confounded with peculiarity: a person may be at the same time eminently commonplace and eminently individual. The combination of commonplace elements that go to make up a personality still form a coherent whole that marks off that person as an individual. Even the representative of a type is, after all, individual. The number of teachers whose individuality is so striking as to be incapable of fitting in to a uniform system is so remarkably small as to give little trouble. Further, such striking personalities are usually so powerful that they become exceptions automatically. The great majority of teachers have a good sound vigorous personality that cannot but assert itself within the system in which they work. In State education we must work under some more or less uniform system, and the best teacher is the one who can get all the advantages out of uniformity without being unduly hampered by it. With regard to the middleman the teacher's policy is to get all the good out of him that is possible without loss of freedom. Probably the best way of making the most of the middleman is to force him to share in the responsibility for the work of the school.

Mr. THORNTON said he did not believe in the educational engineer, and he would like to see both the educational engineer and the inspector reduced to as small dimensions as possible. A system of education was very much like an established religion—it dealt with things of the spirit. When established, and possessing nearly the whole of the field, systems were apt to stagnate, to lose all the power which they were created to exert, and to become fossilized, and in no country had that been more so than in Scotland. There had always been reformers, and the greatest influence had been exercised not by the men of the established system, but by those who left it and would have nothing to do with it. In England the Established Church was until recently more abundant in works than that of Scotland, because alongside it there were voluntary influences between whom and the Spirit of all good there was less and less of the religious engineer. If an established system could do any good it could only be when it was fertilized from without. When these conditions were made possible, then the regeneration from without would take place, and this was always more powerful than regeneration from within. He was thankful to say that this College made for another and a saner way of doing things, and he did not think so little of the intelligence of his countrymen as to think that they would ever tolerate to any large extent the machine-made teacher and the machine-made child.

Dr. HAYWARD said the last speaker had very rightly emphasized the influence of the spirit, but education could not be entirely regarded from that very high level. There were certain broad facts of administration, of which Mr. Thornton took no account, which demanded an efficient system. They might proclaim with eloquence the things of the spirit, but who was to select and promote the teacher and decide what his salary should be. These were administrative matters of the greatest importance which would in the future demand a specialist's knowledge, such as at present they had no conception of. He was glad the lecturer had referred to Mr. Holmes's book because that book contained two thoughts which the author himself had been unable to bring together. For, while he stated that three-fourths of the social troubles of to-day were due to malignant egoism, he appeared to regard it as desirable that self-expression should be cultivated. Then he suggested that administration should be carried out by means of secret circulars and other devices, and that teachers should do as they were told. Meanwhile, they were not to become specialists, but were to be selected for other and chiefly social reasons. The lecturer had raised the most important and vital questions, and he would like to suggest one or two points. The layman had his part to play, but the exact relationship between the professional man and the layman

had yet to be determined. Both were dangerous unless kept in their proper place. Some system must be devised by which the layman would balance and keep in check the virtues and vices of the professional man. No official should be given a life interest in his post. He might have enormous powers of appointment and even of dismissal, but they should be limited to a certain number of years, and ultimately all his acts and his reasons for them should be made public. This would constitute another check. He thought, too, that something of the nature of the rota system should be introduced on a small scale. At present the teacher in an elementary school was to some extent in the position of an official, but their interests were not identical. The teacher, in most cases, could not look forward to official life, and he was frequently tempted to give utterance to revolutionary statements as to educational policy which he would leave unsaid if he thought he might become an official. In the same way the dangers of officialism would be reduced if the official knew that in a few years he might be teaching a class. He suggested that teachers should have an opportunity for a certain number of years of being in the very midst of official work. He felt intensely that the present divorce of power and responsibility was altogether wrong. For any man to be merely a critic and never brought to book was bad. Human nature was too weak to endure the temptations of power divorced from responsibility. The official and the teacher should both be made responsible for what they said and did, and they should always keep in mind Mr. Holmes's warning that human nature is egoistic and had to be protected from itself.

Mr. SNELGROVE said that, to him, the outstanding feature of the address was the terrible indictment of society. He had never heard, either at street corner or elsewhere a more terrible indictment, and, if they took the lifter of pig iron a grade higher, they would get a fairly good view of the actual state of society in which teachers had to live to-day. The lecturer had said they must not confuse economics with education, but he failed to see how the two could for one moment be separated. All the activities of life were based upon material considerations. The coming of the engineer was unavoidable, and he had never heard of any means whereby they were going to be saved from him. In some cases the policy of the schools was already dictated by professional experts, who showed how to produce a good clerk, book-keeper, or salesman. A remedy might be found in trusting the teacher more and more, but this could not be done under present conditions, when teachers were fearful of expressing their own opinions, lest they should offend.

The CHAIRMAN said he wished he could take the comfort Mr. Thornton did about the nature of our people. It seemed to him that the people had for a long time been accepting things that twenty years ago would have been declared impossible. For himself, he did not at all like the prospect of this educational functionary, and still less what he implied. He could not help noticing that when any new educational movement was being floated, the first thing the floaters endeavoured to establish was not an adequate salaries fund which should attract capable teachers, but huge buildings which should be in accordance with approved principles of planning, warming, ventilation, &c. Then they looked about for some sort of a curriculum, and last of all they thought of the steam that was to be put into the machinery, showing they did not value the steam very much. He could not help thinking that a time was approaching when the individual teacher would be of very little worth and the machinery everything.

PROF. ADAMS having replied to the remarks of the various speakers, a vote of thanks to the lecturer concluded the proceedings.

THE Rhodes Trustees have voted £100 toward the cost of the Imperial Conference of Teachers organized for next summer by the League of the Empire. Another £100 has been granted by the Imperial Education Trust; and £25 has been sent from South Africa by the Witwatersrand Education Committee. The League is seeking to raise altogether £1,000.

Offers of private hospitality are also beginning to reach the League of the Empire at Caxton Hall, and are exceedingly welcome, as they will enable the visiting teachers to see and appreciate Old Country life far better than would be possible in boarding houses or hotels.

The following is a complete list of the organizations in this country which will send delegates, varying in number from two to twelve:—Association of Directors and Secretaries of Education, College of Preceptors, Head Masters' Association, Head Mistresses' Association, Teachers' Guild, National Union of Teachers, London Teachers' Association, Welsh County Schools Association, Association of Assistant Masters in Secondary Schools, National Association of Head Teachers, Association of Teachers in Technical Institutions, National Federation of Women Teachers, London County Council Women Teachers' Union, Irish National Teachers' Organization, Training College Association, Preparatory Schools Association, Private Schools Association, Association of Women University Teachers, the Classical Association, and the Historical Association.

THE UNIVERSITIES OF THE EMPIRE.

PROGRAM OF THE CONGRESS.

THE following is the program of the Congress of the Universities of the Empire, to be held in London July 2-5:—

Tuesday, July 2.—Morning—Chairman, Lord Rosebery, Chancellor of the Universities of London and Glasgow and Lord Rector of the University of St. Andrews. Subjects: (1) Question of Specialization among Universities; (2) Inter-University arrangements for post-graduate and research students.

Wednesday, July 3.—Morning—Chairman, Lord Curzon of Kedleston, Chancellor of the University of Oxford. Subjects: (1) The relation of Universities to technical and professional education and to education for the public service; (2) Interchange of University teachers. Afternoon subject: The problem of the Universities in the East in regard to their influence on character and moral ideals.

Thursday, July 4.—Morning—Chairman, Lord Rayleigh, Chancellor of the University of Cambridge. Subjects: (1) Conditions of entrance to Universities and the mutual recognition of entrance tests; (2) Action of Universities in relation to the after-careers of their students. Afternoon—Chairman, Lord Haldane, Chancellor of the University of Bristol. Subject: University Extension and tutorial class work.

Friday, July 5.—Morning—Chairman, Lord Strathcona and Mount Royal, Chancellor of the Universities of Aberdeen and McGill. Subjects: (1) The establishment of a central University Bureau, its constitution and functions. (2) The position of women in Universities.

THE EDUCATIONAL LADDER.

CAMBRIDGE UNIVERSITY.—Burney Prize: not awarded.—Prince Consort Prize: R. H. Snape, B.A., Emmanuel.—Craven Scholarships: John Burnaby, Scholar of Trinity.—Porson Scholarship: C. Ll. Bullock, Scholar of Trinity.—Browne Scholarship: R. D. Whitehorn, Scholar of Trinity; *proxime accessit*, E. H. Carr, Scholar of Trinity.—Montagu Butler Prize for Latin Hexameters: E. H. Carr.—Chancellor's Classical Medals: (1) F. W. Haskyns, Scholar of Trinity; (2) not awarded.—Yorke Prize: F. C. Tudsbery, B.A., LL.B., King's.—Gordon Wigan Prize (£50 for Research in Chemistry): C. S. Robinson, B.A., Emmanuel.—Sir William Browne Medals: Greek Ode, F. P. Cheetham, Scholar of St. John's; Latin Ode, C. Ll. Bullock, Scholar of Trinity—honourably mentioned, G. N. Lankester Hall, Minor Scholar of St. John's; Greek Epigram, J. B. P. Adams, Scholar of St. John's; Latin Epigram, E. H. Carr, Scholar of Trinity.—Seeley Medal: not awarded.—Hulsean Prize: G. A. Chase, Queens'.—Isaac Newton Studentship: H. S. Jones, B.A., Scholar of Jesus.

Dovening.—Fellow and Bursar: Arthur Amos, M.A., late Lecturer at the South Eastern Agricultural College, Wye.

Magdalene.—Sizarships: B. A. Fixsen, Lancing College, and H. G. Carter, Shrewsbury School.

Pembroke.—Fellow: I. T. Spittle, B.A.

Peterhouse.—Exhibition of £30 for History: R. F. Martyn, Bedford Grammar School.

St. John's.—MacMahon Law Studentships, £150 for 4 years: G. E. Jackson, B.A., and L. B. Tillard, B.A.

LONDON UNIVERSITY.—Mitchell Studentship (£100): A. D. Smith, B.Sc., London School of Economics.

Bedford College for Women.—Scholarships and Bursaries in the Secondary Training Department: Miss G. M. Broughton, M.A. (University College), free place for 2 terms; Miss A. Clegg, B.A. (Bedford College), free place for 2 terms; Miss M. Johnson, B.A. (Bedford College), Bursary; Miss F. M. Powell, B.A. (Royal Holloway College), Bursary; Miss D. Prissnall, B.A. (Bedford College), Bursary; Miss A. Fleet, B.A. (University College), Bursary; Miss G. Hawkins (University College), Bursary; Miss A. Hoare, B.A. (Bedford College), Bursary. Diploma in Hygiene: Miss D. F. Michell, and Miss D. C. Morgan.

OXFORD UNIVERSITY.—Senior Mathematical Scholarship: A. M. Grundy, B.A., formerly Scholar of Hertford. Junior Mathematical Scholarship: A. B. Mayne, Scholar of Balliol. Junior Mathematical Exhibition: R. H. Gregory, Scholar of Hertford. Distinguished in the examination: H. F. Slade, Scholar of Balliol; E. N. Strong, Scholar of Corpus Christi; and F. P. Whiteley, Scholar of Queen's.

Queen's.—Tylney Exhibition: Philip H. Davies, Brighton College.

St. John's.—Elections on the Casberd Foundation: to Scholarships, C. J. N. Adams, J. S. M. Thomson, and R. A. Edwards; to Exhibition, I. M. Haines.—Mansel Exhibition in Divinity and Hebrew: W. F. Cotton.

Brasenose.—Heath Harrison Exhibition, £85 a year: Reginald S. M. White, Malvern College.

REVIEWS.

BIOGRAPHY.

James Hutchison Stirling: His Life and Work. By Amelia Hutchison Stirling, M.A. With Preface by the Right Hon. Viscount Haldane of Cloan. 10s. 6d. net. Fisher Unwin.

All students of philosophy, whether of the true Hegelian faith or otherwise, will cordially welcome this faithful and substantial biography of the unveiler of "The Secret of Hegel." Stirling was born in Glasgow and educated at Glasgow University, where his mathematical professor was Lord Kelvin's father, and fellow-students were Lord Kelvin, his brother James Thomson, and Campbell Fraser. Though much drawn to literature, he took up medicine and practised in Wales, till a modest patrimony coming to him at the age of thirty-one allowed him to go to the Continent, primarily to study French and German, and eventually to devote himself to the elucidation of Hegel. He was in Paris during the *coup d'état* of 1851; and his experiences are here described. In 1857 he returned to London, and in 1860 he settled down in Edinburgh, where he died in 1909 in his eighty-ninth year. His failure to obtain a chair of philosophy, first in Glasgow and again in Edinburgh, together with an unfortunate declension of means, somewhat embittered him. Still, he worked on strenuously both in philosophy and in literature. Lord Haldane, who knew him well and is eminently capable of appreciating his work, declares him "a man of genius," and doubts "whether a more remarkable piece of exposition [than "The Secret of Hegel"] has ever been accomplished in our language." "He penetrated into the inmost essence of the Hegelian system as none but a man of genius could have done, and his work remains unrivalled to this day." Miss Stirling goes further. "It is Hegel," she writes, "who says that the man who perfectly reproduces any system is *ipso facto* already beyond it. If this is so, no one can deny that Stirling has gone beyond Hegel—that he is not merely the *interpreter*, but the *successor* of Hegel." And again: "... if there did not arise now and then a Socrates, a Kant, a Hegel, a Stirling..." This is reminiscent of another ingenious author:

Mantua Virgilio gaudet, Verona Catullo,
Dante suo florens urbs Tusca, Cipada Cocajo.

Stirling himself had his due share of the *odium philosophicum* and threw out forcible denunciations of "Darwin & Co." and other thinkers that did not see eye to eye with him, such as "those four shallow, stiff, thin, conceited prigs—weak heads, or soft heads, or empty heads, or wrong heads respectively—Mill, Bain, Buckle, Grote." Honestly, of course, and scarcely venomously; but it seems a pity. No sensible man of the opposing schools, however, will mind such ebullitions. The volume contains many interesting letters, especially some notable epistles from Carlyle. There are eight illustrations, including an excellent portrait of Hegel. We like the filial devotion of Miss Stirling, even when she gives an extra push to her distinguished father's darts between the ribs of philosophers that we take to be anything but fools.

John Viriamu Jones; and other Oxford Memories. By Edward Bagnall Poulton, D.Sc., LL.D., F.R.S., &c., Hope Professor of Zoology in the University of Oxford, Fellow of Jesus College, Oxford. 8s. 6d. net. Longmans.

Prof. Poulton is so fresh and joyous that it is difficult to chide him even when he makes us forget that Viriamu is his subject and fancy that the book is an autobiography, or when he eventually lands his reader in the life-history of the Liver-Fluke and the cause of "rot" in sheep. The first five chapters do give a more or less connected account of the early life of Viriamu, of his Oxford life, of his literary interests and efforts, and of his work at Sheffield in 1881-83, and at Cardiff in 1883-1901. The character of the man is impressed, in spite of a great deal of matter that does not rise above the trivial. The Oxford period depicts an alert and good-tempered talker and debater, a youth of keen literary as well as scientific interests, reserved and meditative rather than forward at the Union or in sports, quietly maturing in his own way. At twenty-five Viriamu was made Principal of Firth College, Sheffield, and there displayed a power of organization and an inspiring enthusiasm that had not a little to do with the eventual success of the institution; but Prof. Poulton leaves the two years of this period quite shadowy. At twenty-seven Viriamu became first Principal of the University College of Cardiff, which he held till his premature death (1883-1901). We learn from a memorandum by Sir Isambard Owen, stuffed away in an appendix, that in the establishment of the

University of Wales Principal Jones's hand "was in almost everything that was done, the impress of his mind was on almost every important measure that was taken." "As first Vice-Chancellor of the University, he mainly moulded its curricula in Arts as well as Science; even in the Faculty of Theology his influence was not unfelt; his voice, time after time, was decisive on larger questions of policy." But there is no systematic and sustained narrative in detail. Principal Jones was no doubt an able physicist and mathematician, and an excellent man of business; "he was a man that could conceive great aims, who could take broad views of a situation, who could foresee difficulties and foresee how they were to be provided against," and "he pursued his aims with unflinching perseverance through good and bad years alike." For the detailed demonstration of all this one could well have spared (for a separate volume) the interesting history of Prof. Poulton's own experiences, the delightful times in Oxford University society in the seventies, and a miscellany of scientific and literary remarks and criticisms on University affairs. There are five illustrations.

The Letters and Journal (1848-49) of Count Charles Leiningen-Westerburg, General in the Hungarian Army. Edited, with an Introduction, by Henry Marczali, Ph.D., Professor of History in the University of Budapest. Done into English by Arthur B. Yolland, Ph.D., B.A. Cantab., Professor of English Literature in the University of Budapest. 7s. 6d. net. Duckworth.

The heroes of the Hungarian War of Independence in 1848-49 have already passed into mythical personages in the veneration of their countrymen. Prof. Marczali has made an effort to restore the historic truth in some degree, by publishing the letters, journal, and memoranda of General Count Charles Leiningen-Westerburg, who played a distinguished part in the military operations, and wrote down, mostly for the information of his wife, his views of every notable event of which he had personal knowledge, generally on the very day that the event occurred, and incidentally characterizations of important persons and reflections on the situation. There are half-a-dozen battle-pictures: Tomasovác, Jarhovác, Pancsova, Czibakháza, Snolzok, and Tápó-Bicske, the last the writer's "greatest masterpiece." The "power of directness, of impartiality, the clear separation of the several events from the confusing influence of later impressions, is the greatest merit of Leiningen's diary as a historical source and as a literary work, too." His close personal interest in his soldiers also makes him an excellent historian of the life of the camp and of the march as well as of the battle. The portrait-gallery of the Hungarian generals is a vivid representation both of large characteristic features and of suggestive details. The most outstanding figure, of course, is Arthur Görgei, who is painted elaborately after much personal intercourse: "with all his faults and failings, a man in the best sense of the word, a hero." Kossuth "is a great party leader, but no great statesman." Francis Deák is "a noble unhappy prophet." Prof. Marczali writes a long historical and biographical introduction. Apart from the historical value of Leiningen's writings, "from a purely literary point of view," he says, "the work is without a parallel in the literature of the War of Independence." There are portraits of Leiningen and Görgei, and a map; and the volume is liberally produced.

EDUCATION.

Educational Charters and Documents, 598-1909 A.D. By Arthur F. Leach. 10s. net. Cambridge University Press.

Mr. Leach has produced a most valuable volume, which all serious students of the history of education will find it necessary to possess. He has "aimed at doing, so far as the scantier space allows, for the educational history of England what Bishop Stubbs's 'Select Charters' did for its constitutional history." This was a piece of work that was really wanted, and Mr. Leach was precisely the one man to do it; and within certain limits he has done it excellently. His great resources of knowledge in the vast amount of material he has collected in his "English Schools at the Reformation," in his histories of "Yorkshire Schools" and of "Warwick Grammar School," and, above all, in his encyclopaedic contributions to the sections on Schools in the "Victoria County Histories," have given him the background from which could be made a selection of documents that should substantially take into the account the whole mass of available material for the consideration of a perspective. And yet it is clear that the restricted space at disposal has embarrassed the writer. Any way,

we find that the last two hundred and fifty years (*i.e.* from 1660 to 1910) only have about twenty pages devoted to them, and might well have been omitted. Had the book simply dealt with the subject up to the date of the Reformation and appropriated the remaining space to further documents up to that time, the readers would have had reason to be grateful. For the earlier documents included are of keen interest, and to many educationists it will be a revelation to know that education received so much thought and attention in pre-Reformation times. In medieval times the charters and documents are in the Latin language, and it should be mentioned that Mr. Leach has provided an English translation, so that there is now no excuse for the modern teacher if he remains ignorant as to the course of development of educational institutions in England.

The first entry in this collection of authorities is from Bede, noting the foundation of an East Anglian grammar school, on the model of Canterbury School, in 631 A.D. In his introduction, Mr. Leach tells us that the Latin term for a grammar school (*ludus literarius*) was first used in Plautus *circa* 210 B.C., and he delights to interpose points of this kind from his large stores of knowledge. He generalizes the outcome of the consideration of the documents. "Education was the creation of religion, the school was an adjunct of the Church, and the schoolmaster was an ecclesiastical officer. For close on eleven hundred years—from 598 to 1670—all educational institutions were under exclusively ecclesiastical control. The law of education was a branch of the Canon Law. The Church courts had exclusive jurisdiction over schools and Universities and colleges, and until 1540 all schoolmasters and scholars were clerks or clerics or clergy and in Orders, though not necessarily Holy Orders." Though this may, perhaps, be stated too categorically—for instance, the ecclesiastical control up to 1670 includes the Commonwealth, in which certainly the exercise of State control was a marked feature of educational procedure, and, again, surely before 1540 there were scholars who were not clerics, *e.g.* Sir Thomas More—yet the general tendency is clearly as stated by Mr. Leach, and the conjunction of religion and education through so many centuries is as yet scarcely realized by the modern student, much less by the general reader. Mr. Leach's book will impress the connexion on every student. His introduction is most interesting. He points out, for instance, that University degrees were originally licences to teach, and not merely in one country, but the *ius ubique docendi* gave the Master of Arts of a medieval University the privilege of teaching in any country and in any University. He notes the development of educational documents in the fourteenth century, when registers of ecclesiastical bodies began to be kept in book form instead of rolls. He suggests that the extension of the cult of the Virgin in the fourteenth century led to the introduction of choristers in the Lady chapels and to almonry schools. He tells us—and none knows the story better than he—of the rise of chantry schools and school provision of the fifteenth and sixteenth centuries. In short, Mr. Leach's book marks an era in the study of our earlier educational history.

Outlines of Education Courses in Manchester University.

3s. net. Manchester University Press.

By the publication of this book the student and the general reader are enabled to catch a vivid glimpse of the work of the classes of Manchester University in the training of teachers. Pages 1-111 contain the Syllabus of Prof. Michael E. Sadler (who, until his recent appointment as Vice-Chancellor of Leeds University, was the Professor of the History and Administration of Education in the University of Manchester) of a "Course on the History of Education in England, 1800-1911." Pages 112-152 contain Prof. Findlay's Syllabus of a systematic "Review of the Principles of Education." Pages 153-164 present Miss Caroline Herford's "Landmarks in the History of Education, with special reference to the Education of Young Children." Pages 165-184 include a Syllabus of "The Mental and Physical Life of School Children," drawn up by Dr. Sandiford, Miss Rankine Brown, and Miss M. A. Fountain. In an Appendix we have "General Directions for Students working in the Fielden School."

Whilst the whole of the "Outlines" of this Manchester Educational Manifesto will be of great interest and value to all those connected with training colleges, to the general reader as well as to the student, the *pièce de résistance* of the volume is the masterly sketch of the complex educational movements of the nineteenth century by Vice-Chancellor Sadler. Beginning with the effects of the Industrial Revolution, of Wesleyanism and the Evangelical Movement, and of the French Revolution on English

education, Dr. Sadler proceeds to the beginnings of State aid to English elementary schools. He goes on to the work, first, of Robert Owen, and afterwards of Thomas Arnold, and sketches the Factory Act movements in legislation and the voluntary institution of mechanics' institutes and working men's colleges. He then deals with secondary education, describing the work of the Charity Commission, and school reforms 1861-69.

He has sections on the Development of Elementary Education 1880-1895 and of Secondary Education in the same period, one on the Education of Girls and Women, and another on the Influence of Science on English Education. He describes the period of Administrative Transition (1895-1902), the Education Act of 1902, and administrative reorganization consequent on that Act. There is a section on Economic Thought in English Education and one on John Ruskin; and, short as it is, the concluding page, on "The Trend of Educational Thought," is of the highest significance. This syllabus is naturally sketchy and fragmentary, but it deserves the closest study, and no one interested in the educational movement of the last century in England should omit to make himself acquainted with this syllabus and to profit by the suggestions for the close consideration of its vital subject-matter disclosing the immediate antecedents of the present educational position.

Anharmonic Co-ordinates. By Lieut.-Colonel Henry W. L. Hime. 7s. 6d. net. Longmans.

This very ably written volume is likely to claim the close reading of a small section only of students of higher mathematics, but to the minority, embracing those who devote attention to the subject of quaternions or to other allied branches of advanced mathematical work, the treatise will be one of much interest. In the textbook before us the author disclaims originality, having sought here principally to amplify and consolidate the work of another, in order that a valuable method of analysis should not remain in comparative obscurity, and quite unknown except to a very limited few. The system of anharmonic co-ordinates was invented by Sir W. R. Hamilton, who included a brief account of it in his great treatise on quaternions, and who also refers to the origin of his invention in a manuscript now in the possession of Trinity College, Dublin. The works on quaternions, due to Prof. P. G. Tait and Mr. C. J. Joly respectively, also make a very brief allusion to the system. Colonel Hime has, however, the distinction of being in all probability the first to give any adequate development of the theory of the method—that is, an investigation of it sufficiently full to render it capable of forming a separate treatise on the subject. The system of co-ordinates framed by Hamilton and discussed by the present writer is very ingenious. The consideration of its details reminds the student very forcibly of the great principle of the permanence of algebraic form; for the equations that arise in the expression of the geometric truths connected with the point, the straight line, the circle, the true and degenerate forms of the conic, &c., &c., bear a close, if a not altogether remarkable, resemblance to their analogues in older systems.

The book is divided into a series of rather short chapters. Of these, the opening one explains the manner in which all the points in a plane may be looked on as the ends of vectors from a common origin, and the means by which they can be made to admit of representation by one general form of expression. The basis of the system is a geometric "net," built up by degrees on a plan closely related to the construction used by Prof. Möbius in his barycentric calculus, and composed at the outset of the six joins of four coplanar points, no three of which are collinear. The four points just mentioned constitute the "cardinal" points of the "net," whilst all other points of the "net" are its "rational," all intermediate points of the plane its "irrational" points. The second chapter of the volume commences with the definition of anharmonic ratio or, as the author styles it, the "anharmonic function." It is by a special application of the principle involved, firstly to the "cardinal" and then to certain other points of the "net," that we are led to a definition of the anharmonic co-ordinates of a point and to an appreciation of the origin of the name given to the co-ordinate system under consideration. In the same chapter the author also applies the method to the determination of a number of points well known in connexion with Euclidean and modern pure geometry. The relation between anharmonic and trilinear co-ordinates is given in an interesting section at the close of the third chapter of the volume. It is unnecessary to refer to the material constituting

the text of each chapter. Suffice it to state briefly some of the various subjects which are discussed here in their relation to the new theory and which are already familiar in another dress to the student of the standard systems of co-ordinate geometry:—the point, the straight line, the conic by means of its general equation, special conics, transformation of co-ordinates, tangential equations, the principle of duality, and so on. We are pleased to see an index to the volume, for it not infrequently happens that text-books on higher mathematics fail to supply this most valuable feature, and the want of it places the student at a serious disadvantage.

GENERAL NOTICES.

CLASSICS.

Lectures on Greek Poetry. By J. W. Mackail, M.A., LL.D., sometime Fellow of Balliol College, late Professor of Poetry in the University of Oxford. 9s. 6d. net. Longmans.

These nine lectures were substantially delivered from the Chair of Poetry in the University of Oxford, at long intervals indeed, yet in pursuance of a single continuous scheme. The aim is, not to set forth a history of the whole poetical product of Hellas, but "to disengage its essence"—a far more exacting and delicate task. "By regarding it as concentrated in the work of a few great poets, I have sought to place its progress in a clearer perspective, and to bring it into a closer relation to life." Three lectures are devoted to Homer—the Homeric Question, Homer and the Iliad, and the Homeric Epic. "The search after a primary Iliad and primary Odyssey is in the main futile; so far as it is not, it is of little relevance." Dr. Mackail would find it difficult, without a good deal of hesitation, to hold that the Iliad and the Odyssey are by different poets. But his essential object is to consider the poems simply as "two consummate achievements in poetry, from the point of view of one who considers poetry itself as a function, interpretation, and pattern of life." In the lyric age, he concentrates attention on Sappho and Simonides. In the tragic age he selects Sophocles, indicating "the quality and value of his poetry as the full embodiment of the Athenian genius." In the post-Athenian age, he deals with the Alexandrian movement towards the reconstitution of poetry in relation with life, and particularly with Theocritus and Apollonius Rhodius. In spite of the inevitable narrowness of the representative selection, the treatment is extremely suggestive; and, notwithstanding "unplumbed seas" and other mannerisms, the style is appropriately charming. The volume is a criticism of poetry by a poetic artist: a criticism of sympathetic and penetrating insight, which now and again ordains the average mortal to walk by faith.

A Greek Grammar: Syntax. By Gustave Simonson, M.A., M.D. 6s. 6d. Swan Sonnenschein.

The first volume dealt with the Accidence. Here the Syntax is very fully and systematically treated, the sections devoted to poetic and dialectic usage being printed in somewhat shorter lines than the prose sections. The author has sought out his own examples, and usefully gives the references. The work is laborious and sincere, and it will be extremely serviceable, whether alone or in supplement to any other grammar. *ἐδν* (page 242, line 19) is an unfortunate slip for *εἰ*; the cause is obvious and natural.

MATHEMATICS.

A Geometry for Schools. By F. W. Sanderson, M.A., and G. W. Brewster, M.A. 3s. Cambridge University Press.

The present volume is a development by Mr. Brewster of Mr. Sanderson's smaller work written several years since as a preliminary and mainly a practical course in the subject. The more recent publication, in which the text of the earlier has been largely (if not entirely) incorporated, combines a theoretical with a practical treatment of geometry, assigning an important part, however, to the latter medium of instruction. The suggested course is interesting, and the boy who has assimilated the contents of the little volume will possess a valuable groundwork of elementary geometrical knowledge. The work is thoroughly modern in scope and line of argument; it has also what many teachers will consider an advantage, in that it embodies a system of education in geometry already obtaining in one of the well known public schools in this country. The book has been issued in useful form with good type and clear diagrams. Exercises, to which the answers are furnished, and many of which are intended to forward definitely the work of later training, are very numerous.

Higher Mathematics for Chemical Students. By J. Riddick Partington, B.Sc. 5s. Methuen.

The author selects for discussion such portions of the subjects of higher mathematics as he deems necessary, or at any rate helpful, to students of chemistry. The text, as a whole, is useful, but it is not always characterized by the rigid accuracy of expression that must be held to be essential in every mathematical investigation that aims at being regarded as thoroughly satisfactory. That the work should fall

(Continued on page 136.)

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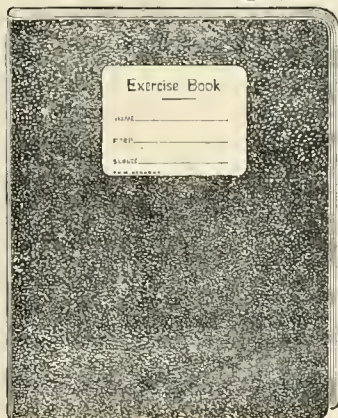
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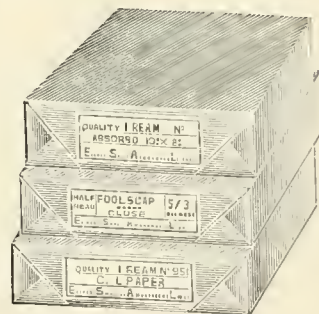
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short from the point of view of the mathematician is inevitable, seeing that the various sections, no matter how valuable in general they may be individually, are still bound to form but a series of more or less isolated pieces of mathematical argument suitable for application to the calculations that arise in the course of study requisite for the student of a special branch of scientific work. Type, paper, and binding are satisfactory, and the diagrams are clear, but the text is not by any means free from misprints.

SCIENCE.

Practical Botany. By F. Cavers, D.Sc., F.L.S., Lecturer in Botany to the Pharmaceutical Society, and at Goldsmiths' College (University of London), late Professor of Biology at Hartley University College, Southampton. 4s. 6d. Clive (University Tutorial Press).

Dr. Cavers describes his new volume as "an elementary practical handbook of Vegetable Histology and Physiology, containing, in addition, a short course of practical work on selected types of cryptogams and gymnosperms." The first three chapters are devoted to Histology, and contain not only clear and practical directions for microscopic work, but a great deal of valuable original suggestion, especially in the second chapter. The next four chapters outline a thoroughly practical course of Plant Physiology, starting with the study of seeds and seedlings. The final section consists of five chapters on Life Histories, and here again there is much original work, involving corrections of previous descriptions, as well as ample directions for the collection and culture of the typical plants examined. Though there is no attempt to illustrate the book completely, there are yet nearly a hundred useful figures. The volume is thoroughly competent, and marked with the ability of a practical teacher and a most careful expositor. It is very clearly printed and substantially got up.

An Elementary Course on Practical Applied Chemistry and Magnetism. By Daniel H. Ogley, B.Eng. (First Hons.), Liverpool, late New Research Scholar, Chief Assistant Lecturer in Electrical Engineering at the Royal Technical Institute, Salford. 2s. 6d. net. Longmans.

The treatise consists of sixty-four experiments. Dr. Rhodes, the Head of the Electrical Engineering Department at the Royal Technical Institute, Salford, explains in a preface that it "is intended to be a labour-saving device." It often happens that so much of the hour and a half of a practical class is spent in learning what to do that there is not sufficient time left to do it: and "if a student is told a week or so in advance what experiment he will have to perform, he has the opportunity of studying it theoretically beforehand." The volume will be extremely useful. It combines practical instructions with the necessary theoretical explanations. The experiments are typical of those in any well organized electrical laboratory and will meet the requirements of beginners and students preparing for the Elementary Examination in Electrical Engineering of the City and Guilds of London Institute. There are sixty-eight figures.

HISTORY.

Eastern Asia: a History. By Ian C. Hannah, M.A., Trinity College, Cambridge; Master of the English School, Tientsin, 1897-9; President of King's College, Nova Scotia, 1904-6. 7s. 6d. net. Fisher Unwin.

This work is a second edition of "A Brief History of Eastern Asia," freely modified by some ten years' further study, and entirely rewritten with a stronger grip of the immense subject. Mr. Hannah's field lies east of Persia and Arabia: he outlines in successive periods the history of China, India, and Japan. The narrative is necessarily severely selected and compressed: the earlier parts may be sufficient for the general reader, but the later parts seem rather scanty—the history of British India, for example, is extremely meagre. Mr. Hannah takes a sober view of recent events in the East. He does not expect that other Eastern nations will soon attempt to do what Japan has done; he notes the force of "a changeless culture that satisfies its own people"; and he remarks significantly upon the success achieved by German merchants everywhere "by their own unflinching diligence, and especially by taking great pains to suit the tastes of their customers," and affirms that "the British position in the East, not to say in the world, owes very much to the co-operation of Germans." The style is plain and lucid.

A School History of England. By C. R. L. Fletcher and Rudyard Kipling. 1s. 8d. Clarendon Press.

Apparently the prose text is the work of Mr. Fletcher, while Mr. Kipling contributes twenty-three poems. Mr. Henry J. Ford supplies eleven coloured pictures and twelve drawings, while there are also seven maps. Mr. Fletcher can do little more within the very limited space than give a broad impression of the chief events and of the character of the chief actors, but this he does with his accustomed freshness and decision, though he still cares nothing for purity of style, and maintains his consistency in crudeness of political thought. He, with an Oxford reputation, actually makes John "sign" that Charter, and gets Mr. Ford to portray John "signing"—pen in hand—in cynical contempt for accuracy. He characterizes Fox as "the worst" of a knot of "noisy Whig politicians." It is not worth while to gibbet his "Imperialistic" judgments: we observe that, while he professes in his last chapter "rather to state what did take place than to try to guide your opinion," he still continues "to try." He is uncontrollable and irresponsible—the

Puck of historians. Mr. Kipling poetizes with rough vigour on the Imperial note. The book needs to be revised in a serious spirit.

A Synopsis of the Leading Movements in Modern History.

By F. R. A. Jarvis. 2s. Philips.

The object of this useful little manual is "to present in a concise form the leading historical movements which have influenced the development of representative government within the British Empire." Commencing with the Renaissance, the author states in outline the chief causes, external and internal, that have contributed to the making of modern democratic government. Arranged in two parts, the book may be used as a two-year course, and it will be found suitable for upper forms or for evening classes. The information contained in the various sections is relevant, sufficient, and up to date. The appendixes supply interesting statistical graphs, the chief points of some Acts of Parliament, and a series of test questions. Altogether a very stimulating little work.

Wider Britain, Past and Present. 1s. 6d. Chambers.

The plan of this textbook is singularly happy. An attempt has been made to combine the geography and the history of the British Empire, explaining as far as possible the connexion and relation of the two. The questions that an intelligent pupil asks about our Colonies are answered accurately and interestingly. The information is derived from the best authorities, the illustrations (mostly in colour) are clear, and the general get-up is pleasing. The chapters on the Climate and Productions of India, the Mutiny, the Great Boer War, and the Australian Cinderella are capital, and will appeal strongly to thoughtful girls and boys. A summary, replete with the "drier" facts (historical and geographical), and valuable maps add considerably to the attractiveness and utility of the volume.

MENTAL SCIENCE.

The Alchemy of Thought. By L. P. Jacks, M.A., Dean of Manchester College, Oxford, and Editor of the *Hibbert Journal*. 10s. 6d. net. Williams & Norgate.

What a pity that Kant and Hegel could not write with the freshness, vivacity, and intelligibility that seem to come natural to Dr. Jacks! The volume is delightful reading, beyond the dreams of a student of philosophy; and it is well worth reading, whether one agree or disagree with the writer. Dr. Jacks opens with "the bitter cry of the plain man" against the mysterious jargon and ways of thinking of the professed philosophers, and here he will conciliate much sympathy. Perhaps he will by and by turn from criticism and show both his brethren and the plain man how the thing should be done in an original constructive work. It is all very well to hail Spinoza as a deliverer when he allows Reality to enter experience under a twofold character—with an infinity of other possible characters in the background (though incognizable by man)—but Spinoza's actual treatment ought to be significant. If the universe is not to be interpreted exclusively in the forms of conceptual logic, either there is something the matter with our logic or there must be a return to the bewilderments of Jacobi. "The result of segregating any school of thinkers would be the conversion of that school to the tenets of the opposing party"; very likely, and the "adventure among abstractions" in the allegorical *jeu d'esprit* "Devil's Island and the Isles of Omnipotence" has its point, and is sufficiently amusing. The chapter on "Self-defeating Theories" appears to us strangely weak: we have covered our margins with notes of interrogation. We commend the chapter on "Morality by the Card," and indeed the two succeeding chapters, to the moral educationists, without much expectation that they will be impressed to reconsider their ways. The last chapter, inquiring "Is the Moral Supremacy of Christendom in Danger?" is dominated by an extravagant notion of the moral conditions prevalent in Japan. Dr. Jacks does well to shake up traditional views in lively and charming style; but he appears to be still feeling his way among philosophical notions, and the excoitation of a formal original treatise would probably be the surest course for bringing him to his bearings.

Science and Religion in Contemporary Philosophy. By Emile Boutroux, Member of the French Institute, Professor of Modern Philosophy at the University of Paris. Translated by Jonathan Nield. 8s. net. Duckworth.

Mr. Nield deserves well of the general English reader for introducing Prof. Boutroux's able work so efficiently to their notice. The author gives the translator a handsome and well earned testimonial. "Le travail de M. Jonathan Nield," he writes, "n'est pas une simple transcription littérale du français en anglais, mais une véritable traduction, qui, remontant du texte à la pensée même, sait modifier la forme pour conserver le fond." He has read great part of it, and finds it "très soignée, très nette, très exacte, très intelligemment et scrupuleusement fidèle." M. Boutroux is neither a dogmatic rationalist nor a radical pragmatist: "je m'applique à distinguer, de la science positive, classification logique des faits réalisés et observés, la raison proprement dite, besoin spontané et perfectible d'harmonie et de convenance, et effort pour réaliser ces conditions dans la connaissance et dans la vie." He considers the needs of "the plain man." First, he sketches the relations between Religion and Science from Greek antiquity down to the present time. In Part I, he reviews "the Naturalistic Tendency," taking as prominent examples Comte, Spencer, and Haeckel; in Part II, "the Spiritualistic Tendency," represented by Ritschl, and by William

(Continued on page 138.)

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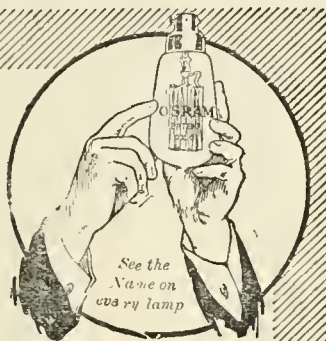
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An Intermediate Logic. By J. Welton, M.A., Professor of Education, and A. J. Monahan, M.A., Lecturer in Education, in the University of Leeds. 7s. 6d. Clive (University Tutorial Press).

The volume is based upon Prof. Welton's well known "Manual of Logic," and adapted to the needs of students preparing for the Intermediate University Examinations. The revision has been unsparing. A less controversial tone is a natural consequence of the surer settlement of the disputes of the doctors over the more modern parts of logical doctrine; and, while the material logic of method and of induction is carefully restated, "Barbara, Celarent, &c.," have been freshly treated and placed in more fruitful relations in the logical system. The various forms of fallacy are handled in immediate connexion with the doctrines they offend. The exposition is comprehensive and lucid, and the treatise will prove very valuable to the student. A great number of questions and exercises, selected from papers actually set in public examinations, are placed at the end of the text; and there is a full index.

THE HOME UNIVERSITY LIBRARY.

An American editor—Prof. William T. Brewster, M.A., of Columbia University—has been associated with the original three English editors; and Messrs. Holt & Co., of New York, are associated with the English publishers, Messrs. Williams & Norgate, in spreading the light on the other side of the Atlantic. A fifth batch of ten volumes (1s. net each) has just been issued. (1) *Peoples and Problems of India*, by Sir T. W. Holderness, K.C.S.I.; (2) *The History of England: a Study in Political Evolution*, by Prof. A. F. Pollard, Litt.D., LL.D.; (3) *Canada*, by A. G. Bradley; (4) *Anthropology*, by R. R. Marett, M.A., Reader in Social Anthropology in the University of Oxford; (5) *Landmarks in French Literature*, by G. L. Strachey, sometime Scholar of Trinity College, Cambridge; (6) *The School: an Introduction to the Study of Education*, by Prof. J. J. Findlay, M.A., Ph.D.; (7) *Rome*, by W. Warde Fowler, M.A.; (8) *Architecture: an Introduction to the History and Theory of the Art of Building*, by Prof. W. R. Lethaby; (9) *Climate and Weather*, by Prof. H. N. Dickson, D.Sc., President of the Royal Meteorological Society; (10) *The Problems of Philosophy*, by Bertrand Russell, F.R.S. This varied list consists of fresh volumes, specially written for the series by most competent authors. In point of interest and of ability it is quite on a level with any of the preceding batches of ten.

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REFERENCE ANNUALS.

The Schoolmasters Yearbook and Directory, 1912. 12s. 6d. net. The Yearbook Press.

This is the tenth annual issue of a book of reference that has made itself indispensable to educationists. The established form is generally maintained. The information section is well packed with matter that has been judiciously selected and cast into a form that is both agreeable to read and calculated for ready reference. The Directory and the List of Secondary Schools, which are pre-eminently serviceable features, have been very laboriously brought up to date. The Directory contains some 14,000 to 15,000 names and the Secondary Schools number about 1,500. These figures indicate to the practical mind the onerous task of the Editor, and the results accomplished by him ought to evoke admiration. We strongly second his continued appeal for still wider support.

The Public Schools Yearbook, 1912. Edited by H. F. W. Deane, M.A., F.S.A., Trinity College, Cambridge, Librarian to the Deau and Canons of St. George's, Windsor Castle, and W. A. Evans, M.A., Barrister-at-Law, Secretary to the Head Masters' Conference. 3s. 6d. net. The Yearbook Press.

This well known compilation, now in its twenty-third year of publication, and established as "the official Book of Reference of the Head Masters' Conference," has been carefully revised up to date. It "provides a record, at once comprehensive and concise, of all matters of educational interest to parents, schoolmasters, and boys." Besides ample information about the Conference and the Public Schools, it sets forth details about scholarships, examinations, conditions of admission to the Navy, Army, Civil Service, and other professions, and furnishes lists of preparatory schools, &c. An immense quantity of useful facts has been diligently compiled and lucidly digested.

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Very interesting. Liberally illustrated.

Greek Accentuation, A Plain Guide to. By F. Darwin Swift, M.A., formerly Scholar of Queen's College, Oxford. Second Edition, revised. 1s. 6d. net. Oxford: Blackwell. London: Simpkin, Marshall, & Co.

Brief and clear; very useful.

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Tacitus: Roman Conquest of Britain. By William Modlen, M.A. 1s. 6d. Macmillan (Elementary Classics).

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Prove that, if T is the tension of the rod DB, and E the point where the straight line AC intersects BD, T : W = DE : DB.

Solutions (I) by K. V. NATASA AIYAR, B.A., B.E., C.E.; (II) by HENRY RIDDELL, M.E.; (III) by R. S. CAPON.

(I) Draw EQ parallel to CB, EO parallel to AD, OP parallel to CB,

$$BP/PD = CO/OD = CE/EA = BQ/QA.$$

therefore PQ is parallel to AD.

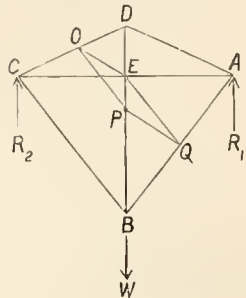
Taking external forces alone,

$$R_1 : R_2 = CE : EA = BP : PD.$$

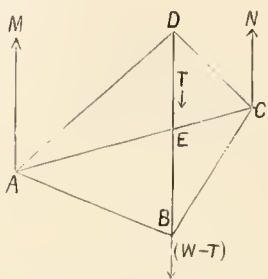
W, R₁, R₂ may be represented in magnitude and direction by DB, BP, PD;

forces at C by the sides of ΔPDO,		
„ A „	ΔBPQ,	
„ D „	ΔODE.	

i.e., tension in rod DB by DE in magnitude and direction; therefore T : W = DE : DB.



(II) The equilibrium will not be disturbed if we suppose the rod DB removed, and weights T and W-T hung to D and B respectively. The two triangles ADC and ABC may now be considered quite separately, and the tension along AC due to T must equal the compression along the same line due to W-T. Hence we may consider A as a point in the upper triangle ADC in equilibrium under forces along AM, DA and AE. The force along



$$AM = (T \times EC)/AC,$$

and tension along AE = (T x EC.AE)/(AC.DE).

Similarly considering the lower triangle we find compression along EA = [(W-T) EC.AE]/(AC.BE).

Hence we have T/(W-T) = DE/BE or T/W = DE/BD.

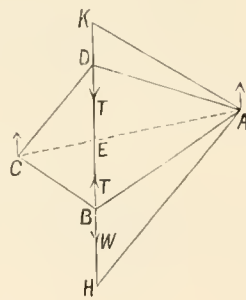
(III) Draw AK, AH parallel to BC, DC to meet BD in K and H. Then

BAK is the triangle of forces for the joint B,
DHA „ „ „ „ D,
KAH „ „ „ „ C
therefore (W-T)/T = KE/HD.

Now EB/DE = KE/EH (by similar triangles CBE, AEK and CED, AEH)
= (KE + EB)/(EH + DE)
= KB/HD;

$$\text{therefore } W : T = EB + DE : DE,$$

$$\text{i.e., } W : T = DB : DE.$$



17205. (J. J. BARNIVILLE, B.A.)—Resolve $x^6 - 8x^2 + 3$, $x^6 - 5x^2 - 12$, $x^3 + 3x^2 + 20$, $x^3 - 21x^2 + 8$, $x^3 - 17x^3 + 1$, $x^3 - 17x^3 + 40$, $x^3 - 2x^2 + 3x - 2$, $x^3 - x^2 - 2x + 2$, each into three factors.

Solutions (I) by T. STUART, D.Sc.; (II) by Lt.-Col. ALLAN CUNNINGHAM, R.E.

(I) The first six equations being of the type

$$F(x) \equiv x^{3n} + Ax^n + B,$$

where n is prime, if they contain a polynomial f(x) as a factor, they must also contain f(ρx), f(ρ²x), ..., f(ρⁿ⁻¹x), where ρ is a root of (θⁿ - 1)/(θ - 1) = 0. Except when f(x) is a function of x², these factors all differ from f(x) and from one another, and hence if B is not, as here, a perfect n-th power, there must be a third rational factor φ(x), which is a function of xⁿ only.

(1, 2). As there is no linear factor, both f(x) and φ(x) must be of the second degree and φ(x) is a function of x² only. Hence $x^6 - 8x^2 + 3 = (x^2 + 3)(x^4 - 3x^2 + 1) = (x^2 + 3)(x^2 + x - 1)(x^2 - x - 1)$.

Similarly $x^6 - 5x^2 + 12 = (x^2 - 3)(x^2 + x + 2)(x^2 - x + 2)$.

(3, 4). As $\lambda^4 + 3\lambda + 8 = 0$ has no rational root, the function $x^3 + 3x^2 + 20$ has no factor of the form $x^2 - \lambda$. Hence we must put

$$f(x) \equiv x^2 + \lambda x + \mu, \quad \phi(x) \equiv x^4 + \theta x^2 + \phi,$$

$$\text{and } x^3 + 3x^2 + 20 \equiv (x^2 + \lambda x + \mu)(x^2 - \lambda x + \mu)(x^4 + \theta x^2 + \phi),$$

which requires $\theta = \lambda^2 - 2\mu$, $\mu^2 + \phi = (\lambda^2 - 2\mu)^2$, $(\mu^2 - \phi)(\lambda^2 - 2\mu) = 3$, $\mu^2\phi = 20$,

giving $\lambda = \pm 1$, $\mu = 2$, $\phi = 5$, $\theta = -3$,

and $x^3 + 3x^2 + 20 \equiv (x^2 + x + 2)(x^2 - x + 2)(x^4 - 3x^2 + 5)$.

Similarly, $x^3 - 21x^2 + 8 \equiv (x^2 + x - 1)(x^2 - x - 1)(x^4 + 3x^2 + 8)$.

(5, 6). If f(x) is a factor, f(ρx) and f(ρ²x) are also factors, where ρ is an imaginary cube root of unity. The third rational factor must be a function of x³ only, since the absolute terms are not perfect cubes.

We have $x^3 - 17x^3 + 4 = (x^3 - 4)(x^6 + 4x^3 - 1)$,

and as the second factor = f(x).f(ρx).f(ρ²x), f(x) must be a quadratic (say) $x^2 + \lambda x + \mu$. This requires

$$\lambda^3 - 3\lambda\mu = +4, \quad \mu^3 = -1, \quad \text{or } \lambda = 1, \quad \mu = -1,$$

and $x^3 - 17x^3 + 4 \equiv (x^3 - 4)(x^2 + x - 1)(x^4 - x^3 + 2x^2 + x + 1)$.

Similarly, $x^3 - 17x^3 + 40 \equiv (x^3 + 5)(x^2 + x + 2)(x^4 - x^3 - x^2 - 2x + 1)$.

(7). After removing the factor (x-1), the quotient

$$\phi(x) \equiv x[(x^2 - 1)/(x - 1)] - 2(x - 1)$$

gives $\phi(3) = 5^2.131$, $\phi(-3) = -23.71$, $\phi(4) = 2.61.179$.

This suggests that one factor may be a cubic in x (say)

$$f(x) \equiv x^3 + \lambda x^2 + \mu x + \nu,$$

and applying the conditions

$$f(3) = 25, \quad f(-3) = -23, \quad f(4) = 61,$$

we get $\lambda = 0$, $\mu = -1$, $\nu = 1$, and $f(x) = x^3 - x + 1$.

Hence $x^3 - 2x^2 + 3x - 2 \equiv (x - 1)(x^3 - x + 1)(x^4 + x^3 + 2x^2 + x + 2)$.

(8). In a similar manner we get

$$x^3 - x^2 - 2x + 2 \equiv (x - 1)(x^3 + x^2 - 1)(x^3 + x^3 + x^2 + 2).$$

(II) $N_1 = x^6 - 8x^2 + 3 = (x^2 + 3)(x^2 - x - 1)(x^2 + x - 1)$,

$$N_2 = x^6 - 5x^2 - 12 = (x^2 - 3)(x^2 - x + 2)(x^2 + x + 2),$$

$$N_3 = x^3 + 3x^2 + 20 = (x^2 - x + 2)(x^2 + x + 2)(x^4 - 3x^2 + 5),$$

$$N_4 = x^3 - 21x^2 + 8 = (x^2 - x - 1)(x^2 + x - 1)(x^4 + 3x^2 + 8),$$

$$N_5 = x^3 - 17x^3 + 4 = (x^3 - 4)(x^2 + x - 1)(x^4 - x^3 + 2x^2 + x + 1),$$

$$N_6 = x^3 - 17x^3 + 40 = (x^3 + 5)(x^2 + x + 2)(x^4 - x^3 - x^2 - 2x + 4),$$

$$N_7 = x^3 - 2x^2 + 3x - 2 = (x - 1)(x^3 - x + 1)(x^4 + x^3 + 2x^2 + x + 2),$$

$$N_8 = x^3 - x^2 - 2x + 2 = (x - 1)(x^3 + x^2 - 1)(x^3 + x^3 + x^2 + 2).$$

Assuming that the factorization is done "by trial," it is readily found that (x² + 3), (x² - 3), (x³ - 4), (x³ + 5), (x - 1), (x - 1) are factors of N₁, N₂, N₃, N₆, N₇, N₈ respectively.

Dividing these factors out depresses those six numbers. Next, denoting any of the numbers to be factorized by F(x), compute numerically the values of F(x) when x = 1, 2, 3, 4, 5, 6, ..., and factorize the results. A careful examination of the factors will generally suggest the algebraic forms of one or more factors.

This method was shown in detail in the writer's solutions of the similar Questions 17063, 17117. [Rest in Reprint.]

10297. (V. RAMASWAMI AIYAR, M.A.)—Four straight lines form four triangles with given circum-centres. Show that the line of collinearity of the orthocentres touches a fixed circle.

Solution by S. NARAYANAN, B.A., L.T.

If A, B, C and D be the four circum-centres given, it is known that they should lie on a circle. Hence taking any arbitrary point O on this circle, lines drawn parallel to the pedal lines of O with respect to the triangles BCD, CDA, DAB, ABC and at double the distances of those pedal lines, form four triangles whose circum-centres are A, B, C, D. Therefore the line of collinearity of the orthocentres is the line drawn parallel to the line of collinearity of the feet of the perpendiculars from O on the four pedal lines and at four times the distance of this line.

Now let O be the pole and the diameter through O, the initial line. The circle being $r = 2a \cos \theta$, where a is the radius, we know, by a well known theorem, that the line of collinearity of the feet of the perpendiculars from O on the four pedal lines of the triangles BCD, CDA, DAB, ABC, is

$$2a \cos \alpha \cos \beta \cos \gamma \cos \delta = r \cos(\theta - \alpha - \beta - \gamma - \delta),$$

where α, β, γ, δ are the vectorial angles of A, B, C, D. Therefore the line of collinearity of the orthocentres is

$$8a \cos \alpha \cos \beta \cos \gamma \cos \delta = r \cos(\theta - \alpha - \beta - \gamma - \delta) \dots \dots \dots (I).$$

Transferring the pole to a fixed point O' on the circle, with reference to which O, A, B, C, D are respectively λ, α', β', γ', δ', we get

$$\left. \begin{aligned} a &= \frac{1}{2}\pi + \alpha' - \lambda, & r \sin(\lambda + \theta) &= \rho \sin(\lambda - \theta') \\ r \cos(\lambda + \theta) &= 2a \cos \lambda - \rho \cos(\lambda - \theta') \end{aligned} \right\} \dots \dots \dots (II),$$

where ρ and θ' are the co-ordinates of any variable point on the line (I) referred to the new pole.

Hence from the relations (II), the line (I) becomes, after reduction (which is slightly tedious),

$$\cos \phi [\rho \cos \theta' - a(1 + \Sigma \cos 2\alpha')] - \sin \phi [\rho \sin \theta' - a\Sigma \sin 2\alpha'] + a\Sigma \cos(\alpha' - \beta') \cos(\gamma' - \delta') = 0 \quad \text{(III),}$$

where $\phi \equiv 2\lambda - \alpha - \beta' - \gamma' - \delta'$;

where differentiating (III) with respect to ϕ and eliminating ϕ , the required envelope is easily seen to be the circle

$$[x - a(1 + \Sigma \cos 2\alpha')]^2 + (y - a\Sigma \sin 2\alpha')^2 = [a\Sigma \cos(\alpha' - \beta') \cos(\gamma' - \delta')]^2.$$

Transferring the pole to the centre of the circle ABCD, this circle becomes

$$(x - a\Sigma \cos 2\alpha')^2 + (y - a\Sigma \sin 2\alpha')^2 = [a\Sigma \cos(\alpha' - \beta') \cos(\gamma' - \delta')]^2.$$

Here, the centre is evidently the centre of the circle which passes through the four orthocentres of the triangles BCD, CDA, DAB, ABC, and the radius, after simplification, becomes $a \cos \theta$, where a is the radius of the original circle ABCD, and θ is the angle of intersection of the diagonals AC and BD.

Some curious Relations between the several sums of consecutive Squares and Numbers of form $6n \pm 1$, including Primes.

By D. BIDDLE, M.R.C.S.

What is aimed at in this brief paper will best be introduced by the following conspectus relating to the early squares and primes:—

Differences between multipliers ...	1	2					
Differences at gaps ...			3				
Multipliers ...	1	2	5	7			
Numbers of form $6n \pm 1$...	5	7	11	13			
Squares ...	1	4	9	16	25	36	
		3		4			
	5		7		9		
	12	15		22	26		35
	17	19		23	25		29
	+ 49 + 64 + 81 + 100 + 121 + 144 + 169 + 196						
	5	6	7		15		
	40	51	57	13	70	77	92
	31	35	37		41	43	47
	+ 225 + 256 + 289 + 324 + 361 + 400 + 441 + 484 + 529						
	8	9	10		11		
	100	117	126	19	145	155	176
	49	53	55		59	61	65
	+ 576 + 625 + 676 + 729 + 784 + 841 + 900 + 961 + 1024 +						

The multipliers are the numbers requisite to bring the primes, &c., below them, to the same value as the sum of the squares up to the identical position. The differences between the several pairs of multipliers ascend regularly according to the first order. The differences at the gaps are the sums of the two other differences near them, and between which they are found. The differences in the top row are identical with n in $6n \pm 1$ belonging to the pair of primes, &c., just below. The squares below the pairs of multipliers and primes, &c., are $(3n)^2$ and $(3n-1)^2$, where n is of the same value as in $6n \pm 1$, belonging to the primes, &c., and difference between the multipliers just above.

The sum of the squares, it is easy to see, can be found from the following formulæ:—

To square below $6n+1$, ... $(6n+1) \{ \frac{1}{2}(3n^2+n) \}$.

To square below $6n-1$, ... $(6n-1) \{ \frac{1}{2}(3n^2-n) \}$.

By substitution of values each of these formulæ will reduce to $(2n+1) \{ \frac{1}{6}(n^2+n) \}$, the well known formula for summation of squares, in which n is the root of the terminal square.

17220. (Professor STEGGALL.)—A metal cup is to be made by forcing a circular lamina, radius unity, through a press in such a way that the flat circular bottom is not strained, while the conical side is formed by mere circumferential compression of the material. Find the dimensions of the cup and the angle of its cone when its content is a maximum.

Solution by W. J. ASHDOWN.

Let the radii of base and top = x and y , the slant and vertical heights = s and h respectively, and let the angle between side and base = $90^\circ + \theta$, and capacity = V .

(1) The compression may increase the thickness of the metal, $s+x$ remaining constant = 1.

Then $s = 1-x$, $h = (1-x) \cos \theta$, $y = x + (1-x) \sin \theta$;

$$V = \frac{1}{3}\pi \{ x^2 + [x + (1-x) \sin \theta]^2 + x[x + (1-x) \sin \theta] \} (1-x) \cos \theta.$$

Differentiating with respect to x ,

$$6x - 9x^2 + (3 - 12x + 9x^2) \sin \theta - 3(1-x)^2 \sin^2 \theta = 0,$$

$$x = (p^2 + \sqrt{p}) / (1+p+p^2),$$

where $p = 1 - \sin \theta$.

Substituting this value of x and reducing,

$$V = \frac{1}{3}\pi [(q+2q^2+q^3) \sqrt{(2-q^2)/(1+q+q^2)}],$$

where $q = \sqrt{p}$.

Differentiating with respect to q , equating to zero, and reducing,

$$\text{the cubic is obtained, } 3q^3 + 3q^2 - 2q - 1 = 0,$$

the positive root of which is

$$q = \cdot 6846947 \dots, \sin \theta = \cdot 53119 \dots, \theta = 32^\circ 5' 10'', x = \cdot 5356 \dots,$$

$$y = \cdot 7823 \dots, h = \cdot 3934 \dots, V = \cdot 542997 \dots,$$

which is a maximum.

(2) It is possible that, with a sufficiently ductile metal, the thickness and extent of surface would remain constant. In this case the inner surface = $\pi(sx + sy + x^2) = \pi$;

$$s = (1-x^2)/(x+y), \quad h = s \cos \theta = (y-x) \cot \theta,$$

$$y = \sqrt{(x^2 + (1-x^2) \sin \theta)},$$

$$V = \frac{1}{3}\pi (x^2 + y^2 + xy)(y-x) \cot \theta = \frac{1}{3}\pi (y^3 - x^3) \cot \theta.$$

This is similarly solved, the first process of differentiating giving

$$x = (1 - \sin \theta) / \sqrt{(\sin^2 \theta - 3 \sin \theta + 3)},$$

and the second

$$3 \sin^2 \theta - 8 \sin \theta + 3 = 0, \quad \sin \theta = \frac{1}{3}(4 - \sqrt{7}), \quad \theta = 26^\circ 50' 45'',$$

$$x = \cdot 4933 \dots, y = \cdot 7353 \dots, h = \cdot 6561 \dots,$$

$$V = \cdot 6871 \dots, \text{ a maximum.}$$

17228. (A. M. NESBITT, M.A.)—Required a neat solution of

$$ax + (a-b)y + (a-c)z = a^2 + (b-c)^2,$$

$$(b-a)x + by + (b-c)z = b^2 + (c-a)^2,$$

$$(c-a)x + (c-b)y + cz = c^2 + (a-b)^2.$$

Solution by R. F. DAVIS, M.A.

Adding together the second and third equations, and subtracting the first equation, we get

$$(b+c-3a)x + (b+c-a)y + (b+c-a)z = (b+c-a)^2$$

or $-2a \{ 1 - x/(b+c-a) \} = x + y + z - a - b - c.$

Similarly

$$2a \{ 1 - x/(b+c-a) \} = 2b \{ 1 - y/(c+a-b) \} = 2c \{ 1 - z/(a+b-c) \}.$$

This is obviously solved by inspection

$$x = b+c-a, \quad y = c+a-b, \quad z = a+b-c.$$

12128. (Professor CHAKRIVARTI.) A., B., C. throw three dice for a prize, the highest throw winning, and equal highest throws continuing the trial. At the first throw A. throws 13; prove that his chance of the prize is $\cdot 623864$ nearly.

Solution by C. W. ADAMS and others.

The chance of throwing n is the coefficient of x^n in

$$(x+x^2+x^3+x^4+x^5+x^6)^3 \cdot 216.$$

The chance of throwing 13 is therefore $21/216$, and the chance of throwing less than 13 is $160/216$.

If B. and C. both throw less than 13, A. wins. If either throws 13 and the other less than 13, his chance is $\frac{1}{2}$ in each case. If both throw 13 his chance is $\frac{1}{3}$.

Therefore his total chance is

$$\left(\frac{160}{216}\right)^2 + \frac{1}{2} \times \frac{21}{216} \times \frac{160}{216} + \frac{1}{2} \times \frac{160}{216} \times \frac{21}{216} + \frac{1}{3} \left(\frac{21}{216}\right)^2 = 0\cdot 623864 \text{ approx.}$$

QUESTIONS FOR SOLUTION.

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 $\sqrt{(2gh)/r}$.

17257. (Professor R. SRINIVASAN, M.A.)—Show that

$$\int_0^\pi \frac{x \operatorname{cosec} x dx}{1 + \sin x \sin \alpha} = \pi + \int_0^\pi \frac{x \cot x \cos \alpha dx}{(1 + \sin x \sin \alpha)^2}$$

17258. (D. BIDDLE.)—(1) Show that $N = ab/(a-b)$ is a sieve for primes, because, though every number, when thus valued, can be defined by integers in place of both a and b , primes can be defined by integers in one way only, composites in at least two more ways.

(2) But, allowing the use of fractional values for a and b , show that $ab/(a-b)$ and $ab/(a+b)$ may be formed of identical values in respect of a , and also of b , so as to give the factors of the bicomposite

$$N = a^2b^2/(a^2 - b^2).$$

17259. (NORMAN ALLISTON.)—Whenever m is prime to r (m and r being whole positive exponents), integral solutions of $x^r \pm y^r = z^m$ are possible. (Cf. Fermat's power summation theorem.)

17260. (Lt.-Col. ALLAN CUNNINGHAM, R.E.)—Show that

$$N_n = X^n - Y^n = \frac{x^3 - y^3}{x - y} = \frac{v^3 + w^3}{v + w} = N_3$$

admits of an infinite number of solutions in positive integers, for all positive integer values of $n = 4k + 3 > 3$.

17261. (R. NORRIE, M.A.)—(i) If one of the exponents a, b, c, \dots be prime to all the others, show that the indeterminate equation

$$Ax^a + By^b + Cz^c + \dots = 0$$

is always soluble in integers, A, B, C, \dots being constant coefficients. (ii) Let F_r denote a homogeneous function of the r th degree in any number of variables. Then if no variable appears in more than one F_r , show that the indeterminate equation

$$F_a + F_b + F_c + \dots = 0$$

is always soluble in integers, provided one of the quantities a, b, c, \dots is prime to all the others.

17262. (J. J. BARNIVILLE, B.A.)—(1) If

$$(2 - ax)/(1 - ax + x^2) = 1 + u_1x + u_2x^2 + \dots,$$

prove that $\frac{1}{2}u_n = 1 + n^2(a-2).2! + n^2(n^2-1^2)(a-2)^2/4! + n^2(n^2-1^2)(n^2-2^2)(a-2)^3/6! + \dots$

(2) If v_n be the sum of the n th powers of the roots of

$$x^3 - 3x^2 - ax - 1 = 0,$$

prove that $\frac{1}{3}v_n = 1 + n^2(n-1)(a+3)/3! + n^2(n^2-1^2)(n-2)(n-3)(a+3)^2/6! + n^2(n^2-1^2)(n^2-2^2)(n-3)(n-4)(n-5)(a+3)^3/9! + \dots$

17263. (Professor E. J. NANSON.)—If σ_r is the arithmetic mean of the r th powers of n positive quantities which are not all equal, and ω_r is the arithmetic mean of their products r together,

$$(n-1)\sigma_r + \omega_r > n\sigma_1\sigma_r - 1.$$

17264. (Professor NEUBERG.)—Trouver le lieu de la projection d'un point donné M sur les plans osculateurs d'une cubique gauche.

17265. (Professor SANJANA, M.A.)—Through a fixed point planes are drawn each cutting in P, Q, R the axes of co-ordinates; in the triangle PQR a point O is taken such that the ratios $OP : OQ : OR$ are constant. Find the locus of O .

17266. (A. M. NESBITT, M.A.)—Discuss the curve $y = x^y$, especially for negative values of y .

17267. (C. E. YOUNGMAN, M.A.)—When a conic is reciprocated by its director-circle into another conic, triangles as ABC can be circumscribed to the two, the sides touching the first at D, E, F . Prove that the common centre is (i) the orthocentre of ABC ; (ii) the mid-point between D, E, F , and the orthocentres of AEF, BFD, CDE ; (iii) a point of trisection between the circumcentre of ABC and the orthocentre of DEF .

17268. (M. T. NARANIENGAR, M.A.)—Show that the parabola through any four co-normal points of $x^2/a^2 + y^2/b^2 = 1$ has its axis parallel to one of the equi-conjugates.

17269. (W. F. BEARD, M.A.)—A circle Y cuts a conic focus S at P, Q, P', Q' , and a circle is drawn to touch $PQ, P'Q'$ at the points where the directrix meets them. Prove that this circle and the other two circles similarly obtained by taking other pairs of common chords are coaxial with Y , and that if Y passes through S , then so do the other circles.

17270. (R. F. DAVIS, M.A.)—If OA, OB are radii of a given circle (centre O) containing a given angle AOB which it is required to trisect, examine the degree of accuracy of the following construction:—Along OA take $OE = \frac{1}{2}OA$, and through B draw BF parallel to OA and $= \frac{5}{4}OA$. Join OF and draw EP parallel to OF meeting the circumference in P . Then arc $AP = \frac{1}{3}$ arc AB (approximately).

17271. (W. GALLATLY, M.A.)—If the points P', P'' are isogonal conjugates, or foci of an in-conic, the antipedal triangle $X'Y'Z'$ of P' is homothetic to the pedal triangle $X''Y''Z''$ of P'' ; and $X'X'', Y'Y'', Z'Z''$ meet in S , the centre of similitude of the two triangles. To determine (α, β, γ) , the trilinear co-ordinates of S .

17272. (M. SATYANARAYANA, M.A.)—Eliminate a from the equations $\cos(3a - \theta) = a \cos^3 a, \sin(3a - \theta) = -a \cos^3(a + 30^\circ)$.

17273. (Professor J. C. SWAMINARAYAN, M.A.)—Prove the identity $(x^2 + y^2 + z^2 + 2yz \cos \alpha + 2zx \cos \beta + 2xy \cos \gamma) \times (x'^2 + y'^2 + z'^2 + 2y'z' \cos \alpha + 2z'x' \cos \beta + 2x'y' \cos \gamma) - \{xx' + yy' + zz' + (yz' + y'z) \cos \alpha + (zx' + z'x) \cos \beta + (xy' + x'y) \cos \gamma\} = (yz' - y'z)^2 \sin^2 \alpha + (zx' - z'x)^2 \sin^2 \beta + (xy' - x'y)^2 \sin^2 \gamma + 2(zx' - z'x)(xy' - x'y)(\cos \beta \cos \gamma - \cos \alpha) + 2(xy' - x'y)(yz' - y'z)(\cos \gamma \cos \alpha - \cos \beta) + 2(yz' - y'z)(x'y' - x'y)(\cos \alpha \cos \beta - \cos \gamma)$.

OLD QUESTIONS AS YET UNSOLVED (IN OUR COLUMNS).

11292. (Professor MALET, F.R.S.)—If tangents, distinct from the common tangents, be drawn to two conics, S and S_1 , through the points of contact of the common tangents, prove that the eight points of contact of the tangents so drawn (the notation being as in Salmon's *Conics*) lie on the conic $\Delta_1 S / (\Theta_1^2 - 2\Delta_1 \Theta) + \Delta S_1 / (\Theta^2 - 2\Delta \Theta_1) - F^2 / 4\Delta \Delta_1 = 0$.

12183. (Professor HAUGHTON, F.R.S.)—A flat champagne glass, half filled, is placed before me on a table, and I observe the images of a small crumb placed on the table at the far side; the images may be four in number, which I can make to coalesce by moving my head; the least motion of the head forwards now destroys all the images. Explain these facts.

12346. (R. F. DAVIS, M.A.)—The tangent to a 3-cusped hypocycloid having a constant length intercepted by the curve, is it possible, by any system of linkages, to obtain a bar moving in such a manner that its extremities lie each on a branch of a 3-cusped hypocycloid while the bar itself envelopes the third branch?

12531. (Professor NEUBERG.)—Trouver la trajectoire orthogonale des surfaces représentées par l'équation $x^m y^{n-2z} = K$, K étant un paramètre variable.

12833. (H. J. WOODALL, A.R.C.S.)—Arrange the terms of the series $1 - \frac{1}{2} + \frac{1}{3} - \frac{1}{4} + \frac{1}{5} - \frac{1}{6} + \dots$, in such orders that sums to infinity shall be respectively (1) 1, (2) 2, ..., up to 10.

13494. (The late Professor WOLSTENHOLME, M.A., Sc.D.)—In a finite tetrahedron $OABC$, such that

$$\Delta OBC + \Delta ABC = \Delta OCA + \Delta OAB;$$

prove that

$$\begin{array}{cccc|c} 1, & 1, & 1, & 1 & = 0, \\ b^2 + c^2 - x^2, & y^2 + z^2 - x^2, & b^2 + z^2 - a^2, & y^2 + c^2 - a^2 & \\ c^2 + a^2 - y^2, & a^2 + z^2 - b^2, & z^2 + x^2 - y^2, & c^2 + x^2 - b^2 & \\ a^2 + b^2 - z^2, & a^2 + y^2 - c^2, & x^2 + b^2 - c^2, & x^2 + y^2 - z^2 & \end{array}$$

and that in any tetrahedron,

$$\begin{array}{cccc|c} 1, & 1, & 1, & 1 & = -1152V^2, \\ b^2 + c^2 - x^2, & y^2 + z^2 - x^2, & a^2 - b^2 - z^2, & a^2 - y^2 - c^2 & \\ c^2 + a^2 - y^2, & b^2 - a^2 - z^2, & z^2 + x^2 - y^2, & b^2 - c^2 - x^2 & \\ a^2 + b^2 - z^2, & c^2 - a^2 - y^2, & c^2 - x^2 - b^2, & x^2 + y^2 - z^2 & \end{array}$$

where V is the volume of the tetrahedron, a, b, c are the lengths of three conterminous edges, and x, y, z are the lengths of the respectively opposite edges.

NOTICE TO CORRESPONDENTS.

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

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SYLLABUS.

I. (Feb. 8.) *Nature and Scope of Psychology.*—Point of view: science of consciousness: nature of consciousness, general and individual: insulation of individual consciousness: the subjective and the objective: the study of the soul: meaning of the ego, and its various aspects: dangers of the psychological attitude on the part of the teacher: psychological data of education: psychology a theoretical study, education a practical.

II. (Feb. 15.) *Personality and Temperament.* Essential unity of the soul: various modes of being conscious: the so-called "faculties": dangers of hypostasis: evolution of personality: nature of temperaments and their classification: permanency of the temperaments, and the means by which they may be modified: relation between temperament and personality: advantages and dangers of using "types" in education.

III. (Feb. 22.) *Presentative Processes.*—Nature of sensation: the senses, general and special: contribution sensation makes to knowledge: the "preferred sense": the training of the senses: distinction between sensation and perception: the mind's share in perception: meaning and limits of observation: the gaping point: rhythm of concentration and diffusion: the place of inference.

IV. (Feb. 29.) *The Conceptual.*—Nature of conception and its relation to perception: the range of the representative processes: nature and origin of ideas: the active and the passive aspects of ideas: presented content and presentative activity: the relation of definition to the concept: degrees of generality of ideas: the grouping and interaction of ideas: recall mediate and immediate.

V. (March 7.) *Memory.*—Not limited to intellectual processes: fundamental nature: relation to personal identity: Bergson's two kinds of memory: predominance of the purposive element: possibility of improving the memory as an original endowment: mnemonics and the educational applications: learning by heart and by rote: reminiscence and recollection: "verbal," "pictorial," and "rational" memory: relation to reality.

VI. (March 14.) *Imagination.*—Distinction from memory on the one hand and conception on the other: relation to thinking, and the corresponding limitations: conditions determining the working of the imagination, and the corresponding classification into "kinds" of imagination: importance in real life of "clearly imaged ends": function of the imagination in school-work: its aesthetic use: nature and moral value of ideals.

VII. (March 21.) *Interest and Attention.*—Nature of each: interaction between them: circular reaction: interest as means and as end: relation between the interesting and the easy: quarrels about the classification of the kinds of attention: the mechanism of attention: its manipulation: its duration: its rhythm: various functions of attention in educational process: moral implications of the newer views.

VIII. (May 2.) *Subconsciousness and the Habitual.*—Vague notions of the subconscious and their dangers: nothing mystical about the subconscious: the dynamic conception underlying it: association a general principle of organic development and not limited to ideas: relation to habits: place and value of habits in education: making and breaking of habits: special and general habits: accommodation and co-ordination: the continuum of common interest: reintegration.

IX. (May 9.) *Suggestion.*—The teacher's means of manipulating the paid-up capital of the pupil: suggestion has no power save in calling up ideational combinations already formed: ideas as forces: self-activity: suggestion as self-originated: pseudo-auto-suggestion: meaning of temptation: making pupils temptation proof in certain directions: relation of suggestion to imitation: spontaneous and deliberate imitation.

X. (May 16.) *Reasoning.*—Fundamentally an adaptation of means to ends on the ideational plane: may be regarded as the purposive aspect of apperception: relation between thought and language: the constant element in thought: the dynamic basis of all thinking: the laws of thought as thought: nature and source of errors in thinking: possibility of honest difference in results of thinking: place and function of syllogistic and other formal modes of thinking.

XI. (May 23.) *The Affective Processes.*—Danger of isolating this aspect of soul life: unreasonable depreciation of the emotions by certain professional philosophers: value of emotions as support of intellectual process: classification of the emotions: expression of the emotions: Lange-James theory of the relation between emotion and its expression: important educational bearings of the truth underlying this theory.

XII. (May 30.) *Conation.*—Interrelations of knowledge, feeling, desire, and will: nature and function of motive: fallacy of "the strongest motive": the motiveless will: practical aspects of the theory of the freedom of the will: evolution of the will: its subjective and objective aspects: hypostasis of the will: possibilities of real training of the will: meaning of "breaking the will": importance of the time element in all attempts at will-training.

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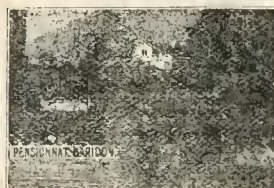
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The Educational Times.

THE meeting of secondary teachers held the other day at the University of London was an imposing ceremony, presided over by the Head Master of Eton, with a past Minister of Education on his right and a present Member for the University of Cambridge on his left; but it was more like a Grand Parade or a Trooping of the Colours than a Parliament of Teachers. The speakers representing the various Associations had all been designated beforehand, but these did not include the College of Preceptors, the Teachers' Guild, or the Private School Teachers, who might conceivably have raised a dissentient note; and the resolutions were so framed that all three were carried by acclamation.

We are not intending in any way to depreciate the significance and importance of such a meeting. If its only result had been to elicit from Mr. Acland the extraordinarily frank and fearless *Apologia pro vita sua*, and to have driven home to teachers the lesson he sought thereby to impress, "You must educate your masters, the public," it would have been well worth calling. London is slow to move, and there was none of the enthusiasm that marked the preceding meetings of last autumn at Manchester and Leeds; but it is something that a thousand teachers should have gathered at short notice on a wet afternoon and sat patiently for two hours in a cold and draughty hall, at the risk of finding no train to convey them home.

The first resolution expressed the thanks of the meeting to the Board of Education for the favourable consideration it had shown to the question of starting a National Pension Scheme for Secondary Teachers. "That the joint efforts of the Board and of Secondary Teachers towards this end may be completely successful" is a pious prayer to which we can all say Amen; but we must wait to see the draft scheme of the Joint Committee, which is ready to be presented to the Board and may be published at any moment, before we can endorse the details. The chief provisions were disclosed by Mr. Rawlinson, whose assistance in framing them was gratefully acknowledged by the Chairman, and the main principle of joint contributions by the teacher, the governing body of the school, and the State, seems to us thoroughly sound; but, as far as appeared at the meeting, the scheme will apply

only to recognized schools, and the private-school master will be left out in the cold. This would, indeed, be a serious defect; but, as we said, it would be rash to assume that it is so before we see the scheme in print.

The second resolution welcomed the appointment of the Teachers' Registration Council and the financial arrangements in connexion therewith. It was fitly proposed by Dr. McClure, who, since Mr. Easterbrook's retirement, has acted as the intermediary between teachers and the Board, and by his diplomatic skill and sweet reasonableness has effected what for five years the Secretary of the Board, supported by the President, had declared to be an impossibility. The Register requires separate consideration, and we do not propose to follow Mr. Winbolt (his was the only contentious speech of the meeting) in laying down beforehand what the conditions of registration should be. We only note, in passing, what his speech revealed, that though the barriers fall there is still a battle to fight; and the outburst of indignation that remarks of Mr. Winbolt in another place provoked shows that, for the harmony of the meeting, it was fortunate that no representative of the elementary teachers was present on this occasion.

The third resolution was of the nature of grace after meat. It affirmed that "the State should ensure to the schools the fullest degree of freedom, especially in the essential matters of curricula and other internal organization." Apparently it ran counter to the substantive resolutions that preceded, both of which hailed with satisfaction State intervention, and it seemed to some to be shutting the stable door after the steed had been stolen. To tell the truth, we are somewhat weary of the shibboleth of the Head Masters' Conference, "variety, elasticity, freedom," and the same feeling must have been shared by the mover and seconder of the resolution, Mr. R. F. Cholmeley and Dr. Sophie Bryant. Thus, Mr. Cholmeley said he was quite willing that his paymasters should call the tune, provided they did not instruct the piper how to play it; and Mrs. Bryant, while paying a high compliment to H.M. Secondary Inspectors, expressed full confidence in the political genius of the British people, the accepted maxim of British statesmen being that no central organization could be successful that did not leave full powers of initiative to the workers.

As Mr. Acland pointed out, we see in the case of Eton what unchartered freedom of head masters has meant in

the past. It meant for three centuries the same "grand old fortifying curriculum" of classics, still in operation (continued Mr. Acland), though doubtless with some additions, enforced, or at least suggested, by a Royal Commission. It is to the Central Authority, to an enlightened and reformed Board of Education, to a Minister of Education ranking with the chief Ministers of the Crown, that schools and schoolmasters must look in the future for protection against the petty tyranny and ignorance of Local Authorities; and, to obtain this chartered freedom, they must submit themselves freely to Government inspection, and, we would venture to add, in the face of the unanimously carried resolution, submit their curricula for the approval of the Board of Education. Let us not be misunderstood. We are not suggesting that Mr. Pease should imitate the mythical French Minister of Instruction who was able to tell what sums every boy in the first class of every *lycée* was working at a certain hour. As to time-tables, methods of instruction, and textbooks, we demand for teachers perfect freedom, with the sole proviso that the results be subject to inspection. But within these limits it is both reasonable and expedient that the State, as representing the public, should prescribe, in broad outlines, what subjects a public school shall teach; that it should not, for instance, permit a classically-minded head master to impose "longs and shorts" on boys whose parents demand arithmetic, or teach them the months of the Attic calendar in place of English history. It is only the State that can free us from the tyranny of crusted traditions, of "cutting" competition, of scholarship hunting, and the hydra of examination.

NOTES.

An Order in Council establishing "a Registration Council representative of the teaching profession" was passed on February 29. The duty of the Council is defined in the second clause:

There shall be assigned to the Council the duty of forming and keeping a register of such teachers as satisfy the conditions of registration established by the Council for the time being, and who apply to be registered.

The term of office of the members of Council will be three years, the first triennial period commencing on July 1 next, by which date the appointing bodies must notify to the Board the name and address of each member appointed by them. The list of appointing bodies is the same as that set forth in the "Further Papers relating to the Registration of Teachers and the proposed Registration Council" (Cd. 5726), which we summarized and commented on in our July number last year; and the number of ordinary members is forty-four, with the addition of the Chairman, who is to be elected by the Council from outside their own number—as before. "As soon as may be after the 1st day of July, 1912, the Board shall transfer to the Council the funds and property of the former Teachers' Registration Council then in their hands." Later, as will be seen in another column, it has been announced that the Board of Education, with the concurrence of the Treasury, will advance, so far as necessary, the expenses of the establishment and maintenance of the Register for at least three years from July next. See also Mr. Cholmeley's explanatory letter in another column.

THE Order in Council proceeds generally on the lines of the scheme suggested in the White Paper of June last. There are the four groups of representatives—University, Secondary, Elementary, and Technical; and it is very satisfactory that the University group retains its place in spite of rumours to the contrary. But the duty of the Council is now defined in very different terms, and the difference is highly significant. "Sir Robert Morant," ran the first sentences of our leading article of July last, "has made up his mind that the teachers do not know what they want. They believe that they want a Register; but he has made the discovery that what they really desire is a Council representative of the whole profession." Sir Robert Morant wrote:

The fact is, the real desires of those members or sections of the teaching profession who have in the last three years been pressing these matters upon the attention of the Government have now ceased to centre, as was originally the case, upon the production of a Teachers' Register, and have taken instead, or at all events in priority of urgency, the shape of a definite call for the establishment of a Teachers' Council representative of the whole teaching profession, irrespective of and apart from all questions of the kind of Register to be produced. And this desire for a Teachers' Council seems now to be the dominating factor in the whole situation, almost to the exclusion, certainly (so far as I could gather) to the supersession for the time being, of any keen interest in the nature of the Register or the purposes it might serve, or the difficulties to be solved in framing it.

Now there is a Teachers' Council, and it is a Registration Council, with the single and sole specified duty of "forming and keeping a Register." February 29 dates a new epoch in the profession. And the chief lesson inculcated is the lesson that we have insisted on over and over again—the prime importance of unity.

THIS victory, gained by resolute and persistent unity, will greatly tend to confirm teachers in that very practical virtue. There is no call for uniformity—very much otherwise; but the natural tendency of different groups to fight for their own hand will be profitably modified in the presence of questions that touch the whole body educational. The transaction of business around the same table will emphasize the necessity of give-and-take, and tend to establish a practical sense of the value of solidarity. "From the public point of view," says the *Morning Post* justly, "the possibility of an authoritative Register being formed is an immense gain. At present the parent has no protection whatever against what, for want of a better word, may be called quackery in education. . . . But now we are getting near the time when it will be possible to educate parents up to the stage of asking whether the teacher is registered or not." Moreover, "many private teachers will soon begin to feel the necessity of being registered, and the Board of Education will not be long before it begins to insist on a definite proportion of the teachers in schools aided by them being on the Register. Local Authorities, too, will be greatly helped. At present there is no recognized standard for teachers other than elementary; but this new Council will soon build up a standard, and that will be of immense assistance."

THE funds necessary for the erection of new buildings to house the University of London are coming tumbling in fast in five and six figures. Already there is close upon one-third of the

The Register.

Looking Forward.

University Funds.

million that Sir Francis Trippel is promising himself. It is a pity that the Senate should have been furnished with a grievance, in that it was not promptly informed of what was going on. The Vice-Chancellor happily withdrew his threatened resignation. No doubt it was trying to learn, not directly, but from the Press, or from private information, that "four people, three of whom have nothing directly to do with the University—Lord Haldane, Lord Milner, and Sir Francis Trippel—were constituted a body of trustees to collect money for the University, with a fixed and definite site, whether we were willing to move there or not." But the fourth is Lord Rosebery, who is Chancellor of the University; and he must stand in the pillory with the other three. However, it ought to be apparent to a less astute man than the Vice-Chancellor that there might well be thoroughly good reasons for the delay in taking the Senate into confidence. Probably enough the sting is really in the choice of site. The alleged slight seems cheap at the price: the Senate might be content to submit to it every day in the week for a considerable period on the same pecuniary terms, without moultng a feather in the eyes of the public. August body as it is, it must realize that it was the Royal Commission that gave the start to a welcome beneficence, such as it has never been able to evoke, or even has ever made any great attempt to evoke. The Senate, indeed, is a very heterogeneous body, representing many diverse interests and little calculated to take a broad and independent view of the measures necessary to enable the metropolitan University to do itself justice. When Sir Ray Lankester describes London University as "the largest body of committees and sub-committees in the world, elected chiefly by the managing committees of a number of struggling schools and underpaid colleges in London, and so organized as to defeat each other's purposes," who shall say that the description is overcharged?

THE question of the site seems to be decisively settled by the conditions attached to a quarter of a million of the money promised. There is no arguing with a quarter of a million of money, especially when you are destitute of current coin of the realm. But, apart from that, the Bloomsbury site has the telling advantages of convenience and concentration. There could be no more convenient site. The proximity to University College—the principal constituent college of the University—is a powerful argument. The dust on Dr. Waller's instruments at Bloomsbury would not be any worse than the dust on instruments at University College, and we have never heard any complaints from that quarter. The architectural effects might be quite as good as in the case of the Sorbonne, and, though they ought to weigh, they may easily be made to weigh too heavily. If you look for the University of Amsterdam, you almost require a local pilot to supplement the guide-book, and yet there has been excellent work done in that obscurely situated institution. We shall be relieved when the promoters get beyond questions of bricks and mortar and attack the main problem of the efficiency of the University—the adequate remuneration of the teachers.

Where the Site?

SUMMARY OF THE MONTH.

IN a printed answer to Mr. Charles Duncan (March 3), Mr. Pease says:—The post of Junior Examiner has, by Treasury Minutes laid before Parliament, been placed under the operation of Section 4 of the Superannuation Act, 1859, and the holders of these posts are thereby exempted from obtaining certificates from the Civil Service Commissioners. This was done on the understanding that persons appointed to these posts should possess special attainments, and this understanding has been carried out. The Board have laid down no special qualification as necessary for candidates for Junior Examinerships, but candidates are informed that they must furnish evidence of having received a really good education and that it is desirable, though not essential, that they should possess some knowledge of the theory and practice of teaching or of the administration of some branch of education; further, that in the case of certain posts which are from time to time vacant some legal training is of advantage.

Mr. Pease appends a tabular statement of the schools, colleges, and Universities of thirty-seven persons appointed during the past five years, but their names are not given. Only five of the thirty-seven were over thirty years of age when appointed. The Universities from which they came are as follows:—Oxford 19, Cambridge 12, Bangor 1, Dublin 1, London (Univ. College) 1. Three were non-University men, one from Repton, one from Westminster School, the third "privately educated." The only sure method of preventing this branch of the public service from continuing to be a preserve for young men from Oxford and Cambridge (says the *Civilian*) would apparently be the appointment of a Board of Selection on which all Universities should be represented.

IN the House of Commons (March 6) Sir PHILIP MAGNUS asked the Prime Minister whether the Government had made itself responsible for the housing of the University of London throughout its history; whether he was aware that in the Treasury Minute, dated February 16, 1899, the liability to provide a dignified and suitable home for the University, and also to make such provision as might thereafter be needed for the full extension and development of the University under the statutes and regulations made by the Commissioners appointed by the Act of 1898 was acknowledged; and what steps his Majesty's Government proposed to take in the matter, in view of the present unsatisfactory accommodation for the University as disclosed in the report of the Royal Commission on University Education in London issued on December 15, 1911.

Mr. ASQUITH: The Government have, as a matter of fact, provided accommodation for the London University throughout its history. The Treasury Minute cited by the hon. member was written before the removal of the old University to South Kensington, and refers to the possibility of an arrangement, which was actually carried out, between the authorities of the Imperial Institute and the Treasury. It must not be construed as admitting liability on the part of his Majesty's Government to provide for all possible requirements of the University in the future. The recent report of the Royal Commission points out that the University must depend to a large extent upon private endowments for its full development. The Government do not think that it would be opportune to take any step in connexion with the present accommodation for the University before the final report of the Royal Commission has been issued.

Sir P. MAGNUS: Is the right hon. gentleman aware of the fact that a large number of public bodies who are to contribute towards the extension of the buildings of the University are only waiting to see what action the Government are going to take?

Mr. ASQUITH: I think that is so.

REPLYING to Sir D. Brynmor Jones, who asked (February 26) whether any and, if any, what steps had been taken to establish a school of Oriental languages within the University

of London, as recommended by Lord Reay's Committee, Mr. McKenna said: The India Office Committee on the School of Oriental Languages under the chairmanship of Lord Cromer submitted an interim report to the Secretary of State in June last, which dealt with the question of site and buildings. Since then negotiations have been proceeding with the London Institution, which the Secretary of State hopes will result in the early introduction of a Bill by means of which the School may be housed in the Institution buildings and enjoy the benefit of the Library. When the matter has progressed rather further the way will be open for Lord Cromer's Committee to present a final report upon the organization of the School.

THE President of the Board of Education received (February 22) a deputation, consisting of Prof. Adams (London Day Training College), Canon Wesley Dennis (St. John's College, Battersea), Canon Morley Stevenson (Warrington Training College), Miss Luard (Whitelands Training College), Miss Hale (Edge Hill Training College, Liverpool), and Miss Richards (Stockwell Training College), who presented to him a series of resolutions passed at a meeting of principals of the training colleges, specially convened in December last. The resolutions urged the Board of Education to form a definite policy; to improve the staffing of schools by employing a larger proportion of trained and certificated teachers; to make proper provision for the adequate instruction of teachers, in both years of training, in speaking and reading aloud, music, drawing, and, for women, needlework; to withdraw the option whereby men candidates for admission to a training college may qualify for admission without satisfying a test in mathematics; and to give an increased grant to training colleges.

Mr. Pease, in reply, said his duty appeared to be, in the opinion of the deputation, first of all to find more money, next to be able to regulate the supply and demand of teachers, and, speaking in general terms, to revise the apportionment of the work so as to secure relief to the training colleges. With regard to money, he was very anxious to have as much money as he could to spend in the promotion of education, and he thought the deputation had made out a very plausible and strong case in connexion with the increased cost during the last thirty years and the absence of any further help from the Government towards the increased expenditure. Concerning supply and demand that was a difficult thing to regulate. If they regulated at one end they might be defeated at the other. It was impossible to foretell the date at which a teacher might leave school. As regards the apportionment of work, if he was going to place more work upon the secondary schools they would be overloaded, and they were already complaining of being overweighted. There was a large number of subjects taught in them, and if it was proposed to drop any of these subjects there would be an immediate outcry. Another point to be borne in mind was that though the secondary schools did to a very large extent supply the teachers who went to the training colleges, that was not the sole object of the secondary school system. The Board had tried to widen rather than restrict the character of the secondary school so that students who passed through it would get the best education for the life that was before them. He wanted the secondary schools to be able to turn out individuals capable of taking part in various trades and professions, therefore they had looked at the curriculum rather from the point of view of the whole community than of that branch of service in which the deputation was specially interested. In conclusion he referred to various circulars which the Board had sent out, the effect of which was to meet some of the points urged by the deputation.

THE Annual Meeting of the Teachers' Training Association was held (March 16) at the London Day Training College, Southampton Row. Mr. M. W. Keatinge (Oxford University), who occupied the chair, was re-elected President, and Mr. C. Fox (Cambridge University) was re-appointed Hon. Secretary. Dr. S. F. Fletcher (Cambridge) was added to the Vice-Presidents, and vacancies on the Committee were filled by the

selection of Miss Stephenson (Edinburgh), Miss Tremayne (Dublin), and Mr. T. Bell (Cambridge). The Hon. Secretary reported that the membership had advanced from 79 to 93. Their organization would have a joint representative with the Training College Association on the new Registration Council. For this position it was decided to nominate Prof. John Adams (London), who was the first President of the Association, and is now the President of the Training College Association. Representatives were selected to attend a conference of teachers' organizations in the Empire convened for July by the League of the Empire. Discussion took place on a number of papers dealing with "The History of Education" in relation to its place and value in a course of training for teachers; a prominent part being taken by Prof. Welton (Leeds), Prof. Campagnac (Liverpool), Mr. Keatinge, Mr. Fox, and Miss M. H. Wood (Cambridge Training College for Women).

A MEETING of secondary teachers was held at the University of London on March 23, the Rev. the Hon. E. Lyttelton, Head Master of Eton, in the chair. The following were the resolutions submitted:—(1) "That this meeting desires to express its appreciation of the favourable consideration shown by the Board of Education to the question of starting a National Pension Scheme for secondary teachers; and earnestly hopes that the joint efforts of the Board and of secondary teachers towards this end may be completely successful." (2) "That this meeting heartily welcomes the announcements recently made by the President of the Board of Education with regard to the appointment of the Teachers' Registration Council, and the financial arrangements in connexion therewith, and is of opinion that the formation of an adequate Register of Teachers is of vital importance to the best interests of the teaching profession." (3) "That this meeting is of opinion that, in guiding the future development of our educational system, the State should ensure to the schools the fullest degree of freedom, especially in the essential matters of curricula and other internal organization."

THE Seventeenth Annual General Meeting of the National Association of Teachers of the Deaf was held at the College of Preceptors, Mr. A. J. Story presiding. Lord Sheffield, President of the Association, in the course of an address, urged the importance of getting the Government to establish a national training school for teachers of the deaf. He felt that nothing less than a national institution would do. Everyone could see that for a limited body like theirs to attempt to do the work was impossible. He calculated that they ought to have at least six hundred qualified teachers of the deaf, and this would be probably less than there ought to be, as they were a long way from bringing all deaf children under proper instruction. The first necessity for making any progress was that they should have the best opportunities for the equipment of the teachers, and therefore they must press upon the Government the necessity for a national training college. The final control of this would be in the hands of the Board of Education, but there should be a selection of representatives on the administration. He was sure there were many local authorities which were not doing their duty in this connexion, and the Board of Education should bring pressure to bear upon these.

SPEAKING at the Royal Society of Arts on "Education in Science as a Preparation for Industrial Work," Mr. H. A. Roberts, Secretary to the University of Cambridge Appointments Board, said we were making no attempt to decide, on broad lines, the educational courses in our secondary schools; we merely introduced more subjects in response to popular clamour and were spending millions on equipment on no considered plan. The question of curricula cried for solution. While large sums were lavished on buildings and plant, the pay of teachers was kept at a level which was absolutely scandalous. The opinion seemed, fortunately, to be gaining ground that, whatever else was omitted, the training in pure science should be as complete as possible, and that it certainly was not complete without a reasonable amount of research. This involved a University course of four and, if possible, five years.

It was most desirable that the "assisted" student should not have his University career cut too short. It, in consequence, the less able students found their way to the more strictly technical schools, they would actually profit in the long run. The grading of ability was of supreme importance. The advantage of examination records was that they were absolutely impartial. That was the reason why, in spite of the acknowledged imperfection of the system, it was difficult to displace. But, in determining how far a given student should be encouraged and assisted to proceed, it was most desirable that the opinions of the professors and others who knew best the quality of his mind should be taken into account.

THE report of the National Committee of Fifteen on a Geometry Syllabus, which has been under consideration for nearly three years, has finally been published in a pamphlet of eighty pages and is ready for distribution to teachers of geometry and all others interested. This report was prepared under the joint auspices of the American Federation of Teachers of the Mathematical and Natural Sciences and the National Education Association. It contains a historical introduction and sections on axioms and definitions, on exercises and problems, and the syllabus itself including both plane and solid geometry. It is hoped by the Committee that this report may be of great service to all teachers of geometry, and to this end that it may have a wide distribution among all interested. Copies may be obtained gratis upon application to the Commissioner of Education, Department of the Interior, Washington, D.C.

SIXTY undergraduates from Oxford and Cambridge will visit Germany during the long vacation. This is in return for the visit paid to this country about two years ago by students of the German Universities. As at present arranged the party will embark at Plymouth on July 4 for Hamburg and Kiel, where they will spend a week. Another week will be given to Berlin; a third to Jena and Weimar; and a fourth to Munich. It is an informal visit, not a strictly educational tour. It should help to dispel the mutual ignorance, and consequent aversion, of the two peoples.

At the recent triennial election of three members of the University Court of the University of Wales by the head teachers of public elementary schools in Wales and Monmouthshire, the following were elected:—Miss Hannah Williams, L.L.A., Head Mistress, Albany Road Council School, Cardiff; Mr. Philip Thomas, Head Master, Gnoll Council School, Neath; Mr. W. R. Jones, Head Master, Garth Council School, Bangor. The number of voting papers issued was 3,291; the number returned was only 1,303.

UNIVERSITIES AND COLLEGES.

(From our own Correspondent).

THERE is likely to be some little turmoil over the question of Divinity degrees. Hitherto only members of Cambridge. the Anglican Church were qualified to put the mystic letters after their names, and perhaps, as there was so close a connexion between the Church and the University in the days of the original foundations, this was as it ought to be. But now all is changed: the benefits of a University education are thrown open to men of all creeds, stations, and nationalities. So the Divinity Professors, with a tolerance befitting a Latitudinarian University, have presented a memorial to the Vice-Chancellor in which they urge the claims of persons who do not belong to the Church of England to be admitted to Divinity degrees. It is not clear from the terms of the memorial whether the Professors aforesaid would include among the eligible class those who profess the Israelitish faith as well as Nonconformists, or whether they wish to go further and put the Christian Scientist, the Agnostic, and the Mohammedan on terms of equality with members of the English Church. At any rate, there will be a discussion, and possibly the non-resident members of the Senate may have something to say on the subject. There will be an interesting debate and a still more instructive vote.

The new Slade Professor is Mr. E. S. Prior, of Caius, and experts say the choice is a wise one. We have never had a failure in this chair yet, and this is a feather in the cap of the electors. It is one thing to know much of art, another matter altogether to be a good Professor in the subject. Prof. Waldstein taught us what to expect, and Prof. Prior will probably justify our expectations.

A report has been presented to the Senate on the subject of the conduct—the report does not say mismanagement—of University examiners. The present writer has for years advocated the formation of a University Department akin to, if not actually part of, the Local Examination organization. Our examinations are conducted in a higger-mugger way; no one is responsible for the details or the principles; confusion is inevitable, and the results are what may be expected. But a reform is indicated in the report. And here one must read between the lines. The present Registry, Dr. Keynes, was for years in charge of the Local Examinations and now uses his official position to do most of the hard business work of the University and more if he can get it. So the Assistant Registry is, on the next vacancy in the Secretaryship of the Board of Examinations, to take charge of the job, and eventually we shall see what is practically a new and absolutely efficient University Department grow into existence. The Registry is housed in a tower: it will be a tower of strength.

The Agricultural Department will soon require more house room, and the Senate will shortly be asked to grant an extension of the existing site on the ground acquired from Downing. The Department is managed by capable men, who will probably get all they want.

It appears from the report of the Appointments Board that 276 Cambridge graduates have found work through the instrumentality of that useful institution.

There is much dissatisfaction at the proceedings of the Military Board, who are acting in a way which is causing friction at the moment and will cause grave trouble in the future. Highly interesting developments are likely to take place before many terms are over.

The Pensions Syndicate have presented a well reasoned and moderate report, in which they concur in the opinion of the Council that it is impossible to bring the projected scheme into operation forthwith. The Syndicate, however, make most prudent suggestions as to the preparations that should be made to accelerate as far as possible the day when pensions shall be an established fact.

Everybody was surprised and delighted to hear of the generous offer which has been made to found and endow a chair of Genetics. In July, 1910, Mr. Balfour read to some of his friends a short paper on the Study of Genetics at Cambridge; at the end of 1911 a meeting was held at Mr. Balfour's house at which it was announced that a generous benefactor was prepared to contribute the sum of £20,000 to found a chair on the subject, and was prepared to give further help if necessary for enabling practical research work to be done. The first appointment is to be made by Mr. Balfour and Mr. Asquith. The new chair is to be styled the Balfour Professorship of Genetics, thus reminding us not only of the statesman, but also of his talented brother, whose reputation as a biologist has never been equalled in Cambridge.

We have failed to beat the sister University at Queen's Club, though some of our men put up very fine performances. Nor is there any great chance of our being more successful on the river, though Swann is not likely to let Oxford win by more than is necessary.

The May term promises to be a very gay one. There may be some work done, but probably not much.

At a meeting of the Berks and Adjoining Counties Dairy Farmers' Association and the Berks and Oxon Chamber of Agriculture, held at Reading, Mr. Runciman, President of the Board of Agriculture and Fisheries, announced that, in addition to the block grant of £1,300 a year given by the Board to University College, Reading, in aid of agriculture and horticulture, and in addition to a further grant of £1,000 a year recently offered

to the College in aid of advisory work among farmers, the Board of Agriculture would provide £2,500 a year and one-half of the capital cost of a building with the object of establishing a Dairying Research Station at the College, on condition that the grant of £2,500 a year was supplemented by £1,300 a year provided locally for the purpose. He further stated that if the advisory work among farmers was well done, and if the experiment should prove successful, and the conditions attached to it by the Board were carried out, he thought he could promise that the grant of £1,000 a year for that purpose would be largely increased, and that other forms of research would receive aid from the Board of Agriculture from the Development Fund.

A ROYAL Commission has now under consideration the constitution of the proposed University College for Brighton, Sussex. To provide university courses in arts, science, agriculture, engineering, and pedagogy will necessitate the establishment in the first instance of seven departments, each under a head or professor. The minimum total cost is estimated at £6,000 per annum, but in the Municipal Technical College and the Municipal Day Training College University work in preparation for the external degrees of London University is now being carried on, and, with the consent of the Brighton Education Authority, it would be possible to make provision for the work of the proposed University College at an additional cost of about £2,500 per annum. The least capital sum required is put at £50,000. Mr. J. A. Nix is chairman of the Education Sub-Committee, and Mr. C. E. Clayton chairman of the Finance Sub-Committee.

THE report of the Executive Committee of the Carnegie Trust for the Universities of Scotland, presented at the Annual Meeting of the Trust held on February 22, points out that the past year completed the first decade of the history of the Trust. The total income for the period amounted to £1,062,931, out of which £63,546 was expended on research, £368,288 in grants to Universities and colleges, £445,373 in payments of class fees for 11,480 individual students, and £30,158 in administration. The income last year amounted to £108,542, and the gross expenditure to £83,160, including £7,833 for endowment of research, £21,182 for grants to Universities and colleges, £50,525 for payments to students, and £3,620 for administration. During the year the sum of £339 was voluntarily refunded on behalf of fourteen beneficiaries for whom class fees had been paid by the Trust.

THE EDUCATIONAL LADDER.

CAMBRIDGE UNIVERSITY.—Porson Prize: G. K. Montagu Butler, Scholar of Trinity; honourably mentioned, Edward Owen Lee, Scholar of King's College. Allen Scholarship: Eric H. Neville, B.A., Fellow of Trinity. Bell Scholarships: (1) C. E. Hobart-Druitt, Scholar of Sidney Sussex; (2) E. W. Armstrong, Scholar of King's, and B. C. Molony, Scholar of Trinity, equal. Distinguished: A. E. Aldous, Rustat Scholar of Jesus; F. D. C. Allen, Scholar of Gonville and Caius. Smith's Prize-men: (1) E. H. Neville, Trinity; (2) L. J. Mordell, Trinity. Rayleigh Prize: P. J. Daniell.

Downing.—Minor Scholarships: Mathematics—A. B. Forsyth, King's School, Canterbury, £50; F. Harrison, Hymer's College, Hull, £50; E. B. Moullin, Newcroft, Bournemouth, £30. Natural Science—H. H. Ginsburg, Acton County School, £50; A. G. Ansell, Solihull Grammar School, £40; J. B. S. Lewis, Bromsgrove School, £40; G. P. Crampton, Merchant Taylors School, £35; C. K. Colwell, Merchant Taylors School, £30. Classics—B. Dewar, St. John's School, Leatherhead, £30; B. J. Surridge, Felsted School, £30. History—A. J. Keith, Kilburn Grammar School, £40; A. F. Hattersley, Leeds Grammar School, £35; E. R. Wood, Denstone College, £30.

King's.—Fellowship: Hamilton Hartridge, M.A. (Natural Science).

LEEDS UNIVERSITY.—Honorary Fellowship for Research in Physics: Norman R. Campbell, M.A., D.Sc., sometime Fellow of Trinity College, Cambridge.

LONDON UNIVERSITY.—Gilchrist Studentships: Modern Languages, Agnes Louisa Williams, B.A., Bedford College for Women (£80);

additional Scholarship (£80), Louise Willes Stone, B.A., University College. Medical Studentship for Women: Cicely May Peake, M.B., M.S.Lond. (R.F.H.), School of Medicine for Women (£100).

King's College.—The following have been appointed Fellows:—Dr. J. F. Thorpe, D.Sc., Ph.D., F.R.S., Sorby Research Fellow of the Royal Society at the University of Sheffield; Mr. C. H. Wordingham, M.I.C.E., M.I.M.E., M.I.E.E., Superintending Electrical Engineer to the Admiralty; Mr. S. A. F. White, M.A., University Professor of Mathematics.

King's College for Women.—The following have been appointed Fellows:—Miss H. D. Oakeley, M.A., Warden of the College; Miss M. L. Lee, Lecturer in English at the College; Miss E. J. Morley, Lecturer in English Language and Literature at the College, Professor of English Language and Lecturer in English Literature at University College, Reading.

University College.—The following have been appointed Fellows:—Dr. H. Bassett, D.Sc., Professor of Chemistry at University College, Reading; Dr. G. Hall, M.D., B.Sc., Assistant Physician and Pathologist at the Royal Victorian Hospital, Newcastle-on-Tyne; Mr. W. T. Layton, M.A., Newmarch Lecturer at University College; Mr. F. O. Mann, B.A., Assistant Inspector under the Board of Education; Dr. A. O. Rankine, D.Sc., Assistant in the Department of Physics at University College; Miss Rachel R. Reid, D.Lit., Assistant in the Department of English History at University College; Mr. T. C. Savage, M.B., B.S., F.R.C.S., Surgeon to the Auckland Hospital, New Zealand, and to the Wagaru Hospital; Dr. A. Willey, D.Sc., F.R.S., Strathcona Professor of Zoology at McGill University, Montreal; Dr. W. N. F. Woodland, D.Sc., Assistant Professor of Zoology at University College, Professor-elect at the Muir Central College, Allahabad.

NEWNHAM COLLEGE.—Creighton Memorial Prize: E. C. Wordsworth.—Gibson Prize: divided between F. Carey and A. M. Taylor.

OAKHAM.—Scholarships: £40, G. Curtis (Oakham School); £30, C. M. Barter (Mr. Field, Edghaston); £20, F. V. R. Woodhouse (St. George's, Windsor), R. E. Frampton (Mr. Bennett, Worthing), F. B. Bent (Mr. Auden, Cheltenham).

OXFORD UNIVERSITY.—Passmore Edwards Scholarship: Frank R. Barry, Scholar of Oriol. Matthew Arnold Prize: not awarded. Arnold Historical Prize: John R. H. Weaver, B.A., Keble; honourable mention, H. A. Smith, M.A., Fellow of Magdalen. Vinerian Law Scholarship: Arthur W. Armitage, hon. Scholar of Queen's. Denyer and Johnson Scholarships: (1) Henry B. Gooding, B.A., Hertford; (2) not awarded; prize of books (£10), R. N. Flew, B.A., Merton. Gladstone Memorial Prize: Laurence F. R. Williams, Exhibitioner of University College. Canon Hall Greek Testament Prizes: Senior, Samuel H. Hooke, B.A., Exhibitioner of Jesus; Junior, Nathaniel Mickle, B.A., New College, and John Cecil West, B.A., Scholar of Hertford, equal. Hall-Houghton Septuagint Prizes: Senior, Robert N. Flew, B.A., Merton; Junior, Godfrey R. Driver, Scholar of New College. *Proxime accessit* Alfred Guillaume, Exhibitioner of Wadham. Houghton Syriac Prize: Alfred Guillaume. Jenkyns Exhibition (£100 for 2 years): G. D. H. Cole, Exhibitioner of Balliol; Prize of £50, M. R. Ridley, Exhibitioner of Balliol; highly distinguished, W. A. Keir, Balliol.

Brasenose.—Junior Hulme Scholarship (£100 a year): F. G. Rednall, City of London School. Somerset Thornhill Scholarship (£80 a year, open *pro hac vice*): Herbert R. Creese, Royal Grammar School, Worcester. Heath Harrison Exhibition: Reginald S. M. White, Malvern College.

Christ Church.—Scholarship in Mathematics: Horace D. Paviere, Oxford Boys' High School.

Exeter.—King Charles I Scholarship for Mathematics: F. N. Roberts, Victoria College, Jersey.

Jesus.—Scholarship in Natural Science: H. W. Toms, Exhibitioner.

Lincoln.—Natural Science Scholarships (£80 for 4 years): T. E. Davies, County School, Wrexham; and W. J. Spurrell, Lincoln College. Natural Science Exhibition: Wilfrid M. Aldous, Magdalen College School, Brackley.

Magdalen.—Demyship in Mathematics: William L. F. Browne, Winchester College. Demyships in Natural Science: Reginald A. C. Prettitt, Wyggeston School, Leicester; Francis W. Halsey, Gresham's School, Holt.

Pembroke.—Abingdon Scholarship: C. E. Cook, Roysse's School, Abingdon. Townsend Scholarship: F. A. Ballinger, Crypt School, Gloucester. King Charles I Scholarship: F. G. Le Gros, Victoria College, Jersey.

St. John's.—Scholarship in Natural Science: Ernest G. Willmore, Berkhamsted School.

University.—Freeston Exhibition: L. J. Horne, Queen Elizabeth School, Wakefield. Scholarship in Natural Science: Henry Potts, City of London School.

Worcester.—Scholarship in Mathematics: B. Le Breton Banks, St. John's School, Leatherhead. Exhibition in Mathematics: D. T. Wardley, St. Bees School.

ST. ANDREWS UNIVERSITY.—Chancellor's Prize (£21) for essay on "Alexander Henderson the Covenanters," open to graduates of not more than ten years' standing: James P. Thomson, M.A., Edinburgh.

THE REGISTRATION COUNCIL.

BOARD OF EDUCATION ANNOUNCEMENTS.

In connexion with the Order in Council made on February 29, constituting a Registration Council representative of the teaching profession, the Board of Education, with the concurrence of the Treasury, announce that assistance will be given to the new Council so as to finance it for a period not exceeding three years from July 31, 1912. The sum of £2,800, which remained in the hands of the previous Teachers' Registration Council, will be handed over to the new Council, and in so far as this fund, and any fees accruing to the new Council, may prove insufficient to meet its expenditure, the Government will make advances of the funds required within a specified limit, and subject to repayment on terms to be arranged between the Council and the Treasury.

The Board further announce that they are prepared to receive application for repayment of the sums of £1. 1s. paid by teachers on admission to Column B of the Register maintained by the previous Teachers' Registration Council. Applications for such repayment should be addressed to the Board of Education, and should state the registered number, the service of the applicant with dates, and, in the case of retirement, the date of retirement from service. All such applications should be received on or before August 31, 1912. Applications received after that date cannot be considered.

RETURN OF FEES.

MR. R. F. CHOLMELEY, Hon. Sec. of the Federal Council of Secondary Schools Associations, writes:—

Sir,—Since it is evident that considerable misapprehension exists among teachers in secondary schools as to the effect of making application for the return of fees paid for Registration to the old Registration Council, the Federal Council of Secondary Schools Associations desires to draw attention to the statement made by the Board of Education and announced through the press at the time of the issue of the Order in Council of February 29.

Doubts appear to be felt by many teachers, who have possibly not seen this statement, whether the repayment of their fees may not injure the financial position of the new Registration Council by diminishing the fund of £2,800 which is to be handed over as the balance left on the hands of the old Council. The official statement makes it clear that no such injury can follow: "In so far as this fund and any fees accruing to the new Council may prove insufficient to meet its expenditure the Government will make advances of the funds required, &c." Any one who leaves his guinea unclaimed may regard himself as a benefactor to the tax-payer at large; but his abstinence will have no effect upon the Registration Council. The finances of that body are within specified limits secure for three years from July, 1912.

A second doubt, arising out of the general situation, may here be resolved. Some teachers hesitate to claim their guineas either in the hope that they may by doing nothing secure their transference to the new Register and the transference of their fees to the new Council; others have expressed a fear that by withdrawing the fees paid to the old Council they may prejudice their application to be registered by the new one. To both classes of inquirers the answer is the same: The old Registration Council, its Register and all its works, are as though they had not been. The new Council will start neither helped nor hampered by the past, whether in its income or in its responsibilities to the teaching profession.

It only remains to add that applications for repayment should be addressed to the Board of Education, and should state the Registered Number, the service of the applicant with dates, and in the case of retirement the date of retirement from service; and that no applications received after August 31, 1912, can be considered.—I am, Sir, &c.

A NEW EDUCATION BILL.

THE House of Commons considered on second reading the Education Acts (Single School Areas) Amendment Bill (March 8). It is provided in this Bill:

1. That no non-provided school in a single school area shall be recognized as a public elementary school or receive rate aid. Such schools may, if the local education authority so desire, be transferred to them by agreement, notwithstanding the provisions of any trusts.

2. Failing transfer, the non-provided school may be continued as a certified efficient school, provided that the owners satisfy the Education Board that there is a reasonable probability of the school being maintained.

3. Where the school is transferred, denominational religious instruction must be permitted on two mornings in the week at the request of parents. The instruction must not be given by any teacher employed in the school, but "by any person approved by the parents."

4. The money for the hire or purchase of transferred schools is to be provided by a Parliamentary grant.

Sir G. Croydon Marks (L. Launceston) moved the second reading, and Mr. Silvester Horne (L. Ipswich) seconded. Mr. S. J. G. Hoare (U., Chelsea) moved the following amendment:

That this House, while approving of the principle that parents should decide the kind of religious instruction that their children are to receive, and believing that all public elementary schools should receive equal treatment from the Board of Education and the local education authorities, cannot proceed with a measure that fails to make equal provision for the requirements of all parents.

Mr. J. F. Hope (U., Sheffield) seconded. Mr. John Dillon (Nat., East Mayo), on behalf of the Irish party, heartily supported the Bill; and Lord Hugh Cecil (U., Oxford University) opposed it.

MR. PEASE ON THE BILL.

The President of the Board of Education said the reason for the Bill was the injustice of the Act of 1902. It would be ungenerous not to recognize that there were some good features in that Act. It had rendered co-ordination possible, and it had systematized national education. But he felt that he had behind him the bulk of the Local Education Authorities when he said that under the provisions of the Act of 1902 they were hampered in providing the best education they might have been able to give. They could not control or regulate the teaching staff as they desired to do. The difficulties of securing efficient and up-to-date schools were always before them, especially in connexion with the non-provided schools. From an administrative point of view, the powers of the Local Education Authorities ought to be considerably increased, the denominational differences ought to be got rid of, and dual control ought to be abolished.

Mr. Pease went on to say that perhaps they did not hear so much about the passive resistance movement to-day as they did a few years ago, but the spirit of resistance to the Act of 1902 was not dead, and Nonconformists felt their grievances as keenly as ever. The Bill now before the House dealt with three or four points connected with those grievances. It abolished tests for teachers. It enabled the voluntary schools to be transferred on fair terms. It went a good way in the direction of reducing the dual system, which was so detrimental to the true progress of elementary education. Both sides of the House were agreed that there ought not to be a system of proselytizing encouraged in our national schools, and that no one should be prejudiced by taking advantage of the conscience clause. But he at once differed from the Opposition when it came to the question whether the State should support sectarian religious education. If a solution of the problem was to be reached, the question was whether they could not agree that some religion was better than none and accept a system common to the great bulk of the members of the Christian faith.

In conclusion, Mr. Pease said he believed the Bill would be a practical step towards the settlement of the religious difficulty. The Government proposed next year to deal with the subject in a comprehensive measure on a national basis. The Government recognized that the Bill under discussion was sound in principle, and they were prepared to give to it their most hearty support, reserving the right to make suggestions on the Committee Stage.

The motion for second reading was carried by 78 votes—209 against 131. The Bill was sent to a Standing Committee.

THE COLLEGE OF PRECEPTORS.

MEETING OF THE COUNCIL.

A MEETING of the Council took place at the College, Bloomsbury Square, on March 16. Present: Sir Philip Magnus, President, in the chair; Prof. Adams, Dr. Armitage Smith, Mr. Bain, Rev. J. B. Blomfield, Mr. E. A. Butler, Mr. Charles. Miss Dawes, Mr. Eagles, Mrs. Felkin, Mr. Holland, Mr. Kelland, Rev. R. Lee, Mr. Morgan, Mr. Pendlebury, Mr. Rushbrooke, Rev. Dr. Scott, Mr. Storr, Rev. Canon Swallow, Mr. Wilson, and Mr. Vincent.

The Secretary reported that the Professional Preliminary Examination had been held on March 5-7, and had been attended by 361 candidates.

He laid before the Council a copy of the Order in Council, dated February 29, 1912, constituting a Teachers' Registration Council.

He reported with deep regret the death of Mr. H. Baumann, a member of the Council. Direction was given that a letter of condolence should be sent on behalf of the Council to Mrs. Baumann.

The diploma of Fellow was granted to Mr. W. McCarthy, and that of Licentiate to Mr. W. E. Clarke, who had satisfied the prescribed conditions.

On the recommendation of the Finance Committee two assistants were appointed under the Hopkins Benevolent Fund for Teachers, and a grant of £15 was made from the Benevolent Fund of the College.

On the recommendation of the Examination Committee, new syllabuses in Scripture History, English History, and English Language and Literature were adopted for the Certificate and Lower Forms Examinations to take place in 1913.

A special Committee was appointed for the consideration of the By-Laws of the College.

The following persons were elected members of the College:—

Mr. R. J. Bartlett, A.R.C.Sc., 3 Eastcote Road, Harrow.

Mr. H. Cooper, Redland Hill House, Bristol.

Mr. F. J. P. Eldridge, B.Sc. Lond., L.C.P., Latelmore, Windmill Lane, Kettering.

Mr. E. P. Evans, L.C.P., Morannedd, Towyn, Merioneth.

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

By MR. N. K. DIKSHIT.—Census of India, 1911; Vol. XVI, Baroda, Part I.

By BLACKIE & SON.—Beynon's Borrow's Wild Wales; Chaytor's Story of Israel and Judah, Parts I and II; Ely's Songs of Beranger; Holland's Nodier's Contes de la Veillée; Le Francois' Carnoy's Les Deux Bossus; Mion's Blancheneige et Rougerose; Robb's Scottish Vernacular Poetry; Saunders's Shakespeare's Henry IV, Part I; Weekley's Lamartine's Souvenirs d'Enfance et de Jennesse.

By W. B. CLIVE.—The *University Correspondent*, 1911; Allen's Tennyson's Enoch Arden; Chaytor's Direct French Course; Collins and Goggin's Milton's Paradise Lost, Books III and IV; Stewart and Satterly's Senior Sound and Light; Wyatt and Clay's English Literature of the Nineteenth Century.

By MACMILLAN & CO.—Arkwright's Macé's La Vache Enragée; Buckley's Children of the Dawn, Parts I and II; Modlen's Marlowe's Doctor Faustus.

Register of Veterinary Surgeons, 1912.

THE COLLEGE OF PRECEPTORS.

PRACTICAL EXAMINATION FOR CERTIFICATES OF ABILITY TO TEACH.

THE following candidates were successful at the Examination held in February 1912:—

Class I.
Worrall, C. H.

Class II.
Le Manquais, J. C. R. | Milne, H. B.

THE COLLEGE OF PRECEPTORS.

PROFESSIONAL PRELIMINARY EXAMINATION.

PASS LIST.

MARCH, 1912.

THE Professional Preliminary Examination was held on the 5th, 6th, and 7th of March in London and at eleven other local centres—viz., Aberdeen, Birmingham, Bristol, Cardiff, Edinburgh, Inverness, Leeds, Liverpool, Manchester, Newcastle-on-Tyne, Nottingham. The following candidates obtained Certificates:—

First Class [or Senior].

Pass Division.

Foreman, C. E. H.	Higgins, L. G.	Mendoza, E. <i>a.ch.</i>
Green, P. e.	Isard, C. V. e.	Shipway, W. H.
Hickley, R.A.	Jones, A.	Winter, H. W. <i>e.ch.</i>

Second Class [or Junior].

Honours Division.

Bailey, H. H.	Essex, P. L. G. e.	Synn. <i>a.al.gm.l.</i>
Davey, N. H. <i>a.al.gm.</i>	Houghton, J. R.	

Pass Division.

Abbott, Miss R. B. e.	Gardiner, W. R.	Pannell, R. O.
Anstin, J. F. L.	Garnsey, L. A.	Pearson, E. A.
Banks, H. K.	Godwin, F. H.	Picton, A. T.
Bevis, C. E.	Hardy, O. K. <i>e.al.</i>	Price, A. L. G.
Bishop, Miss L. G.	Harris, E. G.	Ragy, M. A.
Bloom, B. a.	Haslegrave, C. P.	Salsbury, F. R.
Bloomer, A. C.	Hatcher, H. B.	Scott, A. N.
Brearley, R.	Hipkins, W.	Shaw, J. S.
Broomfield, A. J. E.	Horton, J. E.	Shelley, R. C.
Brown, R. H.	Ide, H. L.	Simmons, G. E. L. e.
Burton, S.	Jay, W. P. e.	Simmons, H. E.
Bywaters, R. H.	Lewis, J. S.	Sontter, M. J. K.
Carter, G. D.	Littlewood, A. V.	Stacey, B. J.
Chapman, Miss C.A.W.	Mackay, D.	Standen, G. f.
Codner, C. C.	Mackay, D. S.	Sturridge, E. A. L.
Course, R. R.	Masters, H.	Sunderland, V. L.
Cowley, R. L.	May, A. G.	Talaat, A. H.
Cox, D. H. <i>a.al.</i>	McCann, J. G.	Thomas, A. a.
Cuming, T.	McClosky, C. A.	Thomas, R. W. e.
Dolamore, A. W.	McMilan, A. N.	Thomson, I. M.
Doughty, L. A.	Milton, A. V.	Verity, A. K.
Eseritt, F. K.	Moore, R. A.	Wade, C. F. N.
Finuy, J. W. M.	O'Brien, K. R.	Wheeler, F. F.
Fox, C. D.	Painter, H. F.	Witcomb, A. H. P.
Galloway, F. P.	Painton, J.	Woodroffe, B. C. a.

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>gm.</i> = Geometry.
<i>ch.</i> = Chemistry.	<i>l.</i> = Latin.
<i>e.</i> = English.	

THE Education Committee of the London County Council has voted maintenance grants totalling to £28,570 to the University of London. This sum does not include a grant in respect of the new School of Architecture proposed to be organized by the University, and towards which a gift of £30,000 has been made. The Committee agreed to postpone its consideration of this subject until a later date. The total includes a grant of £1,000 towards King's College for Women, which, as the Senate of the University explained, is to be made a centre of instruction in home science. A grant for Goldsmiths' College was refused. The grant includes an item of £1,500 upon the libraries of the University. The sum of £500 is allocated to the Physiological Laboratory. For the University professional charges, the sum of £5,400 is allocated, the Education Committee here expressing the opinion that a high standard must be maintained for the staff. This sum is for the creation of nine chairs, two of which are in French. Nothing is included in the grant in respect of Oriental languages, the Committee feeling that the first step in this direction ought to come from the Imperial Government.

A PRIVATE-SCHOOL MASTER IN 1750.

By Prof. FOSTER WATSON, M.A.

II.

SINCE writing the account of Randall's School at Heath near Wakefield (*Educational Times*, November, 1911), I have come across further information respecting him. In 1765 he had removed to York, but he still kept school. The following is the prospectus of his York Academy:—

"For a general education in the City of York. And the youth to be boarded, six only, together in any one private family; three single bedrooms for the convenience of study; and to submit to rules.

"Mr. Randall, formerly master of the Academy at Heath, near Wakefield in Yorkshire, having, some years since that time, conducted a public school in York, and finding this polite and healthful city extremely proper for a place of general instruction, without the hazard of paying high salaries to the respective masters, begs leave to acquaint his friends in different parts of the British dominions, that he has also for some time past undertaken the addition of superintending the education of young gentlemen in all the academical parts of knowledge, without the insuperable inconveniences and bad consequences to youth, of having many of them crowded together in one house, as they may, under proper regulations, be genteelly accommodated, six together, in private boarding houses for that purpose in York.

"He undertakes the private tutorage of about six young gentlemen at a time, in his own house, which is large and commodious, with gardens adjoining; and as any of these pupils go off, others boarded in the city are admitted under his own more immediate care, if desired, on the following terms:

	£	s.	d.
Boarding (provisions being much dearer) the same as in private houses, without washing.....	12	12	0
General instruction in the school, which is a public building.....	2	2	0
Private instruction at leisure hours.....	3	3	0
Per annum	£17	17	0

Entrance, one guinea. Each young gentleman boarded with him finds a pair of sheets. For the above two guineas are taught in the public school, Latin, Greek, French, the best English Authors, Writing, Arithmetic, Merchants' Accounts, the Terrestrial Globe, Geography, and to lay down the common Geometrical figures and to find their contents. The additional expenses are, dropping the two guineas where this mark* is, per annum.

	£	s.	d.
Dancing: Entrance, half a guinea.....	2	8	0
Drawing: Entrance, half a guinea.....	2	2	0
Music: Entrance, half a guinea.....	4	4	0
* The Principles of the Mathematics and Philosophy...	5	5	0
* The necessary qualifications for the Army and Navy...	5	5	0
Fencing: Entrance, half a guinea.....	6	6	0
* Lectures in Moral Philosophy, Logic, and Metaphysics.....	6	6	0

"N.B.—Mr. Randall begs of those Gentlemen, who send him Questions relating to Annuities, Reversions, Leases, Livings, &c., or Matters of intricate Accounts, that they will, to avoid Inconveniences, endeavour to be as particular as possible to which they require an Answer."

Randall's "System of Geography," published in 1744, is described by himself as "a dissertation on the creation and various phenomena of the terraqueous globe, as it consists of subterraneous caverns, subterraneous waters, mountains, valleys, plains, and rocks, with an Hypothesis concerning their causes." It further contains a description of all the countries, kingdoms, &c., of the world, drawn from ancient and modern history and some of the most celebrated voyages and travels. Statistics are comprehensively given of the "present state" of the various countries, and full details offered as to Climate, Government, Laws, Policy, Trade, Revenues, Forces, Curiosities, Population, Character, Religion, Customs, Ceremonies. Moreover, an introduction is prefixed to those parts of Mathematics necessary for Geography—viz., Algebra, Geometry, Plane Trigonometry, the Use of the Globes, Projection of the Sphere, Spherical Trigonometry, Geometrical and Physical Astronomy, Construction of Maps, &c.

The mathematical introduction is thus somewhat comprehensive, and Randall half apologizes in his concluding words: "There are indeed many things in the foregoing pages that

seemingly have no immediate connexion with the subject of geography; but then it may be considered that they serve to a further acquaintance with the noble science of astronomy, and that what improvements geography may receive are chiefly expected from the astronomer." Though Randall was mistaken as to the line of development of geography, it must be remarked that his book, which is somewhat lengthy (676 fairly closely printed large octavo pages) contains carefully chosen material. Thus in the mathematics he follows Sir Isaac Newton, Dr. Gregory, and Dr. Keill, and Mr. Whiston for astronomy, Mr. Martin for trigonometry, Mr. Ward's "Young Mathematician," Mr. Jones's "Synopsis," and Mr. Hammond's "Algebra." When he deals with physical geography, though he quotes the Biblical Moses, he discusses the theories of Dr. Burnet and Dr. Woodward with regard to the Creation and the Flood.

Another of Randall's books was called "An Introduction to so much of the Arts and Sciences more immediately concerned in an Excellent Education for Trade in its Lower Scenes and more Genteel Professions, and for Preparing Young Gentlemen in Grammar Schools to attend Lectures in the Universities. [1765.] Part I.—The Theory and diffusive Practice of Arithmetic, Vulgar and Decimal; the Arithmetic of Algebra by Transposition introduced, as it gives Rules to the Accountant; Annuities for Time; the Principles of Mr. de Moivre, Mr. Simpson, and of the Author, in estimating Annuities for Single Lives considered from the Equity in Sinking Money. Digested into Systems, as Trade, young Ladies, or the concerns of the Gentry may require."

Mr. Randall, as usual, refers the pupil to the best (e.g. de Moivre and Simpson) of the times, and the mention of "young ladies" shows that at this time (1765) an enterprising treatment of arithmetic might expect to find a clientèle amongst those responsible for girls' education.

Part II: "An extensive Course of Geometry; Mensuration; an Introduction to Gauging and Surveying; 'Plain' Trigonometry applied to the Merchant's and Surveyor's Use; the Astronomical Principles of Geography; the Construction and Use of Maps; the Mensuration of the Globes of the Solar System, and of their Orbits; the Estimations of Artificers; and the 'Debates' of the Globes concerning the Earth's two Motions to effect the Seasons, &c." It is in this part that the remarkable dialogue of the heavenly bodies regarding the two motions of the earth takes place, under the above designation of "debates." The whole "Introduction to Arts and Sciences" was "expressly designed to remove that general complaint of not effectually instructing youth while at school" so as to qualify them for their future work. Further, Randall's aim is to enlarge their "narrow conceptions and scanty views of Nature." His methods are practical; he endeavours to assist the master and help the scholar "to be of immediate use when he is put to the test."

In his letter to a merchant in Bristol who had sought advice about the education of children in schools (in the "Introduction to Arts and Sciences"), Randall asserts that the manner of education has considerably changed for the better within these hundred years, and offers his opinion as to what ought to be taught in schools to keep up a preference over the old Latin and writing schools; "otherwise," adds Randall, "people will be weary where they were." The following are his main views:—"The English language ought to be taught in high perfection, and the youth continued in the practice thereof from six years of age to the time he goes to business. Latin also must not be omitted. . . . It may be of importance in giving the boy a taste of propriety in writing our language. . . . It is the teacher's business to show the youth how the two languages differ in construction." As to method, in the early stages the boy should be helped in his Latin till he can go on with the assistance only of his grammar and dictionary. Randall insists on handwriting being taught by specimens of business documents, not by constant single-lined copies; arithmetic should be applied to commerce, and algebra should be brought in to understand the compound arbitration of exchanges and the general nature of annuities for a length of year and lives.

The Italian method of Book-keeping must be taught. The terrestrial globe must be studied. So, too, Geometry, Mensuration, and Gauging up to the point of business uses. Geometry applied to navigation must be known so as to enable pupils to examine a sea journal when concerned in shipping. Randall thus expresses himself on the subject of French: "The French language ought not by any means to be omitted, for this unanswerable reason, because it is remarkably useful to foreign dealers, and is often the means of procuring a handsome living if a youth should act in the capacity of a book-keeper before

he commences merchant for himself. I do not mean any other acquisition in this language than that of writing French letters; the talking part requires too much time."

Randall observes that the professed London academies are upon a more extensive plan, "embracing all parts of knowledge and every accomplishment." He realizes that, besides what he has mentioned, the Holy Scriptures must be constantly engaged in as a subject of study, and that the parent will be anxious his boys should be trained to be good.

As to punishments, Randall is of opinion that school-teaching has been "extremely injured by the writings of speculative men, who, without the requisite experience, have declared to the world that *if a boy will not learn without the rod, he never will with it.* This rash assertion of the *Spectator* and others, hundreds of very worthy men can contradict from their own experience. It is much to be wondered at that such names as Locke, Addison, &c., should thus expose themselves to the unwilling censure of many learned and humane teachers."

He further warns parents against removing a boy from one school to another, "for surely," he argues, "a new physician must have much time to discover a new patient's constitution." He also thinks a small private boarding school in the country not to be recommended, since the chief master cannot afford to pay the "pretty high salaries" good teachers require, and they may fall back therefore on inferior teachers.

In Randall's opinion, it would require at least fifty boarders in the same house to afford right good masters in the country. "Besides, it does not lie within the sphere of a retired clergyman to superintend an education for general commerce, even were his assistants properly qualified."

Randall had only been asked about the education of boys, but he offers suggestions as to girls. His remarks apply to private-school education. He particularly emphasizes a good basis in writing and spelling; transcribing makes pupils very expert at indicting. They should have the more useful parts of arithmetic well impressed on their minds; and he instances with commendation a young lady who would "make many gentlemen blush in her readiness at casting up everything or computing interest, simple and compound, and buying and selling estates, and knowing what estate any sum of money will purchase; and all this without trouble of learning decimal fractions." The principles of English grammar should be taught whilst they are learning the general construction, regular verbs, and declensions in the French grammar. He commends also, in the education of the above-mentioned young lady, her training in digesting and posting accounts by single entry, so that, if need were, girls could be their husband's book-keeper, for their knowledge. Then, too, they should know the globe and the manners and customs of different nations. They may reasonably, too, study the solar system. These subjects only involve, Randall pleasantly says, if properly taught, that young ladies should give their "attention to be agreeably and rationally entertained."

As to girls' education generally, Randall protests he "detests the common nonsense" that girls should be kept in "total ignorance of what contributes to exalt their nature," on the ground that studies will make girls "bad wives." "Then some men fear that their wives will know more than they do, and their ignorance would be made the more conspicuous. But this is an argument for the better education of men, not for less for girls. Let both men and women become cultivated. Madame Dacier's husband, *e.g.*, was not less happy because his wife was an excellent judge of learning. They loved one another for their acquirements, and so will any man and woman of sense."

It is, perhaps, surprising to find Randall discussing the question whether public or private education be best, and deciding that, if a boy is steady and prudent, it is better to send him to one of the *three* public schools (Winchester, Westminster, or Eton) when he is fourteen years of age; but, if he is easily led, it may be better to let him have a private education. This probably indicates the difference in meaning of the word "private," for apparently Randall would regard a proprietary school as "public" when a large number of boys were taught together, whereas a private education meant that of individual instruction by a tutor or a very small school where close individual attention was given.

Augustus de Morgan, on J. Randall's "Introduction" (Arithmetical Books, 1847, page 74), thus characterizes Randall and his book:—

Mr. Randall was a quaint man, but his book is well done. It contains arithmetic, mensuration, and geography, and ends with a dialogue between the heavenly bodies upon their mutual arrangements, in which the

Earth insists upon being allowed to stand still and quotes Scripture like an anti-Copernican, but is brought to reason by the arguments of the others. This is almost the only writer I have met with who has given the student a few hints upon habits of computation. Thus, he will not let him say "three and four are seven, seven and five are twelve," &c., but only "Three, seven, twelve," &c. For, says he (the example being the addition of some rents), "as you have this pretty Income, you must take like a Gentleman to your Figures."

In an advertisement to the "Introduction," Mr. Randall speaks of a further book: "And shortly will be sent to the Press with a French translation on the opposite page, the most striking parts of Ovid's 'Metamorphoses,' Virgil, and Horace, abundantly sufficient to employ a youth in these authors during his instruction at school, consistently with his commercial acquirements, with the improvement of the English roots, only of the declinable parts, neatly placed in the margin on the same page, by which a young gentleman may have the pleasure left him of making out the sense of the text by himself. And in the Notes there will be occasional remarks on the state of the arts and sciences, and, where practicable, a noble instruction in the duties of civil life occurs, and a general attempt to render the heathen theology at least consistent with itself, and to guard the hearts of youth, when a licentious Deity is introduced. Price 6s."

THE PLACE OF MANUAL ARTS IN THE SECONDARY SCHOOLS.*

By WALTER SARGENT,
School of Education, The University of Chicago.

[From the *School Review* (Chicago).]

THE place of the manual arts in secondary schools is the subject for discussion in many educational meetings at present. It presents two phases. . . . The two phases are these: the industrial arts, which relate to the shaping of material into forms that are to be of use, and the fine arts, which relate to the producing of things of beauty, either to be of use or created for the sake of æsthetic contemplation.

1. INDUSTRIAL ARTS AS CULTURAL SUBJECT.

I wish to speak first of the industrial arts as a cultural subject. I think no one can watch the progress of this work in the schools without feeling that the skill and knowledge and foresight and persistence of effort and command of powers necessary to shape raw material into predetermined forms cannot but be valuable for every person, no matter what his future occupation is to be. The industrial arts offer a sort of training that cannot be omitted from general education without a loss for which there is no adequate compensation.

It is not unlikely that development of ability to bring order out of materials previously unrelated, to shape them so that they embody a plan, is the best training for ability to bring order out of chaos of ideas and to think clearly. The increase of mental power that comes from shaping material to express one's ideas has been sometimes overlooked, and we need to consider it carefully in formulating a course for high schools. I suggest herewith some of the results that are observable in actual practice where this sort of work with material is present. If a pupil is to express an idea of his own in construction he has to follow some such steps as these: First, he must have a clear notion of the thing he wants to make. For example, if he wishes to build a birdhouse, he has to make his idea definite and concrete; he finds that, instead of a general idea of a birdhouse, he must have a definite image. This involves a sort of thinking that probably would not come if he did not intend to materialize that idea. After he has made his thought definite, he has to draw plans to exact measurements, so that he knows the amount of material he is going to use and how it is to be cut. Lastly, he must have the technical skill to produce with the material at his command a birdhouse that is like the one that he planned. To produce a thing as at first planned is a

* An address delivered at the Twenty-second Educational Conference of the Academies and High Schools in relations with the University of Chicago.

very different thing from starting to produce a certain thing and having it turn out to be something else, and the sort of training that leads a person to be able to realize his ideas, to produce a thing which shall correspond to the plan in his mind, is an eminently cultural sort of training. Such training brings a vivid realization of the gap that exists between one's first vague thought and the actual result in three dimensions. That is observable in boys who come to high schools and try for the first time to accomplish projects in construction.

The boy starts in with his work, and after one or two lessons realizes, with surprise, how much time it takes to shape a single piece of wood to fit into a certain place. He appreciates the effort that lies before him, and either begs off or is roused into determination to complete the work as he should. This realization of the amount of effort necessary to carry a thing to completion is an important part of an adequate education. If children are trained in handling material from the earlier grades they come to that realization step by step, but if they begin in the secondary school it comes to them as a surprise. If they do not have it in the secondary school they are likely to go out with a confidence which is not grounded in experience. One of the important features which justify the place of the constructive arts in the public school is this training to appreciate the gap between the idea of the thing one would like and the thing realized in concrete form. That brings also a sane soberness in the face of problems.

A great many of the get-rich-quick schemes would not be undertaken if young people were trained to the accomplishment step by step of the conquest of material. The confidence begotten of experience, that one has the skill to carry out a project, the consciousness that persistent effort well planned will secure results, should be gained from manual arts in secondary schools. The young man who has been trained in the high school in the constructive arts should go out into life with the confidence that persistent effort well planned will shape material. Intellectual achievement alone can never take the place of that.

A person approaching a brook in a meadow may calculate whether he can jump the brook or not by reasoning from statistics how far a man ought to be able to jump, but the confidence that this is within the power of the ordinary man is not the same thing as the confidence in his muscles, arising from the fact that he has jumped that brook before. When intellectual confidence is increased also by a sense in the muscles that one can do that thing because he has done it, we have the completed round of education. One comes to appreciate also the scholarship of skill. Some people have the idea that if one trains his brain, skill of hand is something he can get easily at any time; but skill of hand has a part in changing the structure of the brain.

There is a tonic effect in dealing with the unchanging laws of things. The product itself faces the worker in three dimensions as right or wrong after it is done, and that sense of being confronted by the results of the work of one's hands, the feeling that, if one does certain things and follows certain laws, the results are sure, is an important part of education. One may slip a little in certain problems, such as literature, or Latin, and no harm results; but, if in laying a track there is a variance of a few inches, the mistake is fatal. The laws are inevitable. There is an invigorating effect from being brought face to face with these laws of material and being compelled to reckon with them. Anything that helps a person out of ineffectiveness in the presence of the problems of life is cultural.

Pressing Practical Considerations.

The manual arts in the secondary schools have not only this cultural value, the value for all, whatever their occupation is to be, but there are emergencies now pressing that demand industrial education. Manual training is for the purpose of giving that acquaintance with material and its laws which every one needs; industrial training deals with the making of objects which must meet market standards, and in the producing of which one becomes acquainted with industrial processes and is led to see the interdependence of workers in any system. Many question whether this should come into our school system. A number of experiments are being tried. Technical high schools

are being established where industrial education is made the chief end.

Half-time courses are being carried on in many places by means of arrangements with local industries. The boys are allowed to work half-time in the schools on the regular academic subjects and half-time in the shops earning money. If they were in the shops all the time, they would be so held in the clutch of the industrial system that they would not be able to see it as a whole. But this relaxation for half the time, and the continued dealing with academic subjects, helps them to reflect a little upon and understand somewhat these industrial methods.

In spite of the questions that are raised about bringing commercial ideas into schools, experiments have proved that even in the elementary schools it is valuable to do something toward awakening industrial interests. Four-fifths of the children of the country leave the elementary schools at the end of the seventh or the eighth grade, and must of necessity go into unskilled industries that give little pleasure in the work. They pass from one thing to another with no vocational outlook, and by the time they would have gained maturity in the high school most of them have acquired a dislike for work and do not care to prepare themselves for any skilled industry.

Some training which gives an understanding of industrial conditions is valuable. There is an educational value in making things in quantity for use in schools that deserves more attention than it has received. One interesting result of experiments along this line is the proof that the motive of individual ownership is not necessary to produce interest. Classes which have made things to be used by the school system, such as boxes for crayons, and portfolios for use in the high school, and which have bound school books, and have done some of the school printing, have seemed to find fully as much satisfaction in seeing the school-supply team come and carry away the products for use by the city as in carrying them home for personal ownership.

It is a question in a Republic whether there should not be some training which has its place in the system that is supporting the child, whereby the child may be led step by step to realize that he has some return to make. That is a point to consider when this matter of industrial education is under discussion. The making of such things in the school might change the careless attitude of mind toward public property. The demands for some sort of education of this kind are very insistent, and moreover, whether right or wrong, the public responds to any introduction into education of things that deal with productive processes.

Where technical high schools have been established the result has almost always been a great increase in high-school enrolment. This means that many pupils are thus kept in school who otherwise would have gone into unskilled occupations. Moreover, this is also almost universally true, that wherever industrial work is introduced, not only does the other work not suffer, but it is better performed. A boy in an industrial class, when asked how he kept up in his academic studies replied: "I have to get my lessons now or I cannot come in here for this work."

Equally valuable is the manual work for girls, in training them to the intelligent management of the home, which is a business problem, and in dealing with such matters as the making of clothes, millinery, &c.

2. FINE ARTS IN SECONDARY SCHOOLS.

The second phase in my topic, namely, the place of the fine arts in the secondary schools, has been recognized for a long time, and a place on school programmes has been given to drawing and design, but it has too often been a subject to which the authorities gave slight attention. It is very suggestive to compare the honour which has been given to the fine arts, the place they hold in history, and the sacrifices people are willing to make to excel in them, with the slight recognition which they often receive from educational authorities as educational subjects. The artistic faculties are sometimes not supposed to be practical working faculties. Any attitude toward the fine arts which regards them merely as luxuries means a distinct loss. The result is that, while human beings are so built that they demand beauty in their surroundings and in the

things with which they have to deal, they are left without training which leads them to discriminate between mere prettiness and that which is beautiful. There can be no adequate appreciation of beauty without some definite training in that line. Mere prettiness depends upon sensational appeal and personal whim. The person who likes only prettiness has no abiding delight in beauty. The enjoyment of beauty depends upon elements that are permanent. One who appreciates beauty has a constant source of pleasure. To be able to come to such an appreciation of beauty is a necessity for every person if he is to get the most out of the life about him.

Influence on Industries.

I wish to suggest two or three values of the fine arts in education, particularly in the secondary schools. One is their influence on industries. I think every high-school pupil ought to have some knowledge of the beauty that has been attained along the lines of the different crafts in the past and present. The things that the medieval workmen were able to produce were often wonderfully beautiful and full of suggestion for the craftsman of to-day. Knowledge of these is now generally confined to the collector. If such knowledge becomes universal we shall demand beautiful things, because we shall be so trained as to dislike the ugly and commonplace. A beautiful thing is a delight every time one sees it. This is one means of enabling a man to enjoy his life better. A public demand for beautiful things for common use would mean the transforming of many unskilled into skilled occupations and the raising of the level of civilization. A nation which exports its raw materials to some more skilled nation to be finished up into artistic products is suffering a great loss. The nation that so trains its people as to make them able to carry products to the highest stage of perfection is solving part of its social and industrial problem.

Bearings on History.

There is also opportunity for the appreciation of the fine arts in the high school from a historical point of view. Such an appreciation gives the most intimate knowledge of the character of the people who made them. Pupils who study the three orders of architecture cannot come to an appreciation of them without some perception of the character of the people who built them—the simplicity of the Doric, the refinement of the Ionic, the luxury of the Corinthian, but still a luxury held in restraint. A person who looks at temples is looking at an interpretation of the religion represented in such a manner that he is compelled to feel it. The fine arts may play somewhat the same part in cultural education as the classics, when high-school teachers have an adequate acquaintance with the subject.

One sometimes wonders if these concrete objects which the people themselves touched do not exert a greater influence over high-school pupils than the classics, because, however much culture may come to the adult from the inspiration of Homer's style, it is nevertheless true that the high-school boy finds the majestic movement of that style somewhat impeded by the necessity of constant reference to the lexicon; he cannot see the thing as a whole, but only in parts, and those parts to people of twentieth-century ideals are not always as much of an inspiration as they might be. The high-school boy is not apt to make the allowance for differences of civilization.

Æsthetic Value.

I wish to speak lastly of the purely æsthetic value of the fine arts in secondary schools. The person who appreciates a painting of a fine landscape finds that he is looking at something different from a mere photograph, for a landscape well painted is more than a reproduction of an actual scene. When a painting of sunset is a work of fine art it is because the painter watched it; feeling the change from the full sun to the sunset, the rich sequence of the colours, and the glory of the light. He has studied and drawn and painted it until by and by he is able to express his mood in the presence of it. The great painting is the culmination of many hours of observation and of many sketches. The artist has taken a hint that Nature gave him and has carried that hint to perfection. Nature is always

giving hints in the scientific world and in the æsthetic world. Life gives hints, which the writer never takes down stenographically, but which he works over until within his book he makes a completed whole that comes out right. That is what the artist does. The person who looks at the painting appreciatively finds a certain phase of Nature clearly set forth and carried to perfection. That sort of appreciation and its accompanying delight is a part of education one ought to have. When one stands with appreciation in the presence of a great work of art, there is a reinforcement of the spiritual nature, for art has taken one problem after another, of literature, of music, of form and colour, and carried it to a solution and compelled it to reveal its significance. The æsthetic sense does not reason that out, but feels it.

This sort of appreciation is not gained by analysis. It is developed by bringing people into the presence of fine art, not to work upon it, but to let it work upon them. One very unfortunate fact in our school education has been that we have felt we must pursue the scientific method for everything. I think our attitude is changing. In some schools, in addition to the regular school study of music the children are brought together occasionally to listen to the best musician the city can secure.

Our study of the fine arts must include a series of choices between things better and worse, until one comes by contemplating the better and worse to an unerring discrimination of that which is good. And an exceedingly interesting and encouraging fact is that the majority of people, when brought before a series of things—vases, pottery, works of art—and led to discuss the objects and exchange views, even if they are untrained views, will come to a very good appreciation of fine things. Then it remains for the instructor to inject suggestion and stimulus, leading them to what seems to be a trustworthy appreciation. Experiments have been made by taking children through galleries and expecting them to come to an appreciation of art by panoramic views, but the results are not encouraging. Children may be led step by step to the appreciation of a picture within the range of their apprehension by awakening in them a wide interest in the subject. Suppose, for example, the picture is an autumn landscape. If the children collect pictures of autumn and decide which carries the spirit of autumn most truly, if they compare them with descriptions of autumn in literature, and report their own observations of autumn, the chances are that they will develop a sincere appreciation of the picture.

A number of experiments are going on, which promise that, by and by, we shall be able to approach the subject from the æsthetic side; for to have an æsthetic appreciation is to appreciate by feeling. Many pupils in the high schools and elsewhere are led to think that reason is able to conquer all things and that we gain all of our power by activity, forgetting that a great deal of power comes by letting ourselves be worked upon by outside forces as well as by exerting ourselves.

Children now go out of high schools knowing how the Roman forum and the Parthenon looked, but I doubt whether any American high-school child ought to go out without knowing what are the best modern solutions in the way of beauty, in homes and business blocks, town and city halls, and other civic structures in which we might take pride, what are the finest modern products in the way of public libraries, bridges, parks, fountains, statuary, &c. In some countries that is made a matter of great attention, so that if a stream runs through the town the best talent is employed to try to make it as beautiful as possible. Any addition to the beauty of a town, especially of a rural town, is the greatest aid in bringing the people back to that place and giving them pleasure in their memory of it. The pupils should be trained to know the best designs for street signs and street furniture—such as lights and electrical fixtures, elevated structures, &c.

When our high schools have given acquaintance with industrial problems and have so treated the fine arts that the pupils see their relation to industry, their historical value in interpreting the past and their æsthetic value in giving us joy in the present, they will have gone a long way in solving the problem of the place which the fine and industrial arts should take in the secondary schools.

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The present book completes a course of English Grammar for schools according to the methods laid down in the *Elementary English Grammar Through Composition*, by the same author. The title explains the object in view. It is to treat Grammar, not as an end in itself, divorced from immediate utility, but as arising out of everyday forms of speech, and as giving practical help in their mastery and in the completeness of their study. The terminology recommended by the Joint Committee on Grammatical Terminology for all Languages taught in Schools has been adopted throughout.

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CURRENT EVENTS.

A GENERAL MEETING of the Incorporated Association of Assistant Masters in Secondary Schools will be held at the Mercers' School, Holborn, on April 6 at 3 p.m. An important resolution with regard to the National Insurance Act will be submitted.

* * *

THE London University Extension Board have arranged a Training Course for Lecturers, to be held in the Summer Term—ten weekly meetings on Monday evenings, from 6 p.m. till 8 p.m., beginning Monday, April 29. Four lectures on "The Art of Lecturing" will be given by Prof. John Adams, LL.D., M.A., B.Sc., and four lectures on "The Management of the Voice," by H. H. Hulbert, M.A., M.R.C.S., L.R.C.P. The lectures will be followed by six meetings for practical work. Inclusive fee for the whole course, £1. 10s. All the lectures and most of the meetings for discussion and practice will be held in the University of London, Imperial Institute Road, South Kensington, S.W.

* * *

A CONFERENCE on Scripture Teaching will be held at the Victoria Assembly Rooms, Cambridge, April 10-13. The Secretary is Mr. N. P. Wood, 66 Hadham Road, Bishop's Stortford.

* * *

THE National Food Reform Association will hold a Conference on Diet in Public Secondary and Private Schools at the Guildhall on May 13, the Lord Mayor in the chair. The Secretary is Mr. Charles E. Hecht, 178 St. Stephen's House, Westminster.

It is proposed to call a further Conference to consider the feeding of children in elementary schools in charitable institutions.

* * *

THE Cambridge Local Lectures Summer Meeting will be held from July 27 to August 20. The Earl of Selborne will give the Inaugural Address at noon on July 27. The main subject of study will be "The British Empire." Forms of entry and particulars from the Rev. D. H. S. Cranage, M.A., Syndicate Buildings, Cambridge. Letters should be endorsed "Summer Meeting."

* * *

THE tenth Vacation Term for Biblical Study will be held at Oxford from July 27 to August 17. The Bishop of Oxford will deliver the Inaugural Lecture.

* * *

THE sixth Biennial Vacation Course of Geography will be held at Oxford, August 6-23. Lectures on selected topics of Physical Geography, the basis of Economic Geography, the Geography of Man, the Teaching of Geography, and Regional Studies of South-east England, Ireland, and some other region. Further particulars will be issued in June. Names should be sent as soon as possible to the Vacation Course Secretary, School of Geography, Oxford.

* * *

THE Quarterly Meeting of the Moral Education League

will be held at the Royal Society of Arts, John Street, Adelphi, on May 3 at 8 p.m. Mr. F. J. Gould will present a scheme for the Correlation of School Subjects of Instruction. Open. Discussion invited.

* * *

THE annual Matriculation Examination for McGill University will be held on Monday, June 10, at the Medical Hall in Queen Square, W.C., for the convenience of candidates in Great Britain who are not otherwise qualified for entrance. Information regarding the examination may be obtained from the honorary representative of the University, Mr. W. A. Evans, 12 King's Bench Walk, Temple, E.C.

* * *

THE Mural Painting Exhibition will open at Crosby Hall, Chelsea, on June 1. Apply to the Hon. Secretaries, Mural Decoration Committee, Crosby Hall, Chelsea, S.W.

* * *

THE two hundred and fiftieth anniversary of the foundation of the Royal Society will be celebrated July 16-18.

* * *

THE first International Eugenics Congress will be held at the University of London in the last week of July.

* * *

Honours. PROF. SIR JOSEPH JOHN THOMSON has been appointed to the Order of Merit.

Educated at Owens College and at Trinity. Second Wrangler, Second Smith's Prizeman, and Fellow of Trinity 1880; Lecturer at Trinity 1883; Professor of Experimental Physics since 1884; President of Cambridge Philosophical Society 1894; President of Section A, British Association, 1894; F.R.S., 1884; Hon. D.Sc. Oxford, Dublin, Victoria, and Columbia; Hon. F.R.S.E.; Hon. LL.D. Princeton, Glasgow, Johns Hopkins, Aberdeen; Ph.D. Craow; Royal and Hughes Medals of the Royal Society 1894, 1902; Hodgkins Medal of the Smithsonian Institution, Washington; Hon. Fellow of many foreign learned societies; Nobel Prize for Physics 1906. Knighted 1908. Publications numerous and valuable.

* * *

THE University of Cambridge has conferred the honorary degree of Doctor of Letters upon Mr. James Bass Mullinger, of St. John's College, author of the "History of the University of Cambridge."

* * *

THE University of Aberdeen has resolved to confer the following honorary degrees:—

D.D.: Rev. Alexander Brown, Aberdeen; Rev. Canon Anthony Mitchell, M.A., B.D., Principal of the Scottish Episcopal Theological College, Edinburgh, and Bishop-Elect of Aberdeen and Orkney; Rev. Charles Anderson Scott, M.A. Cantab., Professor of New Testament Theology, Westminster College, Cambridge; Rev. William S. Sutherland, M.A., Universities' Mission, Kalimpong, India; Rev. John Watt, M.A., Principal of the Scottish Churches' College, Calcutta; Rev. Thomas Young, M.A., B.D., Minister of Ellon.

LL.D.: The Right Hon. H. H. Asquith, M.P., Prime Minister; Mr. John A. Harvie-Brown, of Dunipace, Stirlingshire; Sir Alexander Hosie, M.A., Consul-General, Tientsin, China; Mr. William Leslie Mackenzie, M.A., M.D., Medical Member of the Local Government Board of Scotland; Sir Alexander M'Robert, of Dounside Lodge, Tarrland, and Cawnpore, India; Mr. William Law Mathieson, Scottish historian; Emeritus Professor Sir William M. Ramsay; Sir Charles Edward Troup, K.C.B., M.A., Permanent Under-Secretary of State in the Home Office; Mr. Edward A. Westermarck, Ph.D., Professor of Sociology in the University of London.

* * *

On the occasion of the opening of the University of Hong-Kong, the King will confer the honour of knighthood upon Mr. Ho Kai.

* * *

THE RIGHT HON. F. E. SMITH, K.C., M.P., and Sir John A. Simon, K.C., M.P., Solicitor-General, have been elected Honorary Fellows of Wadham College, Oxford. They were formerly Scholars of the College.

MR. JAMES C. N. WHITE, Chairman of the Governing Body of Birkbeck College, is to be presented with his portrait (by Mr. Seymour Lucas, R.A.) early in summer, to mark the completion of fifty years' connexion with the College. Past students and friends are invited to take part. Particulars from the Secretary of the College.

THE sum of £305,000 has now been offered towards the establishment of new buildings for the University of London.

Of this sum, £245,000 depends upon selection of the Bloomsbury site—£100,000 promised by an anonymous donor, £70,000 from another anonymous donor, "A Friend of London University," and £75,000 practically a rebate upon the cost of the site (£50,000 reduction of price by the Bedford Estate Trustees, and £25,000 personal contribution by the Duke of Bedford). "Sir Francis Trippel," it is announced officially, "holds an option from the Duke of Bedford for the purchase of this site, and has undertaken, acting in an honorary capacity and bearing all incidental expenses, to raise £1,000,000 for the erection of such new head-quarters for London University as will be worthy of the capital of the Empire." The Drapers' Company's magnificent gift of £60,000 is conditional upon their satisfaction with the site chosen.

* * *

THE Education Committee of the London County Council has voted maintenance grants totalling £28,570 to the University of London.

* * *

AN anonymous benefactor has placed in the hands of Viscount Esher the sum of £20,000 to endow a professorship at Cambridge in connexion with the experimental study of heredity and of development of descent.

* * *

MR. SULLIVAN MACLEAY OSWELL, Chelsea, has left £1,000 to the Endowment Fund of Balliol College, Oxford—conditionally.

* * *

MR. JOHN RICHARDSON, of Halecroft, Hale, Cheshire, has left £500 to the Building Fund of Ruskin College, Oxford.

* * *

AN appeal is made for £50,000 to form the Endowment Fund of the proposed Sussex University College at Brighton.

* * *

A SPECIAL committee of the Dublin Corporation has recommended the establishment of Lectureships in (1) Irish Music, and (2) Municipal History, with special reference to Ireland, in the National University, for three years at £100 a year each.

* * *

WICKLOW COUNTY COUNCIL has decided to offer for competition at University College, Dublin, one of the constituent colleges of the National University of Ireland, three scholarships of £50 each for three years, and one bursary of £25 for the children of parents who had resided in the county for five years previous to the date of the examination and whose income does not exceed £300 per annum.

* * *

WE (*Nature*) learn from *Science* that the plans of Mr. George M. Pullman for the establishment of a manual training school at Pullman, Ill., are assuming definite form. Prof. L. G. Weld, formerly Professor of Mathematics and Dean of the University of Iowa, has been despatched on a tour of America and Europe to collect data to guide the

board of trustees in the construction of the buildings and the arrangement of the curriculum. Building operations, it is expected, will be commenced next year. A site of forty acres has been purchased at a cost of £20,000. A fund of £200,000 was bequeathed by Mr. Pullman at his death in 1897 for founding the institution. This fund was invested in securities, which have increased in value until now there is about £500,000 at the disposal of the governors for the school.

* * *

It is announced in the issue of *Science* for February 9 that conditional gifts of £20,000 to Washington and Jefferson College at Washington, Pa., toward a £100,000 fund, and £10,000 to the Emory and Henry College at Emory, Va., toward a £50,000 fund, were voted at a meeting of the General Education Board of the Rockefeller Foundation last January. Gifts amounting to £16,260 have been announced (says *Science*) by the trustees of Columbia University, including £6,000 from Dr. William H. Nichols for instruction and research laboratories in chemistry, and £5,000 from Mrs. Russell Sage for the E. G. Janeway Library endowment fund at the medical school. From the same source we learn that the Transylvania University has announced that the effort to raise a fund of £50,000 has been completed successfully. The largest gifts, apart from the £10,000 offered by the General Education Board in May, 1910, were as follows:—£6,000 from Mr. R. A. Long, of Kansas City; three gifts of £5,000 each from Messrs. W. P. Bowers, of Muncie, Ind., Geo. H. Waters, of Pomona, Calif., and J. J. Atkins, of Elkton, Ky. Our contemporary also states that the completion of the £100,000 endowment fund for Oberlin College has made possible the following additions to the college resources:—the men's building, £30,000; a new administration building, £10,000; the completion of the men's gymnasium, £10,000; for higher salaries, £40,000; and other endowments, £12,000. (*Nature*.)

Scholarships and Prizes.

A COMBINED examination for 57 Entrance Scholarships and a large number of Exhibitions at Pembroke, Gonville and

Caius, Jesus, Christ's, St. John's, and Emmanuel Colleges, Cambridge, will be held on December 3 and following days. Mathematics, Classics, Natural Sciences, and History will be the subjects of examination at all the above-mentioned Colleges. Scholarships and Exhibitions will also be offered for Modern Languages at Gonville and Caius, Christ's, St. John's, and Emmanuel Colleges; and for Hebrew at Gonville and Caius and St. John's Colleges. Age not more than nineteen on October 1, 1912. Forms of application for admission to the examination at the respective Colleges may be obtained as follows:—Pembroke College, W. S. Hadley, M.A.; Gonville and Caius College, The Rev. the Master; Jesus College, A. Gray, M.A.; Christ's College, The Master; St. John's College, The Master; Emmanuel College, The Master, from any of whom further information respecting the scholarships and other matters connected with the several Colleges may be obtained. The forms of application must be sent in by November 23.

* * *

THE Gilchrist Trustees have resolved to grant an annual scholarship in Geography, £100, for advanced work, open to teachers of either sex that have had experience in teaching geography. Apply to the Hon. Secretary, Geographical Association, 40 Broad Street, Oxford, by April 25 in each year.

* * *

THE University of London offers a University Studentship in Physiology, £50 for one year, to a matriculated student or graduate of the University. Tenable in a physiological

laboratory of the University or of a school of the University. Apply to the Principal by May 31.

* * *

ROYAL HOLLOWAY COLLEGE (University of London) offers 12 Entrance Scholarships, £50 to £60, and several bursaries of not more than £30, tenable for three years. Examination June 24-29. Names to be entered by May 25. Forms of entry, &c., from the Secretary.

* * *

CHARTERHOUSE offers 10 (or more) Entrance Scholarships (£76. 10s. each) to boys of twelve to fourteen (on July 15). Examination on May 29-30. Apply to the Secretary, Charterhouse, Godalming, by May 22.

* * *

CLIFTON COLLEGE offers 12 (or more) Scholarships of £25 to £100 a year in May. Open competition. Apply to the Secretary.

* * *

THE City of London offers 7 Entrance Scholarships (Classical, Modern, and Science) of £15. 15s. a year for three years in May; and the Cuthbertson Memorial Open Scholarship of £15 a year for two years in June. Open. Particulars and entrance forms from the Secretary.

* * *

REPTON SCHOOL offers from 5 to 12 Entrance Scholarships or Exhibitions of £80 to £10 a year in May. Apply to the School Clerk.

* * *

RUGBY SCHOOL offers Scholarships in May. Qualifying examination at candidate's school on May 20; final examination at Rugby on May 28. Apply to the Secretary.

* * *

MILL HILL SCHOOL offers 6 Entrance Scholarships of £40 a year and 8 of £20 a year in July. The £40 scholarships may be increased to £80 if the Governors consider that the circumstances of a successful candidate render this necessary. Apply to the Bursar.

* * *

THE Church Corporation offers, in July, 2 Entrance Scholarships at Uplands School, St. Leonards-on-Sea, £20 and £15. Particulars from the Head Mistress.

* * *

ST. LEONARD'S SCHOOL, St. Andrews, offers 2 Entrance Scholarships, £60 and £40, tenable for four years by girls whose parents are unable to pay the full school fees. Preference to daughters of professional men or of officers in H.M. service. Examination in July. Particulars from the Head Mistress.

* * *

IN connexion with the Nursing and Midwifery Conference to be held in London in April, the National League for Physical Education and Improvement offers valuable prizes in competitions for designs for popular pictorial health posters intended to inculcate simple hygienic truths, such as "healthy homes," "the evils of babies' comforters," "the dangers of dirt," &c. One section will be devoted to the work of elementary-school children. The children's designs may be of any size, on any kind of paper, in black and white or coloured, and should have appropriate letterpress. The competitor's full name, age, address, and school attended should be written at the foot of the designs, which should reach the Royal Horticultural Hall, Vincent Square, London, S.W., before midday on April 20, addressed to the National League for Physical Education and Improvement. Further particulars from the Secretary of the League, 4 Tavistock Square, W.C.

**Appointments
and Vacancies.**

SIR CHARLES N. E. ELIOT, K.C.M.G., Vice-Chancellor of Sheffield University, has accepted the Principalship of the University of Hong-Kong.

* * *

SIR EDWARD THORPE has resigned the Professorship of Chemistry in the Imperial College of Science and Technology as at the end of the current season. He will be succeeded by Dr. H. Brereton Baker, M.A., D.Sc. Oxon., F.R.S., Lee's Reader in Chemistry in the University of Oxford.

* * *

At University College, London, Dr. Frederick G. Donnau, M.A., Ph.D., Professor of Physical Chemistry and Director of the Muspratt Laboratory of Physical and Electro-Chemistry, Liverpool University, has been appointed Professor of General Chemistry, in succession to Sir William Ramsay; and Dr. Louis Napoleon George Filon, M.A., D.Sc., F.R.S., F.R.A.S., Assistant Professor of Mathematics, has been appointed Goldsmid Professor of Applied Mathematics and Mechanics.

Prof. Donnau was educated at Queen's College, Belfast, and at Leipzig, and Berlin University. Junior Fellow and Examiner of Royal University of Ireland 1898-1901; Assistant Professor at University College, London, 1902; Lecturer in Chemistry, Royal College of Science, Dublin, 1903-4; Liverpool 1904. Studied Chemistry under Ramsay, Ostwald, Van 't Hoff, and Letts. Numerous scientific writings.

Prof. Filon (son of M. Augustin Filon, tutor to the late Prince Imperial) was educated at University College, London, and at King's College, Cambridge. Matriculated at London University 1893 (University Exhibitioner); B.A. (First Class Hons.) 1896; M.A. (Gold Medal) 1898; D.Sc. (Granville Scholarship) 1902. Demonstrator of Applied Mathematics, University College, 1896-98; Fellow of the College, and 1851 Exhibition Scholar, 1898; Research Student at King's College, Cambridge, 1898-1902. Lecturer in Mathematics at University College since 1903. Captain (T.F.) in University of London Officers' Training Corps. Numerous mathematical writings.

* * *

At the University of London, Mr. John Lea, M.A., has been appointed Registrar of the Board to Promote the Extension of University Teaching, in succession to the late Dr. R. D. Roberts.

Mr. Edwin Deller, LL.B. Lond., has been appointed a Secretary in the University.

Mr. W. H. Sampson, B.A., B.Mus., Superintendent of Examinations since 1901, died on February 20. Mr. R. Roscoe, B.A., succeeds him.

* * *

MR. EDWARD SCHRÖDER PRIOR, M.A., of Gonville and Caius College, has been appointed Slade Professor of Fine Art in the University of Cambridge.

* * *

THE REV. J. NEVILLE FIGGIS, M.A., Litt.D., Honorary Fellow of St. Catharine's College, Cambridge, has been appointed Honorary University Lecturer in the History of Political Theory in Leeds University.

* * *

MR. JAMES C. M. GARNETT, M.A., Fellow of Trinity College, Cambridge, Junior Examiner to the Board of Education, has been appointed Principal of the Manchester Municipal School of Technology, in succession to Mr. J. H. Reynolds.

* * *

MR. A. F. HOGG, Principal of the West Ham Municipal Technical Institute, has been appointed Principal of the Woolwich Polytechnic. He is succeeded by Mr. John Robinson Airey, Principal of the Secondary and Technical School, Morley, Yorkshire.

DR. GRAHAM SMITH has been appointed University Lecturer in Hygiene for five years in Cambridge University.

* * *

MR. JAMES MUNRO has resigned the Beit Assistant Lectureship in Colonial History at Oxford as from September 30 next.

* * *

MR. F. J. TEAGO, B.Sc., has been appointed Assistant Lecturer and Demonstrator in Electrical Engineering in Liverpool University.

* * *

MISS MARGARET SHANBY, M.A., formerly student of Girton College, Cambridge, has been appointed Secretary to the Cambridge Higher Local Examination at the London Centre, in succession to Miss Alice Zimmern.

* * *

MR. C. C. CALDER, Senior Assistant in Botany in Aberdeen University, has been appointed Curator of the Herbarium in the Botanical Gardens, Calcutta.

* * *

MISS L. F. TODD has been appointed Honours Tutor in English at St. Hilda's Hall, Oxford.

* * *

MISS E. L. KEATES has been appointed Superintendent of Domestic Economy under the London Education Committee.

* * *

MR. J. H. BRAY, Montrose College, Streatham, has been appointed Head Master of Belmont College, Streatham.

* * *

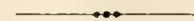
THE London County Council have appointed Mr. William Butler Deputy Medical Officer of Health and Deputy School Medical Officer.



THERE will be published this summer the Literary. first annual volume of "L'Année Pédagogique," by MM. L. Cellérier and L. Dugas (Paris: F. Alcan). The work will present "une revue générale du mouvement de la science pédagogique." Publishers are requested to send copies of the educational works issued by them last year and this year to M. L. Cellérier, 7 Rue Massot, Genève.

* * *

MESSRS. A. & C. BLACK announce a volume on "Literature and Life," by the Rev. L. MacLean Watt, B.D., Edinburgh, in the "Church of Scotland Guild Library" series. It will deal with matter and style, and then apply the principles to various literary masterpieces.



THE Council of Cambridge University Senate General. has unanimously recommended that the University approve of the proposal to throw degrees in divinity open to laymen and ministers of other denominations than the Church of England.

* * *

THE Council of the University of Paris has decided to create a new University degree—namely, a Doctorate of the University of Paris for law, juridical science, and political and economic science. The degree is intended especially for students of foreign nationality, and the examination will be the same as that for the Doctorat D'Etat. The figures given by the Vice-Rector show that law students are the most

numerous, there being 7,507 on the rolls, 911 of whom are foreigners.

* * *

THE Education Committee of the London County Council has decided that this summer there should be organized forty vacation play centres and two vacation schools, with the object of providing entertainment for the children of the poorest of the poor during the summer holidays, when all the other children are away at the seaside or the country. The cost will be some £1,330.

THE MORAL DANGERS OF ÆSTHETICS IN SCHOOLS.

At the Evening Meeting of the College of Preceptors, on March 20, 1912, Prof. ADAMS in the chair, Mr. M. W. KEATINGE read a paper on the above subject. He said:

Instruction in the fine arts has been finding its way into our schools during the last thirty years. Schools now have orchestras, choral societies, and drawing classes. The classics are no longer studied chiefly for the formal training that they afford; the literary and æsthetic side is emphasized as well. English literature is now taught, and in some places girls and even boys are encouraged to write English verse. Nor has this aspect of education merely found its way into schools. It has been summoned thither, and great things have been expected of its civilizing influence. Thring was probably the first English schoolmaster who believed in the beneficial influence of good architecture in school buildings, of a beautifully decorated school chapel, and of systematic instruction in vocal and instrumental music. But he advanced no proof of the validity of his belief. It was a pious hope; one of those intuitions which are frequently right, but which quite as often lead to destruction. Education as a science is full of these loosely stated and little demonstrated assertions, and if possible their number must be reduced. This can be done in two ways: (1) by a rigorous analysis of the elements involved, and by great accuracy in definition; (2) by a statistical method. The way of statistics is, however, a difficult one, as we first need statistics, which are hard to get, and then need to interpret them, which is still harder. And, when we do so, we come back to a method of analysis which thus, in the long run, is our last resort.

In advocating the claims of æsthetics in schools, Thring and every teacher of the classics who has hoped for good educational results from a literary and artistic education have probably had in mind one of the passages in Plato's "Republic" that deal with the value of beautiful surroundings:—

Let our artists be those who are gifted to discern the true nature of beauty and grace; then will our youth dwell in a land of health, amid fair sights and sounds; and beauty, the effluence of fair works, will meet the sense like a breeze, and insensibly draw the soul, even in childhood, into harmony with the beauty of reason. . . . Is not this the reason, Glaucon, why musical training is so powerful, because rhythm and harmony find their way into the secret places of the soul, on which they mightily fasten, bearing grace in their movements, and making the soul graceful of him who is rightly educated, or ungraceful if ill-educated.*

This states Plato's view, and no one can have had a better opportunity of observing the effect of beautiful surroundings upon the growing youth. But, in spite of the reserves which are made by him as to the selection of the proper rhythms and harmonies, it would be unwise to take it as the last word on the subject. For it must be evident to even a superficial observer that beauty of architecture, of colour, of form in sculpture, of rhythm and of melody, do not in themselves appear to produce morality in the ordinary sense of the word. Those who have had personal experience of schools of art on the continent have assured the writer that they are anything but schools of moral living or thinking. The acknowledged literary excellence of the classical writers, with its rhythm and its word-colour, produced in some of the scholars of the early renaissance an outburst of loose living rather than the beauty of soul and of conduct that might have been expected. The effect of beautiful buildings or of art galleries on the general behaviour of those who dwell in or

near them is not easy to trace. Indeed, the whole position adopted by Plato has been flatly denied by other writers.

In the republics of ancient Greece, says Adam Smith,* by music it was proposed, at least by the philosophers and historians who have given us an account of these institutions, to humanize the mind, to soften the temper and to dispose it for performing all the social and moral duties of both public and private life. Notwithstanding the very respectable authority of Plato, Aristotle, and Polybius, and notwithstanding the very ingenious reasons by which M. Montesquieu endeavours to support that authority, it seems probable that the musical education of the Greeks had no great effect in mending their morals, since without any such education those of the Romans were upon the whole superior."

Adam Smith is not alone in his suggestion that the moral value of æsthetics in education may be overrated. There seems to be a certain amount of evidence, of the loose kind that we are often compelled to start with in embarking upon educational investigations, that the inclination to or capacity for the æsthetic is to be found in conjunction with undesirable qualities. Schoolmasters of experience have told the writer that the boys whom they have had to get rid of for moral offences have been musical. In the class that he is teaching at the present moment it is a fact that two boys of distinct musical ability are decidedly stupid. It is true that individual impressions of this kind must not be pressed too far; but there are to hand the results of investigations which generalize from the impressions of a considerable number of individuals, and which, therefore, cannot be placed on one side without interpretation. The following correlations were derived from the reports of a number of experienced teachers who were asked to state the characteristics of their pupils. According to them, the correlation of æsthetic feeling with other qualities and processes of mind is as follows:—Quickness of apprehension, —'42; scope of apprehension, —'36; immediate memory, —'39; continued memory, —'54; logical inference, —'38; self-confidence, —'61; initiative, —'04; altruism, —'13; conscientiousness, —'08; sympathy, '57.

In considering these figures, it may at once be conceded that they are based on opinion, and that it would be interesting to know in what manner æsthetic feeling was estimated. In most cases, probably, the literary feeling shown in compositions, or success or interest in drawing or in music, was the standard, and, under these conditions, many pupils who had much capacity for æsthetic feeling, though it had lain dormant, might escape notice. And, even when one had decided in one's mind which of one's pupils could be singled out as æsthetic, it would be difficult, though not impossible, roughly to decide to what extent they possessed the other qualities mentioned above. It must further be admitted that the existence of a correlation between two processes does not necessarily imply a direct causal connexion. If the correlation between drunkenness and smallness of income is '70, it would not be safe to infer that an increase in income will decrease the tendency to drink. But the existence of a high co-efficient of correlation implies that it is worth while to consider if a causal nexus may not be there; and, in the instances quoted above, the co-efficients are so extraordinary that, even granting that the results are of only approximate value, they call loudly for an investigation. For, consider what the figures mean. They imply, if they mean anything at all, that, if you find a pupil who can be said to have æsthetic feeling, you may expect to find that he is at the same time slow of apprehension, limited in scope, weak of memory, illogical, lacking in self-confidence, and selfish, and that he does not make up for these deficiencies by being more conscientious than other people; while there is a suggestion—though it must not be looked upon as more than a bare suggestion—that, if æsthetic feeling is encouraged, it will increase at the expense of these other qualities. Indeed, the only quality with which it seems to have a high positive correlation is sympathy. The picture is a disconcerting one, for æsthetic subjects have been finding their way into schools, and schoolmasters, with the exception of a few sturdy Philistines, have got into the way of acquiescing in their presence as an aid to moral development. With it before us, what are we to say about the "rhythm and harmony which find their way into the secret places of the soul . . . making the soul graceful of him who is rightly educated"?

Nothing but an analysis of the elements involved in æsthetic feeling and artistic expression will supply the facts from which the question can be answered satisfactorily. For the problem is not one that concerns the leisure side of education: it leads

* "Republic," Book III.

* "Wealth of Nations," Book V, Chapter I.

straight to the most vital matters of education, and, therefore, of life. It brings us face to face with issues so important that they are often shirked; and it is just because of this shirking of serious issues that tractates on education often fail to grip the man for whom they are intended, the man in close contact with boys whose minds and characters are developing under the shadow of his own.

Feeling is a constituent part of mental process that cannot be neglected. It is a commonplace of psychological exposition to set forth that it is always found in all states of mind; that, although the quantity present may approach the zero mark, it is never wholly absent; it is also clear that it stands in a very close connexion with will and with action, and it is not difficult to show that the connexion with will is more easily seen in the earlier stages of will than in the later. It is not, however, so common to meet with discussions of the questions—(1) how far feeling, and what sort of feeling should be cultivated; (2) the dangers of the under-cultivation of feeling; (3) the dangers of the over-cultivation of feeling, or of the wrong kind of feeling.

A few considerations as to the general nature of feeling must precede a more detailed inquiry. We all know what it is like to feel angry or to feel frightened, and in each case have no difficulty in distinguishing the feeling from the knowledge of the thing that we dislike or fear; it is also easy where such an extreme case of feeling is concerned to note the physical concomitants of the feeling, the manner in which the feeling is expressed. The emotion of anger expresses itself by a flow of blood to the head, resulting in redness of face, and by a tendency to clench the fist; fear expresses itself by a rush of blood from the face and an increased action of the heart. We need not now stay to inquire why these modes of expression are different; it is enough to note that violent feelings of this kind are connected with definite physical concomitants or modes of expression, and it is comparatively easy to show that not only the violent emotions but all feelings and sentiments without exception stand in close relation to physical changes which they tend to produce and by which they are in turn affected. When I feel sad my face assumes a lugubrious aspect, and if I deliberately look mournful I can produce, or at least intensify, a feeling of sadness.

Thus two fundamental facts of human nature are feeling and the necessity of expressing it. The simple emotional states mentioned above are expressed through simple physical channels; the more complex or more special feelings need channels of a different kind; and if these channels are not there, or if they are deliberately blocked up, very dangerous states of mind may ensue.

The tendency of pent-up feeling to seek relief is familiar to everyone who has been subjected to an excessive period of routine work, during which many natural instincts and feeling have been repressed, and who suddenly finds himself at liberty. The excesses of the sailor who suddenly finds himself freed from the restrictions of life at sea, the insane manner in which the Malay works off his feelings by running amok; these and similar instances are well known. Not so clearly realized is the result of the repression when it really succeeds in destroying or distorting the feeling which is so essential as a motive power in human conduct. The result of such a repression was to be found in the state of mind known to medieval theologians as *acedia*; a state of mind which adepts of the religious life experienced in their own persons as a result of the repression of self that they had undergone. Its characteristics are variously described, but all the descriptions agree in essentials. Dante, in the Fifth Circle of the "Inferno," finds those who had succumbed to this sin sunk deep in a slimy swamp. "Fixed in the slime they say: 'Gloomy were we in the sweet air that is gladdened by the sun, carrying sullen lazy smoke within our hearts; now lie we gloomy here in the black mire.' This hymn they gurgle in their throats for they cannot speak it in full words." Here gloominess and an inability to express in words seem to be the characteristics. Other writers define it variously. *Acedia* is "a distaste for the soul's good"; "a languid dejection of body and soul that cares not to set about good works nor to keep them up"; "a sadness of the mind which weighs upon the spirit so that the person conceives no will towards well doing but rather finds it irksome." Nor is the inertness confined to good works. "Accidie," says Chaucer in "The Persones Tale," "loveth no besinesse at all." A fifth century writer, Cassian, gives a graphic description of a monk who is attacked by the malady:—

When the poor fellow is beset by it, it makes him detest the place

where he is and loathe his cell; and he has a poor and scornful opinion of his brethren near and far, and thinks that they are neglectful and unspiritual. It makes him sluggish and inert for every task; he cannot sit still nor give his mind to reading; . . . with his mind full of stupid bewilderment and shameful gloom he grows slack and void of all spiritual energy.*

To the medieval theologian this state of mind was a mortal sin, and he diagnosed its cause as a lack of zeal in religion. That listlessness diminishes personality, and that it has an anti-social tendency, is certain, and no doubt this particular kind of listlessness which comprised sullen gloom and had at times almost a fierce aspect might be neutralized by religious feeling. But it is evidently caused, in part at least, by the obstruction of the natural outlets of feeling in the life led by solitaries; and the listlessness and stupid indifference that in our own day so often characterize those of middle age may be traced to the same cause. A misdirected education and unusually artificial and monotonous social surroundings have blocked up the channels of expression and caused the springs of feeling, the source of much of our energy, to dry up. Only in some cases, however, for in natures that are too vigorous to be snuffed out in this way we find instead of listlessness a foolishly critical attitude, a sullen gloom that feeds upon itself and finds a partial outlet in moodiness, discontent, and irritability.

It is a far cry from Cassian in the fifth century to Miss Jane Addams, of the Hull House Settlement, Chicago; but it is from her "Spirit of Youth and the City Streets" that we shall draw our next illustration.†

The revolt of youth against uniformity . . . many times results in such nervous irritability that the youth . . . throws up his job if only to get outside the factory walls into the freer street. . . . When the boy is on the street, however, and is standing around on the corner with the gang to which he mysteriously attaches himself, he finds the difficulties of direct untrammelled action almost as great as they were in the factory, but for an entirely different set of reasons. The necessity so strongly felt in the factory for an outlet to his sudden and furious bursts of energy, his overmastering desire to prove that he could do things without being 'bossed' all the time, finds little chance for expression; for he discovers that in whatever really active pursuits he tries to engage he is promptly suppressed by the police. After several futile attempts at self-expression he returns to his street corner subdued, and so far discouraged that when he has the next impulse to vigorous action he concludes that it is of no use, and sullenly settles back into inactivity. He thus learns that it is better to do nothing, or, as the psychologist would say, "to inhibit his motor impulses."

Now it is a fact that a great part of education consists in inhibiting impulses, and it is just on account of this restraining influence of education and of social life, which tighten their octopus grip on the young daily, that the cultivation of feeling, and this through establishing the right channels for its expression, is of such paramount importance.

A further analysis of feelings must now occupy our attention. Feeling exists in every mental process, but it is found far more in certain processes than in others. Mathematicians, it is true, assert that on occasion the contemplation of a beautiful demonstration produces in them a flush of sensuous feeling as great as any that they can imagine attached to other mental complexes, but this does not invalidate the commonly received opinion that certain forms of intellectual process, although accompanied by their own specific feelings, are not suffused with feeling to anything like the same extent as other phases of thought. Indeed, the mathematicians who make the contrary assertion may either be exceptions—that is to say, they may be persons of unusually strong feeling who have blocked up other outlets and directed all their emotional life into one channel—or they may be wholly unaware to what strength feeling can attain. In our search for strong feelings which admit of development and growth, and which possess a certain quality which arises from the ease with which the objects to which they attach themselves admit of complex arrangement, we shall put on one side (1) the feelings and emotions that accompany violent and primitive nervous processes and states, for they do not admit of much development, owing to the reaction which sets in, and which, for the time being, brings them to an end; (2) the feelings which accompany the higher intellectual processes, since these are slight in amount; and find ourselves left (3) with the feelings that accompany the exercise of the sense organs in what is known as artistic appreciation or production.

* "The Spirit of Discipline," Francis Paget, D.D., page 7.

† "The Spirit of Youth and the City Streets," page 110.

Whatever may be the origin of the art impulse, its development is closely connected with "the natural tendency of every feeling-state to manifest itself externally, the effect of such a manifestation being to heighten the pleasure and relieve the pain."* Equally closely is it connected with the manner in which artistic feeling, when expressed, affects other people, and is in turn increased by the sympathy which it meets with in its surroundings. It is from the desire to establish a permanent channel through which this sympathy can be attracted that the technique of artistic production and the finished work of art arises, and it is from the desire to enter into sympathetic relations that the channels afforded by the technique are used in imitation and admiration.

The more conscious our craving for retroaction from sympathizers, the more there must also be developed in us a conscious endeavour to cause the feeling to be appropriated by as many as possible, and as completely as possible. The expressional impulse is not satisfied with the assurance which an occasional public, however sympathetic, is able to afford. The natural aim is to bring more and more sentient beings under the influence of the same emotional state. . . . An echo, a true and powerful echo—that is what it desires with all the energy of an unsatisfied longing. As a result of this craving, the expressional activities lead to artistic production.†

It is, then, in the artistic construction originally produced by this strong tendency on the part of feeling that we find the instruments by which feeling may be fostered, and by instruction in and by fostering the appreciation of these works of art we produce the channels by which, in middle life, when the springs of the more primitive feelings tend to weaken, leaving as a result an unwholesome state either of placidity or irritability, a reservoir of feeling is maintained which will enrich every department of mental and spiritual life.

We may now approach the question why it is that works of art and the expression of artistic sensitiveness exist in connexion with some of our senses and not with others. It is only in a metaphorical sense that we talk of a cook being an artist in flavours or a perfumer being an artist in smells: and you would feel it to be an absurdity if I suggested that spiritual welfare can be promoted through the appreciation of cookery, as I do suggest it can be enhanced through the ministry of art. The answer seems to be that the phenomena of flavours and of smells lend themselves to manipulation of a far less complex kind than do those of music, colour, and of form, and that while of importance to our well being, they play a very much smaller part in our mental life. It is in connexion with phenomena which admit of organization, and which give ample scope to the desire to create new arrangements, and arrangements with greater meaning, that the artistic impulse manifests itself and develops; and it is, therefore, through music, through form and colour, and through literature, which is a subtle mixture of rhythm, word-colour, and meaning, that we shall hope to produce and to educate feeling in our pupils.

It must be confessed, however, that before we can persuade ourselves that artistic appreciation and expression are worth fostering, we must have some reason for believing that they are not mere conventions, varying from country to country and from civilization to civilization. We must be assured that there is in them something essential, that the quality of feeling that we develop in connexion with an art has been produced by a real growth of mind, that it is not an accident, but has its roots deep in our inner nature. We must believe that an art to which we are devoted is something more than a hobby, and has a deeper meaning, and that development of æsthetic taste is not a mere eccentricity. Yet, at first sight, standards of judgment and appreciation seem to be shifting, relative, and conventional.

Eastern music is appreciated by few Western ears; the principles of one school of art are at variance with those of another; masterpieces of literature are seldom understood without an elaborate training. Are our likes and dislikes in these matters of no greater value than the convention that leads the Chinese to demand cramped feet, Europeans slender waists, and many savages obesity in their womenkind? Needless to say, we should not expect to find absolute uniformity of taste and standard: it is enough if we can show that apparent differences are due to the various stages of development, and can thus be reconciled as parts of a whole, and that persons of gifted natures, or more intense spirituality, can appreciate works of art without the laboriously acquired technique of appreciation generally considered necessary.

* Yrjö Hirn, "Origins of Art," page 302.

† *Ibid.*, page 84.

Here we can do little more than indicate the kind of illustration—the word "proof" would imply too much—that is of use. A singularly interesting one is to be found in an episode in the life of Snarley Bob in Mr. L. P. Jacks's "Mad Shepherds." Snarley is an illiterate shepherd of the Cotswolds, rough of speech and difficult of approach, except to those who will take the trouble to understand him. He is, however, possessed of marked psychological gifts, and believes himself to be guided by an adviser with whom he is in supernatural communion. To the ordinary eye these gifts are not visible, and Snarley is an uncouth and rather alarming rustic. He is quite unversed in the conventions of literary style, has had no training in rhythm, or opportunity of appreciating the right choice of words or their euphonic arrangement. Yet, on hearing Keats's "Ode to a Nightingale" well recited at a village entertainment, he is so powerfully affected that he falls into a state rather like the hypnotic sleep, in which he behaves as follows.*

Snarley, after a few minutes of apparent sleep, raises his head, looks round him, and again stands upright. A flood of incoherencies, spoken in a high-pitched whining voice, pours from his lips. Now and then comes a clear sentence mingled with fragments of the poem—these in a startling reproduction of Mrs. Abel's tones—thus: "The gentleman's calling for drink. Why don't they bring him drink? Here, young woman, bring him a pint of ale, and put three ha'porth of gin in it—the door's opening and he's going through. He'll soon be there—

'Fade far away, dissolve, and quite forget
What thou among the leaves hast never known.'

All right—it's blooming well all right—don't give him any more.

'Now more than ever seems it rich to die,
To cease upon the midnight with no pain.'

It's the passing bell—What are they ringing it for? He's not dead—he'll come back again when he's ready. Stop 'em ringing that bell!

'Forlorn! the very word is like a bell
To toll me back from thee to thy sole self.'

All right—he's coming back—Nightingales! who wants to hear about a lot o' blooming nightingales. I don't. I'm all right. Get me a cup o' tea. It's Tom here who's drunk, not me.

'Where Beauty cannot keep her lustrous eyes
Or new Love pine at them beyond to-morrow.'

What do you know about nightingales? I heard them singin' for hundreds of thousands of years before you were born.

'Thou wast not born for death, immortal Bird!
No hungry generations tread thee down.'

At this point he repeated to the end of the stanza without further interpolation.

Truly, if our standards of judgment in poetry are a complex of conventionalities, it is difficult to account for the stupendous impression made on this rustic. Only on the hypothesis that this poem was in harmony with the natural trend of his spiritual development is the whole occurrence intelligible.

When we turn to music our task is not so simple, for here what may stir one man to his core is either indifferent or execrable to another. And yet it is in the case of music that a demonstration of its reality and intrinsic value will be of the greatest value to our argument. Music deals with feeling, and with feeling only. In its pure form it has no meaning, and should have no meaning in the ordinary sense of the word. Its business is not to describe sunsets or storms at sea. It might of course appeal to or excite the same emotions as are produced by these phenomena, but this appeal is not description, and it is as a manipulation of a type of sense impressions whose nature it is to excite and to have associated with them feelings of the liveliest description that we must view music. Literature in education may have a meaning value in that it often conveys truths of moral import; indeed, it is impossible to conceive of literature except as conveying such truths. Music, on the other hand, conveys no such meaning; when it is not combined with words, in which case it has to be judged from the literary standpoint, it stands out clearly as performing no function except that of producing or exciting a complex of feeling. As in the case of literature, let us ask the question, "Are these approved complexes of feeling mere conventions, or have they a real meaning for our spiritual life?" This question is not so easy to answer, even partially, as was the first. For it is precisely in music, in this realm of feeling, that we appear to meet with the

* "Mad Shepherds," 1910, page 78. It may be well to state here that the account, so the writer is assured by Mr. L. P. Jacks, is an exact description of an incident which actually occurred.

greatest possible diversity of taste. Yet even here there are indications that these apparent diversities represent different stages of development, and that an essential unity underlies the whole. Travellers like Burchell and Moodie heard Hottentot girls singing in parts, and Moodie tells a story of a German officer who played on his violin an air from Glück's "Orpheus," "Ach, ich habe sie verloren." To his surprise he noticed that a number of Hottentot women listened to him attentively, and that some were moved to tears. On the next day the air was being sung all over the village. Similar experiences among Hottentots are reported by missionaries, and harmonies in music which could be appreciated by the European ear have been found in Ashantee, New Zealand, Samoa, the Solomon Islands, and Fiji.* Lack of space forbids to give further examples. Like the illustration of the "Mad Shepherds," they are merely indicative of one kind of argument that can be advanced in support of the claims of music to modify the feelings in an essential manner.

So far, we have shown that the cultivation of feeling is a desirable thing, and that its expression and modification through suitable channels are essential for well ordered mental life, while we have given reason for believing that some, at any rate, of the accepted channels of expression are of more than conventional value. We should, however, be short-sighted did we not recognize that the cultivation of feeling, although necessary, has its extreme dangers. Like all explosives and motive forces, feeling needs to be restrained and kept within limits, and to the suggestion that reason is in itself sufficient to act as turncock and let out from the reservoir just as much feeling, and no more, as is necessary for a specific purpose, two objections, differing widely in their nature, may be brought. The first is, that reason is not strong enough to act as a control when feeling acquires an overwhelming strength, an objection which finds utterance in the fine words of Newman: "Quarry the granite rock with razors, or moor the vessel with a thread of silk; thou mayest thou hope, with such keen and delicate instruments as human knowledge and human reason, to contend against those giants, the passion and the pride of man."† The second objection is the reverse of the first. It is briefly this: that the continual control of the feelings by the reason, especially if the process begins early in life, may be too powerful; that the feeling element may wither away, leaving as result the man who is guided only by his reason, which is only one way of describing a person who for essentially human ends is very limited. The discrepancy of these objections and the element of truth that each contains do but show the need of the middle way that has been suggested above, in which feeling to a large extent both augments and organizes itself by means of the technique of the art in connexion with which it arises. When this is the case, the technique and the æsthetic mechanism are interposed between the feeling and the reason, helping the latter when it is too weak to assert itself, softening its influence when it is too strong, and giving to the emotions in virtue of their organization a relative power of self-control.

This organization lessens the danger which we are discussing, but it does not do away with it. The organized feelings that are connected with an elaborate technique in one of the major arts are certainly easier to direct, if not to restrain, than the simpler feelings attached to the processes of assimilation and reproduction; but we have not escaped from the pitfalls which await all who promote the growth either of intellect or of feeling. In the case of intellect the dangers are well known; conceit, scepticism, cynicism, an abnormal extension of the critical spirit, intolerance are to be found everywhere among the highly educated, and there is only one antidote for them. In the case of feeling, the dangers are even more alarming, and scarcely need mention in detail. Languorous sensuousness and tumultuous explosiveness are among the giants of the tribe, and here again, there is an antidote. The danger of excess at either extreme must be neutralized by an increase in personality; by a growth of character and of the sense of duty which keeps pace with the swelling dimensions of feeling and of thought. Unless moral training bulks as big as æsthetic training, unless, indeed, the two are merged in one, the training of the feelings on which so much stress has been laid may be disastrous; or, to put it more prosaically, should not be subsidized by State funds. Artistic feeling then must be cultivated for the sake of the community. If an art is pursued and if excellence is attained in it as a form

of social service; if it is felt that the capacity for artistic feeling is a gift, that it must be exercised not for the sake of the individual, but of his surroundings; if it is linked on to and aids the struggles of the society towards some worthy goal, the danger is lessened. Personality is increased by the subordination of the individual to social needs, and an undoubted aim of the organized school society is to supply the place of the village or small town community—small enough to be realized by the boy—which is now rapidly vanishing. As the individual is socialized, and as his feelings undergo the same process, the self-control which will keep feeling in order increases also. When the next step is taken, when the sanction of artistic expression, which at first has been duty to society, becomes merged in religious duty, the danger vanishes. The delight that Fra Angelico took in his colour schemes can scarcely have tended to sensuousness, neither can the devotion to church music of the mediæval monk, nor the joy of cathedral architects and builders in their handiwork.

A first safeguard, then, is the socializing of our feelings. A second, and an equally efficacious one, is the insisting on strenuous effort in all æsthetic production or appreciation. If a tone of strong endeavour permeates the feeling-complex it is difficult to see how softness or a lack of control can arise. It is the lounge in the domain of feeling, not the worker, who is on the brink of the precipice.

We are now in a position to explain the correlations which startled us so much a little time back. Although it is probable that there is some exaggeration and that a more careful inquiry would tend to show that the artistic youth has some good qualities, the figures are not so very unlike what we might expect; for the conditions under which the arts of expression are pursued in our schools, with the exception of the literary element in the Latin and Greek classics, are not inspiring. They are seldom cultivated by the more strenuous pupils, or taught or encouraged by the more strenuous masters. Feeble boys who have fallen out of line, and who shirk sports, cultivate feeble arts in seclusion under the guidance of specialist art or music masters who are not prominent members of the school staff; while the number of head masters or head mistresses who are sturdy exponents of, or strenuous enthusiasts for, some form of art, to whom artistic expression is evidently one of the things in life that really matter, must be very small indeed. Under such conditions it would not be surprising if a certain amount of perverted feeling were the result.

The practical lesson to be gathered from these remarks is the necessity in our schools of a far greater insistence on the arts of expression than is at present to be found. The girls' school of a bygone age was justly condemned, not, assuredly, because it taught accomplishments, but because, professing to teach them, it taught nothing. Few things are more striking in adult life than the number of persons who have no means of artistic expression or appreciation at all; who are driven for relaxation to futile pursuits such as card playing, and who, as their higher feelings atrophy, become, in success, fonder of their food and drink or possessed of a craving for rapid motion; or, in failure, gloomy, listless, and irritable.

It will be for the school of the future to lay at least as much stress on the arts of self-expression as on the acquisition of knowledge, and to insure that æsthetic feeling shall pervade the community, quickening its interests and preserving its vitality.

Dr. HAYWARD said he recognized that there was a very solid danger behind the warnings uttered by the lecturer, but, owing to the very limited extent of the teaching of æsthetics in schools, the perils were not yet very serious. He agreed that artistic appreciation should be linked up with vigorous study, and he thought it important that all art should be kept in close touch with the realities of life.

The CHAIRMAN said that an interesting point made by the lecturer was the interpolation of technique between reason and feeling. This showed a striking parallel with the synopsis which takes place in the nervous system. He agreed with the lecturer that emotional output should as a rule be accompanied by effort, but there were occasions when this rule might safely be broken. For example, absorption in a beautiful poem was a pleasurable and healthy experience, and this kind of day-dreaming was, within limits, undoubtedly useful. The recognition and value in life of cheerfulness and happiness was a distinct gain. He regretted the modern tendency in American works to substitute "self-expression" for "self-realization," for this indicated a distinctly lower ideal.

Mr. KEATINGE having replied, a vote of thanks to the lecturer concluded the proceedings.

* Wallaschek, "Anfänge der Tonkunst," page 160.

† J. H. Newman, "Idea of a University," Discourse V.

REVIEWS.

MARSHAL FORWARD.

"Heroes of the Nations."—*Blücher and the Uprising of Prussia against Napoleon, 1806-1815.* By Ernest F. Henderson, Ph.D. Berl., Litt.D. Trin. 5s. net. G. P. Putnam's Sons.

This is a very welcome addition to the well known series of "Heroes of the Nations." Blücher is perhaps little known in this country except as the Prussian commander that came up to Wellington's assistance towards the close of the battle of Waterloo, and readers will probably be startled at Mr. Henderson's claim to establish him "in his rightful position, as the peer of Wellington in all that concerns the overthrow of Napoleon." "Blücher," says Mr. Henderson, "was the one progressive, inspiring element among the leaders of the allied armies from the year 1813 on. Without Blücher's decision to cross the Elbe at Wartenberg, there would have been no battle of Leipzig; without his cutting loose from Schwarzenberg in March 1814, there would have been no closing in of the allies on Paris; without his brave endurance at Ligny in spite of the non-arrival of the promised reinforcements, Wellington would have been overwhelmed at Quatre-Bras and there would have been no Waterloo." The form of the argument, especially in the latter part, is not free from objection; but, admitting all the points fully (for the sake of argument only), there does seem still to remain a considerable inclination of the scales against the claim. Blücher is glorious enough without such extravagant pretensions. He was a man of unsurpassable courage; he had a consuming hatred of Napoleon and never entertained a particle of fear of him; he was a born warrior of the fieriest type and appropriately styled Marshal Forward. He chafed violently against the pusillanimity and delays in the high places, and at last communicated to the more intelligent among the authorities such a measure of his inspiration that he would have had to lead the Prussians against Napoleon if it had been necessary to carry him helpless in a litter. When he became incapacitated, bodily and mentally, at Laon, "not only Gneisenau [chief of the staff], not only Blücher's own aide-de-camp Nostitz, considered it indispensable for him to remain in command lest the whole Silesian army should fall to pieces, but even Langeron, who would have been next in command, once cried out, 'For God's sake, let us carry this corpse along with us!'" But Blücher himself, like the thoroughly honest and modest man he was, was always forward to acknowledge the services of such lieutenants as Scharnhorst and Gneisenau. "Art thou present, spirit of my friend, my Scharnhorst? Then be thyself my witness that without thee I could have accomplished nothing!" "Gneisenau lenkt und ich gehe vorwärts"; or, as Mr. Henderson paraphrases it, "Gneisenau, being my chief of staff and very reliable, reports to me on the manoeuvres that are to be executed and the marches that are to be performed; once convinced that he is right, I drive my troops through hell towards the goal, and never stop till the desired end has been accomplished." Yet, with all this terrific energy, Blücher was anything but hot-headed. His great flank march at Waterloo is a marked example of his cool daring, as his furious expedition at Lasne illustrates his honourable determination to keep his word. He was a great soldier and a great man. By an accident of his youthful thoroughness he was told by Frederick the Great to "go to the devil," and plodded as a farmer and country gentleman for sixteen years; and it was not till he was forty-five and Frederick was dead that he really began his brilliant military career.

Mr. Henderson has exhibited his accustomed diligence in hunting out information about his hero, not only from the detailed German military works, but also from numerous obscure journals and monographs. If the biographical thread occasionally runs somewhat thin in the midst of the general historical narrative which the plan of the series involves, the work was still required, and Mr. Henderson has accomplished it with warm sympathy and with much ability. There are points about the Battle of Waterloo that still engage the most eager partisanship of historical writers, especially in Germany. Mr. Henderson finds the German view the more trustworthy here and there, but on these occasions we suspect his judgment. For example, he takes the view that it was the charge of Zieten that decided the battle by turning the French right wing to flight. But what of the handling of the Guards by Halkett and Maitland and Colborne, and of the charge of the cavalry brigades of Vivian and Vandeleur? If Zieten drove in the north-east

French front and met Vivian and Vandeleur at La Belle Alliance, why should all the credit go to Zieten? Wellington, it is true, officially reported: "I should not do justice to my own feelings or to Marshal Blücher and the Prussian Army if I did not attribute the successful result of this arduous day to the cordial and timely assistance I received from them." Mr. Henderson interprets this sentence as "granting the full credit for the victory to Blücher's assistance"; and, on the face of it, he seems right. But then, he says, Wellington's next sentence "takes that credit away." Wellington goes on to say: "The operation of General Bülow upon the enemy's flank was a most decisive one, and, even if I had not found myself in a situation to make the attack which produced the final result, it would have forced the enemy to retire if his attacks should have failed, and would have prevented him from taking advantage of them if they should have unfortunately succeeded." The italics are Mr. Henderson's. He thinks "Wellington is wrong." For ourselves, we find Wellington's expression anything but clear; but, taking his latter sentence with a previous paragraph in the same despatch, we think it perfectly plain that Wellington held the victory to be essentially his own. His first sentence, therefore, we read not as an assignment of the victory to Blücher, but simply as a liberal recognition of Blücher's aid. Bülow drew off, first and last, some 14,000 of Napoleon's reserves; when Zieten charged, the battle had just been, in effect, decided by the wreck of the guard. Some critics believe that Napoleon would have won the battle if Grouchy had contained Blücher, as he ought to have done. We don't believe this. The battle was lost the moment Napoleon refrained from launching his guard at the broken centre of the Allies; and we do not forget that the prompt re-formation of the centre was, in fact, materially assisted by Zieten's force. It was lost and won because Napoleon was ill and Wellington was resolute. However, the volume is a most capable and most interesting record of the career of the soldier that was the master-spirit of the Prussian Army in those troublous times. Probably no victorious general ever had such a delirious reception in London. There is a curious appendix of folk-songs of the period on Blücher. The illustrations are numerous (thirty-one) and the ten maps and plans are most serviceable.

THE SCHOOL.

The School: an Introduction to the Study of Education. By J. J. Findlay. Is. net. Williams & Norgate (Home University Library).

The interest of this book to our readers will be found to be out of all proportion to its modest size. In some two hundred and fifty small pages Prof. Findlay has compressed problems that would supply our school common rooms with materials for years of discussion. Such a book has a very special importance to our profession, since it goes forth to the world to be read by myriads of people who know nothing of the subject, and are apt to form their opinions from a single source of this kind, particularly when it happens to form one of a series that appears to be authoritative and is certainly popular. It is, therefore, very pleasant to find that, from the professional point of view, the work can be regarded as eminently satisfactory.

Its author has no lack of courage in attacking dangerous problems, and if his heart does fail him when tempted to face the supreme problem of the differentiation of education according to sex, we have rather to admire than to blame, since under present circumstances it requires more courage to omit than to treat such a subject. The matter of the book falls easily into two sections, the psychological and the administrative. The first of these is admirably treated, and the inexpert reader should be able to form a fair idea of what is now being done and thought in this department. There will not be much criticism here, for the plain man is perforce aware that he does not understand all this. When it comes to practical education, however, he at once becomes belligerent, for it is well known that everybody knows all about education. In dealing with matters that the plain man is apt to quarrel about, Prof. Findlay adopts a style that is somewhat different from that which he reserves for the psychological portions. In dealing with such themes as "the organization of education," "types of school," and "the teacher," Dr. Findlay writes as he would write for the *Morning Post*, and has probably hit just the style that will suit the readers of this series. The subject lends itself to the best form of journalistic treatment. It includes matter that is changing before our eyes—matter on which there is great difference of opinion. Probably

few readers will change their view on "the religious question" in education from reading this book, but it will do good to all to have the case presented in the eminently fair way that is possible in such a book and is realized here. Even on such matters as those troublesome "antecedents," dragged in an untimely way into the light of day by Mr. Holmes's Circular, Dr. Findlay can write effectively without rousing animus; though he can hardly hope that human nature will allow the elementary-school master to accept the craftsman attitude, however reasonable may be the arguments brought forward in its favour. Our author thinks "much would be gained if William Morris, rather than Roger Ascham, could be set before the primary teacher as an example"; but the primary teacher would in that case want a difference to be established in the way in which "culture studies" are regarded.

The chapter on "The Teacher" expresses in a very effective way the present difficulties with regard to the status of the teacher. Certain suggestions are made of which the great majority of teachers would approve. In particular, the heart of the professional teacher will warm when he reads the long foot-note appealing for a remission of the present intolerable strain of clerical work involved in the insatiable lust of governing bodies for "returns." The references to the Consultative Committee are fair, as are also those to the Registration Council. The whole chapter is just such a one as an intelligent teacher would like to see fall into the hands of either the man in the street or the member of some Education Authority.

A book of this kind is very aggravating to its author, since it has scarcely appeared on the bookstalls before things happen that begin to "date" it. For example, Prof. Findlay evidently wrote before the Consultative Committee had published its report on Examinations; but there is nothing in that report that necessitates a change in the text beyond that from the future to the present tense. For a description of a state of flux, the book is wonderfully free from errors. But what does Prof. Findlay understand by "underpin" on page 43? On page 118, too, there is some difficulty in making out what the author wants us to think about rate-payers and tax-payers.

This is an excellent little book, a timely little book, a book that will do the plain man good to read, and, therefore, a book that it is to the interest of every teacher to recommend to the general public.

LIGHT.

A Treatise on Practical Light. By Reginald S. Clay, B.A., D.Sc. 10s. 6d. Macmillan.

The title seems a curious one, for light always is light, though the forms of energy may change, but it is the treatment that may be practical; presumably the author wishes the book to be regarded as a practical treatise on light. Anyhow, we have read it with interest and can confidently recommend it. The bulk of it had been written before, and the basis of it is the author's "Practical Exercises in Light," published some ten years ago. It is very much of the same character as the work by Dr. Thomas Preston, of Trinity College, Dublin, but its diagrams are more numerous and easier to understand. Indeed, the diagrams deserve a special word of praise, for they are generally well done; the shading, when necessary, has made them wonderfully clear, and the geometrical figures are excellent.

The author points out that in many of our colleges the subject has been treated as a framework on which to hang pretty mathematical problems, or else has been dealt with for the purpose of the comparatively non-practical questions of Physical Optics, such as interference, polarization, anomalous dispersion, and the like. We do not think that he is quite fair to the researcher; but for the moment it is rather the fashion to decry the mathematical physicist and to applaud the practical observer, especially if he is employed by a business man. At all events, he tells us that the parts of the book to which he attaches the most importance are the chapters on the Compound Lens, the Microscope, and Colour.

From the introduction we should have been led to suppose that the book was written chiefly for the manufacturer and the expert employed by him, whether in instrument making or in textile dyeing or in similar trades, but we hardly find our expectation realized, for even with the added chapters above mentioned the book has not very much that would appeal to the manufacturer. It must, in its present form, appeal almost entirely to the college student entering on a degree course in

Natural Science. It will, however, help to stimulate such student and encourage him to direct his efforts in the direction most needed for the advancement of study and research in this domain of physical science.

A considerable amount of the book, therefore, is of a mathematical character, and parts of it form a good text for the study of Geometrical Optics; in particular, the chapter on optical instruments is useful, though we should have preferred to see a little more of the details of instrument adjustment. We doubt whether the first method of testing the magnifying power of a telescope would be easy to work, as there seem to be obvious inconveniences. The chapters on Deviation and Dispersion of Light and on Further Experiments with the Optical Bench are well worthy of careful perusal; but the chapter on the Determination of the Velocity of Light seems a little out of place, and might have been put later. The treatment of the Compound Lens is excellent, and conveys much information without a great quantity of abstruse calculation; perhaps some reference to Gauss's general theory might have been included. The chapter on the Microscope contains a quantity of useful material in small compass; and the critical tests at the end are especially well described. On Colour Measurement we find the description of a number of interesting experiments; we feel, however, that the results arrived at are somewhat vague, for it does not seem to be made quite clear to the student in what units the measurements are made.

Generally, then, we are of opinion that the author has produced good results in enlarging his old book. The practical and theoretical sides have been judiciously admixed, though perhaps a larger number of experimental examples for the student to try should have been included. The practical hints in the Second Appendix are good, and the logarithmic tables are useful. The index might have been more copious with advantage.

GENERAL NOTICES

CLASSICS.

Roman Stoicism: being Lectures on the History of the Stoic Philosophy, with special reference to its Development within the Roman Empire. By E. Vernon Arnold, Litt.D., Professor of Latin in the University College of North Wales, and formerly Fellow of Trinity College, Cambridge. 10s. 6d. net. Cambridge University Press.

Though primarily intended for the assistance of classical students, and calculated to be very helpful to such as are reading for Honours, this volume is far more important to students of philosophy and religion. It presents in systematic and compact form a most careful and scholarly study of Stoicism in its historical development, with its connexions in earlier thought, and a final chapter on the Stoic strain in Christianity. Dr. Arnold has relieved his original program of the problems of the influence of Stoicism on modern literature and philosophy, but it is to be hoped that he will find time to recur to them. He takes the view of a growing number of students both in Germany and in England, that Stoicism must be assigned a higher importance than formerly, that it should no longer be overshadowed by Plato and Aristotle, and that it should be regarded as "the bridge between ancient and modern philosophical thought." The work is opportune, broad-minded, and thoroughly capable.

The Eclogues of Baptista Mantuanus. Edited by Wilfred P. Mustard, Ph.D., Collegiate Professor of Latin in the Johns Hopkins University. 6s. 6d. net. Baltimore: Johns Hopkins Press. Oxford: Parker.

The ten Eclogues run to 2,063 lines. Popular from the first, they were widely read in France and Germany and England as well as in Italy, and for some two hundred years they were commonly used, both on the Continent and in England, as a textbook in schools. The text of this edition is based on the first printed edition (Mantua, 1498). The spelling is modernized. The introduction forms a considerable monograph on all aspects of the author and of the book, condensed indeed, yet containing the results of a very extended and laborious inquiry. Special attention is bestowed on Mantuan's popularity in England, and the precise range and character of his influence here. The notes mainly explore the question of Mantuan's sources, and only occasionally serve to explain his meaning. It is a most curious, interesting, and scholarly volume.

Mr. Murray publishes *The Year's Work in Classical Studies*, 1911, edited by Leonard Whibley, M.A., Fellow of Pembroke College, Cambridge (2s. 6d. net). The various chapters—twenty in all—have been prepared by experts; and a chapter on Greek Papyrography and Textual Criticism appears for the first time. The book is indispensable to all persons interested in the progress of classical studies.

MATHEMATICS.

A Course of Elementary Workshop Arithmetic. By Henry A. Darling, A.M. Inst. C.E. 1s. 6d. Blackie.

Quite a small book, consisting principally of exercises. These are of a technical and practical nature, being intended to be generally useful to students possessing a knowledge of workshop and factory processes. A certain familiarity with trade terms and technical phraseology is assumed. The details of many of the problems are illustrated by diagrams—some good, others very indifferently reproduced. The answers to the questions are given. The volume has been arranged to meet the requirements of candidates taking the entrance examinations for apprenticeship in His Majesty's dockyards. Its scope has further been determined by the demands of the N.U.T. syllabus as affecting elementary and intermediate workshop arithmetic. The repeated use of the word "lateral" for "literal" in the page headings of Chapter XVI calls for notice.

A Manual of Geometry. By W. D. Eggar, M.A. Parts I and II. 2s. each. Macmillan.

The two parts together constitute to all appearance a verbatim reproduction of the original one-volume edition of the textbook. There is, of course, in some respects a distinct advantage in the new method of publication. Part I contains the first seventeen chapters of the "Manual," and the last of these deals, both on Euclid's lines and otherwise, with the subject of Book I, Prop. 47, of the "Elements." Part II discusses loci, much of the subject-matter of Euclid's Second Book, ratio, proportion, similar figures, the more difficult portions of Euclid, Book III, and other subjects of equal importance. The final chapter includes a number of Question papers set by various public Examining Bodies. The original work was favourably noticed in these columns.

A Classbook of Trigonometry. By Charles Davison, Sc.D. 3s. Cambridge University Press.

The earlier chapters of the work will be criticized later. Regarded as a whole, however, the textbook is valuable, and planned usefully so as to enable the beginner to acquire, without unnecessary delay, a knowledge of the rudiments of his subject and a certain degree of familiarity with the use and application of its processes. To this end the writer either omits altogether or places at the close of the volume—instead of in the positions they usually occupy—portions of bookwork and examples of method which are specially difficult or complicated. The theory of the solution of trigonometrical equations, where the general values of the angles are considered, is treated with much clearness, though in some instances, seeing that the reader is certainly supposed to know elementary algebra, the work of solving typical examples might with advantage be slightly condensed. The first six chapters of the textbook involve the consideration of angles in the first quadrant only, and once more, as on many previous occasions, the disregard of the use of lines at this stage of the work must be deplored. Why teach the beginner to name his trigonometrical ratios at first in a manner that is to be condemned as inaccurate for any angle whatever as soon as an angle greater than a right angle claims attention? There can be no difficulty in making a boy or girl understand at the outset that, although a line in Euclid or Euclid's equivalent may be named by two letters placed at its extremities and mentioned in either order, this is not the case in trigonometry. Even if the conception presented difficulty, it would still be essential that the beginner should make the requisite effort to form it.

SCIENCE.

A College Textbook of Physics. By Arthur L. Kimball, Ph.D., Professor of Physics in Amherst College. 10s. 6d. net. Bell.

The volume covers the usual physics subjects on the plane of "the general first-year course in [the American] College." The central aim has been "to give the student clear and distinct conceptions of the various ideas and phenomena of physics, and to aid him in thinking through the relations between them, to the end that he may see something of the underlying unity of the subject, and to carry out this aim in such a manner that students may not be repelled by any unnecessary prominence of symbolic methods, and yet that the treatment may have all the exactness and precision in statement and deduction which the subject demands." The treatment is full, clear, and simple; numerous problems are provided, and there are 610 figures. It is a thick volume of some seven hundred pages, and ought to be very serviceable to students.

Inorganic Chemistry. By S. W. Burnell, LL.B., B.Sc., Chemistry Master, and A. J. Dicks, B.A., B.Sc., Head Master, of the County Secondary School and Technical Institute, Walthamstow. 3s. 6d. Ralph, Holland, & Co.

The authors address themselves mainly to pupils in Secondary Schools, and, while they do not tie themselves to the particular syllabus of any examining body, they aim at the standard of the Oxford and Cambridge Local Examinations and the London University Matriculation. The course is thoroughly practical, the theoretical work being largely based upon experiments previously performed by the students. The treatment is strikingly systematic, and the more important applications of chemistry to industrial processes are indicated. A large number of examples are

(Continued on page 176.)

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(Continued on page 178.)

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children in the constitutional history of the Church or in deeper matters of doctrine. The historical evolution is lightened and confirmed by biographical and descriptive points; and, if the adult mind feels a want of compactness, it does not follow that the juvenile mind will be similarly affected. The style is very simple and plain. There are twelve illustrations in each volume, and five maps are distributed among the three volumes. The work has been very laborious, but it will be widely welcomed.

EDUCATION.

The Educational Theory of Jean Jacques Rousseau. By William Boyd, M.A., B.Sc., D.Phil., Lecturer on Education in the University of Glasgow. 5s. net. Longmans.

It is but very recently that we welcomed Dr. Boyd's translation of the "Minor Educational Writings of Rousseau." In the present volume he surveys the various factors that contributed to the development of Rousseau's educational doctrine, and sums up the results. Following a hint of Rousseau's, he approaches the subject not through the "Emile," but through his whole social philosophy. There can be no doubt that this course presents the matter in the right perspective: "the common idea that the 'Emile' is a complete expression of Rousseau's thought inevitably results in a one-sided view of his educational theory, which lacks the rich suggestiveness of his whole thought." The exposition is full and most capable, and the critical estimate is penetrating and judicious, though the effort to establish consistency is sometimes strained. The volume thoroughly deserves the attention of all thoughtful educationists.

The Clarendon Press issues a second edition (1910) of *The Early Education of Children*, by Laura L. Plaisted (4s. 6d. net). Part I treats of "The Child under Five"; Part II, of "The Work of the Older Infants"—though no sharp dividing line is intended to be drawn. Dr. A. L. Ormerod contributes an appendix on "The Medical Responsibilities of the School Teacher." There are 12 plates and 32 illustrations. A substantial and useful volume.

The March number of *The Journal of Experimental Pedagogy* contains, with many other interesting and important articles, Prof. Adams's Presidential Address to the Training College Association, on "The Function of the Training College," and a contribution by Prof. Findlay to a symposium on "Some Problems in the Training of the Teacher."

FICTION.

The Sultan's Rival. A Story of the Adventures of Two Boys in Morocco. By Bradley Gilman. 5s. Dent.

If a boy of seventeen goes to Spain on holiday and converses on the pier at Cadiz with an importunate stranger, he need not be surprised to find himself in a sack, cracked on the head, and stowed away on the stranger's schooner, bound for Morocco on a wild expedition to help the Khedive to dethrone the Sultan, his elder brother. Such was Bob Laurie's experience. The schooner is chased, of course, and by and by it is smashed on the Moroccan coast by a tidal wave. Bob gets to shore and saves the mate of the schooner, a lad from Southampton, by the aid of the lad's parrot—a wise bird surely, for had it not been a pet of a late Don of Orizel? The Sous Arab and the Moors take the boys captive, but stand in awe of the parrot, taking it for a djinn. The thing now is to escape and reach Morocco town, and this is duly accomplished through many adventures, in which the marvellous parrot figures conspicuously. "O Trump, you are a Trump!" The fate of the Sultan's rival, is it not chronicled in the last chapter? The book is strictly and simply "a story of the adventures" of the boys, and is accordingly suitable for younger readers that do not demand anything weightier and that do not dislike improbabilities. Six coloured illustrations by John Cassel, and attractive get-up.

Fathers of Men. By E. W. Hornung. 6s. Smith, Elder, & Co.

This is a charming story of the school, with reflections interspersed, which, however, do not interfere with the free course of the narrative. There are two new boys of markedly different characteristics at first appearance, and the question is how they are to develop under the strain of school life. The statement of the problem suggests generally the solution, and the real interest lies in the process of development, especially as the true hero is handicapped by social antecedents. One of the other boys happens to know of these antecedents and is himself of a higher social grade; and the contrast between this boy and the hero of the tale comes out more forcibly than the other contrast in the later chapters of the book. The incidents of the school life are natural and most varied, cricket affairs being tolerably prominent, with a sufficiency of indispensable scrapes, and a lambent humour plays through the clever descriptions and dialogues. The author does not find it necessary to caricature the masters; on the contrary, he draws them sympathetically, the hero's house master in particular—"a magnificent school-master." He tells the story simply, vividly, often dramatically, in felicitous language and in excellent tone. If the Child is the Father of the Man, yet the school environment plays a not unimportant part in the development. There are no illustrations, nor does such a good story stand in need of illustrations.

MISCELLANEOUS.

Harrow School Register, 1800-1911. Edited by M. G. Daughlish, Barrister-at-Law, and P. K. Stephenson, C.A. 15s. net. Longmans. The first edition appeared in 1894, compiled and edited by R. Courtenay

Welch; the second in 1901, edited by M. G. Daughlish; and now, after ten years, comes the third edition, bringing the work up to date, and supplying a good deal of additional matter about the Harrovians of 1800. The volume runs well over a thousand closely packed pages, and must have cost a vast amount of labour and research. It is liberally got up, and will be prized by all Harrovians.

The City of London Yearbook and Civic Directory for 1912—the lineal descendant of the "City of London Directory," with its record of nearly forty years' useful work—has just been issued by Messrs. W. H. & L. Collingridge (5s. net). It is comprehensive as ever, especially in the municipal section; and "it claims pride of place by reason of the mass of exclusive information it affords." It is certainly a most useful compilation for all whose interests lie in or take them to the city.

The third annual "Empire" number of the *Amateur Photographer* (March 11) deals with the enormous spread of photography in this country and the Colonies. It is amply and effectively illustrated.

The Empire Calendar, by G. H. Hallam, M.A., Assistant Master at Harrow, and formerly Fellow of St. John's College, Cambridge, is a handy reprint (with some changes) from the "Victoria League Notes" (2d.). It is attractive and suggestive, and nicely got up.

FIRST GLANCES.

GREEK AND LATIN.

Lexicon, An English-Greek. By G. M. Edwards, M.A., Fellow of Sidney Sussex College, Cambridge. 7s. 6d. net. Cambridge University Press.

Idioms as well as vocabules. Elaborate and valuable introduction, and useful appendices.

Michigan University Humanistic Studies, Vol. III. Part I, The Usage of *idem, ipse*, and words of related meaning, by Clarence L. Meader; Part II, The Myth of Hercules at Rome, by John Garrett Winter. Macmillan.

Scholarly and detailed investigations.

Nouum Testamentum Latinum. Secundum editionem Sancti Hieronymi ad Codicum Manuscriptorum fidem recensuerunt † Iohannes Wordsworth, S.T.P., Episcopus Sarisburiensis, et Henricus Inlianus White, A.M., S.T.P., Noui Testamenti Interpretationis Professor apud Collegium Regium Londini. Editio Minor, curante Henrico I. White. 3s. net. Clarendon Press (Frowde).

Very careful and convenient edition.

Ovid: Heroides I-X. Edited by A. J. F. Collins, M.A. Oxon., and B. J. Hayes, M.A. Lond. and Cantab. 3s. 6d. Clive (University Tutorial Press).

Good introduction; full and serviceable notes.

Plays, Latin, Easy. By M. L. Newman, Sheffield High School for Girls. 6d. Bell.

Two short plays; interesting. Vocabulary on page opposite to text; general vocabulary appended to each play.

MATHEMATICS.

Algebra, A New. By S. Barnard, M.A., and J. M. Child, B.A., B.Sc. Vol. II, containing Parts IV-VI. With Answers. 4s. Macmillan. "A third volume is in course of preparation for the mathematical specialists in Public Schools."

Algebra and Geometry, Lectures on Fundamental Concepts of. By John Wesley Young, Professor of Mathematics in the University of Kansas. Prepared for publication with the co-operation of William Wells Denton, Assistant in Mathematics in the University of Illinois. With a Note on the Growth of Algebraic Symbolism by Ulysses Grant Mitchell, Assistant Professor of Mathematics in the University of Kansas. 7s. net. Macmillan.

Minimum of technical mathematical equipment presupposed. Conversational style. Fresh and incisive.

Arithmetic, The Rational, for Rural Schools. By George Ricks, B.Sc. Lond. Scholars' Books—First and Second Year's Courses. 3d. each. Macmillan.

Arithmetic, Two Term, Jack's. Books II and VII. 3d. and 6d.

Geometry, Solid, Godfrey and Siddons's: Solutions of the Exercises in. By C. L. Beaven, M.A. 5s. net. Cambridge University Press.

Helpful and suggestive.

Geometry, Practical, for Junior Forms. By David Thomas, Assistant Secretary of Education, Carnarvonshire. With Answers, 1s. 4d.; without Answers, 1s. Or, in three Parts (paper covers), 3d., 3d., 4d. Answers to all three Parts, in one book, 4d. E. J. Arnold.

On lines recommended in Board of Education Circular 711. Mensuration and drawing to scale correlated throughout.

Geometry, Theoretical, for Beginners. By C. H. Alcock, late Senior Mathematical Master at Eton. Parts II-IV. 2s. 6d. Macmillan. Revised and rearranged.

Integrals, Elementary: A Short Table. Compiled by T. J. P.A. Bromwich, Sc.D., F.R.S., Fellow and Lecturer of St. John's College, Cambridge, and University Lecturer in Mathematics. 1s. net. Bowes & Bowes; Macmillan.

Logarithms and Anti-Logarithms (to Five Places), Table of. By E. Erskine Scott, formerly a Fellow of the Institute of Actuaries, and of Chartered Accountants. Student's edition, 5s. net. Layton. Cheaper reprint of a well known and valued work, with omissions in view of practical use.

Mathematics, Applied, Elements of. By Herbert E. Cobb, Professor of Mathematics, Lewis Institute, Chicago. 4s. 6d. Ginn. Mainly problems, connecting theory with practical life.

Mathematics, Junior: being a Course of Geometry for Beginners, with portions of Algebra. By David Beveridge Mair, sometime Fellow of Christ's College, Cambridge. Without Answers, 1s. 6d. (paper), 2s. (cloth); with Answers, 2s. (cloth). Clarendon Press (Frowde). Introduction to Geometry and Algebra, on modern lines. Text consists in great part of exercises very carefully devised.

Mathematics, Practical, A First Course in. By B. A. Tomes, Head Master, Tredworth Council School, Gloucester, and Lecturer in Mathematics in Gloucester School of Science and Technology. 1s. 6d. Blackie.

To link up the mathematics of Primary and Technical Schools.

PROSE READINGS FOR LITTLE FOLK.

"Brief Biographies of the Good and Great."—(1) Florence Nightingale (3d.); (2) Victoria, the Good Queen, by Reginald Horsley (6d.). Chambers.

"Biographies of Great Authors."—(1) Scott; (2) Dickens; (3) Ruskin. 1s. net each; or, limp cloth, 6d. each. Jack.

"Children's Heroes, The."—The Story of Robert the Bruce, by Jeannie Lang, with pictures by F. M. B. Blackie. 6d. Jack.

"Dickens for Boys and Girls."—(1) Dombey and Son; (2) Oliver Twist—retold for boys and girls by Alice F. Jackson. Eight coloured plates in each volume. 1s. 6d. net each; or, limp cloth, 9d.

"Historical Romances Series."—(1) Forest Days (G. P. R. James); (2) Crécy and Poitiers (Edgar); (3) The Days of Bruce (Aguilar); (4) Kenilworth (Scott); (5) Fortunes of Nigel (Scott); (6) Waverley (Scott); (7) Redgauntlet (Scott). Retold by Alice F. Jackson. Eight coloured plates in each volume. 9d. each. Jack.

"Stead's Prose Classics for Children."—(1) Uncle Tom's Cabin; (2) Grimm's Fairy Tales; (3) The Redcross Knight; (4) Aesop's Fables. Profusely illustrated. 3d. each volume.

"Tales of Old Romance."—(1) The Wanderings of Ulysses; (2) Jason and the Golden Fleece; (3) Baldur the Beautiful; (4) The Story of Siegfried; (5) Stories from Chaucer; (6) Stories from "The Faerie Queene." 4d. each. Edward Arnold.

Excellent series; simply told; nicely got up.

EDUCATION.

Board of Education.—(1) Report for 1910-11. Cd. 6116. 8½d.—(2) Welsh Department.—Directory. 6d. (3) Minute of February 28, modifying Regulations for Public Elementary Schools, 1909, in England and Wales, as already modified by Minutes of June 25, 1910, and June 13, 1911. Cd. 6098. 1d. (4) National Competition, 1911: List of Successful Competitors and Reports of Examiners, with Illustrations. 3s. (5) Science Examinations, 1911: Examination Papers and Examiners' Reports, and List of Successful Candidates in Honours. 9d.

L.C.C.—(1) Conference of Teachers, 1912: Report of Proceedings. No. 1478. 1s. 6d.; post free, 1s. 9d. (2) Report on Vacation Schools and Organized Vacation Play. No. 1487. 6d.; post free, 7½d. King.

Matriculation Directory: No. 60, January 1912. With Articles on Textbooks. 1s. net. University Tutorial Series.

Michigan University Bulletin: Humanistic Papers, Second Series. (1) The Languages in American Education (6 papers); (2) Reform in Grammatical Nomenclature (10 papers). From the Proceedings of the Michigan Schoolmasters' Club and Classical Conference held at Ann Arbor, March 30 and April 1, 1911. Reprinted from the *School Review*.

National Systems of Education: First Report of the Education Committee of the International Council of Women. Second Edition. Compiled by Mrs. Ogilvie Gordon, D.Sc., Ph.D. 6d. Rosemont Press, Aberdeen.

New South Wales: Report on Continuation Schools. By P. Board, Director of Education.

Includes account of Continuation Schools in England, Scotland, and Germany. Contemplates ultimate compulsory attendance.

University Women, Openings for, other than Teaching. Also a Comparative Table of University Degrees and Diplomas. 1s. Central Bureau for the Employment of Women, 5 Prince's Street, Cavendish Square, W.

Wales, University of. Calendar 1911-12.

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.

16365. (Professor NANSON.)—Show from the relative situation of the real roots of the cubics $(abcd)(x1)^3$, $(bcde)(x1)^3$, that the roots of the quartic $(abcde)(x1)^4$ are all imaginary, if b^2-ac , d^2-ce are negative and c^2-bd is positive.

Solution by the PROPOSER.

Clearly a, c, e must have the same sign, which can be taken positive. Also b can be taken positive by changing the sign of x , if need be.

Because b^2-ac , d^2-ce are negative the derived quadratics (abc) , (cde) have no real roots. Hence the derived cubics $(abcd)$, $(bcde)$ have each but one real root. Hence the quartic $(abcde)$ can have but one turning value (a minimum), and it is sufficient to show that this is positive.

Now, because c^2-bd is positive, the quadratic (bcd) leads to two turning values for the cubic $(bcde)$, at P, Q, say. These turning values are positive because $(bcde) = x(bcd) + (cde)$, and (cde) is always positive. Thus the one real root of $(bcde)$ is on the left of P, and $(bcde)$ is positive on the right of P.

Again, the identity $(abcd) = x(abc) + (bcd)$ shows that at the turning points P, Q the cubic $(abcd)$ has the same sign as x because (abc) is always positive. Now, since b/c is positive, the middle point of PQ is on the left of the origin. Hence x is negative at P, and therefore so also is $(abcd)$. Hence the one real root of $(abcd)$ is on the right of P—that is, where $(bcde)$ is positive. Now it is at this root that the minimum value of the quartic occurs, and because $(abcde) = x(abcd) + (bcde)$ this minimum value is positive, and so $(abcde)$ can have no real root.

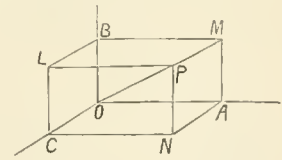
17218. (Professor E. J. NANSON.)—If $\cos^2 x + \cos^2 y + \cos^2 z = 1$ and x, y, z each lie between 0 and π , then of the three $\sin x, \sin y, \sin z$ any two are greater than the third.

Geometrical Solution by "SOLIDUS"; Algebraic Solutions (I) by "SOLIDUS," and many others; (II) by C. E. WRIGHT.

Geometrical Solution.—

Since $\cos^2 x + \cos^2 y + \cos^2 z = 1$;

therefore x, y, z are the angles which a line makes with three rectangular axes. Let OP be such a line of unit length, A, B, C the projections of P on the axes, and L, M, N the projections of P on the planes perpendicular to these axes respectively. Theu



$$\sin x = AP = BC, \quad \sin y = BP, \quad \sin z = CP.$$

The two sides BP, PC of the triangle BCP are together greater than the third; therefore $\sin y + \sin z > \sin x$. Similarly

$$\sin z + \sin x > \sin y \quad \text{and} \quad \sin x + \sin y > \sin z.$$

Algebraic Solutions.—

(I) We have $1 - \sin^2 x + 1 - \sin^2 y + 1 - \sin^2 z = 1$;

therefore $\sin^2 x + \sin^2 y + \sin^2 z = 2$;

$$\text{therefore } (\sin x + \sin y)^2 - \sin^2 z = 2(1 - \sin^2 z) + 2 \sin x \sin y = 2 \cos^2 z + 2 \sin x \sin y.$$

Both terms on the right are positive, since the angles lie between 0 and 180°. Hence $(\sin x + \sin y)^2 > \sin^2 z$; therefore

$$\sin x + \sin y > \sin z.$$

(II) Since $\cos^2 x + \cos^2 y + \cos^2 z = 1$, $\sin^2 x + \sin^2 y + \sin^2 z = 2$.

Also $\sin x, \sin y, \sin z$ are all positive by question. Hence

$$\sin^2 x + (\sin y + \sin z)^2 > 2,$$

but $\sin^2 x < 1$; therefore $(\sin y + \sin z)^2 > 1$. From these it is obvious that $\sin y + \sin z > \sin x$, and the other results follow by symmetry.

Note on the Focus of an In-conic.

By R. F. DAVIS, M.A.

Let $S(\alpha_1, \beta_1, \gamma_1)$ be the focus of an ellipse inscribed in the triangle ABC L, M, N the points of contact with the sides. Then, if (AM, AN),

(BN, BL), (CL, CM) subtend angles ϕ_1, ϕ_2, ϕ_3 at S,
 $2\phi_1 + 2\phi_2 + 2\phi_3 = 2\pi$ or $\phi_1 + \phi_2 + \phi_3 = \pi$.
 Now (BL/SB) : (CL/SC) = $\sin \phi_2 : \sin \phi_3 = \sin(\phi_1 + \phi_3) : \sin(\phi_1 + \phi_2)$
 $= b\beta_1/SA.SC : c\gamma_1/SA.SB$.
 Therefore BL : CL = $SB^2 . b\beta_1 : SC^2 . c\gamma_1$.
 The trilinear equation is therefore
 $SA . \sin A \sqrt{(\alpha\alpha_1) + \dots + \dots} = 0$;
 which also otherwise proceeds by reciprocation from the tangential
 equation of the circum-circle.

11934. (Professor CATALAN.)—Mettre le produit
 $\{1 + x(-1)^1\} \{1 + x^2(-1)^2\} \{1 + x^4(-1)^4\} \{1 + x^8(-1)^8\} \dots$
 sous la forme $P + Q(-1)^k$. Dans chacun des polynômes P, Q, détermi-
 ner les coefficients des puissances de x . Quelle est la loi générale?
 Dédurre de ce problème la décomposition de
 $(1 + x^2)(1 + x^4)(1 + x^8)(1 + x^{16}) \dots$
 en une somme de deux carrés.

Solutions (I) by J. J. BARNVILLE, B.A., I.C.S.; (II) by A. M. NESBITT,
 M.A.; (III) by Professor J. E. A. STEGGALL and J. HODGKINSON;
 (IV) by C. W. ADAMS.

(I) Evidently $P^2 + Q^2 = (1 + x^2)(1 + x^4)(1 + x^8) \dots$.
 Writing $\alpha, \beta, \gamma, \dots$ for x, x^2, x^4, \dots , we have
 $P = 1 - \Sigma \alpha\beta + \Sigma \alpha\beta\gamma\delta - \dots$ and $Q = \Sigma \alpha - \Sigma \alpha\beta\gamma + \Sigma \alpha\beta\gamma\delta\epsilon - \dots$.
 Here
 $\Sigma \alpha\beta = x^3 + x^5 + x^6 + x^9 + x^{10} + x^{12} + x^{17} + x^{18} + x^{20} + x^{24} + x^{25} + x^{34} + \dots$
 $= (x^3 + x^5 + x^{12} + x^{24} + \dots) + (x^6 + x^{10} + x^{20} + \dots)$
 $+ (x^9 + x^{18} + x^{36} + \dots) + \dots$;
 $\Sigma \alpha\beta\gamma = x^7 + x^{11} + x^{13} + x^{14} + x^{19} + x^{21} + x^{22} + x^{25} + \dots$
 $= (x^7 + x^{14} + x^{28} + \dots) + (x^{11} + x^{22} + x^{44} + \dots) + \dots$;
 $\Sigma \alpha\beta\gamma\delta = x^{15} + x^{23} + x^{27} + x^{29} + x^{30} + x^{39} + \dots$; and so on.

To determine the sign of x^n , reduce n to the binary scale; the
 number of units will indicate to which of the above groups it belongs.

(II) Denote x^{2^r} by y_n ; also let
 $r_n \equiv p_n + iq_n = (1 + iy_0)(1 + iy_1) \dots (1 + iy_{n-1})$.

Then we have $r_{n+1} = r_n(1 + iy_n)$;
 equating possible and impossible parts, this gives
 $p_{n+1} - p_n = -q_n y_n, \quad q_{n+1} - q_n = p_n y_n$.

This establishes the law of formation of P and Q.

For clearness we may put the matter in tabular form :

i	ii	iii	iv
P | 1.0 | 0.-1 | 0.0.-1.0 | 0.-1.-1.0.-1.0.0.0.1	Q | 0.1 | 1.0 | 1.0.0.-1 | 1.0.0.-1.0.-1.-1.0	&c.;	

in which the Roman numerals denote the closing of the corresponding
 subscripts of r ; the position of the 1, -1, or 0 (which are coefficients)
 denoting the several powers of x according to place, beginning with x^0
 at the left. Thus we can write down

$$P = p_4 + \dots = 1 - x^3 - x^5 - x^6 - x^9 - x^{10} - x^{12} + x^{15} \dots \&c.$$

$$Q = q_4 + \dots = x + x^2 + x^4 - x^7 + x^8 - x^{11} - x^{13} - x^{14} \dots \&c.$$

[It will be noticed that in the P row, in any compartment of the
 first table, the coefficients are the same as those of all the previous
 compartments in the Q row, but with their signs changed; while in
 the Q row, in any compartment, the coefficients are the same (with
 signs unchanged) as those of all the previous compartments of the
 P row. The law of formation is easier to grasp if the missing terms
 are filled out by zeros. The first compartment (P 1.0) is simply a
 statement of the fact that $r_1 = p_1 + iq_1 = 1 + ix = 1 + iy_0$; the rest
 follows without any calculation whatever.]

Finally, of course, $(1 + x^2)(1 + x^4) \dots$ ad inf. = $P^2 + Q^2$.

(III) P is easily found to be equal to
 $1 - x^3 - x^5 - x^6 - x^9 - x^{10} - x^{12} + x^{15} - x^{17} - x^{18} - x^{20} + x^{23} - \dots$,
 where each index when expressed in the binary scale requires an even
 number of digits for its representation: $-4p + 2$ if coupled with a nega-
 tive coefficient, $4p$ if coupled with a positive coefficient. In the same
 way, Q is $x + x^2 + x^4 - x^7 + x^8 - x^{11} - x^{13} - x^{14} + x^{16} + \dots$,

where, if the index, when expressed in the binary scale, requires
 $4p + 1$ digits, the coefficient is 1, and, if $4p + 3$ digits, -1. Thus,
 in the expression for Q, the number of positive coefficients bet-
 ween 2^n and 2^{n+1} (including one of them) is $c_0 + c_4 + c_8 + \dots$, and
 the number of negative coefficients is $c_2 + c_6 + c_{10} + \dots$, where c_r
 = the number of combinations of n things r at a time. These re-

spective sums are for $n = 2, 3, 4, 5 \dots (1, 1), (1, 3), (4, 4), (9, 7),$
 $(16, 16), (31, 33)$, and so on; the law being obvious.

A similar result holds for P. The particular solution of the second
 part of the problem is clearly given, e.g.:

$$(1 + x^2)(1 + x^4)(1 + x^8) \equiv (1 - x^3 - x^5 - x^6)^2 + (x + x^2 + x^4 - x^7)^2.$$

The other solutions are obtained by changing the signs of all terms
 whose powers of x in the binary scale contain the same digit in any
 the same position in the scale; and we can change them separately
 for each digit, thus

$$1 = 1, \quad 3 = 11, \quad 5 = 101, \quad 7 = 111;$$

so we can change the signs of all odd index terms, as is otherwise clear.

$$\text{Again,} \quad 2 = 10, \quad 3 = 11, \quad 6 = 110, \quad 7 = 111;$$

we can therefore also change the signs of x^2, x^3, x^6, x^7 . Again,

$$4 = 100, \quad 5 = 101, \quad 6 = 110, \quad 7 = 111;$$

and we can change the signs of x^4, x^5, x^6, x^7 .

The general law is obvious.

These 8 solutions reduce to 4, inasmuch as the 4 values of Q are
 repeated negatively; those of P are

$$1 - x^3 - x^5 - x^6, \quad 1 + x^3 + x^5 - x^6, \quad 1 + x^3 - x^5 + x^6, \quad 1 - x^3 + x^5 + x^6.$$

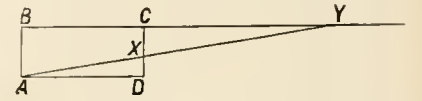
[Rest in Reprint.]

17119. (H. BATEMAN, M.A.)—Every quadric which touches seven
 given lines of a linear congruence will also touch an eighth fixed line,
 and in a special case it will touch an infinite number of fixed lines
 which generate a ruled surface.

Solution by the PROPOSER.

This theorem is suggested by a remark made by R. Bricard, *Bull. de*
la Soc. Math. de France, Vol. XXV (1897), p. 180, and is mentioned as
 being due to him by G. Fontené, *Nouvelles Annales*, Sér. 3, Vol. XIX,
 p. 400. The theorem may be proved by establishing a correspondence
 between the lines of a linear congruence and the points of a quadric Q;
 the lines which touch a quadric then correspond to the points of inter-
 section of Q with a second quadric Q'. Now by Lamé's theorem every
 quadric Q' which passes through seven given points on Q also passes
 through an eighth. If, in particular, the seven given points lie on a
 twisted cubic, Q' will contain the cubic and so will pass through an
 infinite number of known points. Replacing the points by lines the
 theorem follows.

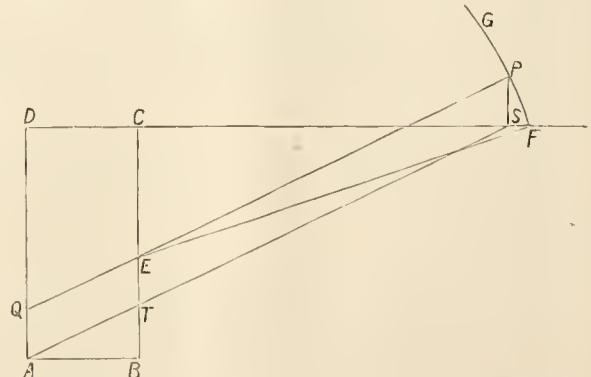
16766. (D. BIDDLE.)—
 ABCD is a rectangle of
 known sides. BC being
 produced indefinitely, it
 is required to draw a
 straight line from A en-
 tering CD, BC in X, Y respectively, the intercept XY being equa
 to a given straight line.



An Easy Method of Approximating to a Correct Solution, by the
 PROPOSER.

(For a solution by the hyperbola, see Vol. xx, New Series, p. 37.)

An interesting paper was received by the Edinburgh Mathematical
 Society on the 19th March, 1910, was read on the 10th June, 1910, and
 appears in the *Proceedings* of that Society, Vol. XXVIII, pp. 152-178;
 and this very question is therein referred to. The paper, which is by
 Prof. R. C. Archibald, M.A., Ph.D., of Brown University, Rhode
 Island (who is also a contributor to the *Educational Times*), is entitled
 "Discussion and History of Certain Geometrical Problems of Heraclitus
 and Apollonius." Altogether some forty solutions of the Problems of



Heraclitus and Apollonius are indicated in Dr. Archibald's paper,
 which is well worth careful study. But, considering the difficulty of

describing curves beyond the scope of a pair of compasses, the following method of solving the problem, in the case of the rectangle, is submitted with some confidence.

ABCD being the rectangle, and DC being produced, in BC take the point E, such that EF, being equal to the given line representing the required intercept, shall (if produced), cut AD in some point well away from A. With centre E, and radius EF, describe the circular arc FG. Next, by adjusting a ruler about E, as a pivot of rotation, find in the arc FG the point P, such that PS, drawn perpendicular to DF, shall equal AQ, whilst PQ represents the ruled line passing through E. Draw AS parallel to PQ. Then TS = EP = EF, the required length of intercept, and TS "verges" toward A.

17242. (B. A. SWINDEN).—Will somebody give a convincing proof that the equation $4x^3 - y^3 = 3x^2yz^2$ is insoluble in positive integers?

Solution by Lieut.-Colonel ALLAN CUNNINGHAM, R.E.

i. The equation is actually satisfied by $z = 1$, and $x = y =$ any integer (an infinity of positive integral solutions), but is shown below to have no other (positive integer) solutions.

ii. If $z = 1$, then $(x^3 - y^3) + 3x^2(x - y) = 0$. Here, if $x \neq y$, then $(x^2 + xy + y^2) + 3x^2 = 0$, an impossibility (x, y being both +), so that $z = 1$ involves $x = y$.

iii. If $x = y$, this involves $3z^2 = 3$, and $z = 1$.

iv. If $x \neq y$, suppose $x = \lambda\xi$, $y = \lambda\eta$, with ξ prime to η . This involves $4\xi^3 - \eta^3 = 3\xi^2\eta z$, which is of same form as original. Hence, if there be a solution (ξ, η, z) with ξ prime to η , then $(\lambda\xi, \lambda\eta, z)$ is a solution for all (positive integer) values of λ .

v. If $x \neq y$, it suffices (from what precedes) to consider cases of x prime to y . The conditions are

$$y < \sqrt[3]{4}x, \quad 4x^3 \equiv 0 \pmod{y}, \quad y^3 \equiv 0 \pmod{x^2}.$$

Hence $y =$ either 1, 2, 4, x (but not $2x, 4x, x^2, 2x^2, \&c.$). Here $y = 1$ requires $x = 1$; $y = 2$ requires $x = 2$; $y = 4$ requires $x = 4$ or 8. The cases of $x = 1, 2, 4$ with $y = 1, 2, 4$ are included in Case I, and $x = 8, y = 4$ is impossible. Thus $x \neq y$ gives no solution. Collecting the results, the integer solutions are only $x = y, z = 1$.

MR. FREDERICK PHILLIPS, F.C.P., B.Sc. Lond., F.C.S., contributes the following discussion:—

The positive integral values of x, y, z , given below, satisfy the equation in question:—

$$\begin{aligned} x = 1, & \quad x = 2, & \quad x = 3, \\ y = 1, & \quad y = 2, & \quad y = 3, \\ z = 1, & \quad z = 1, & \quad z = 1, \end{aligned}$$

or, generally, $\begin{cases} x = y = \text{a positive integer,} \\ z = 1. \end{cases}$

As the original proposition stands, these values seem to indicate that the Proposer wishes to place some restrictions (not stated) on the values. Are different values for x, y, z required, and is $z = 1$ barred?

17203. (Communicated by C. M. Ross, B.A.).—If the constants A, A_0, h, h_0 , be connected by the equations

$$A \iiint e^{-h(u^2+v^2+\mu w^2)} du dv dw = A_0 \iiint e^{-h_0(u^2+v^2+\mu w^2)} du dv dw,$$

$$A \iiint e^{-h(u^2+v^2+\mu w^2)} T du dv dw = A_0 \iiint e^{-h_0(u^2+v^2+\mu w^2)} T du dv dw,$$

where $T = u^2 + v^2 + w^2$;

prove that $h = (2\mu + 1)h_0/3\mu, A = \sqrt{\mu} [(2\mu + 1)/3\mu]^{\frac{3}{2}} A_0$,

the integrations being in all cases from $-\infty$ to $+\infty$. [University of London M.A. Examination, 1894.]

Solution by C. E. WRIGHT.

In $A \iiint e^{-h(u^2+v^2+\mu w^2)} du dv dw$, substitute

$$hu^2 = h_0u_1^2, \quad hv^2 = h_0v_1^2, \quad \mu hw^2 = h_0w_1^2.$$

Then the integral becomes

$$\frac{A}{\sqrt{\mu}} \left(\frac{h_0}{h} \right)^{\frac{3}{2}} \iiint e^{-h_0(u_1^2+v_1^2+w_1^2)} du_1 dv_1 dw_1,$$

the limits being unchanged. Hence, from the first equality,

$$A = \sqrt{\mu} (h_0^3/h^3) A_0 \dots \dots \dots (1).$$

Again, in $A \iiint e^{-h(u^2+v^2+\mu w^2)} T du dv dw$, make the same substitution, and the integral becomes

$$\frac{A}{\sqrt{\mu}} \left(\frac{h_0}{h} \right)^{\frac{3}{2}} \iiint e^{-h_0(u_1^2+v_1^2+w_1^2)} (u_1^2+v_1^2+\frac{w_1^2}{\mu}) du_1 dv_1 dw_1.$$

$$\text{Let } I_{\mu^2} = \iiint e^{-h(u^2+v^2+\mu w^2)} u^2 du dv dw.$$

Then $I_{\mu^2} = I_{\nu^2} = I_{w^2} = \frac{1}{2} I_{\mu^2, \nu^2, w^2}$.

Therefore the second equality becomes

$$A \sqrt{\mu} (h_0/h)^{\frac{3}{2}} (2 + 1/\mu) I_{\mu^2} = 3A_0 I_{\mu^2}.$$

Therefore, using (1), we obtain

$$h_0/h = 3\mu/(2\mu + 1) \dots \dots \dots (a);$$

and, by (1),

$$A = \sqrt{\mu} [(2\mu + 1)/3\mu]^{\frac{3}{2}} A_0 \dots \dots \dots (b).$$

The following is due to the PROPOSER:—

$$\begin{aligned} \iiint e^{-h(u^2+v^2+\mu w^2)} du dv dw &= \iint e^{-h(u^2+v^2)} du dv \int_{-\infty}^{\infty} e^{-h\mu w^2} dw \\ &= \frac{\pi^{\frac{3}{2}}}{h^{\frac{3}{2}} \mu^{\frac{3}{2}}} \iint e^{-h(u^2+v^2)} du dv = \frac{\pi^{\frac{3}{2}}}{\mu^{\frac{3}{2}} h^{\frac{3}{2}}}. \end{aligned}$$

$$\text{Similarly } \iiint e^{-h_0(u^2+v^2+\mu w^2)} du dv dw = \frac{\pi^{\frac{3}{2}}}{h_0^{\frac{3}{2}} \mu^{\frac{3}{2}}}.$$

$$\text{Therefore } A [\mu^{\frac{3}{2}} h^{\frac{3}{2}}] = A_0 [h_0^{\frac{3}{2}} \mu^{\frac{3}{2}}] \dots \dots \dots (1).$$

$$\begin{aligned} \text{Again } \iiint e^{-h(u^2+v^2+\mu w^2)} (u^2+v^2+w^2) du dv dw &= \iint e^{-h(u^2+v^2)} du dv \int_{-\infty}^{\infty} e^{-h\mu w^2} (u^2+v^2+w^2) dw \\ &= \iint e^{-h(u^2+v^2)} du dv \left[(u^2+v^2) \frac{\pi^{\frac{1}{2}}}{h^{\frac{1}{2}} \mu^{\frac{1}{2}}} + \frac{\pi^{\frac{1}{2}}}{2\mu^{\frac{1}{2}} h^{\frac{1}{2}}} \right] \\ &= \frac{\pi^{\frac{3}{2}}}{2\mu^{\frac{3}{2}} h^{\frac{3}{2}}} \iint e^{-h(u^2+v^2)} du dv + \frac{\pi^{\frac{3}{2}}}{h^{\frac{3}{2}} \mu^{\frac{3}{2}}} \iint (u^2+v^2) e^{-h(u^2+v^2)} du dv \\ &= \frac{\pi^{\frac{3}{2}}}{2\mu^{\frac{3}{2}} h^{\frac{3}{2}}} + \frac{\pi^{\frac{3}{2}}}{h^{\frac{3}{2}} \mu^{\frac{3}{2}}} \left[\int_{-\infty}^{\infty} e^{-h u^2} du \int_{-\infty}^{\infty} (u^2+v^2) e^{-h v^2} dv \right] \\ &= \frac{\pi^{\frac{3}{2}}}{2\mu^{\frac{3}{2}} h^{\frac{3}{2}}} + \frac{\pi^{\frac{3}{2}}}{h^{\frac{3}{2}} \mu^{\frac{3}{2}}} \int_{-\infty}^{\infty} e^{-h u^2} \left[u^2 \frac{\pi^{\frac{1}{2}}}{h^{\frac{1}{2}}} + \frac{\pi^{\frac{1}{2}}}{2h^{\frac{1}{2}}} \right] du \\ &= \frac{\pi^{\frac{3}{2}}}{2\mu^{\frac{3}{2}} h^{\frac{3}{2}}} + \frac{\pi^{\frac{3}{2}}}{\mu^{\frac{3}{2}} h^{\frac{3}{2}}}. \end{aligned}$$

$$\text{Similarly } \iiint e^{-h_0(u^2+v^2+\mu w^2)} (u^2+v^2+w^2) du dv dw = \frac{\pi^{\frac{3}{2}}}{2h_0^{\frac{3}{2}} \mu^{\frac{3}{2}}} + \frac{\pi^{\frac{3}{2}}}{h_0^{\frac{3}{2}} \mu^{\frac{3}{2}}}.$$

$$\text{Therefore } A \left[\frac{1}{2\mu^{\frac{3}{2}} h^{\frac{3}{2}}} + \frac{1}{\mu^{\frac{3}{2}} h^{\frac{3}{2}}} \right] = A_0 \cdot \frac{3}{2h_0^{\frac{3}{2}} \mu^{\frac{3}{2}}} \dots \dots \dots (2).$$

$$\text{From (1) and (2), } \mu^{\frac{3}{2}} h^{\frac{3}{2}} \left[\frac{1}{2\mu^{\frac{3}{2}} h^{\frac{3}{2}}} + \frac{1}{\mu^{\frac{3}{2}} h^{\frac{3}{2}}} \right] = h_0^{\frac{3}{2}} \cdot \frac{3}{h_0^{\frac{3}{2}} \mu^{\frac{3}{2}}};$$

whence $h_0(1/2\mu + 1) = 3h$, i.e., $h = [(2\mu + 1)/3\mu] h_0$.

Substituting in (1), we have

$$A = A_0 \mu^{\frac{3}{2}} [(2\mu + 1)/3\mu]^{\frac{3}{2}}.$$

17173. (S. ANDRADE).—Show that the number of words containing m consonants and n vowels that can be formed from a consonants and b vowels when the letters may be repeated is $[a^m b^n (m+n)!]/m!n!$.

Solution by the PROPOSER and T. WORRALL, M.Sc.

Consider the product

$$\begin{aligned} (1 + c_1x + c_1^2x^2/2! + c_1^3x^3/3! \dots) (1 + c_2x + c_2^2x^2/2! \dots) (1 + c_3x + c_3^2x^2/2! \dots) \\ \dots (1 + c_nx + c_n^2x^2/2! \dots) (1 + v_1y + v_1^2y^2/2! \dots) (1 + v_2y + v_2^2y^2/2! \dots) \\ \dots (1 + v_ny + v_n^2y^2/2! \dots), \end{aligned}$$

where $c_1, c_2, c_3, \dots, c_n$ represent the a consonants, and $v_1, v_2, v_3, \dots, v_n$ represent the b vowels.

The coefficient of $x^m y^n$ in this product clearly consists of terms giving all the combinations of m consonants and n vowels allowed in the question, and the number of words corresponding to each of these combinations is $(m+n)!$ divided by the denominators due to the repeated letters and given in the above product.

Hence the required number of words is $h(m+n)!$, where h is the coefficient of $x^m y^n$ in $(1+x+x^2/2! \dots)^a (1+y+y^2/2! \dots)^b$, i.e., in e^{ax+by} , i.e., $a^m b^n / a! b!$.

$$\text{Therefore } h(m+n)! = [a^m b^n (m+n)!]/a! b!.$$

QUESTIONS FOR SOLUTION.

17274. (T. WORRALL, M.Sc.).—A cup containing water is of the form of a paraboloid of revolution, its centre of gravity being at the focus of the generating parabola. Show that it will stand with its axis vertical in stable equilibrium if the height of the water be $< \sqrt[3]{(3h^2/4)}$, where l is the semi-latus rectum of the parabola and h the height of water whose weight would equal the weight of the cup.

17275. (LEONARD C. MILLER, B.A.)—A sphere is in contact with two parallel planes, the lower of which is fixed, while a rotatory motion is imparted to the upper, so that every point in the upper plane describes a circle. The sphere is thus caused to roll, without slipping, on the fixed plane. If P be the original point of contact between the sphere and upper plane, will P ever be the point of contact again, and, if so, when? Again, if so, to what extent will the sphere itself have rotated on its original axis? Is there any restriction with regard to the radius of the circle described by every point in the upper plane?

17276. (F. E. RELTON, B.A., B.Sc.)—Evaluate

$$\int_0^{\pi} \tan^{-1}(m \tan \theta) d\theta.$$

17277. (Lt.-Col. ALLAN CUNNINGHAM, R.E.)—Let $N_m = x^m - y^m$, $N_n = x^n - y^n$. Show that N_m, N_n can be expressed algebraically in an infinity of ways in the following forms, with the same x, y in each:—

(1) $N_m = t_m^2 - nu_m^2, N_n = t_n^2 - mu_n^2$,
where m, n are primes of form $(4k+1)$,

(2) $N_m = t_m^2 + nu_m^2, N_n = t_n^2 + mu_n^2$,
where m, n are primes of form $(4k+3)$. Give an example of each.

17278. (R. NORRIE, M.A.)—Solve in integers the Diophantine system of equations

$$19x^2 + 6y^2 = 114 + u^2, \quad 6y^2 + 30z^2 = 180t^2 + v^2, \quad 30z^2 + 19x^2 = 570 + w^2,$$

e.g., $(x, y, z, t) = (4, 1, 5, 2), (11, 26, 50, 20 \text{ or } 18), (19, 28, 40, 14), \&c.$

17279. (D. BIDDLE.)—Referring to the Note appearing in the March *Educational Times* (see Vol. XXII, New Series, p. 56) on certain Relations between the several sums of consecutive Squares and Numbers of form $6n \pm 1$, it is easy to extend the conspectus indefinitely, and it is also easy to find the appropriate multiplier for any N of form $6n \pm 1$, whether prime or composite. Let N consist of factors f_1, f_2 . Let M be the multiplier of N, and m_1, m_2 the corresponding multipliers of f_1, f_2 , found in their position or similarly calculated. Prove that $M - m_1$ is divisible by f_1^2 , and $M - m_2$ by f_2^2 .

17280. (E. G. BINCKES BERGHOLT, M.A. Cantab., F.C.I.S.)—To construct a Magic Square of sixteen cells, from sixteen different prime numbers, which shall have the smallest possible constant total. (See *The Queen*, Feb. 17th, 1912.)

17281. (R. F. DAVIS, M.A.)—If n is a positive integer, and a_0, a_1, \dots, a_{n-1} the coefficients in the expansion of $(1+x)^{n-1}$, prove that

(1) $1/n = a_0/1 - a_1/2 + a_2/3 \dots \pm a_{n-1}/n$,
(2) $(1 + \frac{1}{2} + \frac{1}{3} + \dots + 1/n) / n = a_0/1^2 - a_1/2^2 + a_2/3^2 \dots \pm a_{n-1}/n^2$.

17282. (Professor NEUBERG.)—On donne une surface S, un plan P et un point Q. On projette un point quelconque M de S sur P en R, et par R on mène un plan P' perpendiculaire à la droite QM. Construire le point de contact du plan P' avec son enveloppe.

17283. (Professor J. E. A. STEGGALL.)—A circular sheet of paper is creased in alternate directions along radii at intervals of π/n . A reflex symmetrical pyramidal cup being thus formed, find the angular distances of these creases from the vertical when the quantity of liquid held by the cup is a maximum.

17284. (A. M. NESBITT, M.A.)—Discuss the curves

(1) $y^r = x^y, \quad (2) \quad y = x^{xy}$.

17285. (Professor E. J. NANSON.)—Solve

$$(x-a)(x-b) + (y-a)(y-b) = 0, \quad x^2(a+x) + y^2(b+y) = 1.$$

17286. (Professor K. J. SANJANA, M.A.)—If θ be the angle contained by the asymptotes of the conic given by $(abcfgh)(xyz)^2$, prove that

$$\tan^2 \theta + P + R^2 = 0,$$

where $P \equiv (ABCFGH) (\sin \alpha \sin \beta \sin \gamma)^2$
and $R \equiv a + b + c - 2f \cos \alpha - 2g \cos \beta - 2h \cos \gamma$,
 α, β, γ being the angles of the triangle of reference.

17287. (E. L. SCOTT, M.A. Suggested by Question 17251.)—TP, TQ are tangents to a parabola, including a given angle α ; TO is the perpendicular from T to the chord of contact PQ. If circles are drawn through O to touch the parabola at P and Q respectively, find the locus of their second point of intersection.

17288. (C. E. YOUNGMAN, M.A.)—At A, B, C on a conic with centre O the tangents are B'C', C'A', A'B'; the normals meet at N; and AA', BB', CC' meet at P. Prove that the conic OABCN goes through P, and that OP goes through the symmedian point of ABC.

17289. (F. G. W. BROWN, B.Sc., L.C.P.)—Given t the length of the bisector of the angle A of a triangle ABC, m the length of the median from A, and one side b , show that the side c is given by the equation

$$bx^3 + x^2(t^2 - 2b^2) + bx(b^2 - 4m^2 + 2t^2) + b^2t^2 = 0;$$

hence calculate a and c when $t = (120\sqrt{2})/23, m = \frac{1}{2}, b = 15$.

17290. (E. G. HOGG, M.A.)—If P be any point on a circle of radius p ($< R$) concentric with the circum-circle of the triangle ABC, and if Q be its isogonal conjugate, then

$$(BC \cdot AQ)/AP + (CA \cdot BQ)/BP + (AB \cdot CQ)/CP = 4\Delta R/(R^2 - p^2),$$

where Δ is the area of the triangle ABC, R its circum-radius.

17291. (Professor J. C. SWAMINARAYAN, M.A. Suggested by Question 17253 of C. E. McVicker, M.A.)—O is the circum-centre of triangle ABC. If the centroid of the three images of any point P on the circum-circle in the sides coincides with the centroid of ABC, then show that PA is inclined to OA at an angle

$$\tan^{-1} \{ [\cos(B-C) - 2 \cos A] / \sin(B-C) \}.$$

OLD QUESTIONS AS YET UNSOLVED (IN OUR COLUMNS).

11904. (Professor LEMOINE.)—Le premier cercle de Lemoine et le second cercle de Lemoine se coupent suivant un diamètre du second cercle lequel passe par le point à l'infini inverse du point de Steiner, et est parallèle à l'axe radical du cercle de Brocard et du deuxième cercle de Lemoine.

11905. (Professor SCHOUTE.)—Le lieu des pieds des normales abaissées d'un point P sur des quadriques concentriques et homothétiques est aussi le lieu des sommets des tétraèdres antopolaires par rapport à l'une de ces surfaces et à une sphère de centre P, dont le rayon est variable.

12052. (E. WHITE, B.A.)—Solve the functional equations

$$\begin{aligned} \phi_1 \cdot \phi_2 \cdot \phi_3 \dots \phi_n x &= f_1 x; \\ \phi_n \cdot \phi_1 \cdot \phi_2 \dots \phi_{n-1} x &= f_2 x; \\ \phi_{n-1} \cdot \phi_n \cdot \phi_1 \dots \phi_{n-2} x &= f_3 x; \\ \dots &\dots \dots \dots \\ \phi_2 \cdot \phi_3 \dots \phi_n \cdot \phi_1 x &= f_n x; \end{aligned}$$

where $f_1 x = ax + b$, and f_2, \dots, f_n are known functions of x .

12521. (D. BIDDLE.)—An equilateral triangle and a square of equal perimeter revolve in the same plane about their common centroid. Find the maximum, minimum, and mean area common to the two.

12535. (Professor HAUGHTON, F.R.S.)—If plane polarized light be incident on a transparent surface, and the angle of incidence be gradually increased from 0 to 90° , find (1) how the reflected light is affected; and (2) under what circumstances it will be circularly polarized.

12589. (Rev. J. J. MILNE.)—The focal radii at the extremities of a chord of a conic make with the chord angles θ and $n\theta$. Show that, if θ is a maximum, the chord is parallel to the major axis. Also, find the relation between θ and the eccentricity, and show that when $n = 3$ $\cos \theta = \frac{1}{2}e$.

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Thursday, March 14, 1912.—Mr. J. E. Campbell, Vice-President, in the Chair.

Messrs. R. C. Archibald, E. B. Stouffer, J. B. Shaw, J. W. Nicholson, and E. O. Lovett were elected members.

The following communications were made:—

- On the Cubic Surface as a Degenerate Quartic: Mr. G. T. Bennett.
- On Differential Operators which Generate all Seminvariants, and all Ternary Covariant Sources: Prof. E. B. Elliott.
- On Goursat's Form of Cauchy's Theorem: Prof. W. H. Young.
- The last was informal.

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VI. (March 14.) *Imagination.*—Distinction from memory on the one hand and conception on the other; relation to thinking, and the corresponding limitations; conditions determining the working of the imagination, and the corresponding classification into "kinds" of imagination; importance in real life of "clearly imaged ends"; function of the imagination in school-work; its aesthetic use: nature and moral value of ideals.

VII. (March 21.) *Interest and Attention.*—Nature of each: interaction between them: circular reaction: interest as means and as end: relation between the interesting and the easy; queries about the classification of the kinds of attention: the mechanism of attention: its manipulation: its duration: its rhythm; various functions of attention in educational process: moral implications of the newer views.

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X. (May 16.) *Reasoning.*—Fundamentally an adaptation of means to ends on the ideal plane: may be regarded as the purposive aspect of apperception: relation between thought and language: the constant element in thought: the dynamic basis of all thinking: the laws of thought as thought: nature and source of errors in thinking: possibility of honest difference in results of thinking: place and function of syllogistic and other formal modes of thinking.

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The Educational Times.

THE Conference of all the Universities, to be held in London in July, promises to be of unusual interest. The last few years have witnessed the establishment of several new Universities in our large provincial towns, as well as of the three colleges constituting the University of Wales. The four Universities in Scotland have received the generous gift of Mr. Carnegie to his native land, whereby free access to those Universities is secured for all deserving students, however poor. In our Dominions over the sea Universities have long been established, and as each Province or State grows to manhood it proceeds to found a new University. Each of our Universities may be expected to bring some distinctive and useful contribution.

One prominent subject of discussion will be the possibility of temporary transference of professors from one University to another, and more particularly of the interchange of occupants of chairs in the colonies with those in the old country. Such an interchange, it is believed, would be of the greatest advantage on both sides. The disadvantage under which a teacher in the colonies labours is that he is far removed from the great libraries, from manuscripts, and, what is more, from the great centres of learning, where new thoughts are ever adapting themselves to new educational necessities. For our British teachers it would be an admirable chance to see with their own eyes the system of education that colonial teachers have adopted as suitable to their circumstances, more especially as our own British students are leaving in large numbers to find homes in Canada or under the Southern Cross. The presence of one or more distinguished teachers and experienced examiners at any of our overseas Universities would enable the staff of the latter to judge whether the standard of education in the Colony or Dominion was satisfactory as compared with that attained in older countries. It would also aid in solving what is perhaps the greatest problem in colonial Universities—that of an adequate supply of qualified outside examiners. The difficulties attending this dearth of specialists in new and sparsely inhabited countries are well illustrated by the fact that the University of New Zealand has long since adopted

the practice of sending to England all the papers of the students to be examined, which is not merely a cumbersome and costly proceeding, but one that necessarily excludes the possibility of oral examination; and examinations without an oral test must be considered very defective, especially in the case of modern languages.

Of course, the position of the classics in the curriculum will be discussed. In this connexion it is reasonable to look for an effective decision of the Congress on the pronunciation of Latin and Greek by English-speaking scholars. At present all is chaos. Different edicts have been sent out by different bodies recommending certain schemes, which have been partially adopted and in the main disregarded. Oxford promulgated such an edict some thirty years ago, and the Classical Associations of England and Scotland respectively have lately issued fresh schemes for the adoption of their respective countries. The scheme to secure a uniform pronunciation for England has proved a partial failure. Some of the local Universities have adopted it, and some of the schools that supply scholars to those institutions; but most of our larger public schools prefer to retain the fashion of pronouncing Latin as English, most of the teachers at our older Universities do the same, and the large majority of the preparatory schools naturally follow suit. In some of the colonies, for instance in Victoria, Latin is pronounced in the traditional Scots fashion—that is to say, approximately as it is pronounced in Italy and by the Jesuits at the present day. Now, it is obvious that a pupil coming from a school where he has learnt to pronounce Latin in this way must be fairly puzzled when he has to continue his education in an institution where the Latin pronunciation adopted is either that current at Oxford or that recommended by the English Classical Association, for these differ not merely from each other but from the pronunciation in vogue in Scotland. The fact seems to be that it is vain to try to teach too many refinements of pronunciation to the British schoolboy, and it is precisely this attempt which seems to be causing the non-success of the scheme propounded by the English Classical Association. "Trilling" the *r*'s and pronouncing *volvo* as *wolvo* will hardly commend itself to our conservative pupils. The most that we can fairly expect is that the vowels shall be pronounced in the Italian fashion and the consonants left to be pronounced as in English. But these are matters of detail; what is of real importance is that the

pronunciation of Latin, and of such Greek as our reformers are good enough to leave us, shall be uniform and not too difficult.

Then it is to be hoped that the possibility of raising the standard for matriculation in most Universities may be discussed, and the necessity faced of heroically braving the consequences, even though the result may be a temporary diminution of the numbers of the pupils. In most of our Universities the standard is deplorably low, and the result is that the mature thoughts of eminent specialists cannot produce the effect which we might hope that they would produce upon our national life. Again, examinations may well be a subject for discussion, and it should be insisted that original work of some sort, expressed in a thesis or essay, should be made an important avenue to the degree. Another important feature that ought to be more widely adopted is the German *Seminar* system, according to which the teacher collects around him a select class of pupils and encourages them to ply him with questions bearing on their work. Finally, one may hope for a discussion on the possibility of rendering the several Universities specialists in one or two particular departments. One such might, for instance, make its name as the best school in the country for modern languages (and, indeed, there is at present a vacancy); another in classics, another in marine engineering, and so on. The Universities over the seas would not be excluded from such useful and friendly rivalry: the five Australian and the three New Zealand colleges might well divide their powers in this way, to the advantage of the community.

All interested in education are expecting the Conference to throw much light on the nature of the education actually given and of the future education of our coming generation but, above all things, the hope may be cherished that, while the Universities may express their willingness to teach as many various subjects as their finances will allow, they will endeavour so to arrange their courses as not to impose on the schools the necessity of teaching too many subjects to each pupil and thus preventing excellence in any department.

NOTES.

The sober discussions of the Easter Conference of the N.U.T. were piquantly diversified with a breeze over Votes for Women and a demonstration by Sir George Kekewich, who (we understand) has the distinction of being the sole honorary member of the Union. Speaking to a resolution regarding "with doubt and dissatisfaction" the list of members of the Royal Commission on Civil Service appointments, moved by Mr. Marshall Jackman, Sir George said that, as he listened to Mr. Jackman, he began to wonder why the Commission should sit at all. "They are going to sit for five years, but for all the good they are going to do they might as well report to-morrow. We know what that report will be. There will be a report of the privileged class in favour of the existing state of things." Then he gave an example of appointment-making within his own official experience:

I used to take a book containing three hundred names to the Duke of Devonshire. When the Duke saw those three hundred names he used to heave a deep sigh—(laughter)—and he would say to me: "Would

you kindly make me out a select list?" I used to make out a list of about a dozen. He would look at it and heave a deeper sigh still—(laughter)—and he would say, "Put two names before me." I said "But what principle shall I act upon in selecting these names?" and his answer was, "Oh, they must be the men who have most distinguished themselves at the University." There was no question of their knowing anything about teaching or about elementary schools. (Cheers.) They were purely University prigs, and the more priggish they were the better. That was how they were appointed.

Probably enough Sir George related the literal and painful facts, though it does not follow that the bad tradition has been continued. The remark about prigs and priggishness looks rather like an inference of his own. It is very far from true that all University men are prigs, especially "men who have most distinguished themselves at the University"; and it is not improbable that University men from elementary schools may be candidates for inspectorships. It is to be hoped that the Commission will deal thoroughly and frankly with the whole question.

THE Moral Education League has just published "A Scheme for the Correlation of Certain Subjects of Instruction in subordination to the aim of Character Training," drawn up by Mr. F. J. Gould (6d. net). The scheme is not intended as a syllabus or time-table for direct application in schools, but is offered "as (1) evidence of the possibility of subordinating school instruction to a moral aim; (2) an indication of the way in which the evolution idea may govern teaching—(a) in earlier years, as a process felt rather than thought, and (b) as age advances to adolescence, as a consciously recognized process; (3) an aid towards simplifying the present confusion of time-tables, aims, and ideals."

The divisions—(1) Environment (physical and geographical world in which man acts, thinks, and progresses); (2) Social and Political Action and Influences; (3) Thought and Expression of the True and Beautiful; (4) Study of the Good Life, and of what Ought to Be—cover education in its chief human and humane aspects, and point to four kinds of *Lessons*. These four kinds of lessons may be roughly described as lessons in (1) Geography, (2) History, (3) Artistic and scientific expression, (4) Conduct. They are, however, closely connected.

"Certain exercises, though dominated by the scheme, necessarily lie outside its practical scope—e.g. physical drill, arithmetic, housewifery, woodwork, language lessons, musical notation lessons, and the like"; "but all these topics should be related on certain definite occasions to the evolution scheme." "The conversion of the educational world to the value of direct moral instruction," says Mr. Gould, "is delayed by a variety of causes, and many teachers may, perhaps, more or less content themselves with the moral instruction conveyed in Columns I, II, and III; but the author regards the systematic treatment indicated in the fourth column as the logical and essential outcome of the whole curriculum." The whole document is "still avowedly experimental, and teachers and educationists are invited to forward proposals for its improvement." It is an elaborate project, and deserves careful consideration.

THE Federation of Teachers in Central Classes has compiled a significant return showing the supply of junior teachers under various Education Authorities—forty-five County Boroughs and twenty-four County Councils. The return

sets out for each Authority the average number of adult teachers appointed under it annually, the number of pupil-teachers finishing apprenticeship in the six years 1907-12 inclusive, the number of student-teachers finishing in the same years, the number of bursars entering a training college at the end of their bursarship in the same years, and then the total supply. "The figures given are official—i.e. supplied by the Directors or Secretaries of each of the Education Authorities quoted."

Cornwall, Somerset, Liverpool, and Coventry could not supply this number [the average number of adult teachers appointed annually] without great difficulty, though they were able to supply the other particulars detailed on the sheet. Excluding the numbers from these four Education Authorities, it will be seen that 43 County Boroughs requiring 2,441 adult teachers per annum had a supply of 1,857 in 1910, 1,550 in 1911, and will have a supply of 1,263 in 1912; and that 22 County Councils having a normal annual requirement of 4,926 had a supply of 2,159 in 1910, 1,653 in 1911, and will have a supply of 1,343 in 1912. This points to a very serious shortage of elementary teachers in the immediate future, and must be a matter of very grave concern to all people who are interested in educational matters.

But, if we go farther back, the figures are still more ominous. In 1907, the figures for the County Boroughs are 2,491, and for the County Councils 3,125. Though the return is incomplete, it is sufficiently disquieting, and indicates the urgent necessity of inquiry.

AN exceptionally fresh and suggestive paper was read to the N.U.T. at Hull by Mr. C. W. Crook, a member of the Executive. Mr. Crook traced historically "the change in the function of the school." Most interesting and important, perhaps, was his pointing out that, good as the changes have been in intention, "three fundamental errors" have been allowed to remain unchecked, all three resulting from ignorance of the fact that the principal object to be considered in the school must be the child himself. First, the commercial spirit of the third quarter of last century made education in the primary schools almost as mechanical and as unwelcome as the child labour of the mine had been, and the effect was rendered worse by the rigidity of the examination system under which it was administered. Second, the tendency of those in authority to cultivate the intellect by bookwork alone: "themselves taught on the humanistic lines of the Universities, they determined that a similar method of education must necessarily be right for the children of the elementary school." Specific subjects, no doubt, were devised in 1876 to modify this, but their value was diminished by the conditions of teaching and the meagreness of the grants. Third, the slowness in officially recognizing the change resulting from the extension of the elementary system. "With every deeper delve of the educational spade into the masses, new strata, and in consequence new factors, were introduced into the schools." Feeding and medical inspection have brought about great changes. "The school has changed from a grant-earning machine into a centre of social influence. The change has altered and added to the work of the teachers, but their close contact and deep sympathy with the children entrusted to them has made them the pioneers in bringing on the new order of things, and has found them eager to undertake their full share of duties of the citizen in its development."

MR. ARTHUR CLIFTON BOYCE, Principal of the Hittle Township High School, Armington, Illinois, presents in the *Journal of Educational Psychology* (Baltimore) for March last the results of an interesting inquiry into the "Qualities of Merit in Secondary-school Teachers"—a complement to a similar investigation by Profs. Ruediger and Strayer published in the same journal in May, 1910. This is Mr. Boyce's summary:

1. Among the high-school teachers compared, sex had little or no effect on teaching efficiency, except that women seem to have a slight advantage among the teachers whose qualities of merit were studied.
2. The best teachers are found in the oldest established subjects—Latin and Mathematics.
3. Advanced work in college or University and professional training are important factors in successful high-school teaching.
4. Experience has an important place in modifying teaching efficiency, but does not seem to be so important as is sometimes thought.
5. Instructional skill, results, stimulation of individuals, intellectual capacity, and discipline rank highest among the specific qualities of merit.

Though forms and requests for information were sent to about 235 superintendents and principals, reports were received from only 38 high schools in 14 States, most of them North Central and Middle Atlantic, and only 27 were properly filled out in full or nearly so. The basis, then, is very narrow, and, after all, the compiler is dependent on the observation and judgment of the various reporting superintendents. "As a group, the physical qualities rank lowest and the dynamic and achievement qualities highest. Superintendents are evidently looking for results." And what results? "The teachers are decidedly weak in health and general appearance." "If intellectual capacity is a quality which cannot be modified, it would appear that instructional skill depends very largely on native ability. But it is a point of great encouragement that it depends nearly as much on studiousness." "Ability to keep order is more important than intellectual capacity." Some of these points are suggestive. But the narrow limits of the inquiry and the means of information seriously restrict its value. What is needed is a national investigation by trained experts.

SUMMARY OF THE MONTH.

IN the House of Commons (March 27) Mr. Montague Barlow (U., South Salford) asked leave to introduce under the "Ten Minutes" Rule a Bill to amend the Education Acts, 1870 to 1911, and make provision for regulating the Parliamentary grants to secondary schools. The regulations relating to Government grants for secondary education, he said, were unfair and unjust to denominational secondary schools. He referred particularly to Article 5, which laid down that there should be no denominational instruction in secondary schools without the consent of the parents; Article 23, which said there should be no question asked of the teachers, trustees, or managers of these schools as to their religious belief; and Article 24, which provided that the majority of the trustees must be chosen by the local authority. In the majority of cases these provisions were flatly in the face of the trust deeds of the schools. The regulations, in effect, gave a preference to secular or undenominational schools. The object of the Bill was to secure equality of treatment for all secondary schools. It had the support of a large number of educational institutions in the country, of the Diocesan Society of Manchester, the Church Schools Emergency League, the National Society, and the leading bodies of Roman Catholic opinion. Leave was given, and Mr. Barlow introduced the Bill.

THE principal objects of the Elementary Education (England and Wales) Bill, introduced by Mr. Edmund Harvey (L.), as set forth in the memorandum, are—to make Council schools accessible to all children of school age, both in rural and in urban areas; to facilitate the transfer of voluntary schools on terms agreed upon by the Local Education Authority and the trustees, in districts where accommodation in a Council school is not already accessible; to secure attention to the wishes of the parents as to the recognition of new voluntary schools and as to the maintenance of existing voluntary schools where alternative to Council schools; to provide for equality of treatment between Council and voluntary schools; to prohibit religious tests for teachers in all Council schools and transferred voluntary schools; to secure for all children in Council schools, subject to the protection of the conscience clause, and for all students in training colleges, opportunities for religious instruction; to require the Local Education Authority, in the case of a Council school, either itself to provide religious instruction in the Bible and in the principles of the Christian religion or to afford facilities for the provision in the school house (so far as accommodation can reasonably be made available) for the giving by authorized persons of religious instruction, whether of a special character or not, to those children whose parents desire them to receive it; and to improve the present arrangements for the giving and supervision of religious instruction by the establishment of such Local Education Authority of a Religious Instruction Committee, including persons of experience in the religious education of the young; and to provide for appeals from the Board of Education to the High Court of Justice.

THE Board of Education have just published a list of thirty-eight 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. Seven of the courses are in German-speaking countries—viz., at Freiburg in Breisgau, Greifswald, Jena, Marburg, 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, Bayeux, Granville, Caen, Honfleur, Lisieux, Paris, Rouen, St. Servan, St. Malo, St. Valery-sur-Somme, Tours, Trouville, Versailles, and Villerville. 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 subjects of instruction, address of Local Secretary, and other details of importance to intending students. This paper is no longer distributed gratuitously, and copies (2d.; by post, 2½d.) can be obtained direct from Messrs. Wyman & Sons, Fetter Lane, London, E.C., or through any bookseller.

To enable the Government to formulate a scheme for the institution in London of a School of Oriental Languages, upon the lines recommended in the report of Lord Reay's Committee of 1909, an Oriental Studies Committee, with Lord Cromer as chairman, was appointed by Lord Crewe, the Secretary of State for India. For some time past negotiations have been in progress between them and the proprietors of the London Institution, in Finsbury Circus, with a view to the acquisition of the latter's premises for this purpose. The building is suitable and convenient, situated as it is in the very centre of London; and the valuable library, containing over 200,000 volumes (certain unique manuscripts and books excepted), will become the property of the school. The Treasury are to ask Parliament for a grant of from £20,000 to £25,000 for repairs, improvements, and additional buildings; and for an annual grant of £4,000 a year towards the maintenance of the school.

THE recently published report of the Board of Education for the year 1910-11 (Cd. 6116) gives much useful information concerning the number of efficient secondary schools in England and of pupils in them. The total number of schools regarded as eligible for grant during 1910-11 was 862, as compared with 841 during 1909-10. In these schools there were, on January 31, 1911, 79,506 boys and 66,378 girls, as compared with 76,699 boys and 64,450 girls in 1910. There were 96 other schools recognized by the Board as efficient during 1910-11, though they were not

on the grant list. In these schools on the date given above there were 9,946 boys and 7,666 girls. So far as the number of pupils in public elementary schools is concerned, the report shows that in 1910-11 the number under five continued to fall, as in previous years, and, in addition, during this year there was a decrease of 8,118 in the number of pupils over twelve; the number between five and twelve rose by 32,169, and the net decrease of pupils of all ages was 7,482. During 1910-11 the average number on the registers decreased by 0·11 per cent., the average attendance increased by 0·09 per cent., and the percentage of regularity rose to 89·15.

AT the weekly meeting of the Education Committee of the London County Council (March 27) a report from the Higher Education Committee on the regulations of the Board of Education dealing with the establishment of a four years' course of training for candidates for a University degree again came up for consideration. The Committee recommended that the temporary arrangements sanctioned by the Council for four years' students admitted to the London Day Training College should remain in operation till further notice. To this an amendment had been moved by Mr. Bruce recommending the Council to make the following grants to those students who had been awarded free places at the college, provided that they had had a year's experience in elementary schools as student teachers or pupil-teachers:—(1) An additional grant of £10 in the third year of the four years' course in those cases where the income of the students' parents or guardians did not exceed £160 per annum; (2) an additional grant of £25 in the fourth year in those cases in which the income did not exceed £300 per annum. A report of the Teaching Staff Sub-Committee was also presented recommending that the commencing salary of teachers who had taken the four years' course should be, in the case of men, £115 a year, and in the case of women, £104 a year. It was pointed out that under this scale the four years' student would attain the maximum salary at the same time as—or in the case of women a year earlier than—the two years' student who entered college in the same year. Mr. Bruce's amendment was carried by 18 votes against 17, and the recommendations of both Committees were adopted with this addition.

THE London County Council has a long list of awards of trade scholarships for girls for 1912. The successful students have been awarded trade scholarships for two years as from Easter, 1912, consisting of free tuition and a maintenance grant of £8 for the first year and £12 for the second year. Girls that have not been awarded scholarships may be admitted to the trade schools, so far as accommodation allows, on payment of a fee of 10s. a term, or 30s. a year.

THE report on the London County Council open-air school at Birley House chronicles further success. During the first week (April 1911) the weather was severe, later the hot summer had a somewhat enervating effect, and finally there were three months of wet, windy, and unsettled weather. But there was never any need to bring the children indoors. Clogs were introduced to ensure dry feet. On admission the children presented a miserable and uncared-for appearance, but all gained in weight during the thirty-six weeks in the school, the boys from 1·4 kilogrammes to 2·6 kilogrammes; the girls gained from 2·2 to 4·4 kilogrammes. The average weekly gain was higher at Birley House than in the general schools. There was also a noteworthy gain in chest expansion.

THE City and University of Oxford have for some time been engaged in formulating plans for the celebration of the millenary of the city, and the details are now taking a definite form. A lecture scheme, it is hoped, will be begun by an inaugural lecture by Mr. Robert S. Rait, subwarden and librarian of New College, on Oxford history. Mr. J. A. R. Marriott, of Worcester College, secretary to the delegates for the extension of University teaching; Mr. A. L. Smith, Dean of Balliol College; and the Rev. H. E. Salter have also promised lectures. The exhibition of records and relics will be held in the municipal buildings and will remain open for some weeks, and its object will be to illustrate the history and growth of the city from the earliest periods. The Ashmolean Museum has many curios, relics, and pictures associated with the history of the city; the city authorities can contribute much that will be highly interesting, including the

very fine Corporation plate; and the colleges could of themselves easily furnish an exhibition of great attractiveness. Thursday, July 11, has been provisionally chosen for the celebration of the millenary.

DR. A. E. SHIPLEY, Master of Christ's College, Cambridge, addressing the Royal Colonial Institute on "Universities and Practical Education," said it was possible for the college man to be as insular and prejudiced as others. Indeed, it was not improbable that his public school and college life might have contributed to this result. He needed to be brought to realize the great progress and almost infinite resources of other countries if he was to understand that he had to face formidable competitors in whatever sphere of activity he elected to move. The "grand tour" used to be considered essential to the complete education of a gentleman. If it were necessary then, it was needless to urge its greater utility to-day. The Association for the International Interchange of Students offered singular opportunities to students to acquire the practical side of their educational equipment.

UNIVERSITIES AND COLLEGES.

A STATUTE will be promulgated in Congregation on Tuesday, May 14, to rescind the Statute concerning the Oxford Faculties, the Boards of Faculties, and the Boards of Studies, which was approved by Convocation on June 20, 1911, and to provide that no steps shall be taken for obtaining the consent of his Majesty in Council to that Statute. On the same day two new Statutes will be promulgated for the reconstitution of the Faculties and the Boards of Faculties and for the constitution of a General Board of the Faculties. The new Statutes are printed in a special issue of the *University Gazette* (March 19), and a note is appended to explain the circumstances in which this action is taken.

THE Establishment Committee of the Senate of the University of London have instructed the Principal and officers to prepare a report comparing the accommodation available on the site of the present central offices with that which would be obtainable on the various alternative sites which have been suggested.

The annual report of the University College Committee for February 1911 to February 1912 has just been issued. During the session 1910-1911 there were 1,600 students, an increase of 28 over the preceding session. Of these 1,170 were undergraduate and non-matriculated students, and 430 were post-graduate and research students. In the first section 432 were women and 738 men, and in the second 100 were women and 330 were men. There were 678 registered Internal students of the University as compared with 672 in the previous year. The accounts for the year show a total revenue on the College establishment account of £46,879, and a total expenditure on the same account of £44,654. The revenue from trust funds for special purposes was £10,453, making the total revenue for all purposes £57,332. Negotiations, it is stated, are now pending between the Senate and the London County Council with the object of securing an Annual Maintenance Grant for the College. The report includes a copy of the memorandum that was drawn up in reply to a Board of Education inquiry, showing that in addition to a sum of money required for the extension of the College site, there is wanted a total additional yearly sum of £20,625. The two most noteworthy developments of the year are the progress made in the scheme for the new chemical laboratories, for which a sum of about £10,000 is still required, and the anonymous benefaction of £30,000 for the building of the new school of architecture. Attention is drawn in the report to the corporate life of the College. Out of the 32 officers and 894 cadets of the University of London Officers' Training Corps, University College provides 12 officers and 239 cadets. The effect of the new well equipped athletic grounds upon the health of the students of the College has, it is said, been evident.

THE fourth annual report of the Imperial College of Science and Technology for the year ended August 31 [Cd. 6132] shows that the total number of students who had attended the institution at any time during the twelve months was 887, as compared with 788 in the previous year. Special mention is made of the increased number of students who had attended post-graduate courses, and the higher qualifications of such students in the session of 1910-11, as com-

pared with previous sessions. Only 24 per cent. of the students attending the college were born in London. The number of students attending in the botanical department had increased, and the question of available space had become a serious one. For the first time in the history of the Royal School of Mines, the work of the session comprised fourth year as well as third year work. The conditions governing the admission of students to the Royal College of Science and the Royal School of Mines had been revised, and an entrance examination instituted for the latter, which will come into force at the beginning of the 1912-13 session.

THERE has just been opened (April 26) an important Spinning Extension of the Textile Industries Department of Leeds. the Leeds University, to afford facilities for instruction in the principles and theory of the manufacture of worsted yarns on the Continental system. In order that the most suitable equipment might be provided for this branch of technological teaching, textile institutes, spinning works, and conditioning laboratories in Belgium, France, Germany, and Switzerland were inspected, and a full inquiry was made as to the commercial value and technical nature of this system of worsted yarn construction, and also as to the methods adopted in dealing with the subject educationally. It is a branch of the textile industry of growing commercial importance, comprising processes, routine and mechanical features capable of systematic analysis. The system is a scheme of mechanism invented and constructed specially for the treatment of short-fibred wools, and to provide a routine of work affording increased facilities in preparing worsted yarns composed of various materials, such as, for example, wool and cotton. Yarn structure contributing to diversity of textual result in manufacturing, it is desirable that each system of preparing and spinning wool and other fibres should be fully treated, theoretically and experimentally, in a University scheme of textile education. For this purpose the new section of the University is equipped with the latest types of Continental drawing, combing, and spinning machinery, constructed by well known English makers; and provision is also made for carbonizing, garnetting, and other plant which will add to the efficiency of the experimental studies in the several systems of woollen and worsted spinning. The extension was designed by Mr. Paul Waterhouse, and forms an effective architectural feature of the University buildings. It has been erected at a cost of £5,000, making a total amount of £75,000 granted by the Clothworkers' Company of London for technical and scientific education in the Textile Industries and Dyeing Departments of the Leeds University.

A COMMUNICATION has been received from the Board of Education of a distinctly encouraging nature with regard to the future of the Hartley University College. Subject to certain conditions, the grant to the College is to be increased, and this will inspire hope and confidence. The present grant amounts to £2,250 a year, and the Department propose increasing it to £2,400. Further, if the income of the College rises above £13,500 a year, they will grant an extra £500 a year for every £1,000 above that sum. This extra is limited to £1,000, so that altogether it is possible for the contribution from the Education Department to be increased by £1,150 a year. The income of the College at present is £11,100, and the penny rate promised by the Corporation would bring it up to £13,500, and that is the reason why the Department fixed that sum. But all this is subject to the old condition of £31,000 being obtained by April 1. However, the position of the College has been greatly improved as it is to be placed back on the University College list, and instead of the grant being from year to year it will be secure for the next four years. The generous offer of the Corporation to guarantee £10,000 on condition that a fair proportion could be obtained from outside authorities is being met by a guarantee of £100 each from private individuals.

THE Advisory Committee appointed by the President of the Board of Education to consider the distribution of Exchequer grants to Universities and University colleges in England issued a report as a White Paper [Cd. 6140]. The report states that, in framing their recommendations for the distribution of the Exchequer grant, the Committee have chiefly had regard to three factors—the needs of the several colleges, the amount of local support received by each, and the volume and quality of their work.

Stress is laid upon the difficulties arising from the inequalities of the present distribution. The present grants are in large measure traditional, having been arrived at mainly by the mechanical multiplication of previous grants as often as the total amount on the Vote was increased. The result is that some colleges have, in the Committee's opinion, a larger and others a smaller share in the State subsidy than they are entitled to. At the same time they consider that a distribution wholly independent of the past is on this occasion impracticable, and they cannot do more at present than recommend such a distribution as will remove the graver inequalities at present existing.

As a result of their visits to the various institutions, the Committee are prepared to say with some degree of confidence that the colleges generally are animated with a true University spirit and that the policy of their governing bodies is actuated by true University ideals. They do not imply that even among the stronger institutions all are equally efficient or have reached the same stage of development, but they rarely found occasion to think that where weaknesses existed the colleges were unaware of them or would be backward in applying the right remedy when circumstances permitted. The Committee assure the Board of Education that in their opinion most of the colleges are fully competent to exercise that "freedom in organizing" and "carrying out their important national and international functions." With regard to such developments as are immediately possible, the Committee consider that much depends on a solution being found for three pressing problems, connected respectively with entrance standards, residential arrangements, and the training departments.

The Committee recommend that the Exchequer grant be distributed in the following proportions:

University of Birmingham	...	...	£13,500
University of Bristol	...	...	7,000
University of Durham, Armstrong College	...	...	8,500
University of Leeds	...	...	12,500
University of Liverpool	...	...	15,500
University of Manchester	...	...	17,500
University of Sheffield	...	...	7,000
University College, London	...	...	16,000
King's College, London	...	9,500	} 11,500
King's College for Women	...	2,000	
Bedford College, London	...	...	7,000
London School of Economics	...	...	4,500
East London College	...	...	5,500
Nottingham University College	...	...	5,700
Reading University College	...	...	5,500
Hartley University College	...	...	2,400
			£139,600

These grants have been calculated on a total of £149,000, and the Committee recommend that the balance (£9,400) of the present grant, together with the balance of £2,550 from the previous year's Exchequer grant, be reserved pending consideration of a superannuation scheme to be reported on later and be regarded as applicable to the institution of such a superannuation scheme and to other contingencies.

The Committee recommend that, subject to unforeseen contingencies, the grants, which are to be regarded as strictly maintenance grants to meet annual expenditure on teaching and research of a University character and standard, be fixed for a period of five years as from April, 1911.

At a recent meeting of the General Council of the University of Aberdeen the report of the Carnegie Trust directed special attention to a new regulation under which applicants for the payment of class fees must qualify by means of the Leaving Certificate of the Scotch Education Department, passes in the Universities' preliminary examinations being recognized only for those to whom the Leaving Certificate examination is not open. The regulation was described as almost an insult to the University, and it was resolved to appoint a committee with powers to make such protest or representation as may be thought advisable, either on behalf of the Council alone, or in concert with other academic bodies.

The sixth Annual Report of the President and Treasurer of the Carnegie Foundation, covering the year ending September 30, 1911, shows that the endowments now amount to £2,424,600. Of the income of £118,000 for the year 1910-11, £105,200 was expended in retiring

allowances and pensions, £7,200 in general administration, and £3,200 in educational publications. Thirty-one retiring allowances and seventeen widows' pensions were granted during the year, increasing the number in force to 373, the average annual payment being £326, and the total distribution to date £349,200. The exchange of teachers conducted through the Foundation sent nine American teachers to Prussia during the year and received seven Prussian teachers in the United States, in both instances with gratifying results. The second part of the Report is a comprehensive survey of educational progress and tendencies from a national point of view. Private and local educational initiative without guidance and federal and State grants without supervision are so wasteful financially and so hurtful educationally that agreement and co-operation must inevitably increase. The extent of overlapping is preposterous. The report will be sent to any address upon request to the Carnegie Foundation, 576 Fifth Avenue, New York City.

THE Paris University (says the Paris correspondent of the *Standard*) seems to be the most attractive intellectual centre of the world, to judge by certain figures given by the *Débat*. The last report states that in round numbers, out of 18,000 students, there are 3,500 foreigners, whose total has tripled in the last ten years. The most popular Faculty is that of Letters, which boasts about 1,300 non-French students, more than half of whom are girls. The first place is taken by Russia, with 512, but almost every country on the face of the globe is represented. And these are not mere amateurs, but serious workers, as is proved by the fact that thirteen foreigners took the degree of Doctor of University and two that of Docteur ès Lettres, not to speak of lesser distinctions. Next to letters comes the Faculty of Law, with an average of 950 foreigners for the last two years. Again the majority are Russians, but they are run close by the Rumanians, Egyptians, and Ottomans. Here the gentle sex is sparsely represented, as is natural, since they cannot profit by the professional study of Law in their own homes. On the contrary, in the Faculty of Medicine there are 329 women, as against 476 men students, and again Russia is first, followed by the Near Eastern nations. Amongst the women, however, almost all are Russian; indeed, it might almost be said, looking at these figures, that with its 1,600 Russian students the University of Paris is one of the most flourishing Russian higher educational centres. This result, of course, is not altogether due to literary and scientific causes; but, be that as it may, Paris can only be proud of the popularity its teaching enjoys. To the above statistics of the Paris University may be added at least two thousand foreign students working in French provincial Universities.

THE EDUCATIONAL LADDER.

CAMBRIDGE UNIVERSITY.—John Lucas Walker Studentship (research in pathology): G. H. Drew, B.A., Christ's.

St. Catharine's.—Open Scholarships—Mathematics: K. G. Howe, Derby Grammar School. Classics: C. L. Corfield, St. Lawrence College, Ramsgate; B. T. Wolfe, Perse School, Cambridge. History: E. R. Wood, Denstone College; H. S. Bates, Denstone College; H. V. Corbett, Doncaster Grammar School. Crabtree Exhibition: G. Woodcock, Warrington Grammar School. Choral Exhibition: W. O. Parish, St. John's School, Leatherhead.

St. John's.—Classical Exhibition, on result of Senior Local Examinations: G. S. Need, Parkfield School, Sefton Park, Liverpool. Mathematical Exhibition: not awarded.

Trinity.—Senior Scholarships: H. T. Kennedy, for Natural Sciences; H. H. George, for Mathematics; R. J. M. Lias, for Classics; B. S. Gossling and A. W. R. Don, for Natural Sciences; H. Glauert, for Mathematics; A. Shaw and N. K. Adam, for Natural Sciences; J. W. Wootton, for History; R. Smith and A. J. Dorward, for Moral Sciences; R. Chandra, for Mathematics; E. H. Carr and E. W. Philip, for Classics; J. Parly, for Mathematics; J. O. Thomson, for Classics; and F. Bowman, for Mathematics. Entrance Scholarships prolonged: G. W. V. Hopley, for History; H. D. Bentliff, for Natural Sciences. Exhibitions: N. C. White, for Natural Sciences; M. J. St. Aubyn, for Classics; D. L. Harvey and W. M. Smart, for Mathematics. Exhibitions prolonged: M. C. Day, G. C. N. Wardley, and J. B. Andras, for Mathematics.

DURHAM UNIVERSITY.—University Classical Scholarship: H. P. Leslie; *proxime accessit* Ethel L. Veitch.

EASTBOURNE COLLEGE.—Scholarships: C. C. Duchesne (Winchester House, Deal), E. C. Goldsworthy (The Downs, Walmersley Grant (The Limes, Croydon), F. Hunt (The Beacon School, Crowborough), D. W. Kinnode (Lychnmere School, Eastbourne), F. J. Whaley (East-

bourne College). G. R. H. Wotherspoon (St. Bede's, Eastbourne). Day Boys' Scholarship: F. E. Burford (Eastbourne College).

ETON COLLEGE.—Newcastle Scholarship: Scholar, H. M. Willink; Medallist, R. A. L. Fell; Select, J. H. L. Lambert, C. R. Holloway, H. F. C. Crook-shank, C. G. M. des Graz, A. H. Armstrong, H. K. Chester, G. S. Madan, P. M. Roberts, C. A. Keele, and W. A. H. King; Wilder Divinity Prize, C. R. Holloway.

GRETTON COLLEGE, CAMBRIDGE.—Chessar Scholarship of £88 for Classics, tenable for four years: Miss K. W. Smith, Bowdon College, Cheshire. Other Scholarships and Exhibitions, tenable for three years (in order of merit)—Clothworkers' Scholarship of £60 for three years and an additional term to Miss I. Woodward, University College, Nottingham, for Mathematics and Physics. Higgins Scholarship (augmented to £50): Miss D. W. Black, Sutton High School, for French and German. Russell Gurney Scholarship for History (augmented to £50): Miss H. S. Watson. Higgins Scholarships of £40 each: Miss J. R. Bacon, Oxford High School, for Classics; Miss A. E. Towers, King Edward VI.'s High School, Birmingham, for Natural Sciences, and Miss D. Fox, Manchester High School, for Mathematics and Physics. Scholarship of £30 for Modern Languages: Miss A. K. Barlow, Blackheath High School, for French and German. Mary Anne Leighton Scholarship (augmented to £30): Miss B. C. Barfield, for Moral Sciences. Scholarship of £25: Miss J. S. Davis, Manchester High School and Victoria University, for Classics. College Exhibitions of £15 each: Miss H. Grover, Lansdowne House School, Hampstead, for German and French; Miss N. I. White, County Secondary School, Fulham, for History; Miss E. M. Turner, High School, Tunbridge Wells, for Mathematics; and Miss D. M. Jones, Howell's School, Denbigh, for Mathematics. Recommended for Exhibitions:—Miss P. K. Downes, Perse High School, Cambridge, for Classics; and Miss F. M. Baldwin, Edgbaston High School, for English and German.

HARROW SCHOOL.—Entrance Scholarships—Classics: A. H. G. Davidson (Rev. H. Bull, Wellington House, Westgate-on-Sea); T. J. E. Haskoll (Mr. T. J. F. Haskoll, Pelham House, Folkestone); J. V. Filleul (honorary) (Mr. T. Pellatt, Durnford, Langton Matravers, Wareham); A. D. Flux (Mr. E. D. Hake, Hailey School, Bournemouth); P. G. S. Gregson-Ellis (honorary) (Mr. E. M. Hawtrey, St. Michael's, Westgate-on-Sea). History: J. M. T. Barton (Mr. H. F. Pooley, Lane Court, Parkstone, Dorset); honourably mentioned, A. J. Aldous (Mr. E. L. Sanderson, Elstree, Herts). Mathematics: F. G. Mansell (Mr. H. D. Moseley, Gate House, Kingston-on-Thames); C. Empson (Mr. M. Roderick, Praetoria House, Folkestone); Exhibition, F. D. Kingdon (Mr. W. A. Walker, Upcott House, Okehampton, Devon). Modern Subjects: P. Bloomfield (honorary) (Messrs. North and Ingram, Farnborough, Hampshire); Exhibition, C. G. L. Hodgson (Mr. H. G. Coghlan, Seafield, Collington, Bexhill-on-Sea). Leaf Scholarship: R. J. S. Dodd. Botfield Scholarship: N. M. Butler. Need Scholarship: R. H. Bussweiler. Sayer Scholarship: J. B. Webb. Clayton Memorial Scholarship: R. H. Hadow. Fifth Form Scholarship: E. H. Pember.

LONDON UNIVERSITY.—George Smith Studentship: Elsie Chick, University College. Recommended for 1851 Exhibition Scholarship: H. J. Page, B.Sc., University College.

OXFORD UNIVERSITY.—*Bal-liol*.—Jen-kyns Exhibition, £100 for two years: G. D. H. Cole, Exhibitor of the College. Prize of £50 from Jenkyns Trust Fund: Maurice R. Ridley, Exhibitor. Distinguished in the examination: W. A. Keen, Scholar of the College.

Corpus Christi.—Open Scholarship in Natural Science: Stanley C. Squire, St. John's School, Leatherhead.

Exeter.—Scholarship in Natural Science.—Charles C. Aston, University College School. Scholarship in Modern History: Bryan W. Ashworth, Bedford Grammar School. Exhibition for Modern History: John Cardross-Grant, Haileybury College.

Magdalen.—Demyships in Classics: Eustace B. Reynolds, Winchester College; Alexander H. Bowhill, Fettes College; Andrew P. Ritchie, Berkhamstead School. Exhibitions in Classics: L. E. Gielgud, Eton College; Ivor Powell, Malvern College; William D. Wilkinson, Bradford Grammar School. Exhibition in Mathematics: D. N. Shorthouse, Ashby-de-la-Zouch Grammar School.

Merton.—Postmastership in Natural Science: Gilbert L. Mold, Boys' High School, Oxford.

New College.—Scholarships in Natural Science: Arnold J. P. Andrews, Tettenhall College; and Albert L. Bloomfield, Queen's School, Basingstoke.

Selwyn.—Scholarships: E. O'N. Hogben, Bedford Grammar School, £40 for Mathematics; C. E. Fischer, Dulwich College, £40 for Classics; W. L. McColl, Northampton School, £30 for Natural Sciences; F. H. Woolliscroft, Denstone, £30 for History. Exhibitions of £20: Mathematics—D. J. Wardley, St. Bees, Cumberland. Classics: D. F. Ridley, St. Edmund's, Canterbury; G. B. Davies, Rossall. Natural Sciences: C. R. Honeaman, Wilson's Grammar School, Camberwell. Divinity: G. C. W. White, St. Edmund's, Canterbury.

Worcester.—Laycock Studentship in Egyptology: Aylward M. Blackman, B.A. Queen's. Open Classical Scholarships: F. L. Farquharson

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TRAINING FOR GIRLS IN DOMESTIC SUBJECTS.*

By Miss S. DIX,
Former Member of Executive of National Union of Teachers.

Ill huswifry lieth
Till nine of the clock,
Good huswifry trieth
To rise with the cock.
Ill huswifry rendeth
And casteth aside;
Good huswifry mendeth,
Else would it go wide.
Ill huswifry craveth
In secret to hallow;
Good huswifry saveth
To-day for to-morrow.

THE value of an occupation should be determined rather by the manner of accomplishment than by its nature. Long, uncertain, almost incessant hours of labour, comparatively small pay, continual demands alike on patience and endurance, and the idea that any unskilled person may undertake it, or that merely low mental capacity is needed for its successful completion—these suffice to stamp an occupation as inferior. When lack of appreciation is added, when methodical, thrifty housewives are valued no higher than automatic machines, no surprise arises that household duties are regarded by insufficiently educated persons as too servile for the consideration of many who can ill afford to pay for labour, and who have grown to esteem the badly paid, ill rendered service of an untrained general servant as their own emancipation from "menial" employment and an addition to the dignity of their station in

* Paper read at the Hull Conference of the N.U.T., April 9, 1912.

life. This foolish attitude finds its reflection occasionally among girls in elementary schools unwilling to take their proper share in the details of a cookery course, girls whose mothers assert, "My daughter does not wash dishes at home, and I object to her doing so at the cookery class!" and who frame excuses whereby they desire these daughters to escape attendance at courses for domestic training. The housewife pursuing her household duties in the best way at the best time should be proud and not apologetic when surprised at her employment.

Before girls can be trained to enjoy and not merely to tolerate domestic duties, or to aim at the high ideal of promoting healthy, happy, home life, the right management of family and home must be considered really estimable, and realized as too admirable to be expected from careless individuals working in casual ways. The daughter remaining in the home to provide for the comfort of those who earn wages outside the home must be regarded as occupying a niche in the world as important as that filled by her well-salaried brother or sister. Her work must be properly appreciated, and not as nowadays be passed over unnoticed, or carelessly accepted except when accidental discomfort brings words of reproach. If every wage earner in the family contributed a sum every week to the mother, wife, daughter, or sister who "stays at home" as *her wages* for personal service rendered to them, domestic occupations would be quickly lifted to a higher level, and the higher estimation in the home would rapidly raise public opinion and appreciation and lead to better performance of household duties. Whilst the advantages of statutory hours of labour, certainty of trade rate of wages, fuller (if dangerous) freedom, call every year more girls to employments outside the home, so the risk of ill-trained, untrained future wives and mothers increases.

Factory workers especially find the restraint of evening-school discipline irksome. Evening schools, with "courses" including some subject valuable in itself but distasteful to the girls, are to them less desirable places than picture palaces, while evening study and practice is less pleasant than aimless street wandering. At home the factory worker has little opportunity (and often less inclination) to exercise her more or less scrappy knowledge of household affairs, to practise or enlarge upon the elements in which she received instruction in the day school, and she generally possesses too little initiative to experiment and prove for herself the reason why.

The responsibility attaching to the day school therefore increases. Obviously, if future wives and mothers are to be even slenderly equipped for the duties the State will one day demand, the training in domestic duties attempted during elementary-school life must be as real, as tangible, as sensible, as enduring as the brevity of that period will allow.

Few realize this extreme brevity. Between the ages of five and thirteen a girl *may* attend school for about fifty-seven weeks; should the leaving age be fourteen, she has the *possibility* of about sixty-four weeks' attendance. No English law is so openly, so shamelessly broken as that which professes to enforce school attendance; the few who rigidly observe it are so rare that newspaper paragraphs call attention to their law-abiding. The limited school life is encroached upon by interruptions for medical inspection and treatment, for dental inspection and treatment, for examinations by nurses rendered necessary because many English mothers are unashamed to neglect the personal cleanliness of their offspring, and by other hindrances less useful to children and less acceptable to teachers. Valuable time is lost because the school is the trial ground for every fad of every faddist and because the hardly won expert knowledge of the teacher is often set aside by the opinion of some absolutely inexperienced individual who is wrapped about in that authority which has not infrequently scotched educational progress, checked originality in teacher and scholar, and shown to both such cold discouragement as only real enthusiasts survive. Classes are too large and apparatus is often meagre or lacking. The nation (more or less good-humouredly tolerating education and always keeping a wide-open eye upon the *cost*) rarely assists or appreciates the efforts of those who press for better conditions. Considering the baffling discouragements, it is well that the child has so well run the educational race, and that the teacher is anxious

to make bold attempts for the betterment of the race by seeking to obtain a maximum result with a wiser economy of time, teaching talent, and material, with the hope of increasing love for domestic pursuits and of, at the same time, enlarging the happiness of home and improving the conditions of national life.

When instruction in domestic matters was introduced into the elementary-school curriculum, the gauge of standard decided the eligibility of the child, and little girls of barely nine frequently "earned the grant," although their tiny hands could not safely hold a saucepan, nor could they correctly spell the names of the utensils and materials they used. To-day age decides, and at eleven the girls essay both cookery and laundry. The specialization begins whilst general education is very imperfect, and this has become more apparent since children of necessity leave the infants' department at a later age than formerly obtained.

Circular 758, a more valuable contribution than others issued from the same source, lays down a generally acceptable course readily adaptable to particular needs. It errs in the assumptions that "Infant Care" is included in the curriculum of every girls' school, and that children uniformly remain under instruction until fourteen. Both conditions are desirable, but there remain many districts where not only are children wholly exempt at thirteen, but thousands leave still earlier by labour certificates and other devices by which the "law allows" ignorance to prevail.

Addressing the Royal Society of Arts, a speaker recently said, "The essential of practical education is that it should not be one of snippets." Snippets of cookery, laundry, housewifery have effected only so much as should be expected from snippets; they daily interrupt and hinder general education in every class; this continuous interruption gives rise to irritation, brings reiteration of lessons, wastes time and power, lowers the standard of work, and tends to decreased effort by scholars remaining in the partially-depleted classes (who quickly realize that their teachers must repeat the lessons). The courses present little or no continuity, and scarcely serve to delight the girls with the practice of domestic subjects, or promote the desire to acquire further knowledge of the requirements of domesticity. These conditions led to the scheme presented in this paper. Evolved to secure freedom from interrupted lessons for younger, and continuous domestic teaching for elder, girls, it is now to be afforded a trial in a Midland city.

As elementary-school life at best closes at fourteen, the age of twelve is recommended as the very earliest advisable for practical work in domestic centres, and six months later would be even better. At this age the average girl has reached the upper classes, and the over-average girl has entered the secondary school. At this age the girl writes fairly quickly, spells with tolerable correctness, and has learned so much theory of home management that she brings a better trained intelligence to the course undertaken; she is physically strong enough to handle utensils and old enough to escape accidents. She should now take a thoroughly good course of plain cookery, and be taught why one thing is to be done and another avoided; why and how certain utensils are used, their cost, their proper care, and the economies to be effected by the use of the many excellent modern contrivances in kitchen apparatus and utensils.

At thirteen school life for girls might well be remodelled. One half of the remaining year should be continuously devoted to cookery, laundry, and housecraft proper. This continuous course should be followed in rooms similar in size and equipment to those in which the girls live and will probably inhabit in adult life. The lessons should teach how to adapt an article possessed until the best utensil can be afforded, and should cover every detail of house-cleaning and management. The rooms should be occupied, real meals prepared, laundry work done for real inmates, the management following real occupation, and a real baby replace the quiescent doll so easily and unresistingly bathed and clothed. The kinds of wood, solid, stained, veneered, should be known, the approximate cost of furniture and its durability estimated, and "house-pride" engendered.

The remaining half-time of the final year should be employed in needlework, especially the making and mending of garments, household linen, and napery, bed furnishings, the fabrication of

children's garments from "left-over" pieces, or by crochet and knitting; in completing the theoretical course in home and baby lessons; in gaining some insight into the elements of public health; in household calculations and accounts; in singing; in physical exercises, especially swimming; and in reading good literature.

The scheme of work included with this paper as preparatory to and concurrent with teaching in domestic centres is offered as affording suggestions for the development of other schemes. It has been successfully tried, and is capable both of enlargement and improvement. Objections have been offered to half the final year being devoted to domestic subjects. Some critics assert that more centres will be required, while others opine that present centres will not be filled. These overlook the fact that, whilst cookery and laundry centres will be needed less for these subjects as such, many housecraft lessons can well be taught in these centres—*e.g.* paint washing, cleaning furniture, brass, silver, care of glass and china, rug making. The working out will probably prove that the present cookery and laundry centres will suffice, whilst further provision will be necessary for housecraft. It is urged that the cost will increase. If this be so, the enhanced value of the continuous teaching with the resulting improved health and home conditions, and decreasing infant mortality and consumption must balance the account. A further objection revolves round a question of grant. Will the total grant earned on a given number of girls be less? At the present rates the answer is "Yes," and though the question of grants be outside the scope of this paper, it may well be suggested that the insufficiency of present grants hinders Local Authorities who would be progressive, and certainly deters some from the expenditure on the fuller training for which this paper pleads. Indeed, the payment of grants often seems devised to decrease the possible amount rather than to assist and encourage Local Authorities. Grants on the individual should cease, and very generous grants on classes replace them; the amounts from Imperial sources need to be largely increased, and absence caused by infectious disease,

by any certified ailment, or by removal from the district should not penalize the Local Authorities. It is suggested that upper classes under this scheme will be smaller. They are now so large that diminution can only be advantageous, and the teacher will find more than ample employment, even with the reduced numbers. The scheme worked in conjunction with domestic centres provides opportunities for good physical, mental, and moral, as well as domestic training.

If strong be the frame of the mother,
The son will give laws to the people.

At the centres continuity of lessons would greatly improve the result attained, girls would gain a real liking for household duties, and take pride in work well done; the higher standard of education would facilitate progress; discipline would be better and easier.

In the schools interruption to daily routine of lower classes would cease; all girls would have better opportunities of reaching higher classes; the standard of elementary education would be raised; economy of teaching power and time would be effected.

To the nation healthy children are its most valuable asset, and the healthier homes would produce a race physically stronger and mentally more alert.

In the homes would be women understanding conditions essential to their own health and to the well-being and comfort of those dependent on their knowledge; wives, capable and unashamed of performing household duties well, would pleasurably and profitably produce at home foods and garments now bought ready-made; better commodities at lower cost would be provided; provision for "bad times" would be available; women would rear healthy children and nurse them intelligently, would train them in self-respect and be respected by them; mothers would earn and deserve the eulogy upon the virtuous woman of the Book of Proverbs, and prove the truth of the old Saxonian assertion: "A wooden mother is better than a golden father."

[A well considered Scheme of Work for Girls' Day Schools is appended to the official print of the paper.—*ED. E.T.*]

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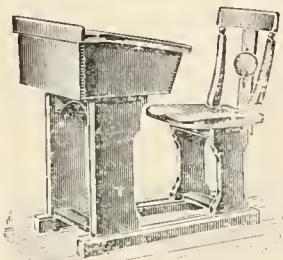
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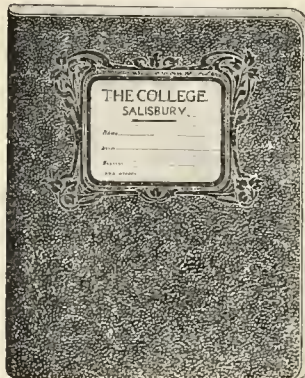
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CURRENT EVENTS.

At the Members' Meeting of the College of Fixtures. Preceptors on May 22, discussions on "The Self-Education of the Teacher" and on "The Correction of Home Work by Teachers" will be opened by Miss K. Stevens and Mr. R. F. Charles respectively.

* * *

At University College, London, Dr. H. Fromageot (Paris) will deliver, in French, two lectures on "Codification of Law" on May 1 and 3, at 5 p.m. (open free); and Prof. H. Poincaré (Paris), a course of four lectures on mathematical subjects at the University, South Kensington, on May 3, 4, 10, and 11 (information and tickets from the Academic Registrar).

* * *

The program of lectures and classes for the Summer term at the London School of Economics and Political Science includes lectures by Prof. Foxwell on "The Measurement and History of Changes in General Prices"; Prof. Morgan, on "The Legal Basis of the Government of England and Ireland"; Prof. Hermann Levy, on "England and Germany: their Industrial, Agricultural, and Commercial Development"; Prof. Roget, on "Swiss Military Law"; Mr. H. J. Mackinder, Mr. W. R. Charles, and Mr. J. O. P. Bland, on "China"; and Mr. C. Bouglé (in French), on "Social Movements in France in the Nineteenth Century," including the Development of the Syndicalist Movement. Prof. Levy will also lecture in German on "The Economic Development of Germany." The last-mentioned lectures and those by Mr. Bouglé are arranged by request of the London County Council and are intended specially for teachers in London, who can obtain admission without payment.

* * *

MISS BARBARA FREIRE-MARRECO, Research Fellow of Somerville, College, Oxford, will deliver a course of eight lectures on "The Self-Government of the Pueblo Indians under Spanish and American Administration" at the London School of Economics and Political Science on Thursdays, beginning May 2, at 3 p.m. Open free.

* * *

THE fifth Annual Dinner of the University of London Graduates' Association will be held at the Criterion Restaurant on Saturday, May 4, at 6.30 for 7 p.m., the President, Lord Justice Fletcher Moulton, in the Chair. Tickets (6s. 6d.) from Mr. A. S. E. Ackerman, B.Sc. Eng., 25 Victoria Street, Westminster.

* * *

A CONFERENCE on Diet in Public Secondary and Private Schools will be held at the Guildhall on May 13, at 10.30 a.m.

* * *

THE fortieth Annual Congress of the General Association of Church Managers and Teachers will be held at Southend during Whitsun week. Particulars from the Organizing Secretary, Miss E. M. Parham, 132 Argyle Road, Ealing.

THE HON. MONTAGU BUTLER, D.D., D.C.L., Master of Trinity College, Cambridge, will deliver the Romanesque Lecture in the Sheldonian Theatre, Oxford, on May 22. Subject: "Parliamentary Oratory from Chatham to Gladstone."

* * *

THE University of Dijon will hold its tenth Cours de Vacances pour les Etrangers from July 1 to October 27. S'adresser soit à M. le Recteur de l'Université, soit à M. le Professeur Lambert, 1 rue Viollet-le-Duc, Dijon.

* * *

At the Polyglot Club (4 Southampton Row) the following lectures, &c., will be given (8.30 p.m.):—May 4, "Paris, Ville Lumière, Ville de Plaisir, Ville de Souvenirs," by Mlle V. Bonhome; May 6, Seventh Annual Banquet, Waldorf Hotel; May 11, "La Divina Commedia, prima de Dante," by Signor F. Rossi; May 13, Henrik Ibsen's "Nora oder ein Puppenheim," Frau S. Neily; May 16, "El Castellano como vehiculo universal de cultura," by Señor Don B. Sanin-Cano; May 18, "Causerie anecdotique," by M. Ch. Barbyer; May 20, Debate, "That the Older Universities are failing in trust towards Democracy"; May 23, Russian subject, by Baron A. Heyking; May 30, "El problema colonial en su aspecto económico," by Señor Don Julio Alvarez del Vayo.

Honours. THE Senatus Academicus of Edinburgh University has offered honorary degrees as follows:—

D.D.: Rev. Andrew Benvie, M.A., B.D., Edinburgh; Rev. J. Fraser Grahame, M.A., B.D., Glasgow; Principal E. Griffiths-Jones, United College, Bradford; the Rev. Prof. J. Macphail Russell, Christian College, Madras; Rev. George Steven, M.A., Edinburgh.

LL.D.: Lord Minto, Lord Rector of the University of Edinburgh; Colonel F. Bailey, R.E., formerly University Lecturer in Forestry, Edinburgh; Prof. J. Theodore Cash, M.D., F.R.S., Aberdeen University; Mr. J. S. Flett, D.Sc., Survey Office, Edinburgh; Mr. W. Warde Fowler, D.Litt., Lincoln College, Oxford; Lord Johnston; Prof. W. C. McIntosh, Professor of Natural History, St. Andrews University; Robert Munro, M.D., F.R.S.E., Largs; Sir James Porter, K.C.B., Director-General Medical Department R.N.; Sir Thomas Raleigh, K.C.S.I., Member of Council of India; Mr. J. L. Robertson, H.M. Inspector of Schools, Inverness, formerly Rector of Dingwall Academy.

Endowments and Benefactions. THE LATE MISS ROSA MORISON, Lady Superintendent of Women Students at University College, London, left £33,679 net personalty. She bequeathed to the University of London, on behalf of University College, £2,000 to found a scholarship for women in the Faculty of Arts, and £2,000 to found a similar scholarship in English Language and Literature; £500 (and certain furniture) to the Old Students' Association, College Hall, Byng Place; £250 to the Endowment Fund of College Hall; £250 to the Eleanor Grove Memorial Fund; £100 to the Library Fund; £100 to the Old Students' Association; and £100 to the Women's Union Society of University College (subject to minor legacies). The residue of her property is to be divided equally between the New Hospital for Women, Euston Road, College Hall London Residence for Women Students, and University College (Faculty of Arts).

* * *

SOME £5,000 is still wanted to secure for King's College, London, a new Hostel for Theological Students. Contributions to Mr. Walter Smith, Secretary, King's College, Strand, W.C.

* * *

AN appeal is made on behalf of the Oxford House in Bethnal Green for £1,500. Contributions to the Secretary

THE Southampton Town Council have adopted the recommendation of their Parliamentary Committee guaranteeing a payment of £10,000 towards the Hartley University College building scheme on the condition that the county councils of Hants, the Isle of Wight, Dorset, and Wilts, and the boroughs of Portsmouth and Bournemouth, contribute a fair proportion of the required sum.

* * *

MR. JAMES MADEN HOLT, Bacnp, Lancashire, has left £300 to the Grammar School, Newchurch-in-Rosendale, to found a scholarship.

* * *

THE Massachusetts Institute of Technology has received from an anonymous donor £500,000 for the erection of the buildings on the new site.

A JOINT Examination, beginning on December 3 next, will be held by University, Oriel, New College, Brasenose, Corpus Christi, Christ Church, Trinity, and Wadham Colleges, Oxford, for the purpose of filling up a number of Open Classical Scholarships and Exhibitions.

* * *

A JOINT Examination, chiefly classical, will be held on December 10 next by Merton and Exeter Colleges, Oxford, for the purpose of filling up a number of Postmasterships, Scholarships, and Exhibitions.

* * *

EMMANUEL COLLEGE, Cambridge, offers a Research Exhibition of £50 a year for two years; also Exhibitions of smaller value if applicants be properly qualified. Apply to the Master of Emmanuel by September 24.

* * *

THE Drapers' Company offer three scholarships, £60 a year each for two or three years, to enable specially promising girls to study at some place of advanced education either in special subjects or for a degree. Age, seventeen to nineteen on June 1. Must have passed some approved public examination; must need assistance. Preference to girls that have studied not less than three years at a school in the County of London. Particulars from the Clerk to the Company, Drapers' Hall, Throgmorton Street, E.C.

* * *

DURHAM SCHOOL offers King's Scholarships, £20 to £50, to candidates under 15 on September 21. Examination June 4. Forms to be filled up and sent to the Chapter Clerk by May 23. Particulars from the Head Master.

* * *

KING'S SCHOOL, Bruton, Somerset, offers three open scholarships. Examination July 9-11. Candidates may be examined at their preparatory schools.

* * *

KING'S SCHOOL, Canterbury, offers fourteen scholarships, £55 to £10. Examination June 12-14.

* * *

BLUNDELL'S SCHOOL, Tiverton, offers eleven scholarships. Examination June 13-14.

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ALDENHAM SCHOOL offers twelve or thirteen open scholarships—eight Junior Platt Scholarships of £30 and four or five (House) of £20—all tenable for three years. Age, under

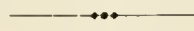
fifteen on May 1. Examination June 6-7. Particulars from the Head Master.

* * *

RADLEY COLLEGE offers ten scholarships and exhibitions, £80 to £20. Examination July 4-5.

* * *

SEDBERGH SCHOOL offers six scholarships, £80 to £25, and some House Exhibitions. Examination in July. Particulars from the Head Master.



Appointments and Vacancies.

MR. A. J. BALFOUR has accepted the invitation of the Glasgow University Senatus to deliver the Gifford Lectures on Natural Theology for the first course 1913-14.

* * *

PROF. GEORGE G. A. MURRAY, F.B.A., Professor of Greek in Oxford University, has been appointed Rede Lecturer at Cambridge for 1912.

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THE REV. A. J. MASON, D.D., Master of Pembroke College, Cambridge, intends to resign within the course of the present year.

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MR. STANLEY A. COOK, M.A., Hebrew and Syriac Lecturer and late Fellow of Gonville and Caius College, Cambridge, has been appointed to the Lectureship in the Comparative Study of Religions just founded by the College.

Mr. Cook was a member of the editorial staff of the "Encyclopædia Biblica," and published a scholarly monograph on "The Laws of Moses and the Code of Hammurabi" (1903, Adam & Charles Black).

* * *

In the University of Leeds, Mr. C. M. Gillespie, M.A., Lecturer in Philosophy in the Yorkshire College and in the University since 1893, has been appointed to the new Chair of Philosophy; and Mr. F. W. Moorman, B.A., Ph.D., Assistant Professor in English Language and Literature in the University, has been appointed to the new Chair of English Language.

Prof. Moorman was educated at Caterham School, University College (London), University College of Wales, and Strasburg University. Assistant Lecturer in English at Aberystwyth 1895; Lecturer and Assistant Professor at Leeds since 1898. Numerous publications.

* * *

MR. JOHN W. CUNLIFFE, M.A., D.Lit., Professor of English in the State University of Wisconsin, has been appointed Professor of English in Columbia University and Associate Director of the Pulitzer School of Journalism, New York.

Shakespeare Scholar and Berkeley Fellow in English Literature at Owens College. M.A. Manc.; D.Lit.Lond. Author of "The Influence of Seneca on Elizabethan Tragedy"; editor of Gascoigne (Cambridge English Classics); contributor to the "Cambridge History of English Literature." Journalistic experience in England and Canada. Professor of English in McGill University, Montreal; then in Wisconsin.

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DR. ANNA J. MCKEAG has been appointed President of Wilson College, Chambersburg, Pennsylvania.

* * *

ASSOCIATE PROFESSOR SAMUEL C. PARKER has been appointed Dean of the College of Education of Chicago University.

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PROF. EDWARD L. THORNDIKE, of Teachers College, Columbia

University, has been elected President of the American Psychological Association for the current year.

* * *

MR. L. V. D. OWEN, B.A., Lecturer in History at Keble College, Oxford, has been appointed Assistant Lecturer in History at Bangor University College.

Educated at Cardigan County School, Llandovery School, and Keble College (Scholar). Stanhope Prizeman.

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THE Directorship of the Rothamsted Experimental Station will be vacant in September through the resignation of Mr. A. D. Hall, who has been appointed a Development Commissioner. The Committee of the Lawes Agricultural Trust will elect a new Director in June.

* * *

A HEAD MASTER is required for the Hull Municipal School of Art. £400. Forms, &c., from Mr. J. T. Riley, Secretary of Education, Education Offices, Albion Street, Hull; to be returned by May 10.

* * *

A VICE-PRINCIPAL is required for the Cambridge and County Schools of Arts and Crafts (October). £130, rising to £150. Apply (fifteen copies, three recent testimonials) to Mr. Austin Keen, M.A., Education Secretary, County Offices, Sidney Street, Cambridge, by May 15.

* * *

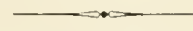
A DIRECTOR AND SECRETARY is required by the Tonbridge Local Higher Education Sub-committee. £200 initial. Forms from the Registrar, Technical Institute, Tonbridge; to be returned to Mr. J. W. Kenyon, Technical Institute, Tonbridge, by May 15.

* * *

A LADY PRINCIPAL is required, in September, for Lincoln Training College for School Mistresses. Churchwoman under forty; University Honours. Apply for forms to Canon Vines, Fiskerton Rectory, Lincoln.

* * *

A HEAD MISTRESS is required for Tasker's Endowed (Secondary) School for Girls, Haverfordwest. Apply to Mr. H. E. H. James, Director of Education for Pembrokeshire, County Education Offices, Haverfordwest.



MESSRS. LONGMANS issue the annual edition of their "Classified Catalogue" of the vast variety of works they publish. The classification is most convenient, and it is assisted by a very full index. Messrs. Longmans "will be pleased to forward copies of the catalogue to book-buyers and any others interested in literature."

* * *

AMONG the spring announcements of the Oxford University Press are "A Commentary on Herodotus," by W. W. How and J. Wells; a translation of "Tacitus' Histories," by W. Hamilton Fyfe; a "Companion to Roman History," by H. Stuart Jones; and a new edition of Wickham's "Horace," by H. W. Garrod.

* * *

THE April issue of ten volumes of the "Home University Library of Modern Knowledge" brings the number of volumes already published up to fifty. Messrs. Williams & Norgate are making arrangements for a rapid extension of the Library.

MESSRS. CONSTABLE & CO., LTD., will shortly publish another volume in their delightful series of Anthologies entitled "In Praise of Edinburgh," by Rosaline Masson. Other volumes to follow are "In Praise of Cambridge," by Sidney Waterlow; "In Praise of Switzerland," by Harold Spender; "In Praise of Australia," by Florence Gay.

Messrs. Constable have also for early publication some interesting impressions of European towns entitled "European Years" by G. E. Woodbeny; and also "History of London" by H. Douglas Irvine, being an account of London from before the Conquest to the present day.

* * *

MR. DAVID NUTT has transferred the bookselling portion of his business to Mr. Alexander George Berry, who will carry it on at 212 Shaftesbury Avenue, W.C. Mr. Nutt will continue to carry on his publishing business as hitherto at the well known address, 57-59 Long Acre, W.C.

* * *

THE next number of the *Edinburgh Review* (Longmans) will appear under a new editor, Mr. Harold Cox—the seventh in succession from Francis Jeffrey.

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"THE New Irish Constitution: an Exposition and some Arguments," edited for the Eighty Club by Prof. J. H. Morgan, of University College, London, will be published immediately by Messrs. Hodder & Stoughton.

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THE Prize Fellowship of £120 offered by the General Federation of University Women has been awarded to Miss C. E. Spurgeon, Docteur de l'Université de Paris, Lecturer in English Literature at Bedford College for Women. Miss Spurgeon's published work deals chiefly with mysticism in poetry and with Chaucer criticism.

* * *

GLASGOW University Court has decided to proceed with the establishment of the proposed Chair of Scottish History. A committee has collected some £5,000, and the surplus from the Scottish National Exhibition will complete the endowment.

* * *

MR. EDMUND DAVIS, a Governor of the Middlesex Hospital, who has generously arranged for the rebuilding of the entrance of the Hospital, with a view to mural decoration, offers £100 for the execution of each of four paintings from designs approved by him; or £50 for a design accepted and not approved by the Hospital. Particulars from the Hon. Secretaries, Mural Decoration Committee, Crosby Hall, S.W.

* * *

THE Senate of the University of Belfast has applied to the Treasury for £33,000 for new buildings during the current financial year.

* * *

THE *Bioscope* is organizing a series of invitation *matinées* at a West End Theatre to demonstrate the value of the cinematograph to medical men and teachers, and hopes to obtain the services of well known scientists and educationists as lecturers.

* * *

THE seventy-fifth anniversary of the National University of Greece was celebrated, and the Sixteenth Congress of Orientalists met, at Athens on April 7. The University was formally inaugurated on May 15, 1837; and the present University buildings were opened in 1841.

OPEN COURT.

*They haif said . . .**Quhat say thay?—Lat thame say!*

THE ANNOTATION OF SCHOOL CLASSICS.

By Mrs. CRUSE (AMY A. BARTER).

THE annotation of school classics is a subject that has been much discussed. Yet it cannot be said that any very satisfactory conclusion has been reached. It is a subject on which a conference of editors and teachers might with advantage be held, for its importance in connexion with the teaching of English literature is considerable, and only by real effort on the part of all concerned is the ideal likely to be approached. We have all agreed in condemning the over-annotated books of the past, and many of us have declared for "plain texts" and tabooed notes and introductions altogether. Yet this course, whatever its theoretical merits, is not without its drawbacks, as those that have tried it are in general willing to testify.

The circular on the Teaching of English, issued by the Board of Education, gives some valuable suggestions; but even here we are told more of what a school edition should *not* be than of what it should be. This, perhaps, is all that it is possible to do with any measure of authoritative decision. After all, in this, as in so many other questions concerning teaching methods, the answer lies in the special ability, tastes, and personality of the teacher. In the subject of English, more almost than in any other, the teacher is everything. In the hands of the ideal teacher the most violent "examination" editions become harmless, and "plain texts" are made to glow with a light that illumines the most obscure and intricate byways. But the ideal teacher is not yet, as were Dickens's Mr. MacChoakum-child and his companions, turned out yearly, in large numbers from the "factories," "like so many pianoforte legs," and it is not the ideal teacher whom the question most closely concerns. The great rank and file has to be catered for, and many of us, alas! must come under the denomination of weaker brethren. The well read but uninspired teacher; the easy tempered teacher of moderate ability and moderate ambition in his teaching methods; the brilliant impatient teacher, whose flights carry him far ahead of his unfledged pupils; the earnest, painstaking teacher who advances with slow and laborious steps—for these, and such as these, textbooks are written and school editions prepared. Moreover, even the ideal teacher does not work under ideal conditions. His time, both in school and out, is limited. He has a class too large for individual attention to be given to each member. The reference library to which he can send his pupils is not ideally furnished, and if he relies on what they can do at home he probably finds that there the resources are even more imperfect.

It is for these reasons that annotated editions have not yet disappeared, and will probably not disappear in our day, or in our children's. Effort, therefore, may well be expended in the attempt to evolve as perfect a type as possible.

In judging of the fitness of any annotated edition for use by pupils, there are, teachers will probably agree, two main principles to be kept in mind. The editorial matter must not injure, but if possible increase, the scholar's love and appreciation of the work to be studied; also it must be practically useful—that is to say, it must be so planned as to save time without discouraging effort. The fulfilment of these two requirements is not easy and demands special qualities in the editor. He must possess not only a scholarly enthusiasm, but a real love for literature in general and for the work to be studied in particular. He must keep himself in sympathy with the minds of young people. He must be able to judge when the training received by the pupil in searching out a piece of information for himself is worth the time and labour involved, and when, in the best interests of that pupil, it is well that the information should be provided for him.

The editor's task would in many respects be easier if he knew how far teachers in general would go with him should he venture boldly to take for granted that some allusions and difficulties in the text might be passed over without an explanation being sought from any source. How many teachers, for example, would be willing to leave Milton's

The brutish kings of Nile as fast
Isis and Orus and the dog Anubis haste

without explanation other than that which the words themselves supply? Or how many would ignore slight textual difficulties,

such as the "Heavily, heavily," of the mourning song in "Much Ado," or Portia's "The full sum of me is sum of nothing" in "The Merchant of Venice"?

One thing that is noticeable in turning over a number of annotated texts, even those of recent times, is the amount of space occupied by the explanation of classical allusions. I would suggest, as a definite measure of reform, that these be entirely cut out. If an explanation is absolutely necessary to the sense of the passage, a classical dictionary can always be consulted; but, if not, the passage may well be left for maturer reading. I have often wondered what ideas of classical literature the scholar that has gained his chief knowledge of it from annotated editions must have. What a strange medley of disconnected scraps of information there must be in his brain, and what a curious, trivial sort of thing must appear to him the great world-study of which he has heard so much! In his heart he must almost despise the possessors of that coveted thing, a classical education. The advantage he gains from the knowledge is small indeed. To the reader familiar with the ancient classics such references have a peculiar charm, charged as they are with associations, and opening up as they do such large tracts for comparison and thought. But this result is not to be attained by the ordinary scholar through notes. One might as well offer to him, one by one, all the ingredients that go to the making of a delicious entrée and expect him by this means to enjoy the full flavour of the completed dish.

The same remarks also apply to other general sources of allusions—the mythology of the North, the Nibelungenlied, the Arthurian legend, &c. Stories founded upon all this early literature are now being included in the English syllabus of most schools, and this cannot, one would say, fail to have excellent results.

In various recent series of annotated texts the avowed aim of the editors is to put into the introduction in connected form the information that has usually been given as notes. This is undoubtedly an advance, but I venture to suggest that the reform might be carried still farther in this direction. The introduction might usefully attempt to supply a background against which the work to be studied could be set, an atmosphere through which it could be viewed. For example, suppose a class is beginning the study of the "Coverley Papers," much of what they contain will be lost upon the scholar if he does not know something of the life of the time—far more than an ordinary history book will teach him, and far more also than he can learn through explanations of the direct allusions in the text. There are subtle indirect allusions in almost every line. The scholar needs to go farther afield. He must know something of the London through which Addison and Steele moved as they took their portraits—the coffee houses and other fashionable resorts, the streets, the houses; something, too, of the mode in dress, furniture, manners, and speech; of the books that the average gentleman of the day read, and the plays that he saw acted. In a word, he must as far as possible put himself in the position of the eighteenth-century Londoner to whom the *Spectator* was served up with the chocolate each morning.

The best way of accomplishing all this is, naturally, through an introductory lesson given by a skilful teacher. The introduction as here suggested is not intended to replace, but to supplement, this—to provide reading for the pupil to which he will come with awakened interest, which will serve to deepen and fix his impressions, and which possibly will lead him on to further study of the subject.

The circular of the Board of Education says that, in an introduction, "a complete biography of the author is out of place." With this I would agree, but I cannot help thinking that some details concerning the life of an author are helpful and stimulating in connexion with the study of his works. For example, some knowledge of the simple and beautiful life led by Wordsworth in his humble home at Grasmere helps to give dignity and force to the poems he wrote there; one cannot read Ruskin's social works without a strong desire to know what manner of life was led by the writer, nor Lamb's "Essays" without making up for oneself a "life" of their author whether it is given or not.

If the text is for the use of advanced pupils, who have some knowledge of the outlines of literary history, a short sketch of the origin and growth of the particular form of literature dealt with—essay, ode, novel—is useful. It will enable them to place it in relation to literature in general, and in relation to others of its class.

It may be objected to these suggestions that if they were carried out the introduction would be swelled to a stupendous

size, in some cases overwhelming the text. I do not think that this need necessarily be so. In few cases would all the three elements—background, biographical details, history—be required. The *Spectator* essays form an extreme example with regard to the first: in most instances a less comprehensive introductory sketch would be required. Experience has convinced me that the three aids that have been here indicated may be made extremely valuable in the class study of an English classic. An "introduction" would be a convenient form in which to supply them.

There remains the question as to what information, if any, should be given in the form of notes. I should say, very little indeed. The meanings of obsolete, or foreign, words, if these are not to be found in an ordinary dictionary, chance allusions to obscure historical personages, or characters in literary works, occasional illustrative extracts from contemporary literature—these, in most cases, will comprise all that is necessary.

THE COLLEGE OF PRECEPTORS.

MEETING OF THE COUNCIL.

A MEETING OF the Council took place at the College, Bloomsbury Square, on April 20. Present: Mr. E. A. Butler, Vice-President (in the chair), Dr. Armitage Smith, Mr. Barlet, Rev. J. B. Blomfield, Mr. Charles, Mr. Cholmeley, Mr. Eagles, Mrs. Felkii, Mr. Millar Inglis, Mr. Rushbrooke, Mr. Somerville, Mr. Starbuck, Rev. J. Twentyman, Mr. White, and Mr. Wilson. (The name of Mr. Millar Inglis was accidentally omitted from the list of those present on March 16.)

Mr. W. G. Rushbrooke, Dean of the College, was appointed the representative of the College on the Teachers' Registration Council constituted by the Order in Council of February 29, 1912.

At the invitation of the Child-Study Society, the Rev. J. O. Bevan and Mr. J. W. Longsdon were appointed to represent the College at a Conference of Teachers to be held at the University of London on May 9-11.

The diploma of Associate was granted to Miss E. W. Gray, Brother Calixtus Andrew, and Mr. E. W. Stone, who had satisfied the prescribed conditions.

On the recommendation of the Finance Committee it was resolved: (1) That a grant of £20 from the Benevolent Fund be made to the widow of a former member of the College. (2) That in future the College Calendar should be published without the appendix of examination papers. (3) That, beginning with the Calendar for 1913-14, a copy of the Calendar should be sent free to every life-member and subscribing member of the College. (4) That the papers for each of the College Examinations should be issued in separate books at 1s. net each set. (5) That all the sets of papers for examinations held after March 1912 should be offered at half price to life-members and subscribing members of the College. (6) That the following revised scale of fees charged to candidates for the Certificate and Lower Forms Examinations should come into operation in June 1913: First Class, 15s.; Second Class, 15s.; Third Class, 10s. 6d.; Lower Forms, 7s. 6d.

On the recommendation of the Examination Committee, German, Spanish, and Dutch were added to the list of optional subjects for the Lower Forms Examination, beginning with the Midsummer Examination in 1913, and Mr. Percy Simpson, M.A. Camb., was appointed an additional Reviser in the subject of English.

The following persons were elected members of the College:—

Mr. W. G. Beare, A.C.P., 22 Wordsworth Avenue, Manor Park, Essex.

Miss F. M. A. Gadesden, M.A. Dublin, 3 Orchard Road, Blackheath.

Mr. A. A. Gunnis, L.C.P., The Modern School, Streatham Common, S.W.

Mr. J. A. Hawke, A.C.P., 4 St. John's Villas, Friern Barnet Road, New Southgate, N.

Mr. J. Pipe, A.C.P., 8 Beauchamp Road, Lavender Hill, S.W.

Mr. F. Rowland, A.C.P., Temple Mount, Belvedere, Kent.

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

By the BOARD OF EDUCATION.—Report of the Board of Education for the Year 1910-11.

By BLACKIE & SON.—Blackie's Experimental Arithmetics, Books V and VI; Blackie's English Texts (Mungo Park's Travels in the Interior of Africa); Blackie's Stories Old and New (4 vols.); Frew's Junior Geography of Scotland; Goldsmith's The Good-natured Man, and She Stoops to Conquer; Margee's Le Livre Rouge; Vinnall's Shading and Painting for Schools.

By W. B. CLIVE.—Duffin's Shakespeare's Twelfth Night; Lyster's Text-Book of Hygiene for Teachers; Satterly's Junior Heat.

By HACHETTE & Co.—Tricoche's Vade Mecum du Professeur de Français, Calendar of the South African School of Mines and Technology.

THE SOUL OF STUDY.

By Rev. HUGH B. CHAPMAN, Chaplain of the Savoy.

[From the *Moral Education League Quarterly* (April).]

THE whole question of education is so complex and has become to such a large extent a matter for experts, that I hesitate to express the opinion of a layman on the even more abstruse subject of the Moral Education League. I welcome, however, the opportunity of expressing my gratitude for and sympathy with the objects of this great movement, which every thinker will own is necessary to counteract the routinous and clerical rut into which the training of the young is all too prone to slip.

Having had the privilege more than once of listening to Mr. Gould, I was impressed with the new light he threw upon the problem, and how it appeared possible to call forth in children their very best and most original, through the medium of the spirit of things, rather than a too strict confinement to the letter. Not that accurate knowledge was in the least belittled, but by a genius unique to himself he gently drew forth from his listeners lofty sentiments and profound feelings to which their simplicity and ingenuousness lent themselves in a way seldom found amongst more matured and complicated minds. I was reminded of a proverb that many of the grandest secrets are hid from the wise and prudent, but revealed to babes, and at the conclusion of his class felt almost a godly jealousy at what I had lost through contact with the world and so-called experience. Truth to tell, I am not surprised that Jesus took a little child and set him in the midst of his elders as a model, whilst I feel strongly that teachers often forget how Christ may be forfeited through slavery to a curriculum.

I believe the root fallacy to consist in the accepted theory that "main principle" is the outcome of age, whereas the young, being more plastic, more innocent, and more imaginative, spring to ideals under the magic wand of sympathy, for the excellent reason that as yet they are nearer to the Kingdom and understand by intuition mysteries by which we are baffled. It is a cause of complaint on every side that modern education has not produced better manners, and we are getting a little tired of being referred to the rising generation who will alter all that. We still, however, refuse to realize that children do not necessarily become braver, gentler, purer, more unselfish or refined because they know the date of the Conquest and are sadly proficient in all the "ologies." I have often been tempted to marvel, not so much at "conversion" (which is hardly justified by philosophy, save in most exceptional cases) as at our terrific tendency to "reversion," and this is where books so dismally fail, compared to an almost unconscious, yet actually pleasant, process of soaking principles.

Here it is, then, that I cordially welcome the Moral Education League as at least a protest against over-methodizing the subtle task of training the young, let alone for its positive use of pictures calculated to evoke the soul through the time-worn channel of stories deftly told and furnishing an eternal delight. I confess that this system, which lays itself open to the attack of being nebulous, appears, for me at least, to be parabolic, or much on the lines of the Great Teacher. Whereas facts, however necessary and accurately taught, are prone to become useless lumber, ideas remain and continually restore vitality. It is all to the good, then, that not only our national education, but that of all children, in whatever class, should no longer be confined to the objective: it should be winged by the poetry through which morals are most successfully imbibed. The best metaphor is that of electric cars compared to the old system which took double the time and entailed endless fatigue upon the horses, but this new force of inspiration suddenly transforms the whole business by means of a current, which, though unseen, carries a tenfold weight without the smallest distress.

The only weak point in the affair is that such God-given lessons require God-given teachers, but here I would point out that far more people are gifted in this direction than is allowed, and I am persuaded that masses of men and women possess, at all events, the germs of this poetic instinct, if only they took the pains to develop them. Surely we should welcome with profound gratitude a society whose influence ought to be immense, in gradually creating teachers whose aim shall be to bring the

children throughout the world to think on "whatsoever things are lovely, whatsoever things are of good report, or contain any virtue or any praise," independent of dogmas or creeds, which, after all, are but different means to the same end.

This is why I hope that the Moral Education League will be strongly supported, and, considering its great value, it most surely never ought to lack funds in order to carry out its high purpose. To rescue the little ones from becoming mere machines; to teach them how to fly before they have lost the use of their wings; to enthuse them with heroic ambition; to appeal to the tenderness of their affectionate hearts; to make them feel the sanctity of home; to clothe the word "father" with dignity and "mother" with a halo; to fill them with a passion for Fatherland; to tell them of all the heroes and heroines who have laid down their lives because they had within them the same spirit as moved Jesus; to make them restless until they climb some of the peaks which others have scaled; to show them that, whether children of the rich or poor, to whatever nation they may belong, whether they be black or white, they can all be great by being good: this were a fine achievement, and it is this which is spelt by the League.

If its tenets were better understood, and if its gospel were more universally preached, I can imagine one of those bloodless revolutions which, without any wordy battles, would go far to alter the face of the world, minimize the chances of war, and blend human beings in the common perspective of finding God in achieving their best. To put it tersely, the message of the society, to which I offer my best wishes, and on behalf of which I earnestly plead, is much the same as the song of the angels at Bethlehem: "Peace on earth, and good will amongst men."

ASSISTANT MASTERS' ASSOCIATION.

A SECONDARY TEACHERS' UNION SUGGESTED.

A GENERAL Meeting of the Incorporated Association of Assistant Masters in Secondary Schools was held at Mercers' School, E.C., on April 6, Mr. S. E. Winbolt (Christ's Hospital), Chairman, presiding. Mr. Winbolt said that month by month the Association was growing stronger. They had added 355 members since January 6, making the total to date 3,887. The sinews of war were in healthy condition, and never had the Executive Committee been better attended. Along with other educational bodies who had furthered the cause of registration they might now indulge for a brief moment in the heart-warming pursuit of self-congratulation on the result of their efforts. After referring to other activities of the Association, Mr. Winbolt said:

Above all, the work of the Provident Society has for the first time brought the associations of secondary teachers into really close contact, and there is now a great body of opinion favouring the speedy formation of a Secondary Teachers' Union. The Manchester meeting of last year did its share in this direction. At Liverpool, on March 16, our Lancashire and Cheshire West Branch organized a splendid meeting, representing all kinds of secondary teachers, and your London representatives, in spite of the coal strike, arrived on the platform in time to provide sensational copy to some Northern and other journals. A week later, at Kensington, under the chairmanship of the Head Master of Eton, a large meeting listened to speeches on Pensions, Registration, and Freedom in Education from Mr. Dyke Acland, Mr. Rawlinson, Dr. McCaure, Miss Lees, Mrs. Woodhouse, Mr. Cholmeley, and others. The Reinhardt of this mass meeting was Mr. Heath. All this seems to mean that the time is ripe for the formation of a Secondary Teachers' Union, which shall represent to the public and the political and administrative world the wishes of secondary teachers. The machinery would be simple. All members of the four associations of heads and assistants would, by virtue of their association membership, belong to the Union. A small capitation fee per member would be paid to the funds of the Union. I cannot here go into detail; but that the plan is both feasible and necessary I thoroughly believe. And where is the initiative to come from? From the I.A.A.M.

Mr. G. T. Hankin (King's College School, Wimbledon) moved: "That this Association is prepared to do all in its power to protect the rights and interests of such of its members as are affected, directly or indirectly, by the provisions of the National Insurance Act, and to support the Secondary and University Teachers' Provident Society." Mr. E. Tilswell (Tottenham Grammar School) seconded. The resolution was carried unanimously.

N.U.T. EASTER CONFERENCE.

THE National Union of Teachers held their forty-third Annual Conference at Hull, April 8-11, under the presidency of Mr. W. D. Bentliff (L.C.C. School, Haselrigge Road, Clapham, London, S.W.). The Union now numbers 56 County Associations, 516 Local Associations, and 72,394 members. Over 1,800 branch delegates attended the meeting, and there were representatives of teachers' associations in Belgium, Switzerland, Ireland, Scotland, of the Teachers' Guild, and of the Co-operative Union. A vast variety of educational questions were discussed, and an extensive exhibition of apparatus and books for school use was held. There were also numerous interesting collateral meetings and the usual program of visits to neighbouring places of interest.

THE PRESIDENTIAL ADDRESS.

Admitting that the Acts of 1902-3 led to great improvements, Mr. Bentliff dealt with the necessity for further changes—the removal of the age bar to continued attendance at the primary school, a free secondary system with a sliding scale of maintenance grants, justice to the teachers (especially voluntary-school teachers) dispossessed, the abolition of the distinction between provided and non-provided schools, and the placing of every public primary school under complete popular control, &c. The power of appointment and dismissal as now exercised he regarded as a serious matter for the teachers and a far more serious matter for the community.

WHY IS IT TOLERATED?

After all, that is the question. One answer is humiliating. It is this: To provide for the continued denominational religious instruction of children whose parents in the very vast majority of cases have not asked for it, are not keen on it, and would view its discontinuance in the schools with indifference. This is a serious statement, and one which may be questioned. Let me give reasons for making it. In no case of which I am aware have the parents in a locality approached a religious denomination and asked them to build a day school in which the definite religious teaching of that denomination might be given. I will go further. Whether denominational schools have been enlarged or new schools built, the movement to increase has been initiated by the representatives of the denomination concerned, and not by parents in the locality. Let me now take the next point. I have said that parents are not keen on denominational teaching. What is my reason? This: I have had a long experience in the admission of children to provided schools. I have admitted thousands, and never yet have I heard a parent complain of having to enter children in a provided school; never yet have I heard an expression of regret at our statutory inability to provide definite denominational religious instruction. My experience is not unique. It is the experience of ninety-nine out of every hundred of the head teachers of provided schools. With regard to the indifference of the parents, I place before you, in support of my statement, the fact already mentioned, that non-provided schools have been closed by the hundred, and I ask: Where are the protesting parents? Where are the petitions to the denominations? They may exist, I have not heard of them. The truth, so far as parents and denominational religious instruction are concerned, is this: Enthusiasts have built an inverted pyramid of fiction on a pin-point of fact.

There are other answers to my question, "Why is it tolerated?" Many will tell you the denominations did so much for education in the past that it is unfair completely to remove their control of the religious instruction and instructors. Some will go further, and frankly own that, money having been spent freely, the wishes of those who have provided it must be respected and the trust deeds duly observed. We recognize to the full the pioneer work of the Churches in the field of education. We honour and respect the generous donors of the past, but—and it is a big "but"—past work and past generosity must not be allowed to hamper present progress. There comes a time when even the grip of the dead hand must be gently released to safeguard the welfare of the living. I am not advocating spoliation. I am not urging a diversion to secular objects of money left for the purposes of religion. I have sufficient confidence in the British Parliament to know that, when the dual system of primary education is abolished, it will be abolished

without robbery and without harshness. It is not the teachers' province to outline any scheme of equitable transfer. That is for the politicians in consultation with the lawyers. As teachers, however, we are concerned with the educational effect of the transfer, and we must insist that the terms of settlement involve no setting back of the clock. In the first place, there must be no contracting out of the national system, no payment of public money where there is no full popular control. Contracting out means the re-establishing of the old voluntary system on a small scale, with an intolerable strain upon teachers and a grave injustice to the children. No solution involving that will satisfy the National Union of Teachers. It has been attempted in Bills now dead. It has failed. We hope no fresh attempt will be made. Nor can we lend countenance to any attempt to establish the principle of denominational religious teaching in the present provided schools. In them there is no present religious difficulty. There must be none. In them more than half the primary-school children of this country are now receiving religious instruction with profit to themselves and with satisfaction to their parents.

THERE MUST BE NO RIGHT OF ENTRY

into present provided schools. It would be little short of a national calamity to solve the problem of religious instruction in the non-provided schools by altering a scheme of instruction in the provided schools which is satisfying the parents of more than three millions of children. What, then, shall we do? Turn to the parents. Let those in authority recognize the fact that what the parents are anxious about is *not* denominational religious instruction, but the retention of the Bible in the schools, and I am voicing the opinion of the members of this great Union of Teachers in saying here and now

THE BIBLE MUST BE KEPT IN THE SCHOOLS.

If that is done, if we are allowed to teach the truths therein contained which are accepted by every denomination which founds its creed on the Bible, then, speaking for myself, and, I hope, for the very great majority of teachers in this country, I say that, so far as the day schools are concerned, denominational instruction may go. I am aware, and I am surprised, that what I am advocating, and, mind you, it is simple Bible teaching, has been sneeringly referred to as "County Council religion." I should like a word on that. What is County Council religion? Let me tell you, and through you the man in the street, and the Members of Parliament who will have to deal with the settlement. It is this: "Thou shalt love the Lord thy God with all thy heart, and with all thy soul, and with all thy mind, and with all thy strength. . . . Thou shalt love thy neighbour as thyself." Those words of Christ form the ground-work of the religious instruction given day by day in every Council school of London. It is County Council religion. I wish I had more of it. Acted up to by miners and mine-owners, to say nothing of Members of Parliament, it would have settled the coal strike in a few hours. If it is good enough to save the nation from disaster, it should be good enough to be accepted as a basis for the righteous upbringing of the nation's children. I am not asking the theologians what they think of it, or whether such Cowper-Temple teaching satisfies them. I know it doesn't. But the enthusiasts for sectarian teaching have founded their enthusiasm on an eager desire to safeguard the wishes of the parents. To the parents, then, I appeal, and I ask them: Will such teaching as I have outlined satisfy you as a sure, certain, and solid week-day foundation for any superstructure of definite denominational Sunday-school teaching you may desire for your child? I know the answer of more than half the parents. It is "Yes." I think I know the answer of the great majority of the others. It also is "Yes." Who, then, has prevented, and is still preventing, a solution on these lines? In the words of a former President of this Union,

"THE THEOLOGIAN BLOCKS THE WAY."

He blocked it then. He blocks it now. We must remove the block. There must be no weakness. The wrench is inevitable, and the sooner it comes the better will be the terms to the friends of religious instruction in the schools. Have the theologians ever pondered the inevitable effect of their differences? What a spectacle they present for the irreligious! The avowed believers in and upholders of the teachings of Holy Writ unable or unwilling to agree on a series of lessons from its pages acceptable by all and suitable to the capacity of a little child! Let them ask each other what lessons Christ would have them teach, and there will be peace. I warn them to agree quickly. Let them remember this: No one can justify the expenditure of public money apart from full public control. No one can justify the closing of more than twelve thousand head teacherships to all but those who can satisfy a Creed test. No one can justify the appointment and dismissal of public servants by private persons. No one can justify the subordination of a profession and of the educational interests of three million children to the interests of sectarianism. Because these things cannot be justified, the system under which they are possible must go. There have been several attempts to end it, and in each an honest effort has been made to preserve the religious instruction. Let the sectarians responsible for the failure of these efforts beware lest in sheer despair Parliament removes the block by removing the Bible.

SCHOOL JOURNEYS :

THE MEDICAL ASPECT.

DR. C. RIVIÈRE read a paper before the School Journey Association, at Toynbee Hall (March 22), on "The Medical Aspect of School Journeys." School games, he said, should be compulsory, because of the moral and physical benefits to be derived from them; but they should be carried on under medical supervision, because only an expert can detect the signs of overstrain. Doctors are not killjoys, but they desire to prevent the possibility of nervous bankruptcy. The effects of school journeys from a medical point of view may be grouped under four headings:

1. *Change of Air*.—The effects of change of air on the surface tissues and mucous membranes produce nervous energy; heart tone improves, and consequently digestion.

2. *Feeding*.—Extra appetite from skin stimulation produces general bodily improvement.

3. *Sleep*.—Open-air life leads to deeper and therefore more effective sleep, during which recuperation is more efficient.

4. *Exercise*.—(a) Physical: Benefit to health; produces (i) loss of nervous energy, (ii) increases heart action, and consequently strengthens. (b) Mental: This means loss of nervous energy.

School journeys should serve to store up nervous energy, and consequently to realize truly their effects a kind of income and expenditure account should be raised: *Income*—Fresh Air, Food, Sleep, Mild Exercise; *Expenditure*—Exertion, Physical or Mental.

The physique of children varies in districts, but the average elementary-school child in London is in need of a holiday, and the most suitable district is the East of England. From the above statement of gain and loss it is a pity that any teaching should be put in. Seaside visits are best for London children, and they should generally be quiet holiday rests.

The average gain in weight by a party on a visit of a fortnight to Dymchurch was 1.25 kilograms; and another party for a similar period to Bexhill gained 1.4 kilograms.

For the more strenuous programs to be possible the following three points are essential:

1. The unfit should be eliminated. (a) The diseased—those with heart complaints especially; (b) those out of training—much harm is done by taking children whose tissues are flabby through a severe program, especially in the direction of heart strain, and this applies particularly to girls; (c) those suffering from malnutrition, as they are deficient in nervous energy.

2. Aim at natural conditions. Children are naturally spasmodic; therefore, short tramps with frequent rests should be the rule. Frequent small drinks are better than one long one. Meals should not be heavy. The main meal should be taken in the evening, allowing time for settling down after coming in. Easy days should alternate with strenuous ones.

3. Supply of time for sleep. Eight hours is not enough. Children of 11 years require 11½ hours sleep; 12 years, 11 hours. Adequate bedding should be provided, as this has an important bearing on the quality of sleep.

Great care should be taken to avoid heart strain. There is much difficulty in judging effects in different cases; heart strain is very difficult to recover from, and its after effects are often very serious. The commonest signs of it are breathlessness or quickened breathing and loss of flesh.

Nervous-system strain is also to be avoided, or nervous bankruptcy may be the result. Neurasthenia is not uncommon in schools among the pale, listless children. Anything which strains nervous energy too far may produce this state. Holidays are to build up nervous energy to withstand the strain of the London year, and it must be remembered that physical as well as mental energy are carried on at the expense of nervous energy.

From experience gained of the astonishing increase of weight during school journeys there is no doubt that an immense amount of good may be done by them provided due precautions are taken.

REVIEWS.

THE PROCESS OF LEARNING.

The Learning Process. By Stephen Sheldon Colvin. 5s. 6d. net. Macmillan.

Finding that Prof. Colvin is a colleague of W. C. Bagley, the reader may be inclined to expect in this work a sort of counterpart of "The Educative Process" and to look for something in the way of F. M. McMurry's "How to Study." But, while the author makes occasional references to the technique of learning as opposed to instruction in the content of the subjects of the school curriculum, his main interest throughout is in the process by which the individual appropriates the universe. The point of view is that of the teacher, so far as the school is involved at all; but a good deal of the book is taken up with the general question of learning in the widest possible sense. Prof. Colvin, however, never keeps far away from the school. It supplies him with all manner of illustrations of his more general theme, and no teacher can read these pages without realizing the importance of a careful study of the theoretical side of his profession. The book, in fact, is an excellent example of the direct application of psychological study to the practical needs of the schoolroom. Its author would, no doubt, be included by Prof. Adams in his class of "Educational Engineers" whose function it is to mediate between the theory and the practice of teaching.

Some parts of theory Prof. Colvin regards as of importance merely as theory. He treats them as belonging to a sphere that has no immediate connexion with the work of the school, though no doubt they deserve careful consideration from those who have the direction of the wider issues of education. Thus the problem of the transmission by heredity of characteristics acquired during the life of the individual appears to Prof. Colvin as too remote from the work of the practical teacher to deserve detailed attention. On the other hand, the idea of purpose underlying all mental process, and indeed all vital process, is of fundamental importance to the practical teacher, since it makes its influence felt on all the work of the school. This notion of purpose is very prominent in the book. The author never loses sight of it for long; even when arguing for the study of pure science as well as for science with a more obviously utilitarian aim, he makes it plain that purpose in its general sense is not excluded.

Prof. Colvin is perhaps best known on account of his reactionary position with regard to the doctrine of "formal training"; so we are not surprised to find this matter dealt with at considerable length. His "A Partial Justification of the so-called Dogma of Formal Discipline" is here worked up into three important chapters that furnish an excellent account of the present state of the controversy. He gives what the Americans call "a conservative estimate" of the value of formal training, and it may be doubted whether such a polemical subject could be more fairly treated. The teacher of classics may not get from this book all that he ordinarily feels entitled to, but, at any rate, he will escape from the usual buffetings of the more recent opponents of formal training. It can be no longer doubted that there is at least a limited amount of "transfer" from one subject to another. This is sufficiently demonstrated by the number of different theories suggested to explain how the transfer comes about. When we have different explanations offered by (1) James, (2) Thorndike, (3) Scripture and Davis, (4) Coover and Angell, (5) Fracker, (6) Bagley, Ruediger, and Ruger, (7) Ebert and Meumann, it seems highly probable that there is something to explain. These three chapters are a triumphant justification of the very popular belief that "there is something in" formal training, but they are at the same time a complete demolition of the old-fashioned but still common opinion that one can best learn to do a certain thing by doing something quite different. Prof. Colvin has done nothing but round off the somewhat ragged edges of the argument against the lately current view of formal training.

Of the more strictly psychological parts of the book the chapters on "Memory," "Association," and "Attention" will be found of special interest to our readers. In dealing with Attention it might have been better had Prof. Colvin given some account of the absorption view that is really implied in his *passive* attention. But, as it is, the practical teacher will probably be grateful for the simplified presentation of this difficult part of psychology. In dealing with Memory the author does not even mention Bergson, and yet in that philosopher's "Memory and Matter" is to be found the statement of a theory that throws light upon and confirms much that we find in this book. Indeed,

the Bergson view of memory really implies a great many of the conclusions to which Jung and Freud are driven—conclusions to which Prof. Colvin rightly attaches great importance. The practical teacher cannot read all that appears in the text regarding evidence and other apparently extraneous matter without making applications to his ordinary work in school. But Prof. Colvin does not always lay on his readers the responsibility of drawing detailed guidance from general statements. Many of his chapters bear specifically upon the applications to be made in school.

Thus we have chapters on "The Pedagogical Significance of Imagination," "Economy in Memory and Association," "The Applied Psychology of Memory and Association," "Pedagogical Applications of the Doctrine of Attention," "The Educational Problems of Rational Thinking."

There is, perhaps, a lack of co-ordination between the Jung and Freud view of the functioning of consciousness and the view developed by Prof. Colvin in other parts of the text, but, with this exception, the book forms an organic whole, working out the subject in a consistent and convincing way.

THE PSYCHO-PHYSICAL PROBLEM.

Body and Mind: a History and a Defense of Animism. By William McDougall, M.B., formerly Fellow of St. John's College, Cambridge, Reader in Mental Philosophy in the University of Oxford. With 13 diagrams. 10s. 6d. net. Methuen.

In this substantial volume Dr. McDougall's primary aim is "to provide for students of psychology and philosophy, within a moderate compass, a critical survey of modern opinion and discussion upon the psycho-physical problem, the problem of the relation between body and mind." By "animism" he means, not the primitive animism, or anthropomorphism, but the opposite to materialism—a conception no doubt historically continuous with the ancient conception, yet also historically distinct. In half-a-dozen chapters he outlines the history of animism through the European culture-tradition, noting the attacks upon it from the sides of metaphysics, epistemology, and the natural sciences, and indicating the principal doctrines proposed as alternatives to it. "Of the three influences that have contributed to bring about the decline of animism—namely, the critical philosophy of Kant, the absolute Idealism of the romantic school, and the astonishing and splendid development of the natural sciences, based in the main upon the strictly mechanistic view of Nature, the last has been the most far-reaching and decisive." Since Hume the psycho-physical problem has been increasingly regarded as belonging to the province of science rather than to the province of metaphysics, so that the solution is to be sought in empirically established facts. Through a dozen chapters Dr. McDougall argues over the whole field against the opponents of animism, and labours with great care to exhibit the inadequacy of the mechanical principles to explain the facts of general physiology, of biological evolution, of human and animal behaviour, and of psychology.

Concluding that "the mechanistic dogma," the only serious objection to Animism, is discredited, he weighs the claims of the principal varieties of Animism in a discussion that results in favour of the hypothesis of the soul; and, finally, he indicates a view of the nature of the soul that shall harmonize with all the facts established by empirical science. It should be noted that his inquiry is not conceived as a search for metaphysical truth, but is conducted by the methods and with the aims of all empirical science; "that is to say, it aims at discovering the hypotheses which will enable us best to co-ordinate the chaotic data of immediate experience by means of a conceptual system as consistent as may be, while recognizing that such conceptions must always be subject to revision with the progress of science." Accordingly, he claims for the conception of the soul advocated in his last chapter "no more than that it is an hypothesis which is indispensable to science at the present time." The doctors are ranged in opposing battalions, and the question in dispute is too wide for any attempt at discussion within our limits. But we are confident that all thinking people, on whichever side they may be ranged, will welcome the straightforward and capable handling of the subject presented by Dr. McDougall in this most interesting and suggestive inquiry.

IS "OTHELLO" AN ALLEGORY?

An Allegory of Othello. By Charles Creighton, M.D.
3s. 6d. net. Humphreys.

We take Dr. Creighton's monograph to be one of the most

original, scholarly, and stimulating contributions that have ever been made to Shakespearean criticism. He acknowledges fully "the perfection of the art and the overpowering force of the feeling called forth by natural means," "the infinity and subtlety of the invention," and "the all-sufficing beauty of the poetry in its plain meaning," and therein he finds a serious obstacle to the proof of symbolism. "It is only in cold moments of criticism and analysis that one feels the need of some key to an enigma." The literal "Othello" is not probable, and probability of action is an Aristotelian requirement of tragedy. So Dr. Creighton has sought for the key of the enigma. We will not say what the key is; but it is fitted to the characters, one after another, in startling detail. At different points, no doubt, there may be felt some questionable straining, but the general effect is certainly very remarkable. "I believe," says Dr. Creighton, "that the allegory will be found to explain a good many difficulties of the text, of the characterization, and of the action, which are felt most by students, and are confessed in the variorum notes; also that it will bring out new beauties and much latent wit (which I do not profess to exhaust), and above all that it will enable us to understand how the playwright could carry through so monstrous an action with so profound conviction to so imposing a catastrophe. The grasp, the harmony, the sequence of thought, the consistent moral, are amazing if we look below the surface or read between the lines." Amazing indeed! If the allegory be accepted, it adds cubits to the intellectual stature even of Shakespeare. Is it possible, one cannot but suggest, that in writing the greatest tragedy in literature the author should have multiplied the immense inherent difficulties by constructing it upon so vastly different a drama, and that he should have accomplished the work with such freedom and skill that the world's critics during three centuries have hardly suspected and never hitherto got the slightest clue to the underlying theme? On the other hand, is it possible that Shakespeare, with his broad and flexible mind, should not have felt impelled to handle, were it but for his own satisfaction, one of the greatest questions convulsing the life of his own time and involving personages that he had come more or less into personal contact with? In any case, Dr. Creighton's essay is a strikingly ingenious argument, supported by an exceptional grasp of the pertinent literature and history, and presented with conspicuous fairness and sobriety. He has discovered allegories in half-a-dozen other plays of Shakespeare, and we trust the reception of the present volume will encourage him to publish them at an early date.

CALCULUS.

A School Calculus. By A. M. McNeile, M.A., and J. D. McNeile, M.A. 7s. 6d. John Murray.

To the junior student accustomed hitherto to be occupied with the definite quantities and magnitudes such as are principally dealt with in elementary algebra and geometry, the ideas of a variable, of an independent and a dependent variable, and of a differential coefficient, present many difficulties before they are grasped in their broad sense; yet a clear conception of the nature both of varying quantities and of their limiting values and some knowledge of the differential and integral calculus are of the greatest utility to all, and are absolutely essential to a large number of students during the later stages of their training. The writers of the present volume, adopting a course which finds its parallel in the constant appeal to the concrete in the teaching of the rudiments of arithmetic, investigate the truths of the calculus first of all by a very close and careful discussion of particular and largely numerical examples, endeavouring by means of these to teach the reader to understand fully and to realize the necessity for the general symbols and processes which make the branch of mathematics in question such a powerful instrument of research. The volume is planned to meet, in the first place, the needs of candidates reading either for Army examinations or for others of similar standard. But its aim is more far reaching, for it seeks to assist also a much larger and somewhat younger class of reader, and to bring an elementary course on the differential and integral calculus within the scope of a school curriculum. The discussion of the main subject of consideration is preceded by a brief study of some of the principles of graphic representation, and the first two chapters which are devoted to this topic form a very interesting and valuable opening to the treatise. Chapters III and IV deal suggestively on the plan outlined above with the fundamental notation and processes of differentiation and integration respectively. The subsequent chapters of the work, which, of course, constitute by far the

greater portion of it, are devoted to various applications of the principles that have been discussed: (1) To curves, including the determination of their lengths and contained areas (or portions of either); (2) to volumes and surfaces; and (3) to the theory of the science of mechanics. The fifth chapter is a very suggestive one, written on lines that have perhaps been originated by the authors of the work. It treats of several of the well known curves, each of which is connected with what the writers style in terms that explain themselves, its "differential curve" and its "integral curve." A single diagram portrays all three—at least in part, the three being, in general, drawn to the same scale, but distinguished one from the other by a special type of line. The characteristic clearness and originality of the diagrams form a noteworthy and most attractive feature. In every respect it is evident that no trouble has been spared with regard to details connected with the production of the textbook. As usual, a considerable number of exercises have been provided, and will be found at intervals in the course of the text. Further, at the close of the work, a large collection of miscellaneous examples is introduced and affords practice in applying the principles discussed throughout the entire treatise. The answers to the last named series are published in separate form only.

GENERAL NOTICES.

MATHEMATICS.

A Rural Arithmetic. By Rupert Deakin, M.A., and P. J. Humphreys, B.Sc. 1s.; with Answers and Index, 1s. 6d. Mills & Boon.

A useful little volume, which will certainly be welcomed by many, seeing that it has been planned and written to meet an expressed need. It is intended not for the actual beginner, but for class purposes in evening continuation schools that prepare the student for work in connexion with farming and rural life generally. Of the three sections into which the little treatise is divided the first briefly reviews the processes of ordinary arithmetic, suitably revising what has previously been more fully taught, and drawing attention to recent methods in arithmetic. Useful stress is laid upon the value of forming preliminary ideas as to the results of problems, and also upon the necessity of checking calculations on completion. The subject of Household Accounts forms the second division of the treatise, containing many practical hints, and being introduced as a necessary accompaniment to the third section of the volume, where problems of special interest to those living and working in country districts form the subject of treatment.

Notes and Answers to Exercises in "Geometry for Beginners." By C. Godfrey, M.A., and A. W. Siddons, M.A. Cambridge University Press.

Just a pamphlet, but one which will be of interest and value to those using the authors' "Geometry for Beginners." It furnishes these with a number of notes suggestive of the way to make the best use of the original textbook, and supplies in compact form the answers to the exercises contained in it.

The Board of Education has issued in the series of "Special Reports on Educational Subjects" further papers on the Teaching of Mathematics in the United Kingdom: No. 12, *Mathematics with relation to Engineering Work in Schools*, by T. S. Usherwood, Head of the Manual Training School, Christ's Hospital, West Hove-lan (2d.); No. 13, *The Teaching of Arithmetic in Secondary Schools*, by W. G. Palmer, Mathematical Master at Christ's Hospital, Horsham (2½d.); No. 14, *Examinations for Mathematical Scholarships*, by Dr. F. S. Macaulay, Assistant Master at St. Paul's School, London, and Mr. W. J. Greenstreet, editor of the *Mathematical Gazette* and late Head Master of the Marling Endowed School, Stroud (3d.); No. 15, *The Educational Value of Geometry*, by G. St. L. Carson, Head Mathematical Master at Tonbridge School (1½d.); No. 16, *A School Course in Advanced Geometry*, by C. V. Durell, Assistant Master at Winchester College (1½d.); and No. 17, *Mathematics at Osborne and Dartmouth*, by J. W. Mercer, Head of the Mathematical Department of the Royal Naval College, Dartmouth, with a Preface by C. E. Ashford, Head Master of the College.—Wynnan.

MODERN LANGUAGES.

"Method Gaspey-Otto-Sauer."—Heidelberg: Julius Groos.

London: David Nutt.

Recent editions in this well known series are: (1) *Petite Grammaire Anglaise*, par A. Maunon, septième édition, revue et corrigée par Paul Verrier, Chargé de Cours à la Sorbonne (2s.); (2) *Elementary French Grammar*, by Dr. J. Wright, fourth edition, revised by C. Talbot Onions, M.A. (2s.); (3) *German Conversation-Grammar*, by Emil Otto, Ph.D., twenty-ninth edition, revised by Francis E. Sandbach, M.A., Ph.D., Lecturer in German in the University of Birmingham (4s. net); (4) *Elementary Swedish Grammar*, by Henry Fort, second edition (2s.); (5) *Danish Conversation-Grammar*, by E. J. Thomas, M.A., Emmanuel College, Cambridge—an adaptation of Wied's "Dänische Konversations-

Grammatik" for English students. The principal alterations are in the sections on pronunciation, which have been overhauled, the phonetical system of the Association phonétique internationale being diligently applied. Many other improvements, however, have been incidentally introduced, so as to keep the series up to the mark. And an excellent series it is, especially for private students.

"Marlborough's Self-Taught Series."

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Messrs. Marlborough have also issued a new edition of the *Personal and Social German Letter-Writer*, by F. Franck, revised and enlarged by J. C. H. Schafhausen (wrapper, 1s.; cloth, 1s. 6d.). The introduction furnishes all necessary explanation as to how to set about writing a letter; next there is adequate information on the important question of titles; then idiomatic phrases, and polite forms to begin and end with; and exemplary letters in wide variety. Mr. Schafhausen has also prepared a *Key*, which provides a free and idiomatic rendering. These volumes will be found extremely useful.

SHAKESPEARE.

"The Shakespeare Library." General Editor, Prof. I. Gollancz, Litt.D.—*The Shakespeare Allusion-Book*: a Collection of Allusions to Shakspeare from 1591 to 1700. Two volumes. 21s. net. Chatto & Windus.

This collection of allusions to Shakespeare in the literature of more than a century subsequent to the middle period of his life was originally compiled by Dr. C. M. Ingleby, Miss L. Toulmin Smith, and Dr. F. J. Furnivall, with the assistance of the New Shakspeare Society. Now it has been re-edited, revised, and rearranged, with a comprehensive and instructive introduction by John Munro. The allusions have been hunted out with persistent diligence, Mr. Munro having added no fewer than 130 new ones. The appended notes are extremely serviceable. The volumes ought, of course, to be in the library of every serious Shakespearean student.

A Shakespeare Glossary. By C. T. Onions, M.A. Lond., of the Oxford English Dictionary. 2s. 6d. net. Clarendon Press.

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The Shakespeare Revival and the Stratford-upon-Avon Movement. By Reginald R. Buckley. With chapters on Folk-Art, by Mary Neal; a Foreword, by F. R. Benson; and an Introduction by Arthur Hutchinson. 3s. 6d. net. George Allen & Sons.

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ENGLISH LANGUAGE.

Historical Manual of English Prosody. By George Saintsbury, M.A. Oxon., LL.D. Aberd., D.Litt. Dubl., Honorary Fellow of Merton College, Oxford, and Professor of Rhetoric and English Literature in the University of Edinburgh. 5s. net. Macmillan.

In this volume Prof. Saintsbury does not summarize his great three-volume "History of English Prosody from the Twelfth Century to the Present Day," but, while naturally drawing upon it for historical elements, he offers the wider and more compact treatment of prosody suitable to a manual. He presents a general system of English prosody, with ample materials for enabling the student to form his own judgment

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The Revised English Grammar. By Alfred S. West, M.A., Trinity College, Cambridge, Fellow of University College, London. 2s. 6d. Cambridge University Press (Pitt Press Series).

This is a new edition of "The Elements of English Grammar," based upon the recommendations of the Committee on Grammatical Terminology, and largely rewritten and modified. There is still room for modification in matters of more importance than terminology. One must regret continued feebleness in definition of parts of speech. The author starts on the right principle of classifying words "according to their separate functions in a sentence," but is at once content to define a Noun as "the name of anything." An Adjective, again, is "a word which is used with a noun to limit its application," and yet there are adjectives that do not "limit," just as there are adjective clauses that do not limit, but co-ordinate. Mr. West properly and clearly explains the distinctive use of restrictive and co-ordinating relatives, but he neither enforces its importance for composition nor pays the slightest heed to it in his own practice, though there are very few things in grammar that are half as much worth insisting on. The analysis and the parsing are still thinly exhibited. In "A question was asked the candidate," it seems somewhat curious to set down "the candidate" as object. In "He had laid him low," we should entirely refuse to parse "laid" as "participle past, passive, of trans. verb lay, limiting him." It is an interesting and painstaking compilation, but—we are aware that its circulation runs deep into six figures—it lacks grip.

HISTORY.

The Groundwork of British History. By George Townsend Warner, M.A., sometime Fellow of Jesus College, Cambridge, Master of the Modern Side in Harrow School, and C. H. K. Marten, M.A., Balliol College, Oxford, Assistant Master at Eton College. 6s. : or, in two Parts, 3s. 6d. each. Blackie.

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FICTION.

The Heart of a Russian. By Mikhail Yurevich Lermontov. Translated from the Russian by J. H. Wisdom and Marr Murray. 6s. Herbert & Daniel.

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Pension Kraus. By Agnes Blundell. 6s. Herbert & Daniel.

The Pension Kraus is at Eisenbach in Rhineland, and there Mrs. Thorngrove, a young widow of unfortunate matrimonial experiences, retires for rest and quiet. The company under the presidency of the *quâdige* Frau Kraus is, of course, very mixed, and the interest excited by Mrs. Thorngrove, together with the hopes that drew a French admirer after her from England, effectually precludes her anticipations of a quiet life. The story is conducted through a great variety of piquant adventures natural in the circumstances, the characters being drawn with marked care and consistency. Miss Sandemar is called a Dane, except in one place, where she is "the Dutch woman"—a slip that shows the real fact of the matter. Dr. Engel, however, is strong enough to stand a much stronger competition than he has to face; yet, if the other characters, men and women, are mostly weak creatures, their foibles are effectively turned to account, not unfrequently with dramatic force. "But for fools," as Pechorin says, "the world would be a very dull place." The story is written with great verve and the humour here and there is not without a dash of malice, insular and harmless.

MISCELLANEOUS.

The Complete Bowler: being the History and Practice of the Ancient and Royal Game of Bowls. By James A. Manson (Jack High). 3s. 6d. net. A. & C. Black.

Mr. Manson is an enthusiastic bowler, with a very sober and practical eye for the proper playing of the game. "I have sedulously cultivated the game," he says, "since 1869, when I rolled my first bowl on the green in East Princes Street Gardens, Edinburgh." He traces the ups and downs of the history of bowls from the inception of the game to the present day, including an account of the leading associations and a review of the famous tours in the United Kingdom by representative teams from Australia and Canada. Then, turning to the practice of the game, he explains in necessary detail how the game is played, how greens are constructed and maintained, how the bowl is made and what are its peculiarities, and so forth; exhibits a thorough exposition of the features of the rink game, which is often such a puzzle to learners; and expounds

the competitive exercises that have been devised for the making of experts. Though the game appears to have originated in London, it is governed by laws passed by the Scottish Bowling Association; and Mr. Manson sets forth the seventeen laws of the game, with many acute criticisms and suggestions. The book is indeed "complete"; it is charmingly written; it is profusely and interestingly illustrated by fourteen full-page plates and by eight useful diagrams in the text, the latter prepared by the author's son, Mr. Magnus M. Manson; and it is artistically got up. The labour, if exacting, has been a labour of love; and it is sure to be warmly appreciated by all true bowlers.

"The Homeland Pocket Books."—*Our Homeland Churches and how to Study Them.* By Sidney Heath. 2s. 6d. net. The Homeland Association, Ltd., Chandos Chambers, 15 Bedford Street, Strand, W.C.

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Wooing and Wedding; or, Love, Courtship, and Matrimony, and its sequel *Wooed and Wedded and A'*, by the Rev. J. O. Bevan, M.A., F.S.A., Rector of Chillenden, are shilling brochures, published by Messrs. George Allen & Sons. Grave is judiciously mixed with gay, instruction with entertainment. There is much curious lore, with much sober sense; not a page but has something of interest and suggestion. The presiding spirit is unfailingly genial.

FIRST GLANCES.

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(1) Brief introduction and some helpful foot-notes, in French. (2) Ample introduction and notes, in French.

Harrap's Shorter French Texts.—(1) *La Journée d'un Petit Lycéen.* By A. Auzas. 6d. (2) *Les Précieuses Ridicules* (Molière). Edited by Marc Ceppi, French Master, Whitgift School, Croydon. 8d.

(1) "Les scènes sont de celles dont est faite l'existence ordinaire du petit lycéen de Paris." Very easy. Every page opposite the text is illustrated. Excellent. (2) Introduction, notes, grammatical and retranslation exercises, vocabulary; carte du pays de Tendre ("une illustration sans rivale de la préciosité"). The idiomatic renderings in the notes are conspicuously good.

Longmans' French Texts.—Intermediate Series: La Montre du Doyen and Le Vieux Tailleur (Erckmann-Chatrian). Edited by T. H. Bertenshaw, M.A., B.Mus., Assistant Master in the City of London School. Pupil's edition, 9d.; Teacher's edition, 1s. Advanced Series: Trente et Quarante (About). Edited by T. H. Bertenshaw. Pupil's edition, 1s.; Teacher's edition, 1s. 3d.

Notes; exercises (elaborate); vocabulary.

Oxford "Cours de Français et d'Allemand (Méthode Directe)."—Alexandre Dumas père: Pages Choiesis. Par B. L. Templeton, M.A., Professeur de Français à Goldsmiths' College (Université de Londres). Oxford University Press.

Six interesting episodes. *Questionnaire* to each episode; vocabulary, with explanations in French.

Pitt Press Series.—La Dette de Jen (Maxime du Camp). Edited by V. Payen-Payne. 2s. Cambridge University Press.

Short biographical introduction; useful notes; vocabulary.

Siepmann's French Series, Elementary.—L'Homme à l'Oreille cassée (About). Adapted and edited by Eugène Pellissier, Professeur Agrégé au Lycée du Havre, formerly Assistant Master at Clifton College and Lecturer at University College, Bristol. 2s. Key to Appendixes, 2s. 6d. net. Macmillan.

Brief introduction; full notes; irregular verbs (in text); vocabulary.

READINGS FOR YOUNG FOLK.

Battle, The British, Series.—(1) Blenheim; (2) Malplaquet. Both by Hilaire Belloc. 1s. net each. Stephen Swift & Co. (10 John Street, Adelphi).

Clear and vigorous description; most useful sketch maps (eight and seven).

Bell's English Texts for Secondary Schools.—The Adventures of Ulysses (Charles Lamb), edited by A. C. Dunstan.

Introduction, notes, index, and a map (based on Siekler).

Blackie's English Texts.—(1) Tales from Shakespeare (Lamb); (2) Wallace and Bruce, with the Story of Macbeth (Scott); (3) William the Silent (Motley); (4) Essays from the "Spectator." 6d. each.

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Chambers's Standard Authors.—(1) The Vicar of Wakefield (Goldsmith); (2) Silas Marner (George Eliot); (3) Old Jack (Kingston); (4) The Lighthouse (Ballantyne); (5) The Lifeboat (Ballantyne); (6) The Red Eric (Ballantyne); (7) The Dog Crusoe (Ballantyne); (8) The Gorilla Hunters (Ballantyne); (9) Martin Rattler (Ballantyne). Limp cloth, 8d. each; cloth boards, 1s. each.

Capital reading. Frontispiece. Attractive get-up.

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EDUCATION.

Board of Education.—(1) Regulations as to Grants for Medical Treatment in Schools. Cd. 6138. 3d. (2) Circular 792 (same subject). 1d. (3) Preliminary Examination for the Certificate, 1912, Part II: Examination Papers. (4) Provisional Regulations for Examinations in Art and in Science and Technology applicable to the Examinations of 1912. 2d. Wyman.

Cambridge University Local Examinations.—(1) Annual Report. 2s. (2) Examination Papers (Preliminary, Junior, Senior), December 1911. 2s. (3) Examination Papers in Higher Local Examination, December 1911, with Regulations for the Examinations in June and December 1912. 1s. Cambridge University Press.

Instruction, A Scheme for the Correlation of certain Subjects of, in subordination to the aim of Character-training. 6d. net. Moral Education League, 6 York Buildings, Adelphi, W.C.

Johns Hopkins University Circulars, 1912. No. 1, Report of the President, 1910-11. No. 3, Commemoration Day (with very interesting address on George Washington by Dr. S. Weir Mitchell). Baltimore: Johns Hopkins Press.

Knowledge, A Classification of Human. By the Rev. S. Claude Tickell, Myddylton House, Saffron Walden, Essex. 6d.

L.C.C.—(1) Handbook containing particulars with regard to the Conditions of Employment and the Prospects of Advancement of Students completing their Courses of Training who are appointed to the London Public Elementary Schools Service. 1d. (2) Annual Report—Two Volumes. 2s. 6d. each. (3) Report by the School Medical Officer on Open-Air Schools. 2d. King.

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.

12661. (R. F. DAVIS, M.A.)—On January 1st, 1895, a person forwards by post to his banker in London the following twelve cheques *en bloc*, forming a total of £199. 0s. 6d. :—

£.	s.	d.	£.	s.	d.	£.	s.	d.
15	2	11	19	7	10	12	9	5
22	6	7	10	19	0	8	11	4
43	15	2	5	18	1	17	16	9
7	10	6	14	14	3	20	8	8

On a subsequent reference to his pass-book he finds he has been credited with 1895, Jan. 2, Cash £78. 1s. 2d.

" " 4, Country cheques ... £120. 19s. 4d.

Ascertain which of the above were country cheques.

Solutions (I) by FREDERICK PHILLIPS, F.C.P., B.Sc. (Lond.), F.C.S.; (II) by C. O. SAYER, B.A.; (III) by JAMES BLAIRKIE, M.A.

(I) The country cheques were

£	s.	d.
15	2	11
43	15	2
7	10	6
19	7	10
14	14	3
20	8	8

Note.—Although a "trial" problem, the following analysis reduced the labour:—

- (1) 5 or more cheques are required to make up £120 19s. 4d.
- (2) 3 " " " " " " £78 1s. 2d.

(3) The pence numbers of the given cheques are 0, 1, 2, ..., 11, the total being 66. Now it is obvious that the pence figures of cheques required to make up £120 19s. 4d. must add up to 16 or 28 or 40 or 52, &c., and the pence figures of cheques required to make up £78 1s. 2d. must add up to 14 or 26 or 38 or 50, &c., and the difference between the correct pence numbers must give 2, 14, &c., to produce £42 18s. 2d. Clearly 40 and 26 fulfil the conditions, so that 40 has to be made up of 5, 6, or 7 of the numbers 1, 2, 3, ..., 11 (the cheque £10 19s. 0d. can be adjusted last).

Many of the combinations can be rejected at once by a survey of the pounds figures. The proper combination was found to be 2, 3, 6, 8, 10, 11, giving the total £120 19s. 4d.

(II) Number the cheques as tabulated thus:—

1,	5,	9,
2,	6,	10,
3,	7,	11,
4,	8,	12.

Now 17d., 19d., 29d., and 2d. are all measures of £78 1s. 2d. This suggests the tabulation of remainders and defects of the twelve amounts when measured by 17d. These, in order, are +4, +4, -4, +4, -4, -7, +6, -5, +1, -1, -3, and +8 pence. The cheques included in £78 1s. 2d. must be such that the total remainder is ±17 or 0, and in the last case we may have +1-1, +5-5, +6-6, &c.

On trial, +11-11 is the result of taking cheques 2, 6, 7, 9, 10, 11, and these give the total £78 1s. 2d., so that the country cheques are 1, 3, 4, 5, 8, 12.

£	s.	d.
15	2	11-1
43	15	2-3
7	10	6-4
19	7	10-5
14	14	3-8
20	8	8-12
£120 19 4		

(III) At first sight this seems an easy question; on further investigation it appears immensely laborious, but with careful consideration much of the labour may be dispensed with. It is convenient to arrange the cheques in ascending order and to designate each by a letter. Thus, $a = £5$ 18s. 1d., $b = £7$ 10s. 6d., ..., $l = £13$ 15s. 2d. For shortness, write ab for $a+b$, ba for $b-a$, &c. We should now construct a table of the 66 differences $ba, cb, ca, \dots, lk, \dots, la$, and also a table of the 66 sums $ab, ac, \dots, al, \dots, kl$. The sum $s = £78$ 1s. 2d.

may apparently consist of 3, 4, 5, 6, or 7 cheques. To tabulate all the possible sums of such cheques would require

$$66 + 220 + 495 + 792 + 924 + 792 = 3289$$

operations. But by the intelligent use of the tables of sums and differences the number of operations required may be greatly reduced. Thus, if we wish to find whether s is the sum of three cheques, the work may proceed as follows:—

$$ejl = \text{£}76 \text{ 13s. 3d.}, \quad ekl = \text{£}78 \text{ 11s. 2d. (since } kj = \text{£}1 \text{ 17s. 11d.)}, \\ fjl = \text{£}78 \text{ 18s. 1d.}, \quad fil = \text{£}77 \text{ 17s. 3d.}, \quad gil = \text{£}78 \text{ 15s. 11d.}$$

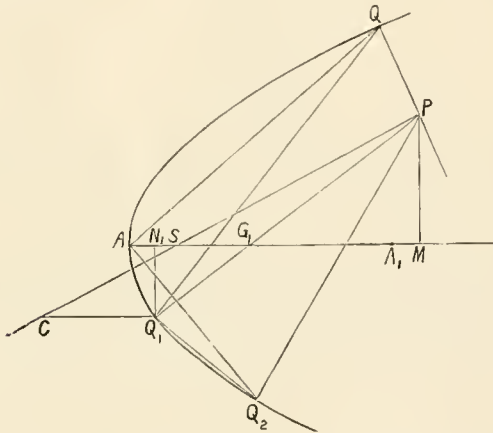
Thus s is not a sum of three cheques. Similarly, but at much greater length, we ascertain that no sums of four or five cheques amount to $\text{£}78 \text{ 1s. 2d.}$ When we come to combinations of six, however, a very short calculation gives us $acdehk = \text{£}78 \text{ 1s. 2d.}$ Thus we see that $b, f, g, i, j,$ and l are country cheques.

16978. (A. H. S. GILLSON.)—Normals are drawn from a point P to a given parabola. Show that the locus of P is another parabola, if the orthocentre of the triangle formed by the feet of the normals always moves on the given parabola.

Geometrical Solution by W. F. BEARD, M.A., and R. BIGART.

Let Q, Q_1, Q_2 be the feet of the normals from P .

Then it is a well known theorem that Q, Q_1, Q_2, O lie on a rectangular hyperbola, with the axis as one asymptote. Thus the orthocentre of the triangle Q, Q_1, Q_2 lies on the hyperbola, and, by hypothesis, it is on the parabola; hence it must coincide with one of the points Q, Q_1, Q_2 , say with Q_1 .



Join PS and produce it to C , so that $CS = \frac{1}{2}SP$. Join CQ_1 .

Draw Q_1N_1, PM perpendicular to the axis. Cut off $MA_1 = N_1A$. Let PQ_1 meet the axis at G_1 .

By Theorem I (*Educational Times*, October, 1910), C is the centre of the circum-circle of the triangle formed by the tangents at Q, Q_1, Q_2 .

By Theorem 7, CQ_1 is parallel to the axis, and $SP = 2SC$;

therefore $PG_1 = 2G_1Q_1$;

therefore $G_1M = 2G_1N_1 = 4AS$; also $PM = 2Q_1N_1$;

therefore $N_1M = 6AS$; therefore $AA_1 = 6AS$, and A_1 is a fixed point.

Hence $PM^2 = 4Q_1N_1^2 = 16AS \cdot AN_1 = 16AS \cdot A_1M$;

therefore locus of P is a parabola with vertex at A_1 .

The problem might also be proved in less detail as follows:

The circle round Q, Q_1, Q_2 passes through A ; therefore $\angle QAQ_2 = 90^\circ$;

therefore, by Frégier's theorem, QQ_2 cuts the axis at a fixed point.

Hence by a known theorem the normals at Q, Q_2 meet on a parabola.

We may note that the tangent at P to its locus is parallel to QQ_2 .

Analytical Solution by HENRY RIDDELL, M.E., and many others.

In general any conic passing through the vertices and the orthocentre of a triangle is an equilateral hyperbola, so that there is an appearance of paradox in this question.

Algebraically, we have the general equation of a normal to $y^2 = 4ax$, $y = mx - 2am - am^2$; and, if drawn from the point (y_0, x_0) , we have, by the theory of equations,

$$m_1 + m_2 + m_3 = 0, \quad m_1m_2m_3 = -y_0/a, \quad m_1m_2 + m_2m_3 + m_3m_1 = (2a - x_0)/a,$$

where $m_1, m_2,$ and m_3 are the roots of

$$am^3 + (2a - x_0)m + y_0 = 0.$$

Also the three feet are $(am_1^2, -2am_1), (am_2^2, -2am_2), (am_3^2, -2am_3)$.

The equations to the sides of the triangle with the feet of the

normals as vertices are

$$2x + y(m_1 + m_2) + 2am_1m_2 = 0,$$

$$2x + y(m_2 + m_3) + 2am_2m_3 = 0,$$

The perpendiculars from the vertices are

$$x(m_1 + m_2) - 2y = am_1^2(m_1 + m_2) + 4am_3,$$

$$x(m_2 + m_3) - 2y = am_1^2(m_2 + m_3) + 4am_1,$$

These meet in the point

$$x = -a(m_1m_2 + m_2m_3 + m_3m_1) - 4a, \quad y = \frac{1}{2}a(m_1m_2m_3);$$

therefore $x = -a\{(2a - x_0)/a\} - 4a = x_0 - 6a, \quad y = -\frac{1}{2}y_0$.

Hence, if x and y are on the parabola $y^2 = 4ax$, we have at once

$$\frac{1}{4}y_0^2 = 4a(x_0 - 6a), \quad y_0^2 = 16a(x_0 - 6a), \quad \text{another parabola.}$$

The fact is that this is the locus of a point, such that the feet of normals drawn from it to the curve form a right-angled triangle. Hence there are only three points on the parabola and not four, as in the general case of the equilateral hyperbola. There are some very curious relations between the ordinates in this case. For example, if the feet be $(x_1, y_1), (x_2, y_2),$ and (x_3, y_3) , and if (x_5, y_5) be the right-angled vertex, we have $x_1x_3 = 16a^2$ and $y_1y_3 = -16a^2$.

Hence also the third side of the triangle always passes through $(4a, 0)$.

Some Curious Relations between the Several Sums of Consecutive Squares and Number of Form $6n \pm 1$, including Primes.—Continuation.

By D. BIDDLE, M.R.C.S.

In continuation of my Note on this subject (*v. Educational Times*, March, 1912, and *Reprint*, New Series, Vol. xxii, p. 56), let us take $N = 6n \pm 1, f_1, f_2$, and let M, m_1, m_2 be corresponding multipliers of N, f_1, f_2 ; then we have

$$N = 6n \pm 1 = (6p \pm 1)(6q \pm 1);$$

and we also have

$$M = \frac{1}{2}(3n^2 \pm n), \quad m_1 = \frac{1}{2}(3p^2 \pm p), \quad m_2 = \frac{1}{2}(3q^2 \pm q).$$

Accordingly, there are four cases:

- (i) $6n + 1 = (6p + 1)(6q + 1), 6pq + (p + q), \frac{1}{2}(3n^2 + n), \frac{1}{2}(3p^2 + p), \frac{1}{2}(3q^2 + q);$
- (ii) $6n + 1 = (6p - 1)(6q - 1), 6pq - (p + q), \frac{1}{2}(3n^2 + n), \frac{1}{2}(3p^2 - p), \frac{1}{2}(3q^2 - q);$
- (iii) $6n - 1 = (6p - 1)(6q + 1), 6pq + (p - q), \frac{1}{2}(3n^2 - n), \frac{1}{2}(3p^2 - p), \frac{1}{2}(3q^2 + q);$
- (iv) $6n - 1 = (6p + 1)(6q - 1), 6pq - (p - q), \frac{1}{2}(3n^2 - n), \frac{1}{2}(3p^2 + p), \frac{1}{2}(3q^2 - q).$

Expressing M in terms of p and q , as given under n :

$$M_1 = 6(3p^2 + p)(3q^2 + q) + \frac{1}{2}(3p^2 + p) + \frac{1}{2}(3q^2 + q),$$

$$M_2 = 6(3p^2 - p)(3q^2 - q) + \frac{1}{2}(3p^2 - p) + \frac{1}{2}(3q^2 - q),$$

$$M_3 = 6(3p^2 - p)(3q^2 + q) + \frac{1}{2}(3p^2 - p) + \frac{1}{2}(3q^2 + q),$$

$$M_4 = 6(3p^2 + p)(3q^2 - q) + \frac{1}{2}(3p^2 + p) + \frac{1}{2}(3q^2 - q).$$

Hence, invariably, $M = 24m_1m_2 + m_1 + m_2 \dots \dots \dots (a)$.

Moreover, as can easily be worked out,

$$M - m_1 = \frac{1}{2}(3q^2 \pm q)(6p \pm 1)^2 = m_2f_1^2 \dots \dots \dots (b);$$

$$\text{and } M - m_2 = \frac{1}{2}(3p^2 \pm p)(6q \pm 1)^2 = m_1f_2^2 \dots \dots \dots (c),$$

as required by my Question 17279 in *Educational Times Mathematics*.

Thus $f_1^2 = 24m_1 + 1, f_2^2 = 24m_2 + 1 \dots \dots \dots (d), (e),$

$$\text{and } f_1^2f_2^2 = N^2 = 24M + 1 \dots \dots \dots (f).$$

$$\text{We also have } m_1 : m_2 = f_1^2 - 1 : f_2^2 - 1 \dots \dots \dots (g),$$

$$\text{and } N^2 - 1 = (f_1^2 - 1)(f_2^2 - 1) + (f_1^2 - 1) + (f_2^2 - 1) \dots \dots \dots (h).$$

But we can break up (a) in various ways, 24 being a very suitable number for the purpose. Thus

$$M + \frac{1}{24} = (m_1 + \frac{1}{24})(24m_2 + 1) = (2m_1 + \frac{1}{12})(12m_2 + \frac{1}{2}) \\ = (3m_1 + \frac{1}{6})(8m_2 + \frac{1}{3}) = (4m_1 + \frac{1}{6})(6m_2 + \frac{1}{4}) \dots \dots \dots (i).$$

However, let $N/24 = l$, with remainder r . Then

$$l - s = m_1m_2, \quad \text{whilst } r + 24s = m_1 + m_2 \dots \dots \dots (k), (l).$$

In both these equations s is identical, and may be zero; but, generally,

$$N/288 < s < M/600 \dots \dots \dots (u).$$

Moreover, s is the only unknown quantity in

$$m = \frac{1}{2}\{r + 24s \pm [(r + 24s)^2 - 4(l - s)^2]\} \dots \dots \dots (v),$$

which gives the values of m_1, m_2 , whence, by (d), (e), the values of f_1, f_2 are immediately found.

Now, it would be a valuable achievement to restrict the range of s

in (ν) within as narrow limits as possible. The following is an attempt in that direction:—

On dividing $N-1$ by 24, a remainder (if any) is left having a common factor with 24. Consequently, the division results in a quantity having only a small fraction beyond the integral portion. Let a = the total quantity so found. Then

$$N = 24a + 1 \quad \text{and} \quad N^2 = 24^2 \cdot a^2 + 2 \cdot 24a + 1 \dots \dots (\alpha), (\pi).$$

But, by (α) and (ζ),

$$24^2 m_1 m_2 + 24(m_1 + m_2) + 1 = N^2 \text{ also} \dots \dots (\rho).$$

$$\text{Therefore } 24(a^2 - m_1 m_2) = (m_1 + m_2) - 2a = (m_1 - a) - (a - m_2) \dots \dots (\sigma).$$

When m_1 and m_2 are equal, as when $N = \square$, we have

$$m_1 = m_2 = a \dots \dots (\tau).$$

$$\text{Otherwise } a^2 > m_1 m_2 \quad \text{and} \quad m_1 + m_2 > 2a \dots \dots (\nu), (\phi).$$

$$\text{Therefore, by } (\kappa), a^2 \geq l - s, \text{ and by } (\lambda), r + 24s \geq 2a \dots \dots (\chi), (\psi).$$

Moreover, except when $N = \square$ or $s = 0$, which latter occurs only when N is small, we have $l > a^2 > (l - s) \dots \dots (\omega).$

For $(N^2 - 1)/24^2 = M/24 = l$, with remainder r , as shown above (κ); and, comparing (π) with (ρ) and (ϕ), it is easy to see that, generally, $l > a^2$, that is to say, whenever $a \geq 12$, ($N \geq 289$). The position of a^2 between l and $(l - s)$ varies, being sometimes nearer $(l - s)$, at others nearer l . For $(l - a^2)$ is determined by the size of N , but $a^2 - (l - s)$ by the disparity of m_1 and m_2 .

As shown above, when $N = \square$, $a^2 - (l - s) = 0$. Otherwise

$$a^2 - (l - s) = c^2/d^2, \text{ a fractional square, proper or improper} \dots (\Lambda),$$

where d^2 is identical with the denominator in a^2 .

The statement in (Λ) can readily be proved as follows:—

$$\text{By } (\kappa), \quad l - s = m_1 m_2.$$

$$\text{By } (\sigma), \quad 24(a^2 - m_1 m_2) = m_1 + m_2 - 2a = (m_1 - a) - (a - m_2).$$

$$\text{By } (\gamma), \quad = (M - m_2)/f_2^2 + m_2 - 2a.$$

$$\text{By } (\epsilon), \quad = (M + 24m_2^2 - 48am_2 - 2a)/f_2^2.$$

$$\text{By } (\alpha), (\pi), (\rho), \quad = (24a^2 + 24m_2^2 - 24 \cdot 2am_2)/f_2^2.$$

$$\text{By reduction,} \quad = 24(a - m_2)^2/f_2^2.$$

$$\text{By similarity,} \quad = 24(m_1 - a)^2/f_2^2.$$

$$\text{Therefore } a^2 - (l - s) = a^2 - m_1 m_2 = (m_1 - a)^2/f_2^2 = (a - m_2)^2/f_2^2.$$

By product of the equal roots, we further obtain

$$a^2 - (l - s) = a^2 - m_1 m_2 = (m_1 - a)(a - m_2)/N \dots \dots (\text{B}),$$

$$\text{whence } a(m_1 + m_2) = 2m_1 m_2 + (N + 1)(a^2 - m_1 m_2) \dots \dots (\text{C}).$$

This makes clear the comparative smallness of $a^2 - m_1 m_2$, which, however, was sufficiently indicated in (σ).

Reverting to (Λ), let b/d^2 be the fractional part of a^2 , where $b < d^2$. Then we can make trial of $\mu d^2 + b = \square$, until we find a value that is in all points suitable, namely, c^2 ; but μ may = 0.

$$\text{Now, by } (\Lambda), m_1 m_2 = l - s = a^2 - c^2/d^2 = (a + c/d)(a - c/d) \dots \dots (\text{D});$$

and the factors to the right contain all the components of m_1 and m_2 , but not thus assorted. But we also have

$$s = (l - a^2) + c^2/d^2 \dots \dots (\text{E}).$$

Let $l - a^2 = e/d^2$, which is readily calculable or known. Then

$$s = (e + c^2)/d^2 \quad \text{and} \quad c^2 \equiv -e \equiv b \pmod{d^2} \dots \dots (\text{F}), (\text{G}).$$

$$\text{Again, by } (\sigma), \quad a^2 - m_1 m_2 = \{(m_1 - a) - (a - m_2)\}/24,$$

$$\text{and, by } (\text{B}), \quad = (m_1 - a)(a - m_2)/N.$$

$$\text{Therefore } 1/(a - m_2) - 1/(m_1 - a) = 24/N \dots \dots (\text{H}).$$

Moreover, since $N = 24a + 1$, $f_1^2 = 24m_1 + 1$, $f_2^2 = 24m_2 + 1$, we have

$$f_1^2 - N = 24(m_1 - a) \quad \text{and} \quad N - f_2^2 = 24(a - m_2);$$

$$\text{whence } a^2 - m_1 m_2 = (f_1 - f_2)^2/24^2 \dots \dots (\text{I});$$

$$\text{and, by } (\sigma), \quad 24 \{(m_1 - a) - (a - m_2)\} = (f_1 - f_2)^2 \dots \dots (\text{K}).$$

$$\text{Therefore } 6 \{(m_1 - a) - (a - m_2)\} = \square \dots \dots (\text{L}).$$

Such are a few of the aids to factorization.

17145. (Professor E. J. NANSON.)—Through the vertices A, B, C of a triangle perpendiculars are drawn to the corresponding medians, and form a triangle A'B'C'. Show that the ratio of the areas A'B'C', ABC is $(\sin^2 \alpha + \sin^2 \beta + \sin^2 \gamma)^2 \operatorname{cosec}^2 \alpha \operatorname{cosec}^2 \beta \operatorname{cosec}^2 \gamma$, where α, β, γ are the angles at which the medians intersect.

[N.B.—In last line but one, insert $\frac{1}{3}$ at the beginning.]

Solutions (I) by W. GALLATLY, M.A.; (II) by B. C. WALLIS, B.Sc., F.C.P.

(I) The triangle A'B'C' is similar to the Median triangle, whose sides are equal to GA, GB, GC; it therefore has the same Brocard angle as ABC.

$$\text{Therefore } \cot \omega = \frac{\sin^2 \alpha + \sin^2 \beta + \sin^2 \gamma}{2 \sin \alpha \sin \beta \sin \gamma}.$$

Let $\Delta, \Delta', \Delta''$ be the areas of ABC, A'B'C', and of A''B''C'', the pedal triangle of K.

Since G, K are isogonal conjugates, the triangles Δ', Δ'' are homothetic, and therefore $\Delta' \Delta'' = \Delta^2$. (See Gallatly's *Geometry*, p. 30)

$$\text{Also } \Delta'' = \frac{1}{2} \cdot \frac{1}{2} b \tan \omega \cdot \frac{1}{2} c \tan \omega \cdot \sin A + \dots = \frac{3}{4} \tan^2 \omega \cdot \Delta.$$

$$\text{Therefore } \Delta' = \frac{4}{3} \cot^2 \omega \cdot \Delta.$$

And generally, if λ, μ, ν are the angles of the triangle formed by drawing through A, B, C perpendiculars to PA, PB, PC, then

$$\Delta' = \frac{1}{2} (a^2 \cot \lambda + b^2 \cot \mu + c^2 \cot \nu) = R^2 (\beta \gamma \sin A + \dots + \dots)^2 a \beta \gamma \Pi \sin A,$$

where α, β, γ are the normal co-ordinates of P.

(II) Let B'C' and the median through A be the axes; then

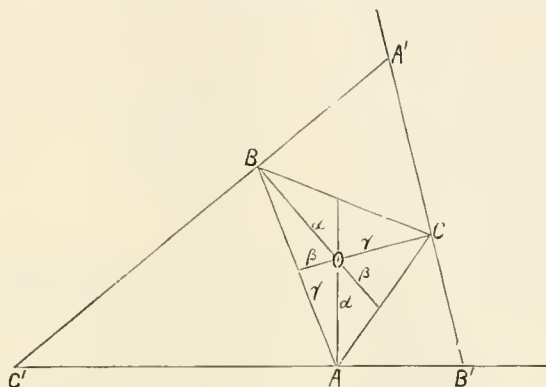
$$C = \text{pt. } (2p \sin \gamma, 2m + 2p \cos \gamma)$$

$$= \text{pt. } \{2m \sin \alpha \cdot \sin \gamma / \sin \beta, 2m [1 + (\sin \alpha \cos \gamma) / \sin \beta]\},$$

$$B = \text{pt. } (-2p \sin \gamma, 2m + 2n \cos \alpha)$$

$$= \text{pt. } \{-2m \sin \alpha \cdot \sin \gamma / \sin \beta, 2m [1 + (\sin \gamma \cos \alpha) / \sin \beta]\};$$

$$\text{where } OA = 2m, \quad OB = 2n, \quad OC = 2p.$$



Then

$$\text{equation } OC = x \cos \gamma - y \sin \gamma = -2m \sin \gamma,$$

$$,, \quad OB = x \cos \alpha + y \sin \alpha = 2m \sin \alpha,$$

$$,, \quad A'B' = x \sin \gamma + y \cos \gamma = 2m \left(\frac{\sin \alpha \sin^2 \gamma}{\sin \beta} + \cos \gamma + \frac{\sin \alpha \cos^2 \gamma}{\sin \beta} \right)$$

$$= 2m \left(\frac{\sin \alpha}{\sin \beta} + \cos \gamma \right),$$

$$,, \quad A'C' = x \sin \alpha - y \cos \alpha = -2m \left(\frac{\sin^2 \alpha \sin \gamma}{\sin \beta} + \cos \alpha + \frac{\sin \gamma \cos \alpha^2}{\sin \beta} \right)$$

$$= -2m \left(\frac{\sin \gamma}{\sin \beta} + \cos \alpha \right);$$

whence x -values of

$$B' = 2m \left(\frac{\sin \alpha}{\sin \beta \sin \gamma} + \frac{\cos \gamma}{\sin \gamma} \right), \quad C' = -2m \left(\frac{\sin \gamma}{\sin \alpha \sin \beta} + \frac{\cos \alpha}{\sin \alpha} \right);$$

and y -values of

$$A' = y (\sin \alpha \cos \gamma + \cos \alpha \sin \gamma)$$

$$= 2m \left(\frac{\sin^2 \alpha}{\sin \beta} + \sin \alpha \cos \gamma + \frac{\sin^2 \gamma}{\sin \beta} + \sin \gamma \cos \alpha \right),$$

i.e.,

$$y = 2m \left(\frac{\sin^2 \alpha + \sin^2 \beta + \sin^2 \gamma}{\sin^2 \beta} \right).$$

$$\text{Length } B'C' = 2m \left(\frac{\sin \alpha}{\sin \beta \sin \gamma} + \frac{\sin \gamma}{\sin \alpha \sin \beta} + \frac{\cos \gamma}{\sin \gamma} + \frac{\cos \alpha}{\sin \alpha} \right)$$

$$= 2m \left(\frac{\sin^2 \alpha + \sin^2 \gamma}{\sin \alpha \sin \beta \sin \gamma} + \frac{\sin \beta}{\sin \alpha \sin \gamma} \right)$$

$$= 2m \left(\frac{\sin^2 \alpha + \sin^2 \beta + \sin^2 \gamma}{\sin \alpha \sin \beta \sin \gamma} \right);$$

whence

$$\text{area } A'B'C' = 2m^2 (\sin^2 \alpha + \sin^2 \beta + \sin^2 \gamma)^2 \operatorname{cosec} \alpha \operatorname{cosec} \beta \operatorname{cosec} \gamma.$$

$$\text{But } \text{area } ABC = 3m \cdot 2p \sin \gamma = (6m^2 \sin \alpha \sin \gamma) / \sin \beta.$$

$$\text{Ratio of areas} = \frac{1}{3} (\sin^2 \alpha + \sin^2 \beta + \sin^2 \gamma)^2 \operatorname{cosec}^2 \alpha \operatorname{cosec}^2 \beta \operatorname{cosec}^2 \gamma.$$

17230. (S. NARAYANAN, B.A., L.T.)—Show that the trilinear equation of an in-conic of a triangle ABC having a focus at (l, m, n) is

$$\Sigma [l a (m^2 + n^2 + 2mn \cos A)]^{\frac{1}{2}} = 0.$$

(Cf. Question 14289.)

Solution by R. F. DAVIS, M.A.

Let ABC be the triangle of reference, and denote the perpendiculars from A, B, C on any variable tangent to the circum-circle of ABC by p, q, r . Then $a \sqrt{p} + b \sqrt{q} + c \sqrt{r} = 0$. Reciprocating with respect to any point S, and using Salmon's theorem, we obtain the trilinear equation to an in-conic having S (l, m, n) for its focus in the form

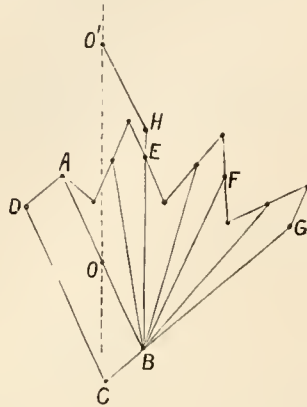
$$\Sigma SA \sin A \sqrt{la} = 0$$

(which coincides with the question) or $\Sigma \sin BSC \sqrt{(a/l)} = 3$, as given in Casey.

12346. (R. F. DAVIS, M.A.)—The tangent to a 3-cusped hypocycloid having a constant length intercepted by the curve, is it possible, by any system of linkages, to obtain a bar moving in such a manner that its extremities lie each on a branch of a 3-cusped hypocycloid while the bar itself envelopes the third branch?

Solution by Colonel R. L. HIPPLISLEY, C.B., R.E.

Let AB be a bar pivoted at its centre O, and forming the outside of a fan-shaped linkage BAEFG, of which the bar BEH is constrained to move parallel to itself by means of the radial arms OB and O'H. Then the angle ABG will always be three times the angle ABE. If a point C be taken on GB produced so that BC is half OB, the point C will trace out a 3-cusped hypocycloid. Now the other extremity of the tangent which envelopes a branch of the curve is the point in the hypocycloid which is being traced out by the small circle 180° removed from the one tracing out C (as can be easily proved), and if BD is a parallelogram D is this point. The bar CD therefore moves in the manner required.

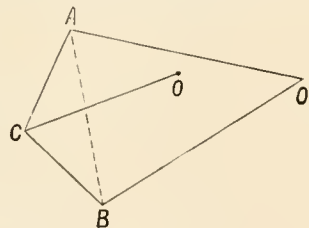


QUESTIONS FOR SOLUTION.

17292. (Communicated by C. M. ROSS, B.A.)—If a high throw is made with a diabolo spool, the vertical resistance may be neglected, but the spin and the vertical motion together account for a horizontal drifting force which may be taken as proportional to the vertical velocity. Show that, if the spool is thrown so as to rise to a height h and return to the point of projection, the spool is at its greatest distance c from the vertical through that point when at a height $2h/3$; and find the equation of the trajectory in the form $4h^3x^2 = 27c^2y^2(h-y)$. [Math. Tripos, 1908.]

17293. (D. BIDDLE.)—Two boards, each 10 feet long, 1 foot broad, and 1 inch thick, lie one upon the other, being hinged together at the one end. They are placed so that the other end extends well beyond the table or other support. Find where to draw the line marking the maximum in this latter respect, so that when the upper board is lifted to a given angle and suddenly let fall, the force of the impact shall not cause both boards to topple over and descend to the floor. A book, such as a big atlas, will explain what is meant, if experimented with.

17294. (Colonel R. L. HIPPLISLEY, C.B., R.E.)—O and O' are two fixed pivots about which the jointed framework O'ACB moves. The links O'A and O'B are equal and also the links CA, CB. Show that the intersection of the link OC with the line AB traces out a conic.



17295. (Professor NEUBERG.)—Démontrer que le déterminant

$$\begin{vmatrix} a_1 + \lambda_1 b_1 & b_1 + \lambda_2 c_1 & c_1 + \lambda_3 d_1 & d_1 + \lambda_4 a_1 \\ a_2 + \lambda_1 b_2 & b_2 + \lambda_2 c_2 & c_2 + \lambda_3 d_2 & d_2 + \lambda_4 a_2 \\ a_3 + \lambda_1 b_3 & b_3 + \lambda_2 c_3 & c_3 + \lambda_3 d_3 & d_3 + \lambda_4 a_3 \\ a_4 + \lambda_1 b_4 & b_4 + \lambda_2 c_4 & c_4 + \lambda_3 d_4 & d_4 + \lambda_4 a_4 \end{vmatrix}$$

s'annule si

$$\lambda_1 \lambda_2 \lambda_3 \lambda_4 = 1.$$

17296. (G. H. HARDY, M.A.)—Prove that

$$\int_0^1 \frac{\log \log (1/u)}{1+u} du = -\frac{1}{2} (\log 2)^2.$$

17297. (Lt.-Col. ALLAN CUNNINGHAM, R.E.)—Let

$$N_1 = t_1^4 - 2u_1^2, \quad N_2 = t_2^2 - 2u_2^4, \quad N_3 = 2u_3^4 - t_3^2, \quad N_4 = 2u_4^2 - t_4^4.$$

Find algebraic formulæ for expressing certain numbers (N) in two (or more) ways in some one (or more) of the four forms (N₁, N₂, N₃, N₄).

17298. (L. J. MORDELL.)—Show that the equation $y^2 = x^3 + k$ has no integral solution when $k = -36, 59, 85, -92, 93$.

17299. (NORMAN ALLISTON.)—Evolve the logarithm which, minus one, is identical with its natural number.

17300. (Professor E. J. NANSON.)—Find the envelope of an elliptic disc which touches the rectangular axes.

17301. (Communicated by W. R. FORBES, B.Sc.)—Show that, if a quadric contain a twisted cubic, the generators of one set meet the cubic in one point, while those of the other set meet it in two points. (See *Proj. Geometry*, by L. N. G. Filon.)

17302. (Professor R. W. GENESE, M.A.)—AP, BQ, CR are any straight lines in space; XP, XQ, XR perpendiculars to them from any point X in space. If the lengths AP, BQ, CR be taken as the co-ordinates of X, any equation of the first degree represents a plane.

17303. (C. E. YOUNGMAN, M.A.)—From a given point N on a conic three chords NA, NB, NC are drawn cutting the curve again at the same angle θ ; show that when θ varies the circles ABC are coaxial, bisecting the director-circumference; and that the tangents at A, B, C intersect on a fixed circle through the centre of the conic.

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.

17305. (N. SANKARA AIYAR, B.A.)—Prove that the self-polar circle of a triangle cuts the director circles of all in-conics of the triangle orthogonally.

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 = AC², AE.AC = AB². Prove that DE passes through the foot of the perpendicular from A on BC.

17307. (K. S. PATRACHARI.)—Any point P is taken on the nine-point circle of a triangle ABC of which O is the orthocentre. Circles are described passing through O, P, and cutting the circles on OA, OB, OC as diameters orthogonally. Show that the second points of intersection lie on a circle through O.

17308. (D. M. Y. SOMMERVILLE, M.A., D.Sc.)—AB'CA'BC' is a regular hexagon inscribed in a circle, and P is any point on the circle. PA' cuts BC in X, PB' cuts CA in Y, and PC' cuts AB in Z; prove that XYZ are collinear. Show also that if three parallel lines be drawn through A', B', C' cutting BC, CA, AB, respectively, in L, M, N, then LMN are collinear.

17309. (A. M. NESBITT, M.A.)—If G be the centroid of a triangle ABC, and P any point, then will

$$AP^2 + BP^2 + CP^2 = 3PG^2 + \frac{1}{3}(a^2 + b^2 + c^2).$$

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10768. (Professor CURTIS.)—Show that the chord of curvature of any point on an equilateral hyperbola passes through the centre of the curve.

12171. (W. J. GREENSTREET, M.A.)—The ends of a uniform heavy rod, of length $4a$, slide on the circumference of a three cusped hypocycloid whose plane is vertical, one of the cusps being at the highest point of the circumscribing circle whose radius is $3a$; find the length of the isochronous simple pendulum.

12175. (H. FORTEY, M.A.)—Show that when the cards are dealt out at whist, the probability that every hand contains one or more cards of each suit is $\cdot 8161049 \dots$, or the odds are about 9 to 2 in favour of the event.

12221. (Professor HAUGHTON, F.R.S.)—Trace the form of the curve

$$Z = \{\log (y+a) - \log y\} - K \{\log (y+b) - \log y\},$$

with varying values of the parameters a, b, K , all supposed real and positive.

12225. (V. RAMASWAMI AIYAR, M.A.)—Prove that the inverse of a harmonic polygon is a harmonic polygon.

12455. (J. GRIFFITHS, M.A.)—Show that through a point P in the plane of a triangle ABC three pairs of "generalized Brocard" circles can in general be drawn. Discuss this proposition when P lies on the Brocard circle of ABC.

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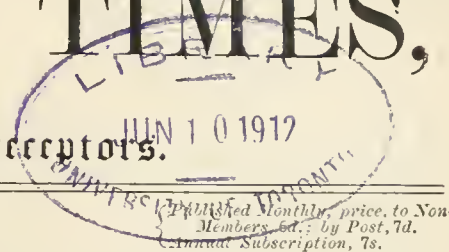
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AND

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Vol. LXV.] New Series, No. 614.

JUNE 1, 1912.



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The Educational Times.

In August next an International Congress of Mathematicians will be held at Cambridge to discuss the teaching of mathematics, especially in schools. During the last forty years sporadic efforts at reform have been made; but this is a united effort, on which four years of preparation have been spent, and for which official support is assured. The matter is not for the specialist alone. During the last half century improved means of communication and the increasing importance of statistics have tended to make mathematics an integral part of civilization. And the field is widening: economics, chemistry, and even medicine are calling for further applications, so that mathematics promises in time to be the most widely applied of the sciences.

For many years—one may say for centuries—this was the end that mathematicians sought to avoid. They recognized their specialty as a philosophy, to be defended at all costs from the sacrilegious hand of commerce. So long as college fellowships were plentiful and valuable, so long as country livings were fat and easy, this comfortable ideal found favour. But one day two facts emerged: that in its application mathematics was a science on which financiers put a price; that it was a subject in which the home student might excel, since he could be his own critic. The first fact degraded mathematics as a philosophy, the second undermined it socially; the two combined showed that the mathematician might not only be mercenary, but also perhaps unclubbable. The biography of Lord Kelvin in the "Encyclopædia Britannica" states that when he wished to undertake experimental work he had to seek opportunities in Paris, because "at Cambridge science had progressed little since the time of Newton." This unfortunate state of things, marked by a taboo of the concrete and a determination to hold aloof from a noteworthy body of non-academic mathematicians, persisted for long on account of the monopoly that Cambridge had established. It was subsequently aggravated by the establishment of the Civil Service Commission. Finally, the study degenerated into a mark-snatching competition in which original work represented simply a waste of time.

The position of Cambridge cannot be described as unique in regard either to the state of the particular study or to the treatment that it received. If, in spite of the discovery of Neptune, Airy had doubts about the law of gravitation, the anatomist followed Paley and talked of humours and textures. If Cambridge revelled in a liturgy of academic problems, dexterous manipulations, and examination pitfalls, no other University, British or foreign, was entitled to reproach her. Dühring, no petty or gentle critic, declared that "the general verdict on the nebulous, perverse, and cavilling form of science in the nineteenth century will be similar to that passed on the scholasticism of the Middle Ages: the position occupied by logic then is nowadays filled by mathematics." An equivalent verdict passed ten years ago in Great Britain aroused a storm of opposition. In ten years more there will be few to deny it an element of justice.

In many ways it is unfortunate that a fair measure of success in mathematics has been possible of achievement by industrious mediocrity, which has often invested its intellectual capital in academic Consols, firmly believing that depreciation was impossible and the return, though small, secure. The result has been the collection of an encyclopædia of curiosities, the elaboration of rules and processes for each particular problem, the classification of appropriate dodges, and an amount of over-teaching and over-learning which, praised as "thorough" by the author, has been the worst form of cram. The tendency to over-appreciation of details extends to the very lowest ranks. To the faults of repression of the imagination, failure to observe perspective, and self-deception with regard to the originality of problems must be added an equally grave one—the neglect of literary style. At times it seems intentional. An author, once eminent and now forgotten, gives a proof of the proposition that every equation has a root which is simply verbal juggling with the words "some" and "any." More often a deficiency of literary perception is noticeable. One gets accustomed to sentences like "If it is at right angles to it, then it bisects it." Even "twice times" passes muster, whilst an average has been defined as "a number which multiplied by the number of the numbers gives the total of the original numbers." From this general condemnation an exception must be made in

favour of Ireland: it is a pity that, though Cambridge recognized the "silent sister," she failed to see what Trinity College had to offer in return.

With the rise of experimental science, new conditions appeared. The magical attraction of certain conclusion and general demonstration, and the possibility of discovery without the uncertain help of experience, which characterized formal culture based on deductive methods, had to give way to inductive treatment, independent research, and the conviction that comes of successful application. Results are no longer accepted as true because they have been derived by a cunning use of the syllogism or proclaimed "on the authority of a clergyman of unblemished character." The difficulty that the words "phenomenon" and "noumenon" suggest is disregarded, and the temporary expedients that once shed lustre on the work of pioneers have been consigned to appropriate oblivion. Mathematics is no longer a philosophy, the prey of catchwords, but a science in which conclusions are immediately subjected to experiment.

It is difficult to decide when the change took place. Prof. Klein of Göttingen gives 1890 as the date at which physics began to make insistent demands on mathematics, and declares that this date marks the climax of the anti-mathematical feeling. Twenty years earlier a pioneer body, affectionately recalled by the initials A. I. G. T., began a vigorous campaign against the memory work of Oxford, the queer compound called mechanics by London, and the weaknesses of the Cambridge Little-go. In time its reiterated protests attracted attention and, changed circumstances being favourable, it can now look back on a past of national value. The date of change, however, is unimportant compared with its nature. Experimental pedagogy has shown that what is fit for adults is fatal for infants. The systematic perfection beloved by the maturer mind is lost on the inquisitive novice, who, subjected to pedantic thoroughness, becomes either apathetic or slavishly imitative. To his great credit, the British boy has refused to plough the weary sands of formality that promise no harvest, and has justly hated his mathematical work. Carrying his hatred into middle life, he is now astonished at the dawn of a new regime which promises renewed vitality for the science he detested.

This attractive prospect is due to improvement all round—a wiser choice of subject-matter, more reasonable demands on the part of Inspectors, and closer study of applications by the teacher. At last it is being understood that reasoning based on fundamental propositions is just as valuable a mental training as reasoning based on fundamental concepts. A study of the latter offered a fine array of guesses at truth; it wandered into historical discussions; it unearthed obscure gentlemen that had earned eternal rest, and it finished by arriving at nowhere in particular. Freed from a slavish study of rules, the pupil may now rely on a few basal principles, and, encouraged to apply them in living problems, he discovers a passion for investigation and a power of initiative that astonishes those who thought they knew him well. Of two recent publications, one, an official document, notices the improved ability and the greater mastery shown by pupils that have been taken through the pruned introductory work quickly; the other,

semi-official in character, tells how the house masters at a school well known for its classical scholarship are appalled at the avidity now shown by their boys for mathematical studies.

The excision of the obsolete and unessential, and the postponement of systematization till University life is reached, have been favourably regarded by Inspectors, who declare that "the only proof of knowledge worth having is the power to apply it to new matter." Various associations of teachers, recognizing this official encouragement, have decided what can be jettisoned with safety in algebra and how closer working in mathematics and physics can be brought about. The amount of work they have accomplished is only less astonishing than the unanimity of conclusion. It seems exceedingly probable that in the near future the mathematical laboratory and the mathematical museum will be necessary accessories of the school. At the same time the abuses of examination have been attacked, with good prospects of success.

Towards these desirable conclusions public authorities and Universities have contributed. The former have become reasonable, the latter have afforded laboratory training and made short work of pedantry. Twenty years ago there were two contending parties—one demanded that teachers should be trained; the other that they should be taught. The latter prevailed. But the question of training is not to be lightly dismissed. Germany, with characteristic thoroughness, wishes to see a rearrangement of her training programs and the establishment of a system of accredited studies between the University and the technical high schools. Cambridge, thinking languidly on pedagogy, has abolished orders of merit in class lists, and thus allowed the ambitious to indulge imagination and originality. It would seem that, circumstances being less restrictive, the time for consideration of the claims of pedagogy has now arrived.

Thus the ground is being prepared for a general advance, and all idea of mathematics being an intellectual luxury has vanished. But the advance must be slow; the position must be won by sapping, not at the point of the bayonet. Of immediate difficulties it is not easy to speak, but one thing seems certain: directly a pronouncement is made, a flood of authors will rush into print, flourishing the new shibboleths on their title-pages. Overloaded as our present manuals are, it will be wise not to indulge in lavish expenditure on novelties when once entrance has been gained to the promised laud.

NOTES.

PROF. HARROWER'S "Map of the Greekless Areas of Scotland," just issued from the Aberdeen University Press, is an amorphous splatch of funereal black with a sprinkling of sixty-nine little squares of light—the light of Greek teaching. Greek has been faring badly in the North. Twenty years ago there was scarcely a parish, at any rate within the territorial area of Aberdeen University, where a boy could

*Greek in
Scotland.*

not have got an excellent start in Greek. And now? Hear Prof. Harrower on the work of his chair:

To-day Greek is being taught in Aberdeen University on a lower level than has been known for fifty years. This has been forced on the University. It must teach the Greek alphabet or be content to see students entirely cut off from the study of Greek.

Indeed, "it may very well be that, if the rate of decline exhibited by the past few years be kept up, the Universities will be the only Greek-teaching institutions left in Scotland." There is, apparently, one small compensation for the declining supply of Greek students from the schools, and it is a somewhat curious one. "It is officially stated that 50 per cent. of the students in the Divinity Halls are without adequate knowledge of Greek"; so they are sent to the Junior Greek class! Still, Prof. Harrower is resolutely pessimistic. "It is as certain as anything can be that, unless a speedy change of policy be insisted on, the study of Greek in Scotland is doomed, and doomed by the action of the Scotch Education Department." Unfortunately, Prof. Harrower's mind is so obstinately centered upon the calamity of Greek that he omits to set forth the compensations derived or derivable from such subjects as have taken the place vacated by Greek. It is not, after all, a case of pure loss; and, however one may regret the decadence of Greek, one cannot reach any conclusion as to the educational results without taking into account the whole of the educational facts pertinent to the question.

"It was reported at a recent meeting of the Surrey Education Committee," says the *School Guardian* (May 11), "that no less than 129 head teachers in the county area had no definite class to teach"; and the tendency to consider the head master merely an organizer "is not confined to elementary schools." But a head master cannot be continually organizing, and, when he is not engaged in organizing, what does he do? No doubt the head classes in schools where the head masters are "merely organizers" miss what would be, presumably, the best teaching; and the junior masters miss a possible occasional example of their art. But what is all this portentous business of "organizing"? Is it confined to Surrey, or is it generally prevalent? Some Education Authority that is conversant with the practice would do well to explain to the tax- and rate-payers.

Now, if it were the case of the Principal of a University or College—especially the President of an American University or College—one could understand it. We have always imagined that the President of an American University or College was the official that raised funds and ran the institution; but one needs some instruction in detail before one can grasp the full significance of the description. Happily, there is on record (*Educational Review*, April 1911) a description by Dr. James H. Kirkland, of Vanderbilt University, Nashville, Texas, given in an address delivered at the inauguration of President Houston of the University of Texas (April 18, 1906):

To labour constantly for the world with no thought of self, to find indifference and opposition where you ought to have active assistance, to meet criticism with patience and the open attacks of ignorance without

resentment, to plead with others for their own good, to follow sleepless nights with days of incessant toil, to strive continuously without ever attaining—this it is to be a college president. But this is only half the truth. To be associated with ambitious youth and high-minded men, to live in an atmosphere charged with thoughts of the world's greatest thinkers, to dream of a golden age not in the past but in the future, to have the exalted privilege of striving to make that dream a reality, to build up great kingdoms of material conquest and make daily life richer and fuller, to spiritualize wealth and convert it into weal, to enrich personal character and elevate all human relationships, to leave the impress of one's life on a great and immortal institution—this, too, it is to be a college president.

As the Mayor of Falmouth said, "that's what a man gets for rising early and lying down late to serve his country." Well, putting both halves together, if the experience of our non-teaching head masters answer to this description, even in a very remote degree, who shall envy them? But, after all, one must come back to the standpoint of the tax- and rate-payer.

THE claims of hygiene, in school as well as outside school, are persistent and not to be ignored. In this country, the health of the teachers is not excited any very particular interest; attention has been concentrated on the health of the children. In America, however, the case is different. Witness Dr. W. S. Small, of Washington, speaking on "The Need of Investigation in the Field of School Hygiene," the general thesis of the Conference held on occasion of the twentieth anniversary of Clark University (whose President is Dr. Stanley Hall):

We know in a general way, by common experience, that teachers are liable to nervous disorders and that this common experience is confirmed by such few careful investigations as have been made. As to the real extent and degree of this factor we are in the dark. Mr. W. H. Allen declares that it has come to be "a matter of course that teachers are nervous wrecks" and "this fact is offered by teachers themselves as sufficient explanation for impatience, irritability, and downright ugliness of disposition." If Mr. Allen's assertion be even half true the moral damage to children from this source is incalculable. Not to mention nervous injury and intellectual loss, the moral damage furnishes the strongest kind of motive for investigation of the health of teachers, a motive that will be effective in enlisting the interest of all intelligent parents. The fact that a certain percentage of all the teachers in the community are suffering from nervous strain, so that their personal happiness and joy in life are impaired, may elicit commiseration and some deprecatory protestations that something ought to be done; but the fact that this does not stop with the sufferers, but is transformed into positive damage to the children in our several homes, is quite another matter. We as parents want to know whether the teachers of our children are thus suffering, and we are even interested in knowing both the extent and the nature of the ills to which the conditions of school life render the teachers especially liable.

The American teachers are mostly women; but many of our teachers are also women, presumably liable to like infirmities. Nor are men teachers destitute of nerves, or of trials to nerves. Apart altogether from the influences on the pupils, the health of teachers ought to be more carefully considered and guarded. "Commiseration and some deprecatory protestations" are all very well in their way; but prevention is better than cure, even where cure follows.

THE REV. ALFRED J. CHURCH, M.A., died at eighty-three. He was educated at King's College, London, and at Lincoln College, Oxford. He was an assistant master at Merchant Taylors 1857-70; Head Master of Henley Grammar School 1870-72, of Retford Grammar School 1873-80; Professor of Latin in University College, London, 1880-88; and Rector of Ashbury, Tetbury, Gloucestershire, 1892-97. He gained the prize for a poem on sacred subjects at Oxford 1884. With the Rev. W. J. Brodrick he wrote a translation of Tacitus; and his popularization of the Classics in numerous "Stories" for young people has been a distinctive success.

MR. EDWARD PINCHES.

MEMBERS of the College of Preceptors will learn with the deepest regret of the death of Mr. E. E. Pinches at his residence in Kensington on May 17 after a long illness.

Mr. Pinches was born in London in the year 1838, and was a member of a family of notable schoolmasters. His father, William Pinches, carried on for many years the City Commercial School in George Yard, Lombard Street, on the site now occupied by the Mocha Coffee House. Mr. William Pinches was an accomplished classical scholar, but the subjects in which he chiefly delighted were elocution and English literature, and among his favourite pupils were Sir Henry Irving, who left the school in 1852, and Sir Edward Clarke, who joined it in the following year. His eldest son, Conrad Hume Pinches, established Clarendon House School, in the Kennington Road, which had a great success and reputation. The second son, William, established a school in St. Martin's Lane, which was afterwards removed to the North of London. Edward was the third son, and spent his school life under his eldest brother at Clarendon House. He early gained distinction in the examinations of the College of Preceptors, his name appearing in the prize list for the year 1854, and in his examination for the B.A. degree at London University. He possessed the family fondness and talent for elocution, and Dr. Conrad Pinches' well known work on elocution is illustrated by portraits of Edward and his younger brother, Charles. At his father's school he made acquaintance with Henry Irving and Edward Clarke, and established with each of them a close and lasting friendship. That with Henry Irving continued until the death of the famous actor; the other lasted until his own death. For a short time after his father's retirement in 1860 Mr. Edward Pinches carried on the school at Lombard Street, removing it upon the expiration of the lease at George Yard to a house in Finsbury Square. He however, left the scholastic profession upon his marriage in 1865.

Mr. Pinches became a member of the College in 1855. His ability and energy soon found acceptance with his fellow members, and in 1869 he was elected to the Council, a position which he occupied without intermission till the day of his death. Though comparatively young in years, he soon gained influence on the Council, and on the death of Dr. Conrad Pinches in 1881 he was elected Treasurer of the College in his place, an office which he filled for five-and-twenty years, until the state of his health compelled him to resign it. During this long period he was often chosen to represent the College and publicly advocate its claims; he gave evidence before the Royal Commission on Secondary Education in 1894, and he served as the representative of the College on the first Registration Council established under the Education Act of 1899. His wide and accurate knowledge, his resourcefulness, and his judicial tone of mind made him an ideal examiner, and in that capacity his services were in frequent request by his own University, the College of Preceptors, and other public bodies.

At a general meeting of the members of the College a good many years ago, one of those present referred to the three gentlemen seated at the table on the platform as "The Triumvirate," who were mainly responsible for the government of the College. The three thus designated were Dr. Wormell, Mr. Eve, and Mr. Pinches. The aptness of the epithet, which was fully appreciated by the meeting, will be recognized by all who are acquainted with the history of the College, and it will be generally admitted that it was Mr. Pinches who, by his unflinching tact and steadfastness of purpose, supplied the binding quality which held together in friendly union for the common good that "Council of Three." It was his cool judgment, his insight into principles of action, his mastery of details, and his sympathy with every form of educational activity, which made him so beneficent a controlling force in the counsels of the College, and which makes his loss wellnigh irreparable. It was especially his wise administration of the finances of the Institution during the many years that he filled the office of Treasurer that was so largely instrumental in securing for the College its position of stability and influence.

"This for remembrance."

I should like to be allowed to add a few words in affectionate remembrance of a very dear and true friend. My earliest recollection of Edward Pinches is that at an elocutionary entertainment at Clarendon House he took the part of Mercurio in a scene from "Romeo and Juliet." It was in 1853, and he was

then a bright handsome boy, with great charm of voice and manner. The close friendship between us which then began grew closer as years went on, and lasted without any break—without indeed being clouded by a single day of difference or discord—until I saw him for the last time about three weeks ago. For forty-seven years we have been in chambers together in the Temple, and although he never obtained, or indeed desired, the professional work for which he was in many ways admirably fitted, he used constantly to attend at his room until his increasing work at examinations—and during the last three years his failing health—made his visits to the Temple less frequent. To me in my political career he was a devoted and self-sacrificing helper. He was with me in the Southwark contests of 1880; at two of my elections at Plymouth he acted as my election agent, and showed a skill, and industry, and firmness, and caution which the most experienced agent could not have surpassed, with an unflinching tact and a courtesy which was never disturbed. We had no secrets from each other, and I owe much—how much I cannot tell—to his wise counsel and his just yet tolerant judgment. My sense of loss must deepen as my few remaining years go by.

"And unto me no second friend."

E. C.

SUMMARY OF THE MONTH.

THE Secondary, Technical, and University Teachers' Provident Society has been established by a Joint Conference representing the Incorporated Association of Assistant Masters in Secondary Schools, the Assistant Mistresses' Association (Incorporated), the Association of University Women Teachers (Incorporated), the Association of Teachers in Technical Institutions, and the Teachers' Guild of Great Britain and Ireland. The Society is open to "gentlemen whose main employment is teaching in institutions recognized by the Committee of Management as falling under the following descriptions: Universities, University colleges, training colleges, technical institutions, secondary schools (public or proprietary), preparatory schools; together with persons whose main employment is teaching otherwise than in public elementary schools, and who possess qualifications approved by the Committee of Management." Application forms may be obtained from the Secretary, 35 John Street, Bedford Row, W.C.

THE College of Preceptors recently sent a resolution to the London County Council recommending, amongst other things, that, in order that private schools may fulfil their function in our educational system, it is essential that the independence of those schools which do not desire recognition by the Board of Education or by Local Authorities should be safeguarded. Reporting upon this, the Education Committee of the London County Council state that there is difficulty under existing circumstances in bringing private schools within the purview of a system of public education. It is recalled that last January the Incorporated Association of Head Masters passed a resolution to the effect that the time had come when all private and proprietary schools and other educational institutions should be inspected by the Board of Education. Accordingly the Committee recommend: "That the London County Council is unable to recognize a private school for the attendance of its scholars unless the school has been inspected by the Board of Education or by a University and declared to be efficient."

At a meeting held at University College (May 17), presided over by Dr. Kenyon, Director and Principal Librarian of the British Museum, the Dean of Westminster moved a resolution that a London branch of the Classical Association should be formed. Such branches, he said, could be carried on without the least reference to the controversies which might cause considerable agitation and possible friction at the old seats of learning. People might quite legitimately hold entirely different views as to the right policy, but at the same time they might desire to promote whole-heartedly the study and investigation of the classics. The utilitarian view of education had made many parents assume that the teaching of Latin and Greek could be of no real utility for their boys and girls, but he was persuaded that in the interests of literature, the study of Latin and Greek must

be encouraged, as they were the pillars on which modern literature rested. Prof. Conway (Manchester), who supported the resolution, said that nothing could seem worse for the classics than the recent action of the London University in discarding Latin and Greek from the list of compulsory subjects; but in the North of England that happened thirty years ago. They survived it, however, and the study of Latin and Greek was not dying out in the North of England, but spreading very widely. The resolution was adopted unanimously, and, on the motion of the Head Master of Westminster School, seconded by the Head Mistress of St. Paul's School, a committee was appointed to draw up rules for the branch.

At the thirteenth Annual Examination for the National Diploma in Agriculture, held at Leeds, 102 candidates appeared—21 in Part I, 43 in Part II, and 38 under the new regulations introduced this year. In Part I, 8 candidates were successful; in Part II, 29 passed for the Diploma, four gaining honours; 23 passed in four of the eight subjects under the new regulations, while 3 (out of 4) that took the whole examination obtained the Diploma.

MR. HENRY SWEET, M.A., Ph.D., LL.D., University Reader in Phonetics at Oxford since 1901, died at sixty-seven. Educated at Bruce Castle (Tottenham), King's College (London), Heidelberg and Oxford Universities, he devoted himself to comparative philology, and especially to English study. His grammars, primers, and editions are well known in the schools. He was a corresponding member of the Munich, Berlin, and Copenhagen Royal Academies of Sciences, and had wide literary and outdoor interests.

UNIVERSITIES AND COLLEGES.

(From our own Correspondent.)

THIS is an age of examinations. If we can teach the undergraduate little, yet we can examine him much, and Cambridge by this time we ought to know how to do it. But it is not so. From a business point of view it is an open fact that the arrangements for those necessary evils, our Specials and Triposes, are not particularly admirable. The present writer has for years advocated the association of all the business work of the examinations under the control of one central body. The Local Examination Syndicate stands out as the most satisfactory organization to take charge of the subject: it has done much to make the University smell sweeter in the nostrils of the outside world; its officials realize the advantages of courtesy, punctuality, and tact; they work hard, never grumble at their increasing responsibilities, their decreasing holidays, and their stagnant salaries. The readers of these notes will, therefore, at first be surprised when they hear that it is proposed to transfer a great deal of the management of the examinations to the Registry's office, and still more surprised when the suggestion is cordially endorsed by the present writer. For the Registry was long the head and front of the Local Examinations, and the spirit of Syndicate Building has only flitted across the road to the Registry. It is also proposed that the Registry shall *ex officio* be Secretary of the Council. All this means that Dr. Keynes is prepared to do the work of three ordinary or six University officials. And he will do it.

Those who are agitating in favour of the promotion of architectural studies are moving slowly but steadily; it is now proposed to organize a Board to superintend the work, instead of leaving it to the tender mercies of (a) the Board of History and Archaeology and (b) the Board of Physics and Chemistry. Those who are acquainted with the personnel of these two bodies will vote for change—any change. But is it eminently desirable to allow students to devote themselves to any special and technical line before they have given some proof of having attained a definite quantum of general education? Is the Little-go a sufficient test of a general education?

The proposal to throw open the Divinity degrees to all and sundry—to those professing orthodox, heterodox, or fancy variants—has for the moment hung fire. A very strongly signed memorial has reached the Vice-Chancellor, and the hand of the reformers has been stayed till after we have consumed our Michaelmas goose.

The University reformers have sent out for signature a me-

morial addressed to the Prime Minister, praying for a Royal Commission. No doubt reform is wanted—everybody realizes that; but this precious document is to be signed, forsooth, because the recent attempts at reform from within have proved ineffectual. True it is that certain ill-digested Schemes have been referred to the obscurity from which they had their origin, but no *bona fide* measure of reform has ever received anything but the most careful consideration from the Senate. And another point: no scheme has yet been formulated to remedy the crying evil of the undergraduate's expenses. It is a great, growing, and notorious scandal. All the best work is done here without adequate payment; the whole system of teaching and of payment for teaching needs radical overhauling, not necessarily overhauling by Radicals; the fallacy that a man can teach because he has obtained a College fellowship must be recognized, stipends must be adjusted to the work done, and those who shout loudest for Free Trade for our Empire must be taught that charity begins at home.

We are fortunate in having secured Prof. Murray, the learned Professor of Greek in the sister University, to deliver the Rede Lecture on June 4. The subject will be "The Chorus in Greek Tragedy." Luckily we have a room, the theatre of the new Lecture Rooms, where such a lecture can be heard.

Examinations loom large in these notes this month, but they also bulk largely in the arrangements of the May term. Everybody is "in" for something. Triposes are upon us before May is three weeks old, and Specials, Medical Examinations, and Diplomas follow on their heels. But there is a silver lining to the cloud. At last the fetish of the system is exposed to a microbe which will work its deadly way in the examination body. Proposals are afoot, and will materialize into statute, ordinance, and regulation, that in certain cases a man may finish his examinations in his second year, and spend the rest of his time in getting a certificate from certain officials that he has "diligently attended a course of instruction." These be happy days for the undergraduate. But of this more anon.

The "May" Races begin on June 5. The first four boats will probably show some good sport. First Trinity, Pembroke, Jesus, and the Hall are all strong, the most promising crew being Jesus; while "First" have the advantage of rowing head, which means an advantage of something like two lengths. Much depends upon whether Pembroke can stave off the attack of Jesus. If they can do so, changes will be few, but if Jesus make their bump early some interesting racing will follow.

Our cricket eleven promises well in the batting department, but there is a dearth of good bowlers. The freshmen are unusually good, and one of them, Woosnam, from Winchester, is acknowledged to be as good a field as Cambridge has seen for years; he has, however, not been lucky as a bat. We shall be well represented in the Olympic games, and our prospects for next year are remarkably bright.

The festivities begin on June 6 with the Hawks Ball, and for a week dancing will be the order of the day—or night. For some of the balls all the ladies' tickets had been sold a month beforehand.

OPINION continues to be keenly divided over the questions of the new site for the University, and of the position of London. of external students.

It has been decided to organize a Summer School for tutorial class students to be held in June, partly in the University buildings and partly at University College and King's College. There will be a series of general lectures, and tutorial classes will be held in economics, sociology, general history, and literature.

The Congress of the Universities of the Empire is to discuss, among other subjects, such matters as—The question of division of work and specialization among Universities; inter-University arrangements for post-graduate and research students, including the questions of reciprocal recognition of courses for post-graduate degrees and co-operation in post-graduate courses; the relation of Universities to technical and professional education; interchange of University teachers; the problem of Universities in the East; residential facilities at Universities; conditions of entrance to Universities and the possibility of mutual recognition of entrance tests; the action of Universities in relation to after-careers of students; University Extension and tutorial class work; the position of women in Universities and the representation of teachers and graduates on the governing bodies.

THE EDUCATIONAL LADDER.

BANGOR UNIVERSITY COLLEGE.—Entrance Scholarships: Eyton Williams Scholarship (£40), Robert R. Surtees, Consett Secondary School; Durham Scholarship (£30), Reata Jackson, Girls' County School, Wrexham; Eyton Williams Scholarship of £5, John R. Morgan, County School, Bethesda; John Hughes and Tate Exhibition of £25, C. G. Roberts, Friars School, Bangor; John Hughes and Eyton Williams Exhibitions of £15, Ruth Allen, County School, Hawarden; Eyton Williams Exhibition, B. Maelor Jones, Grammar School, Ruabon; Osborne Morgan and Eyton Williams Exhibition, D. Miles, County School, Hawarden; Eyton Williams Exhibition, G. R. Punchard, Girls' County School, Wrexham; R. Hughes Scholarship of £15, A. T. Owen, Grammar School, Beaumaris. Exhibitions of £10: J. H. Jones, County School, Bethesda; Tate Exhibition, Phœbe C. Jones, County School, Barnouth; R. Gee Exhibition, T. Prince, Grammar School, Ruabon; D. Williams Exhibition, Idwal G. Ll. Williams, Friars School, Bangor. Tate Exhibitions: M. H. Roberts, Girls' School, Wrexham; D. H. Williams, Friars School, Bangor; H. B. Watson, County School, Llandudno; F. Boyle, Grammar School, Swansea; P. V. McKie, Girls' County School, Bangor; Ethel M. Russell, County School, Llangollen.

CAMBRIDGE UNIVERSITY.—Porson Prize: G. K. Montagu Butler, Scholar of Trinity. Winchester Reading Prizes: E. A. Peers, Christ's, and L. E. Tanner, Pembroke, equal. Le Bas Prize: Not awarded. Stewart of Rannoch Scholarships in Hebrew: Restricted, (1) E. E. Polack, (2) F. A. Redwood, Queens'; Open, B. M. Pickering, Gonville and Caius. Stewart of Rannoch Scholarships in Greek and Latin: (1) H. McGowan, St. Catharine's; (2) A. S. Polack, St. John's. Stewart of Rannoch Scholarships in Sacred Music: Restricted, no candidates; Open, J. B. Johnson, Selwyn, and B. C. Jones, Corpus Christi. Lightfoot Scholarship: Eric E. A. Whitworth, B.A., Trinity. Adam Smith Prize: F. Lavington, B.A., Emmannel. Tyrwhitt Hebrew Scholarship, £30 a year each: J. Pinkerton, B.A., Emmannel, and K. M. Robathan, B.A., Gonville and Caius. Mason Prize for Biblical Hebrew: J. Pinkerton and K. M. Robathan, equal.

Christ's.—Giggleswick Exhibition: T. J. G. Brasnett.

Queens'.—Fellowship: Robert G. D. Lafan, B.A., Scholar of Eton and Brackenbury Scholar of Balliol, Oxford.

St. John's.—Choral Scholarship: H. S. Hand, Berkhamsted School.

CARDIFF UNIVERSITY COLLEGE.—Drapers' Company's Scholarship, £35 for one year: Hugh Lawrence, City of Cardiff High School for Boys; Richard Cory Scholarship, £25 a year for 3 years: T. W. Butler, County School, Barry; Caroline Williams Scholarship, £25 a year for 3 years: Margaret Jones, Intermediate School, Merthyr Tydfil; Sir Alfred Thomas Scholarship: £20 a year for 3 years: F. W. Pinkard, Intermediate School, Newport; Special Scholarship, £25 a year for 3 years: Eric Norman de Normann; Isaac Roberts Scholarship (Science), £50 a year for 3 years: F. C. Lewis, Howard Gardens Municipal Secondary School, Cardiff; City of Cardiff Scholarships in Arts: Florence E. Gatfield and Dorothy Holland, both of Howard Gardens Municipal Secondary School; City of Cardiff Scholarships in Science: Gladys A. Gedrych, Howard Gardens Municipal Secondary School, and Gladys M. Gitsham, City of Cardiff High School for Girls and P.-T. Centre, Cardiff; David Davies Mining Scholarship, £40 a year for 3 years: Herbert J. Carpenter, Gelli, Rhondda; Brecon Scholarship, £27 a year for 3 years: John G. T. Price, County School, Brecon; Craddock Wells Exhibitions: T. G. Daniel, Howard Gardens Municipal Secondary School, Cardiff, and P.-T. Centre, Cardiff; W. T. Griffiths, Howard Gardens Municipal Secondary School, Cardiff; Elsie Loek, City of Cardiff High School for Girls; Albert John Phillips, Howard Gardens Municipal Secondary School and P.-T. Centre, Cardiff; and Frederic Wallis-James, Canton Municipal Secondary School, Cardiff; Caradog Scholarship in Music, £50 a year for 3 years: George F. Lewis, L.R.A.M., Merthyr Tydfil.

LONDON UNIVERSITY.—

Royal Holloway College.—Driver Scholarships: Classics, Miss C. E. Faithfull and Miss C. M. Baines; Mathematics, Miss T. L. Heywood and Miss G. L. Whitaker; English, Miss E. Noble and Miss L. M. Swinburn; History, Miss G. Hinde and Miss S. E. Foster; Botany, Miss F. E. Messiter. Christie Scholarship for History: Miss V. E. Somerville. Driver Prizes: Greek, (1) Miss C. E. Faithfull; (2) Miss C. M. Baines; English, Miss P. P. Duncan; French, Miss B. C. Seth-Smith; German, Miss D. L. Barker; History, Miss S. E. Foster; Pure Mathematics, Miss I. L. Heywood; Applied Mathematics, Miss G. L. Whitaker; Botany, Miss A. Stephens. Christie Prize for French: Miss B. C. Seth-Smith. Savory Divinity Prize, Miss M. A. Hennings.

OXFORD: ST. HILDA'S HALL.—Scholarships: Hilda Jennings, Stafford High School (English Language and Literature), £40; Elizabeth N. Macrae, Tottenham High School (Modern History), £40.

OXFORD UNIVERSITY.—Stanhope Historical Essay: Michael T. H. Sadler, Commoner of Balliol (son of Vice-Chancellor Sadler); *proxime accessit* George C. H. Borley, Scholar of Balliol; honourably mentioned, Hubert Phillips, Exhibitioner of Merton. Lothian Prize: Austin Lane Poole, B.A., Corpus Christi; honourably mentioned, Leonard F. Nalder, B.A., Corpus Christi. Ellerton Theological Essay: M. G. Haigh, B.A., New College.

THE COLLEGE OF PRECEPTORS.

MEETING OF THE COUNCIL.

A MEETING of the Council took place at the College, Bloomsbury Square, on May 18. Present: Sir Philip Magnus, President (in the chair), Prof. Adams, Prof. Adamson, Dr. Armitage Smith, Mr. Bain, Rev. J. O. Bevan, Rev. J. B. Blomfield, Mr. Cholmeley, Mrs. Felkin, Mr. Howe, Rev. R. Lee, Mr. Pendlebury, Mr. Rule, Mr. Rushbrooke, Rev. Dr. Scott, Dr. Sibby, Mr. Starbuck, Mr. Storr, Rev. Canon Swallow, and Mr. Wilson.

The diploma of Associate was granted to Mr. J. H. Dearn, who had satisfied the prescribed conditions.

The Rev. J. O. Bevan and Mrs. Felkin were appointed to act as delegates of the College at a Conference of Teachers' Associations, convened by the League of the Empire, to take place on July 13-17.

On the announcement of the death of Mr. E. E. Pinches, the following resolution was proposed by the President and adopted unanimously:

"The Council of the College of Preceptors have received with the deepest regret the intelligence of the death of Mr. Edward Ewin Pinches, their highly esteemed colleague and for twenty-five years Treasurer of the College. His ability and knowledge, his wise administration, and devotion to the College were largely instrumental in building up its prosperity and augmenting its influence, and his name will ever be associated with the beneficent development of the work of the College. The Council is deeply sensible of the irreparable loss which the College has sustained by his death, and they wish to convey to Mrs. Pinches and the other members of his family their sincere sympathy for them in their sad bereavement."

The Secretary was also directed to write a letter of condolence to the family of the late Rev. A. J. Church, who had been for many years a member of the Examining Board of the College.

Saturday, July 20, was fixed as the date of the forthcoming general meeting of the members of the College.

On the recommendation of the Education Committee, it was resolved that in view of the arrangements for a joint conference of Associations of Teachers at the University of London in January next, it would not be advisable to hold a winter meeting of Teachers at the College at the same time.

On the recommendation of the Finance Committee grants amounting to £30 were made from the Benevolent Fund of the College. It was resolved that the arrangements for the collection of advertisements for the College publications should be left in the hands of the present publisher on the terms he had offered. It was also resolved that the College should, if possible, become one of the Associations of Teachers, to be constituted under the name of the Secondary, Technical, and University Teachers' Provident Society to be approved under the National Insurance Act, 1911.

Mr. J. S. Thornton, B.A., 6 Kirkdale Road, Leytonstone, was elected a Member of the Council to fill the vacancy caused by the death of Mr. Baumann.

The following persons were elected members of the College:—

Mr. J. Griffin, M.A. Camb., L.C.P., St. John's Training College, Battersea.

Mr. J. A. Monkhouse, L.C.P., 9 Haydon's Park Road, Wimbledon, S.W.

Mr. P. R. Rayner, L.C.P., 71 Welldon Crescent, Harrow.

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.

By BLACKIE & SON.—Dyson's Selections from Mignet's *l'Histoire de la Révolution*; Hall and Grünbaum's *Chemistry of Housecraft*.

By W. B. CLIVE.—Flecker's *Acts of the Apostles*, Ch. I-XVI; Gergin's *Shakespeare's Macbeth*; Rennie's *Lessons in Plant and Animal Life*; Walker and Shaker's *Gospel of St. Mark*.

By MACMILLAN & CO.—Hall's *School Algebra*, Part III; Hall and Stephens' *Examples in Arithmetic*, Parts I and II.

By METHUEN & CO.—Auld's *Introduction to Quantitative Analysis*; Switzer's *Practical Geometry for Schools*; Thole's *Qualitative Organic Analysis*.

By the OXFORD UNIVERSITY PRESS.—Historical Portraits, 1600-1700; Allen's *Lives from Cornelius Nepos*, *Tales of Early Rome*, and *Tales of the Roman Republic*, Parts I and II; Auden's *School History of Shropshire*; Bos's *Dickens's Tale of Two Cities*; Crofts' *Deux Contes par Joseph Méry*; Davis's *Story of England*; de Sauge's *Cours de Dictées*; Gilkes' *Kallistratus*; Gordon's *Shakespeare's Hamlet, Coriolanus, and Twelfth Night*; Hamilton's *Junior History of Rome*;

Herbertson's Clarendon Geography, Vol. I; Lee-Warner's Extracts from Livy, Parts I, II, and III; Lowe's Tales of the Civil War; Makower and Blackwell's Book of English Essays (1600-1900); Masse's French Spare Moments; Scott's Dickens's Pickwick Papers; Tindall's Erckmann-Chatrain's Madame Thérèse; Verney's Bucks Biographies; Walford's Extracts from Cicero, Parts I, II, and III; Wilson and Hedley's School Chemistry; Wordsworth and White's Novum Testamentum Latine.

By ALSTON RIVERS.—McNair's Guide to the Study of English History, Part I.

A CHARACTER-TRAINING CURRICULUM.

At the Quarterly Meeting of the Moral Education League, held at the Royal Society of Arts on May 3, Mr. F. J. Gould, the League's Demonstrator, presented for consideration a scheme for the correlation of school subjects of instruction with a view to character training. Dr. F. H. Hayward presided.

The lecturer pointed out that on the Herbartian principle all the curriculum must be subordinated to the ethical aim. But there was a general complaint among teachers as to the overcrowding of the time-table. Reform must therefore be secured by reducing subjects to juster proportions, especially arithmetic, the *bête-noire* of our school system. He was of opinion that arithmetic might not only be rendered less burdensome and more rational, but also be a better subordinated to moral ends.

The correlation scheme presented to the meeting was not intended for adoption in its printed form. Basing the school teaching on the general plan of human evolution, it recognized the principle that the child psychology approximately follows the psychology of the race. Younger scholars would therefore have all their lessons associated with antiquity—Greeks, Romans, Hebrews, with the corresponding environment: scenery, myths, fairy tales, &c.; and the incidental moral elements scattered through these subjects would be gathered up for the illustration of the direct ethical instruction of that stage. But the teacher would be free to add modern and other illustrations from any suitable source whatever. For example, lessons on the scenery and natural history of the Mediterranean and its coast-lands would be connected with the activities of the Greeks and Romans (represented, say, by the life of Lycurgus or of Cato), and the classical myths (such as that of the Argonauts), and with moral lessons which would emphasize the character, qualities, and virtues embodied in the preceding topics.

The second stage would, in a similar way, cover the period of the Middle Ages and the centuries ensuing till about the year 1700. A group of lessons might be given, for example, on the central theme of the Crusades, and would reveal the spirit of co-operation which animated the Western-European nations, and also, by means of stories from the "Arabian Nights," &c., would portray the moral qualities of the enemies of the Crusaders. Incidentally, a lesson on religious toleration would be then imparted. Only in this second stage would the scholars' own native country come into view; for all children, without exception, should first study, in simple outline, the period of antiquity.

The third stage, adapted to the age of thirteen upwards, would culminate in the world geography and the moral outlook associated with the brotherhood of man.

Such a scheme met the need, felt by children as well as by adults, for constructive thought and method. Even children like to feel ideas being gradually built up, whether in general education or in moral instruction. The lecturer quoted a passage from Ferdinand Buisson's "Foi Laïque" to the effect that all children would, in the schools of the future, know and appreciate the most beautiful pages of all the Bibles of humanity, including the Gospels; they would admire the Middle Ages, the Renaissance, and the Reformation, and understand both the greatness of the Church and also of the critics who attacked it. The time was approaching when the various activities and studies of the school must not only be correlated—they must be correlated for a living and abiding purpose, and that purpose was the training of the young personality in the service of the larger life. The correlation must supersede all the disconnected compartments of the nineteenth-century school time-table. Education must abandon scattered aims and chaotic survivals—it must correlate in order to subordinate, and it must subordinate in order to consecrate.

Discussion followed. A copy of the scheme will be sent to any reader on receipt of a post card addressed to the Moral Education League, 6 York Buildings, Adelphi, London, W.C.

CONFERENCE ON DIET

IN PUBLIC SECONDARY AND PRIVATE SCHOOLS.

THE National Food Reform Association held a conference on Diet in Public Secondary and Private Schools at the Guildhall on May 13. The membership of the Congress numbered some 250, including many well known names both in education and hygiene. The papers read were thoughtful and practical. Thus Dr. Dukes, the experienced Hon. Consulting Physician to Rugby School, discussed "Diet as a Factor in Physical, Intellectual, and Moral Efficiency"; Miss M. E. Robertson, Head Mistress of Christ's Hospital Girls' School, Hertford, "Diet in Boarding Schools"; Dr. Mumford, Medical Officer to Manchester Grammar School, "The Importance of Adequate Meals and Suitable Dietary in Securing Efficiency and Good Scholarship"; Dr. Cecil Reddie, Head Master of Abbotsholme, "The Teaching of Health, Personal and Social"; Mrs. Stanley Hazell, "Problems in Institutional Feeding"; Miss Marie Michaelis, M.A., Lecturer in Hygiene and Physiology at King's College for Women, "Training in Institutional Work"; &c. We make room for one or two abstracts:—

THE TEACHING OF ELEMENTARY PHYSIOLOGY AND PERSONAL HYGIENE.

By Dr. ALICE M. BURN,
Assistant School Medical Officer, Durham County Council; late
Medical Officer, Wycombe Abbey School.

The national importance of securing the greater physical efficiency of the child is now recognized as a matter of urgency. The modern school accepts its mandate for the physical equipment of its product just as surely as it accepts responsibility for its mental output. The residential school in particular is making splendid efforts to secure that perfect mental balance which is essential to normal and harmonious development. But the best of school regimes works at a disadvantage while youthful ignorance of the simple fundamental facts of physiology and personal hygiene remains unenlightened. Some stray knowledge of the physiological self has already reached the child, filtered through channels of a more or less unreliable nature. This should be rectified and amplified by expert teachers just as all other misconception and inaccuracies are treated. Why has not the school always furnished the child with as much knowledge as will give him a defence against ill health and deterioration, on the same principle as we have equipped him with the knowledge and training that secure him an adequate foothold in the professional, industrial, and social areas? The duty has been lightly relegated to the home. But the modern home has no greater capacity for dealing with this important branch of study than it has for the effective teaching of the ordinary subjects of the curriculum.

The teaching of elementary physiology co-related with its personal hygiene should be a recognized part of every school syllabus. The value of such a study to the scientific training of the child mind has never been fairly appreciated; its aid in the maintenance of a high standard of school health and physique has never been invoked; its power to imbue the individual and permeate the home with national ideals of physical integrity has never been assessed. A national supremacy which is founded largely on industrial and economic pre-eminence exacts a heavy physical toll of its communities. It becomes then a policy as well as an ideal to call out all the resisting powers of a nation to depletion or deterioration. For the great mass to be well, and keep well, under our present social and industrial conditions, is an art and a science which might well tax the knowledge and understanding of the most expert, but at least the greatest advance towards that ideal will be made in our educational equipment of the school unit of to-day—the parent of to-morrow. One-fifth of the nation will be found in our schools. These constitute one of the most favourable points of approach for the new state service ideal that yearns to place its knowledge and power to keep a nation well, at the disposal of legislative authorities.

MAIN LINES OF REFORM IN DIET AT PUBLIC SCHOOLS.

By J. SIM WALLACE, M.D., D.Sc., L.D.S.,
Lecturer on Dental Surgery and Pathology, London Hospital.

In his recent annual report, the chief medical officer of the

Board of Education, Sir George Newman, says: "There are few questions of greater moment calling for the attention of health and education authorities in this country than this one of diet, both in relation to teeth and to the general nutrition of the child . . . Speaking generally, not more than a few children out of every hundred will be found who fail to bear evidence of present or past dental disease. What, however, is of even greater moment is the fact that probably the majority of school children suffer more or less serious disability in some form or other, sooner or later, from dental decay. Indeed, it is probably true to say that there is no single ailment of children which is responsible, directly or indirectly, for a larger proportion of the delicacy and disease which is found at every turn to handicap efficiency, both physical and mental."

Generally speaking, the diets in vogue are good, except from a hygienic point of view. The most important principle in dietetics is the one that teaches that meals should be of such a nature, or so arranged, that they will leave the mouth and alimentary canal in a hygienic state. This principle leads us to divide foods into two classes, namely, those which give rise to oral mal-hygiene and those which give rise to a hygienic state of the mouth. Lack of appreciation of this principle in dietetics accounts for the ruination of millions of teeth annually and also for oral sepsis and the multitudinous forms of ill-health and disease which consequently follow. Certain rules follow the recognition of this new principle: (1) Children should always have farinaceous food in a form which will stimulate a pleasurable amount of efficient mastication. The albuminous part of their diet should also be presented in a form which will encourage mastication—*e.g.* boiled fish, meat, and bacon. Milk, or milk substitutes, should only be allowed in small amounts. (2) The meals should be arranged in such a way that if soft, starchy, or sugary food has been eaten the mouth and teeth will be cleansed by food of a detergent nature taken immediately after. Thus, therefore, when sweets of any kind—*e.g.* milk puddings, jam rolls, cake, sweet biscuits, bread and marmalade or jam—are eaten, fresh fruit should be eaten afterwards. (3) Three meals daily are to be preferred to any greater number, as the longer the interval the more hygienic is the state of the mouth and stomach and the more perfectly adapted for the reception of a further meal. Sweets, chocolate, or biscuit and milk should never be eaten between meals or before going to bed.

The tuck shop causes an enormous amount of dental decay and oral mal-hygiene, and school meals should provide all that is requisite or desirable for the child's needs without causing a pathological craving for sweets as they usually do.

DIET REFORM IN PREPARATORY SCHOOLS.

By W. H. PROSSER,
Snettisham Grange, Norfolk.

The period spent at a preparatory school is, in my opinion, the most important in a boy's school career. It follows, therefore, that it is of the highest importance to provide a dietary which lacks none of the elements necessary for proper development of mind and body. From my own experience the following points are of importance.

There should be no work before breakfast. Eating between meals should be prohibited. Menus should be so arranged that the requisite amount of body-building material is supplied without the clogging elements. Vegetable soup containing the all-important vegetable salts should be provided at least once a day. All vegetables should be cooked in some way that ensures the juices being retained, and they should be used as sauces or in soup. Meals should be made varied and appetizing, especially by serving vegetables in various ways. Salads made from cold vegetables and fruit, cooked and uncooked, should be frequently served, especially in summer. Meat once a day is sufficient; its place may be taken at the evening meal by nut or cheese dishes, or by eggs. It is advisable to tell boys a little about foods and their values, but not to make them faddy. Weekly cooking lessons are found interesting and useful. Opportunity should be found to give instruction in proper carriage of the body, breathing, and other exercises. In this way boys learn how to take care of themselves by the time they go to a public school.

The results, in my experience, of this system are freedom from illness and consequent loss of time; increased mental activity and responsiveness of boys. Records taken at beginning and end of term show most satisfactory gain all round.

CURRENT EVENTS.

Fixtures. THE Ordinary Half-yearly Meeting of the members of the College of Preceptors will take place on Saturday, July 20.

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THE Annual General Meeting and Conference of the Teachers' Guild will be held in the Grey Coat Hospital, Westminster, S.W., on June 1, at 10 a.m. The principal subject of discussion will be "The Present Position of Training of Secondary School Teachers."

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THE Holiday Course of the Teachers' Guild at Lübeck will begin on August 6, and last for three weeks. Apply to Dr. David Heron, University College, Gower Street, London, W.C.

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THE Congress of the Universities of the Empire will be held in London on July 2-5. The Secretary's office is at the University of London, South Kensington, S.W.

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THE Summer School of Theology will be held at Oxford from July 22 to August 2. The Dean of St. Paul's will deliver the inaugural lecture.

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THE Cambridge Local Lectures Summer Meeting will be held July 27 to August 20. Forms of entry and information from the Rev. D. H. S. Cranage, M.A., Syndicate Buildings, Cambridge. Letters should be endorsed "Summer Meeting."

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THE (Biennial) Health Conference and Exhibition will be opened on June 24, at noon, at the Royal Agricultural Hall. Tickets and information from the Offices, 35 Ludgate Hill, E.C.

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THE second International Moral Education Congress will be held at the Hague, August 22-27. Hon. Secretary for Great Britain: Fred Charles, 22 Park Crescent, Church End, Finchley, London, N.

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OWING to the visit of the King to Cardiff on June 26, the June Matriculation Examination at all three centres will be deferred for one week, so that it will commence on Monday, July 1. Notice of the change will be sent to all concerned as soon as possible.

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THE Committee of the Hellenic Travellers' Club announces that Miss Lillah McCarthy and Mr. Granville Barker, of the Kingsway Theatre, will give performances of Prof. Gilbert Murray's translation of the "Iphigenia in Tauris" of Euripides in the open-air Greek theatre of Bradfield College on June 11, 14, and 15. Tickets from the Secretary, 5 Endsleigh Gardens, N.W.

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THE proprietors of the *Bioscope* (85 Shaftesbury Avenue, W.) will give three demonstrations of the use of the cinematograph in school and lecture theatre at Cinema House, Oxford Street, W., on June 5 (for medical profession only), June 12 (Natural Science), and June 15 (Education), from 11 to 1 o'clock. Three gentlemen, well known in the medical, scientific, and educational worlds respectively, will give short addresses. Tickets on application. (*Cf.* the article "Moving Pictures in Education," below, page 247.)

A CONFERENCE will be held in Oxford (September 4 to 10) to consider the question of the Christian education of women in the East. The aim is to give to University women engaged in teaching an opportunity of realizing the pressing need of well qualified women to help in the educational movement already on foot in India and China. Registration forms from Miss Guest, 51 Cavendish Buildings, Clerkenwell Road, E.C. The fee is less for those that register before July 1. (See "Correspondence," below, page 241.)

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THE Summer School of Agriculture at the Royal Agricultural College, Cirencester, will be held this year for the three weeks beginning August 7, under the personal direction of the Principal. A choice of subjects must be made from among the following:—(1) Theory and Practice of Agriculture, (2) Dairy and Poultry work, (3) Fruit Culture, (4) Bee-keeping, (5) Agricultural Chemistry, (6) Entomology, (7) Land Surveying, (8) Practical Carpentry, (9) Fariery and Forge work. Tuition fee, £4. 10s. The object is to help teachers desiring to give a "rural bias" to their work. The school has been approved and officially recognized by the Board of Education. For details apply to Prof. Ainsworth Davis, M.A. (Trinity College, Cambridge), F.C.P., Principal.

Honours. AMONG the honorary degrees conferred at the recent celebration of the seventy-fifth anniversary of the foundation of the University of Athens were:—

LL.D.: Sir John Sandys; Mr. William Miller (author of "The Latins in the Levant").

Ph.D.: Sir Donald MacAlister, Dr. Bywater, Dr. Kenyon, and Dr. Mahaffy.

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THE University of Oxford has conferred the honorary degree of Mus.D. upon Sir George C. Martin, M.V.O., Organist of St. Paul's Cathedral.

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THE University of Cambridge has conferred the honorary degree of Sc.D. upon Major Leonard Darwin, late President of the Royal Geographical Society; and the honorary degree of M.A. upon Robert C. Brown, M.B. Lond., F.R.C.P.&S.

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THE UNIVERSITY OF MANCHESTER, has resolved to confer the following honorary degrees on June 29:

LL.D.: Lord Shuttleworth.

Litt.D.: Emeritus Professor Toller.

D.Sc.: Mr. D. H. Scott, formerly honorary Keeper of the Jodrell Laboratory, Kew Gardens; and Mr. Dugald Clark, Manchester.

D.D.: Prof. Deissmann, Berlin University.

M.A.: Mr. Alderman Park, Ashton-uuder-Lyne, and Mr. Alderman Fildes, Manchester.

And the official degree of M.Sc. Tech. on Mr. Arthur Anderson, Mr. L. G. Radcliffe, Mr. A. H. Shaw, and Mr. H. Threlfall, all of whom are in charge of classes at the School of Technology.

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EMERITUS PROFESSOR SIR W. M. RAMSAY has been elected an Honorary Fellow of St. John's College, Oxford, of which he was formerly a Scholar.

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THE degree of M.A. has been conferred upon Dr. Cesare Foligno, Hon. M.A., Taylorian Lecturer in Italian, by decree of Convocation, Oxford University.

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THE REV. ARTHUR B. SHAW, M.A., of Christ Church, Oxford, left £250 (less legacy duty) "to be applied for the general purposes of the University in such manner as the Vice-Chancellor shall think fit."

Endowments and Benefactions.

MISSES RIDDELL, of Belfast, have given £25,000 on trust to establish a Hall of Residence for Protestant Girls coming from the country to attend Belfast University.

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LADY STEPHENSON, widow of the late Sir Henry Stephenson, has endowed, in memory of her husband, a Hostel for undergraduates of Sheffield University that propose to take orders in the Church of England. The Rev. E. C. Hoskyns, son of the Bishop of Southwell, has been appointed Warden.

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AN appeal is made for £5,000 to establish a memorial of the late Mr. A. B. Weigall, M.A., C.M.G., for forty-six years Head Master of the Grammar School, Sydney, N.S.W. Subscriptions to the Weigall Memorial Committee, Office of the High Commissioner for Australia, 72 Victoria Street, London, S.W.

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MR. JUSTICE KARAMAT HUSSAIN, of the Allahabad High Court, has given 1 lakh and 80,000 rupees (some £12,000) towards the cause of women's education in India.

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THE University of Chicago has established a system of retiring allowances for professors or their widows. £500,000, taken from Mr. Rockefeller's gift of £2,000,000 in 1910, has been set aside for the purpose.

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THE Maryland Legislature has voted the sum of £120,000, to be followed by an annual grant of £10,000, to establish a School of Technology in connexion with the Johns Hopkins University. There is also announced a gift of £60,000 to Princeton University from Mr. W. C. Proctor, of Cincinnati, for the endowment of the Charlotte Elizabeth Proctor Fellowships in the graduate school. Mr. Proctor has previously given £100,000 to the graduate school.

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Scholarships and Prizes. THE Meynell-Ingram Scholarship at Lichfield Theological College, £50, will be awarded by the Bishop of Lichfield to a graduate of some British University desiring to enter residence in autumn. Apply to the Principal by August 1.

* * *

CHRIST'S COLLEGE, Cambridge, offers a Choral Exhibition, £25 for three years, on June 17. Tenor preferred. Send names (with testimonials of good conduct) to the Dean (Rev. A. V. Valentine-Richards) by June 10.

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THE Trustees of the Mary Ann Ewart Trust Fund invite applications from past and present members of Newnham College for a Travelling Scholarship of £150 for purposes of study. Apply to Miss Clough, Newnham College, by June 10.

* * *

BEDFORD COLLEGE FOR WOMEN (University of London) offers a scholarship of £35 for one year for the course of Scientific Instruction in Hygiene beginning in October. Scholar must hold a degree or an equivalent certificate. Apply, with particulars of previous study, to the Principal by July 1.

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THE Club and Institute Union, Ruskin College, Oxford, offers two Scholarships (a year's tuition fees and maintenance, railway fares, and £10 for a term of residence from September 7, 1912, to July 26, 1913).

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BISHOP'S STORTFORD COLLEGE offers scholarships on July 23 and 24. Particulars from the Head Master.

BRADFIELD COLLEGE offers one or more Foundation Scholarships of 90 guineas, and four or more exhibitions of 30 to 60 guineas. Preliminary examination (at the preparatory schools of candidates if desired), June 7. Final examination at Bradfield, June 11 and 12. Apply to the Head Master, or to the Secretary, Bradfield College, Berks.

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BRIGHTON COLLEGE offers ten scholarships and exhibitions, £60 to £15 a year, on July 2 and 3. Particulars from the Head Master.

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BROMSGROVE SCHOOL offers about six scholarships and exhibitions, £80 to £20 a year, in July. Particulars from the Head Master.

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BUXTON COLLEGE, Derbyshire, offers two Entrance Scholarships, £50 and £20, to boys between twelve and fourteen (on September 1, 1912). Examination June 11 and 12. Particulars from the Head Master.

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CHIGWELL SCHOOL offers scholarships, 50 to 20 guineas, on July 18. Particulars from the Head Master.

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GIGGLESWICK SCHOOL offers scholarships, £50 to £20, in June. Particulars from the Head Master.

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GLENALMOND offers several Open Scholarships, £60 to £20, to boys not over fifteen (on September 30, 1912). Particulars from the Warden, Trinity College, Glenalmond, Perth.

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GRESHAM'S SCHOOL, Holt, offers scholarships on June 11 and 12. Apply to the Head Master.

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LANCING COLLEGE offers Entrance Exhibitions—at least six Classical and Modern, 60 to 15 guineas a year, and two Choral, 20 guineas—on July 2 and following days. Age ten to fourteen (on July 1, 1912). Further particulars from the Head Master. Lancing College, Shoreham, Sussex.

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MERCHANT TAYLORS SCHOOL, Charterhouse Square, E.C., offers Entrance Scholarships to boys under fourteen (on June 11, 1912), July 2-4. Apply to the Secretary.

* * *

OUNDE SCHOOL offers nine or more scholarships, £70 to £30, in July. Particulars from the Head Master.

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ST. PETER'S COLLEGE, Radley, Abingdon, offers six scholarships and four exhibitions, £80 to £20, July 4 and 5. Particulars from the Rev. the Warden.

* * *

SCARBOROUGH COLLEGE offers Entrance Scholarships of £30 and exhibitions of £20 and £10 to boys under fourteen, in July. Particulars from the Head Master.

* * *

KING'S SCHOOL, Rochester, offers King's Scholarships, Scholarships for Clergymen's sons, and House Exhibitions, on July 11 and 12. Apply to the Head Master or to the Secretary.

* * *

WEYMOUTH COLLEGE offers eight scholarships, £50 to £20, to boys between twelve and fourteen, on June 12 and 13. Particulars from the Head Master.

LAKE FOREST COLLEGE, Illinois, U.S.A., will award early in 1915 the Brass Prize of 6,000 dols. (£1,200) to the author of the best book or treatise on "The connexion, relation, and mutual bearing of any practical science, or the history of our race, or the facts in any department of knowledge, with and upon the Christian religion."

Appointments
and Vacancies.

MR. H. C. PLUMMER, Assistant (since 1901) in the University Observatory, Oxford, has been appointed to the Andrews Professorship of Astronomy in the University of Dublin, which carries with it the title of Royal Astronomer for Ireland, in succession to Dr. Whittaker.

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THE REV. GEORGE EDMUNDSON, M.A., formerly Fellow of Brasenose College, has been elected Bampton Lecturer in the University of Oxford for 1913.

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IN the University of Leeds, Mr. John William Cobb, B.Sc., has been appointed Livesey Professor of Coal Gas and Fuel Industries, in succession to Dr. W. A. Bone, F.R.S., who has accepted the Professorship of Fuel and Refractory Materials at the Imperial College of Science and Technology; Mr. G. C. Hayes, F.R.C.S., L.R.C.P., University Lecturer in Otology; and Mr. Llewellyn R. Jones, B.Sc. Lond., Assistant University Lecturer in Geography.

Prof. Cobb is a former Scholar and Prizeman of the University of Leeds, an Exhibitioner and B.Sc. of the University of London; has been Chemist, and more recently Technical Assistant, to the Farnley Iron Company; and has contributed largely to scientific journals on subjects mainly technical.

Mr. Hayes is Honorary Ophthalmic and Aural Surgeon to the Leeds General Infirmary.

Mr. Jones was educated at Kingswood School and at the Royal College of Science, and holds the Geographical Certificate of the London School of Economics. He is at present an Assistant Master at Farnham Grammar School.

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A JUNIOR ASSISTANT LECTURER in French is required at Manchester University. £150. Apply to the Registrar by June 5.

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MR. ALAN H. GARDINER, D.Litt., Laycock Student of Egyptology at Worcester College, Oxford, has been appointed Reader in Egyptology in Manchester University, in succession to Mr. F. Ll. Griffith, who is now Reader in Egyptology at Oxford.

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MR. S. D. ADSHEAD, Lecturer in Civic Design in Liverpool University, has been appointed to the new Chair in that subject.

* * *

THE Sir David Dale Chair of Economics in Armstrong College, Newcastle-upon-Tyne, is vacant. £500. Send sixty copies of application, and of not more than four testimonials, to the Secretary of the College by June 14.

* * *

THE Professorship of Economics and Commerce at University College, Nottingham, is vacant. £400. Apply to the Registrar by June 17.

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MR. JAMES HENDRICK, Lecturer in Chemistry, Aberdeen Agricultural College, has been appointed to the new Chair of Agriculture in Aberdeen University.

* * *

AT Manchester University Prof. S. H. Capper, M.A., A.R.I.B.A., &c., has resigned the chair of Architecture

(through ill health); Mr. H. Hassé, M.A., M.Sc., Richardson Lecturer in Mathematics, has been appointed Fielden Lecturer in Mathematics, in succession to Mr. F. T. Swanwick, M.A., B.Sc., resigned (after twenty-nine years' service); Mr. T. G. B. Osborn, M.Sc., has resigned his Lectureship in Economic Botany, on his appointment to the Chair of Botany in Adelaide University; Mr. E. M. Kershaw, M.Sc., has resigned his position as Assistant Lecturer and Demonstrator in Botany; and Mr. L. Brehaut, B.A., has resigned his position of Lecturer in Ethics and Politics and Assistant Lecturer in Philosophy, on appointment to the Chair of Greek and Ancient Philosophy in the University of Saskatchewan.

* * *

MR. STEUART, M.A. Glas., B.A. Oxon., has been appointed Lecturer in Roman History and Antiquities, and Mr. W. R. Halliday, B.A. Oxon., Lecturer in Greek History and Archaeology, in Glasgow University.

* * *

AT University College, Bangor, Mr. E. Lloyd Williams, D.Sc., Assistant Lecturer, has been appointed Lecturer in Agricultural Botany; and Mr. G. W. Robinson, B.A., of Wellington, Salop, Lecturer in Agricultural Chemistry.

* * *

A JUNIOR ASSISTANT LECTURER in English Literature is required at Manchester University. £150. Apply to the Registrar by June 8.

* * *

AN ASSISTANT LECTURER and Demonstrator in Botany is required at the University College of North Wales, Bangor. £140. Apply to John Edward Lloyd, M.A., Secretary and Registrar, by June 8.

* * *

A LECTURER in English and a Lecturer in Classics are required at Victoria College, Stellenbosch, South Africa. £300 each. Apply to Mr. George Smith, Merchiston Castle, Edinburgh, by June 12.

* * *

A PROFESSOR of French is required at Queen's College for Women, Harley Street, W. Apply to the Secretary by June 4.

* * *

MR. THOMAS WOODTHORPE BEASLEY, M.A. Oxon., Senior German Master, Rossall School, has been appointed Head Master of the County School, Richmond, Surrey.

Educated at Wimborne Grammar School, and at Brasenose College, Oxford (Scholar, Senior Hulme Exhibitioner). Second Class Classical Mods. 1895; Second Class Lit. Hum. 1897. Diplôme de l'École des Hautes Études, Sorbonne, Paris, 1897-1900. Taught at Alte Burg, Aenzen, Hanover, 1901-3; St. Edward's School, Oxford, 1903-9; Rossall 1909.

* * *

MR. ARTHUR RILEY BLACKBURN, B.Sc. Lond., A.R.C.S., F.C.S., Chemistry Master, Secondary School, Widnes, has been appointed Head Master of the Grammar School, Staveley.

Educated at Bradford Grammar School, Bradford Technical College, and Royal College of Science, London, B.Sc. Lond. 1908. Fareham Modern School (2 years), Staveley Grammar School (4 years), Wolverhampton Grammar School (1 year), County Secondary School, Runcorn (5 years); Widnes 1906.

* * *

MR. HORACE BAKER BROWNE, M.A. Lond., Assistant Master, Hymers College, Hull, has been appointed Head Master of the Municipal School, Morley.

B.A. Lond. 1896; M.A. Lond. 1904. Board of Education's Art Class Teacher's Certificate. King Edward VI's Middle School, Norwich (3 years), Godolphin School, Hammersmith (2 terms), Birkenhead Institute (4 years), Hymers College 1902. Author of several works, and editor of "Arnold's English Texts" (12 volumes).

MR. W. G. DAVIS, Assistant Master, Argyle House School, Sunderland, has been appointed Head Master of St. Peter's Choir School, S.W.

* * *

MR. FREDERICK R. HURLSTONE-JONES, B.A. Cantab., Assistant Master, Hackney Downs School, has been appointed Head Master of Holloway County School.

Educated at Manchester Grammar School, and at Christ's College, Cambridge. First Class Preliminary Science, Arts, and Law, Victoria University, Manchester, 1901; Second Class History Tripos, Part I, 1904; Second Class Economics Tripos (1st Div.), Part I, 1905; First Class Cambridge University Diploma in Theory, History, and Practice of Education, 1906. Elstree School 1906-7; Leighton Park School 1907; Newton College, Newton Abbot, 1907; King's College School, Wimbledon, 1908-9; Hackney Downs 1909.

* * *

MR. EDWARD T. H. ROYDS, B.A. Lond., Assistant Master, Friars School, Bangor, has been appointed Head Master of Milton Abbas School, Blandford.

Educated at St. Albans School. B.A. Lond. 1904. St. Albans School (1 year); Edgbaston Preparatory School (2 years); Ipswich Middle School (3 years), Witton Grammar School (4 years), Bangor 1907.

* * *

MR. A. L. JENKYN BROWN, B.A., LL.B., Assistant Secretary of Education to the Derbyshire Education Committee, and County Inspector of Elementary Schools, has been appointed Director of Education, in succession to Mr. Small, retired in bad health.

* * *

A HEAD MASTER (layman) is required for Sydney Grammar School, N.S.W. £1,200; pension £500, at or after sixty-five. £100 travelling expenses. Further particulars from the Agent-General for New South Wales, 123 Cannon Street, London, E.C. Applications to be lodged by July 1.

* * *

A HEAD MASTER (graduate) is required for the Royal Grammar School, Newcastle-upon-Tyne. £1,000. Further particulars from Mr. Horace J. Criddle, 2 Collingwood Street, Newcastle-upon-Tyne. Applications to be lodged by June 4.

* * *

A PRINCIPAL (experienced, graduate, with qualifications in History, English, and Latin) is wanted in July for Doveton Protestant College, Madras. Rs. 500 a month. Passage out. Apply to the Rev. H. Pegg, I Woodside Lane, North Finchley, N.

* * *

MR. STANLEY H. WATKINS, M.A., Ph.D., has been appointed Assistant Lecturer in the Training Department (men) at Cardiff University College.

* * *

UNDER the L.C.C. Education Committee, Miss E. E. Kyle has been appointed Head Mistress of Highbury High School for Girls; Miss C. L. Morant, Head Mistress of St. Pancras Secondary School; and Miss H. Barbiam, Head Mistress of Woolwich Secondary School.

* * *

MR. A. STARK has been appointed professional instructor in Waiting at the new School for Waiters just started by the London County Council.

MESSRS. MACMILLAN have in preparation a Literary series of textbooks giving a history of the movement of philosophical thought, Greek and modern, with the application of philosophy in educational and political theory. The general editor is Prof. Sir

Henry Jones, of Glasgow University. The first volume—"The Evolution of Educational Theory," by Prof. Adams—will be issued immediately.

* * *

"HERBERT KYNASTON: a Short Memoir, with Selections from his Original Writings," by the Rev. E. D. Stone, formerly of Eton, is promised by Messrs. Macmillan.

* * *

THE first number of the *Journal of English Studies* has just been published by Messrs. Horace Marshall & Son. The journal will appear three times a year—in May, September, and January. It will address itself mainly to the study of English in schools and Universities, but will also contain articles of a general character.

* * *

THE Visual Instruction Committee appointed by the Secretary of State for the Colonies has issued the second of a series of Lantern Lectures on the Colonies and India, entitled "The Sea Road to the East." The book, which is illustrated by maps and views, is being published by Messrs. George Philip & Son, and the slides may be bought from Messrs. Newton & Co., 37 King Street, Covent Garden. The Committee will next issue a set of lectures on Australasia, and further sets are being prepared.

* * *

HERR R. OLDENBOURG, of Munich and Berlin, has begun to publish "Modern England," a series of monographs by German and English writers of authority, edited by Dr. E. Sieper, Professor of English Philology in the University of Munich. The undertaking is promoted by the Anglo-German Committee for fostering friendly relations between the two countries.

* * *

MR. G. LOWES DICKINSON, M.A., Fellow and General Lecturer of King's College, Cambridge, and Mr. Percy Maude Roxby, M.A. Oxon., Lecturer in the University of Liverpool, have been elected to Albert Kahn Travelling Fellowships (£660).

* * *

ONE of the survivors of the "Titanic," Mr. Lawrence Beesley, was until recently a science master at Dulwich College, whither he went from Wirksworth Grammar School. On leaving Derby School he became a Scholar of Caius College, Cambridge. He was a prizeman of his college, and graduated with First Class Honours in the Science Tripos of 1903.

* * *

THE foundation stones of the new Gresham College, in Basinghall Street, will be laid by the Master of the Mercers' Company (Mr. Horace Cullen) and the Chairman of the Gresham College (Mr. Deputy Coates), on July 24.

* * *

THE King of Siam is reported to have sanctioned a scheme for the establishment of a University of Bangkok, with eight Faculties—Arts, Medicine, Law, Engineering, Agriculture, Commerce, Pedagogy, and Political Science.

* * *

THE Government of India hope to establish a University for Burma, but no definite proposals have yet been formulated.

* * *

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CHRISTIAN EDUCATION OF WOMEN IN THE EAST.

To the Editor of "The Educational Times."

SIR,—It is well known that vast movements are rapidly transforming the countries of the East. Amid this transformation new problems are emerging, and one of them is now acknowledged on all hands to be supremely important—namely, the kind of education which Eastern women shall receive to enable them to take their right place in these new movements. Shall they receive a merely Western education and bring to their nation an ideal of human life which is not interwoven with the old national ideals, or shall they still remain true to the best of that which their nation has always desired for women, and yet add to the older ideal the new social and intellectual freedom, and the stronger religious life which Christian education can give? As women leave their seclusion and exert a new influence, is this influence to find expression in a materialistic or in a spiritual interpretation of life? With the entrance of Western science and Western civilization the old faiths are rapidly losing their power for guidance and restraint, and nothing could be more disastrous at the present time than the diffusion in the East of the merely material benefits of Western civilization apart from spiritual ideals, in the atmosphere of which all that is best in modern progress has developed.

While serious desire on the part of Eastern girls and women for education has opened the way for the action of Government as well as for private enterprise, and schools of varying character are springing up in all directions, it is more and more clearly recognized that, unless all the education given in the East is influenced by the religious spirit and aims at the training of character as well as of intellect, the education given becomes rather a peril than an advantage.

Facts such as these constitute a strong appeal to the leaders of

women's education in England. Only those who have had to guide modern educational thought can understand the need for sound principles by which to direct the new, and sometimes vehement and confused, aspirations of the races undergoing this rapid transformation. Hence the need for many more women of the highest educational faculty to guide this work in the East. Moreover, in the solution of all these problems, far more help than in the past must be given by those who are guiding education at home.

The urgency of the crisis has led to a special effort during this year to bring the situation with all its opportunities to the notice of thoughtful women in England. An Advisory Council has been formed on which are the names of almost all the Heads of the Women's University Colleges in this country as well as those of some prominent Head Mistresses of Girls' Schools; and meetings have been held at a number of educational centres and have been addressed by Dr. Michael Sadler, Lord William Cecil, Prof. Adams, Miss de Sélincourt (Principal of the Lady Muir Training School at Allahabad), Miss McNeile (Head Mistress of the High School, Benares), and others.

The aim of this effort is not to form any new organization or society, but to enlist fresh interest in the work of the various Mission Boards, which have led the way in modern education for boys, and are now called upon to contribute to the still more difficult work of the new education to be given to girls.

For the further consideration of the subject a Conference will be held at Oxford from September 4 to 10, at which it is hoped that, in addition to some of the speakers mentioned above, the Bishop of Oxford, Prof. Cairns (of Aberdeen), Miss Small (Principal of the Missionary College, Edinburgh), Mr. A. G. Fraser (Principal of Trinity College, Kandy), the Principals of the Cambridge Training College and of St. Mary's College (London), the President of the Association of Head Mistresses, and others will take part. Miss de Sélincourt will be very glad to receive suggestions or offers of help or to give further information with regard to the forthcoming Conference. All communications should be addressed to her at 26 Belsize Grove, London, N.W.—

I am, Sir, &c.,

A. M. RICHARDSON,

Vice-Principal of Westfield College.

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THE COLLEGE OF PRECEPTORS.

At the Members' Meeting of the College, held on May 22, two separate subjects were brought forward for discussion. The discussion on the first subject (Mr. R. HAWE in the chair),

THE SELF-EDUCATION OF THE TEACHER.

was introduced by Miss KATE STEVENS, Head Mistress of the Montem Street Central School for Girls, N., who read the following paper:—

Much has been said, written, and rightly emphasized with regard to the academic and professional training of the teacher. However, assuming that a teacher has had the very best opportunity for equipment in these respects, there is still much, in the way of self-education, which it is necessary, especially for the young and inexperienced teacher, to accomplish. There is little that can be said that has not already, in some form or another, been better said; but occasionally it is well—is it not?—for us to take stock and to remind ourselves of these things in order to find out what is lacking in our own case, where our weakness lies, and, if we are teachers of experience, to try to warn others of the pitfalls into which we ourselves, in our ignorance and lack of wisdom, have fallen in the past.

We naturally place first matters that belong to the environment of the teacher and lie within his power to modify—e.g. ventilation of the classroom and other schoolrooms and of his private rooms, especially of the sleeping room. There are still to be found teachers who, while strongly emphasizing the need of personal cleanliness and care, will tolerate a stuffy and poisonous atmosphere at the cost of much personal discomfort, lack of interest in their work, and, on the part of the pupils, dullness and much ill behaviour. All agree as to the necessity of plenty of outdoor exercise for the pupils, but forget that it is an equally important factor in the health of the teacher. It is essential to perfect bodily health, vigour, and tone, and to good, sound, restful sleep, which is so all-important to brain-workers. This exercise can be taken, moreover, in the way most agreeable to the teacher—in the form of athletics, golf, tennis, riding, rowing, swimming, cycling, or it may be combined with Nature study or the pursuit of geology or archaeology, or a holiday walking tour may be taken. Numerous forms will readily occur to all of us.

Change of occupation is also desirable. Some teachers complain that so much of their time out of school is taken up with marking exercises and in the preparation of lessons that there is no opportunity, or that they are too weary, to enjoy a change of scene or occupation. This is wrong and most unwise. Either the amount of work set is excessive and the head should be appealed to for assistance in or a lessening of the amount of work expected, or there is a lack of system and organization upon the part of the teacher. There must be temperance shown in work, as in all else, or we shall surely suffer for the indigestion.

Unless exceptional circumstances seem to demand, it would seem to be unwise to spend the greater part of a vacation in attending holiday courses or educational conferences, valuable as are both in their place. Part of a holiday so spent may prove of great help and stimulation, fruitful in knowledge, in a clearer insight into the conditions and possibilities of work, and, above all, in higher ideals, fresh interests, and possibly in new friendships that may be there formed. Hobbies may wisely be cultivated. They form a valuable distraction to the mind, and, if they include some form of handwork, especially if they take us into the open air, to a change of scene or surroundings, are most valuable. Such occupations are likely to make us more interesting to our pupils, who always greatly appreciate the human note in us. We are then more apt to win their confidence, to learn of their own special interests out of school, and to have an opportunity of showing our interest and sympathy in such.

It is generally acknowledged that travel, especially abroad, is

a most valuable part of the self-education of the teacher. It broadens the mind, immensely increases our knowledge of men and things and of the several factors that help to mould national character. It makes our teaching, especially of geography, much more interesting and alive, and certainly adds to our authority in the class.

We must beware of clannishness among teachers. Social life should not be shunned. Friendship and social intercourse with non-teachers is essential, if we are properly to get the point of view of the parents of our pupils, of "the man in the street," and above all that of our grown-up ex-pupils. For it is by the conduct and attitude of the last that in the final issue our work and its real worth must be judged, and not by examination results. We need such intercourse in order that we may lead well-balanced lives, have a truer perspective of life, and see things in their right proportions. If clannish, we are apt to talk over and to magnify our professional grievances, to dwell on the hardships of our lot, to compare and agree over the stupidity of our pupils, rather than to rejoice over the more promising ones. Some teachers are to be found who seem to make it almost a point of honour to magnify the stupidity, the crass ignorance, and the large proportion of "poor material" which marks any new class given to them. Such a state of mind must be checked, for it leads, if encouraged, to a morbid and pessimistic attitude, where one sees only the monotony and drudgery of the work, or in extreme cases one may become so obsessed as thoroughly to dislike all teaching and even all children. A terrible state of affairs, truly, but one, we believe, becoming more and more rare. While few reach such a deplorable state, it is well for us to ask ourselves faithfully: Do we suffer, or have we suffered in the past, from some or any of these symptoms, and how may young teachers avoid such pitfalls?

An orderly arrangement of our time and affairs is of great help, as businesslike habits are of the utmost importance, and add much to the smooth working of a school. All clerical work should be properly done, and kept up to date as far as possible. I know from experience the demands which this work makes upon the teacher, but, as it must be done, our business is surely (even if we are led to protest at the undue amount) so to arrange that it shall be done as expeditiously as possible, and with the minimum amount of loss to the ordinary class work. We must see to it that we are punctual, as well as businesslike in our methods. It is a bad beginning to our day's work to arrive breathless at the last moment, or even late; it will probably place things out of gear for the day, and will not certainly improve our own temper or poise. A little trouble taken at first to arrange things according to some well defined plan will be an immense saving of time in the long run. Noise and bustle do not necessarily mean effective work, nor do a loud voice and blustering tones denote good discipline. There is no greater truth than the assertion that "in quietness and in confidence shall be your strength." Our favourite school motto is taken from that inspiring book called "The Teacher," by Prof. G. H. Palmer, of Harvard University, U.S., where he says: "The test of high character is the amount of freedom it will absorb without going to pieces."

Some teachers there are who fritter away their power in fussiness and fidgetiness, in too much talking and restlessness; some confuse the power of being amusing and entertaining with that of being interesting, and so produce an unhealthy excitement in their class; others are continually grumbling and fault-finding, or even "nagging," till the pupils feel it is of no use to try to please them. Again, we find some who seem to bring out all their big artillery in order to punish comparatively small faults; they thus have no reserve when really serious misdemeanours have to be dealt with, and so are most ineffective. Above all, we must beware of sarcasm, which cuts deeply into the soul of the sensitive pupil and leaves ineffaceable scars. Those who use this terrible weapon have need to remember the injunction: "Take heed lest ye offend one of these little ones."

Against all these faults we must continually be on the watch, and honestly endeavour to cure ourselves when we realize that we are guilty in any respect. We must not only set a high standard for ourselves, but honestly strive to reach it.

A keen sense of humour is invaluable to a teacher, and tends to make things go pleasantly and smoothly. Unless we naturally have a bright and buoyant spirit, we must cultivate a spirit of cheerfulness—one which ever looks on the bright side of things. If we are accustomed to take all our misfortunes in the spirit of "it might have been worse," it will be a great help to both teacher and pupil. Children have an instinctive respect

for those who show "pluck," and have as great a dislike to those who "whine" or complain on slight provocation.

We must guard against using our superior position or strength in order to crush the spirit of our pupils. As I once heard Prof. Adams say: "We must remember that we have probably some pupils who will turn out to be much more gifted than their teacher." We should not only respect ourselves, but also our pupils. We must seek to discover, encourage, and develop the special powers of each, and not rest content until we have discovered the key which unlocks their higher self. At the same time we must be most careful to respect the individuality and reserve of the elder pupils. If they are first assured of our strict justice and impartiality, respect will follow, and possibly regard. We often make the mistake of looking for, and being disappointed at not receiving, gratitude from our pupils whilst they are still under our care. We seldom then find it. The real test of our work and of their gratitude for, or blame of, our training of them for life, are only to be found in their later years, when schooldays are far enough removed to be seen in their true perspective; and it is only as we adjust ourselves and our work to this point of view that we shall be most successful.

Another point that must be mentioned is that of professional reading whilst engaged in active teaching. There is some danger, it seems to me, of a want of balance amongst young teachers in this matter as contrasted with the number of classes attended per week for professional improvement. We owe a great debt of gratitude to the authorities that have so liberally made such excellent provision. It is not of the use, but of the abuse, of the privilege that one would utter a word of warning. Too little time appears sometimes to be given to serious professional reading, mental digestion, and assimilation. Many of us are not familiar with the best current educational magazines or reviews or with the best books written by experts upon various phases of our work and its underlying principles. Formerly it was much more difficult to obtain such information. I, personally, owe much to the excellent Pedagogical Library of the Teachers' Guild. Another such library is to be found at this College. An excellent one is also being formed at the Education Library of the London County Council, which is freely open to all those engaged in the service of the Council. Then, too, there is the Education Library of the Board of Education at Whitehall. Many helpful books on professional lines may be obtained for the teachers' libraries in the schools themselves. One might also mention the valuable library of the Child Study Society at the School of Economics, from which such books may be borrowed. All the best of the current educational magazines and reviews may be seen at the Teachers' Guild, at the Common Room of this College, or at the Board of Education Library. There is now, indeed, little excuse for any neglect of this part of our training. To others, again, a different warning should be uttered—namely, to vary their reading as much as possible—not to read exclusively on professional lines, but to take some other subject in addition, whatever most appeals to them at the time. To the very young teachers we would say: Spend a fair proportion of your time quietly in your study, and do not get into the feverish habit of attending too many classes at once or reading and studying mainly for examination purposes. We must read for relaxation as well as for improvement. Further, we must not draw too heavily upon our reserve of strength, or we shall suffer for it later on in life.

One would like to recommend young teachers, and, indeed, older ones too, if they have not already done so, to become acquainted with, and interested in, the social and civic sides of education. Education and sociology are becoming more and more interdependent. There is to-day such an amount of social unrest and upheaval that it behoves us to study, in some measure at least, the environment, the social conditions, and the influences under which our pupils live, and which, equally with their school training, are important factors in their education, as the future men and women of the country, and as those who will, in their turn, have to face and deal with these same, or even more acute, problems. We must study the surroundings of our pupils, whatever may be the social status or type of home from which they come. Such knowledge will frequently enable us to understand much that puzzles and possibly annoys us in a pupil; it gives us some explanation of the bad behaviour, the moral cowardice, the untruthfulness, or other faults of which we are conscious.

As we grow older, we have to guard against the temptation of seeking first our own ease and leisure for enjoyment. Duty still calls. We can often make our knowledge and experience of use to others, in the various ways that open out before us, by serving

on committees or by our voice or pen as needed, and above all by our patient and sympathetic attitude towards, and thoughtful consideration for, our younger colleagues. To be effective they must themselves bravely face and overcome their own special difficulties, whilst we watch them with sympathetic interest, ready to give an encouraging word of praise and appreciation for their effort, and of belief in their ultimate success. We must not let a young and enthusiastic teacher feel "lonely" while we are near. There comes to most of us at the commencement of our career as teachers a time when the theories that we have learnt about "the average child" seem to fail us, and just when, too, we most need help; when we stand in the presence of a lively class of pupils, whose one aim seems for the time to be to try what mettle we are made of, and to test to the utmost our powers of endurance. In such crises, mother-wit, common sense, patience, self-restraint, and self-command are sorely needed, with perhaps a saving grace of humour as our best weapon. Although our theory seems to fail us, it is not really so, for after a time, and with more knowledge and greater experience, we are able by means of it to readjust the fresh experience that has been often so hardly gained.

It is not an uncommon sight to see a young teacher commence work with great self-confidence and enthusiasm, full of excellent theories, and going to "do great things." By degrees a change comes, he loses zest, becomes less confident of his powers, gets disheartened, and in extreme cases desperate. He is bewildered, perhaps rebellious, and will probably, at first, be inclined to lay all the blame upon conditions and circumstances external to himself. While he is in the "martyr" or fault-finding stage it is of little use to try to help—he would probably resent the offer—but as soon as he arrives at the stage of realizing his own shortcomings, or comparative failure, then is the time to help him effectively, to keep him from despair, to encourage him to take heart, and to note carefully the effect and reaction produced on the class, by various ways of management, approach, and attitude on his part, and on that of more experienced teachers. We can help him to take a firm grip on himself, and be determined that he will succeed. This resolve must be carried out with quiet persistence, and he will, before long—as his pupils come to know him better, and to feel assured that, although he is strict in exacting work and prompt obedience, he is at the same time, uniformly just and impartial—find that the class has been won to work and loyalty.

Children are the keenest judges of character, and it is of no use our making spasmodic efforts if we do not "ring true" at all times. It is simply amazing how some people imagine they can hoodwink children, and think that they do not "see through them." Even when the class, as a whole, is won, there will still remain the problem of the individual "naughty" child. Here comes in the practical value of our study of psychology, which helps us to see in the "trying" child an interesting problem, which we have been set to solve, and which furnishes much food for thought and study.

Still, with all its difficulties and responsibilities, teaching is one of the noblest professions that any earnest man or woman can take up in life, and its rewards are great when tried by the highest standard.

Finally, we must train ourselves to realize the vast influence and the creative power of thought. We must teach this also to our pupils, showing them how the greatest achievements ever carried out have first been thought out and planned in the mind of the author, whether it be a fine building, a beautiful picture, a stirring poem, or whatever most appeals to us. They have all first been ideals to be persistently realized and faithfully followed. So must we not only plan but ever strive to live up to the highest that we know, and so worthily fulfil our high destiny as educators.

Mr. CULLINGFORD, who described himself as a head master and teacher of forty-five years standing, and a member of the College since 1869, spoke of the pleasure which the paper had given him, especially that part relating to the value of travel, since during the whole of his career it had been both a pleasure and a duty to travel as much as possible. He had visited nearly every country in Europe, all the ports of Morocco, and in America, Canada and the United States, with the object of self-education, and he had experienced the added advantages of a broadening of mental outlook, and an increase of power to secure the interest of pupils, who were always much more aroused by accounts of things actually seen than of things merely read about.

Mr. KING feared that in his time the main, if not the only mode

of self-education was reading at home, the stimulus in his own case having been supplied by the examinations for the diplomas of the College. The ability to read judiciously was a valuable item in a teacher's equipment, and he largely attributed to it the measure of success he had secured in the preparation of his own pupils for examination. He was as ready as the previous speaker to recognize the importance of travel, and the opportunity it gave of appreciating the aims and methods of the inhabitants of other countries.

MISS RENDALL desired to ask for some guidance in a difficulty of her own. During an absence of six weeks from school she had read the book, "What is and what might be," by Mr. Holmes, and now that she had returned, her mind was still very full of the subject of "self-realization." She had always felt that it was essential to the acquisition of knowledge, but the problem which now perplexed her was how to secure this "self-realization" on the part of the pupils, and whether her own mode of securing their order and good conduct by means of the exercise of her will and the employment of intelligent methods was not inimical to its development. The accomplished lady of the book had no need for discipline in her Utopian School, for the children did willingly everything that was right and good; but could any of those present tell the inquirer how she should proceed in order to get similar results without emphasizing and enforcing her own personality?

THE CHAIRMAN said that twenty-six years ago he had come over from Ireland to teach the young Saxon, and his whole life had been one process of learning how to act in the making of the men and women of the future. He would like to subscribe to what Miss Stevens had said as to the good effect of taking ourselves and our studies occasionally outside our own groove. There was a suggestion he would like to commend to the attention of all teachers, and, if he might venture to say so, to the attention of elementary teachers especially. This was that intercourse with pupils in their play was an immense assistance in getting to understand them and in securing their sympathy. An elderly Jesuit, whom he had seen bowling for the boys of a Jesuit College, had told him that it was only in this way he was able to get to know the boys' dispositions, and was thus enabled to effect a good deal in the moulding of character.

MISS STEVENS was gratified at the testimony of the various speakers to the value of travel. She had herself always taken a good holiday abroad, and even at the cost of skimming and saving to afford it, had found the practice well worth while. The latest of such journeys had been one to California, but in this case she had despaired of her own powers to describe adequately the things she had seen, the wonderful flowers and fruit, and the stupendous manifestations of Nature in the Grand Cañon of Arizona, and to surmount the difficulty she had resorted to the assistance of picture post cards. In regard to the question put by Miss Rendall, she thought teachers should so train their pupils that in time they acquired the habit of reacting to the stimuli in the appropriate manner without needing to have presented to them in detail all the incentives to right conduct; but certainly the exercise of will power could not, in her experience, be dispensed with. Will was expressed unconsciously. All these things, however, had to become matters of experience with young teachers, and to most people discipline did not come spontaneously.

After an interval, the chair was taken by Prof. J. W. ADAMSON, and a discussion on

THE CORRECTION OF HOME WORK BY TEACHERS
was opened by Prof. J. ADAMS as follows:—

Since the subject has been presented to me in the above form I must take it for granted that it is admitted that home work of some sort is desirable from children attending school, and that at least a portion of this work should take the form of written exercises. The problem is how these exercises have to be dealt with by the teacher. In actual practice solutions vary from culpable slovenliness to equally culpable thoroughness. Slovenly treatment is unfair to the pupil; detailed correction beyond a certain point becomes a burden that no school authority has a right to lay upon a teacher.

Taking a wide view that includes all classes of teachers, one is at first inclined to think that the two extremes almost balance each other, and that if we total up the whole we shall find that the average is just about what it should be. Even if this were so, it would bring little comfort, for the laziness of one teacher does nothing to alleviate the overwork of another. But, as a matter

of fact, taking account of all the kinds of teachers that I have ever come across, I am convinced that the balance is decidedly on the side of overwork. No doubt there are some flagrantly careless teachers, and their sins of omission are so gross that they make an undue impression on the mind of the observer. But it is the very rareness of cases of this kind that gives them their illegitimate weight as arguments. The number of teachers, particularly women teachers, who waste themselves in excessive thoroughness in marking home exercises is so great as to call for serious consideration from all those who are in any way responsible for the educational methods of the country.

The broadest classification of teachers according to their procedure in this matter, gives us the two divisions of those who do, and those who do not, return the exercises to the pupils who have written them. A minority of teachers insist upon written work at home being done on separate sheets, so that it may be given in without any claim to have it returned because of other matter in an exercise book. Of the teachers who belong to this minority some hold it to be enough for the purposes of the school that the exercises are actually written and handed in. When the paper has been duly delivered at school the pupil's responsibility, and the master's, end. Such teachers do not feel called upon to wade through the crude attempts of the pupil to express himself. They believe that by handling the matter for himself in the exercise the pupil has gained all the real advantage that is to be had, since he has prepared his mind for the proper treatment of the subject when the teachers present it to him in the following lessons.

Only a small minority of teachers reach the elevated stage of moral aloofness that enables them to dispense altogether with reading written work. Many compromise matters by making a selection, amounting to say a fifth of the papers written on each occasion, and reading those. The argument is that the samples selected are sufficient to give a general idea of how the work is done and to supply a clue to what are the errors that occur with such frequency as to demand general treatment in class. Further, the more careless pupils will naturally find themselves more frequently than others among those whose work is selected for the benefit of correction. The scheme works fairly well in the case of somewhat advanced pupils. It has at least the advantage of directing the pupil's attention more to the doing of the work than to the comparison of his own results with those of the other pupils. But at the best it cannot be called satisfactory, and few teachers have consciences sufficiently elastic to take advantage of the relief it offers. It is not wholesome for the pupil to realize that on the average four out of five of his written exercises find their way into the waste-paper basket unread. It requires a somewhat robust pedagogic conscience to put matters right by never letting the pupils realize that their written work has such a slight chance of coming under the master's eye. Many teachers smooth matters by a process of "casting their eyes over" all the exercises, but not allowing them to linger long enough on any of the papers to lead to undue exhaustion. Here again what cannot but be regarded as an abominably slipshod system produces results that are not wholly unsatisfactory, for the experienced skimmer of papers does acquire such skill that weaknesses have much less chance of escaping than one would naturally expect. But, when all has been said, it must be admitted that the best results are obtained when every paper is dealt with in some little detail.

The very fact of returning the papers to the pupils establishes a new condition by admitting the possibility of an appeal. Unless the paper is returned absolutely without comment, oral or written—I have known cases in which this was done—the teacher has committed himself to a judgment that he must be prepared to stand by, and if necessary defend. The dangers of criticism are lessened by merely giving estimates of the value of the exercise as a whole, without going into details. Further, the pupils like best to have a general evaluation mark. Indeed it is the one thing that they look for with any interest among the red ink contributions of the teacher. But if home-work is to produce its proper effect, it must represent the interaction between teacher and pupil, and the whole problem comes to be how this interaction can be fostered without an excess of work on the teacher's part. We are not concerned to save the pupil from work. It is part of our business to see that he works enough. It is no kindness to him to do his work for him. Accordingly, it is folly to do for him what he ought to be compelled to do for himself. The teacher who writes in carefully all the correct forms where the pupil has gone wrong, is far from acting in the interests of the pupil. Some teachers confine themselves to making red or blue

marks wherever a blunder occurs, and leave it to the pupil to discover what the blunder is, and how to correct it. It may naturally be objected that, if the pupil is in a position to know how to rectify a blunder, that blunder should never have been made, and there is sound sense in the criticism. But the errors in an exercise may, from this standpoint, be divided into two classes: those that result from carelessness and slovenliness on the one hand, and those that come from imperfect knowledge on the other. With regard to the first class all that is necessary is to call the pupil's attention to what he has done. The remedy comes of its own accord. With regard to the second class, the danger should be minimized by the manipulation of the mental content of the pupil. Home work that is expected to be done by a class as a whole ought always to be limited to the *application* of knowledge already acquired by the whole class. It should never involve knowledge that the pupils have to find out for themselves, unless indeed the source of the knowledge is categorically stated and lies within their reach. With this limitation, the number of errors for which the pupil cannot be held justly responsible is reduced to a minimum, and the pupil may fairly be called upon to bear the brunt of finding out both the nature of the error and the way to correct it.

It has to be noted that a compromise may be effected by adopting a code of conventional signs that works like a shorthand system in indicating to the pupil the general nature of his errors; and therefore in suggesting to him the proper way to make the necessary corrections. In certain subjects where there is usually a definite alternative between right and wrong, the mere note that a certain form is wrong is sufficient to suggest the probable line of error and the necessary modification. This applies to such subjects as mathematics, and also to many forms of science, and even to the grammatical parts of language. But, when it comes to such pervasive subjects as English composition, it is necessary to invent a code that will give general clues to the line of weakness the teacher wishes to make his pupil realize and avoid. Most teachers naturally fall into a system of signs that their pupils understand, and in this way a good deal of time may be saved. Pupils appreciate this form of shorthand as much as do their teachers. At the University of California the Students' Co-operative Society print their own exercise books, and on the cover of each they print a list of thirty-two marks that are agreed upon between pupils and instructors. These include such hints as "Cut sentence in two," "Faulty correlation of clauses," "Topic used instead of sentence," "Marked fault in coherence." Single letters are full of meaning: thus *u* = faulty sentence unity, *U* = faulty paragraph unity, *K* = awkward, *R* = rewrite! The list concludes with N.B.—Besides this list, marks ordinarily employed by proof-readers (to be found in almost any good dictionary) are used. In general a question mark indicates a fault, an exclamation mark suggests a correction. "Emph?" *e.g.*, would mean "Is this the emphatic point?"; whereas "Emph!" would mean "Emphasize this!"

Merely to sit down and work out such a scheme of symbolical marking is an excellent exercise for the teacher. It enables him to clear up his own ideas about the sort of things to which particular attention should be called, and altogether puts him in the proper attitude for dealing with a mass of "corrections." But it has to be admitted that even when such a scheme is in full working order it increases the work in one direction while reducing it in another. The teacher no doubt saves time by not having to write in the corrections on the actual exercise book, but to give full effect to the system of forcing the pupil to make his own corrections the teacher has to undertake the additional labour of a second revision of every exercise that contains errors. Sometimes, indeed, the teacher may have to revise the same exercise more than twice in order to make quite sure that the corrections have been properly made. But, after all, the second revision is a mere trifle as compared with the first. The points to be dealt with are indicated at the first revision by marks in red ink, and at the second revision a glance is sufficient to let the teacher know whether the correction has been properly made. To indicate errors and to see that the pupil makes the proper corrections will be found to be much lighter work than to make the corrections for ourselves. There is a real and substantial gain in time, but, even if there were no gain in time, there is certainly a striking gain in efficiency. It is difficult to imagine a more fruitless expenditure of the teacher's time than in writing full corrections on an exercise book; while the pupil is never better employed than when seeking out for himself the proper way to find the true road after having wandered from it.

When all short cuts have been used by the teacher there usually

remains a body of solid work in correction that by its very bulk is appalling, and, since there are only twenty-four hours in the day, relief may have to be sought by methods that seem to be excluded by the very title that has been given to me. The words "by teachers" are certainly significant. Do they deliberately rule out all forms of correction that call upon the pupils to take a hand as assistant correctors? Is there not a good deal to be said in favour of what may be called the co-operative system of marking home exercises? The usual objection is that the pupils are incompetent to mark each other's exercises, and, further, that there are a number of moral difficulties involved, difficulties that the experienced teacher is not at all likely to minimize. But it must not be forgotten that such a system, if properly conducted, has certain very distinct advantages. The effort of the teacher to make his collaborators understand exactly the principles on which they should do their correcting is exactly the effort that should be made in any case to put them in the position of really understanding the matter they are studying. Further, it transfers the work of correcting from the teacher's private time to his public time. There is no real reason why the home work of the pupil should be home work for the teacher. The more closely the home work of the pupils is correlated with the school work the better for all concerned. The great danger of the collaborative method of marking is the tendency it evokes to set only such questions as produce answers that lend themselves easily to correction by pupils. No doubt mere mechanical exercises must not be allowed to usurp too much of the pupil's time, but there is a place for a certain amount of this kind of exercise, and the tendency to keep the average run of exercises within a plane that is easily attained by the ordinary members of the class is in itself no bad thing—if only there be a definite small percentage of questions always set of sufficient difficulty to bring out the powers of the abler pupils.

The important point to be kept in view in the co-operative system of marking is that the very process of marking is itself one of the most effective means of making the pupils learn the subject with which they are dealing. The lesson that the conscientious teacher—especially the conscientious woman teacher—needs to learn is that the effectiveness of written home work does not necessarily vary in direct proportion to the amount of time spent in correcting it. The test is always the effect upon the pupil, and naturally the greater the share of the pupil in the work, the better the result in his training. Conscientious teachers are justly accused of doing too much for their pupils. Teachers are fresher for their work and less liable to the fatal professional disease of *stuteness* if they keep their correction work down to a minimum. If they are afraid of being accused of laziness in reducing the time they spend in correcting home work, they should take comfort from two facts: (1) every bit of work of this kind transferred from the teacher to the pupil is a gain to the pupil; (2) in order to arrange that the pupil shall do this extra work to the best advantage, the teacher must work very hard—he will not save on the total amount of work to be done, but the work will be better for him and for his pupils than the present soul-stifling toil of mechanical correction.

The CHAIRMAN, with reference to the people who examined 5 per cent. of the exercises, was reminded of an experience of his own which raised the problem in an acute form. He undertook very early in his teaching career to teach a Frenchman English, and, knowing nothing of better methods, he had put him through the same process as had been applied to himself in the case of both French and Latin, under which he had done what was required of him and no more. This pupil, however, was unreasonable enough to be sincerely desirous of learning English, and was therefore not at all content with the dole of exercises served out to him, but was always several exercises ahead, and kept his teacher hopelessly in the rear. An even more serious part of the trouble was that he was evolving out of his own mind a lingo entirely new, not English nor anything else. He himself supposed it was English, however, and the number of corrections that appeared on his papers was alarming, and all the time he would be visiting upon himself his vexation at his stupidity, punishing the innocent, the guilty party being the teacher. What, he asked, should be done with the 95 per cent. whose exercises remained unseen? Were they not evolving a language of their own? There was an aspect of the matter which he thought present-day teachers were inclined to leave out of sight—namely, that they were too much in the grip of pen and ink. Boys, as far as he was aware, were still taught Latin by

means of the old method of the construe, and for home work were told that on the morrow they would be put on somewhere in such and such a chapter. They wrote nothing, and their mistakes, being made in the presence of the teacher, were corrected at once and had less opportunity to become ingrained. In girls' schools a piece of Latin was usually set for written translation, with the result that a large amount of work fell upon the teacher and the pupils were practised not only in the correct forms, but also in incorrect ones. He thought teachers might well consider their ways and ask themselves whether it would not be well to escape from the tyranny of pen and ink by making a good deal more of the home work of the oral kind, achieving thereby economy of time for themselves and a great addition to the pupils' power of learning. In setting written work teachers rightly aimed at obliging the pupils to work, but he thought this end could be attained at least almost as well by the oral method as by the other.

Mr. KING thanked the Professor for his able paper. Under its influence he had come to feel that he was not as great a sinner as he had supposed—indeed, that compared with the one-fifth men, he was endued with the garments of saintship. He was of opinion that, in the case of all but the older pupils, home lessons, if done at all, should be more or less mechanical and should involve a good deal of repetition—mainly because there should not be too much brain disturbance in the evening. It was his practice, accordingly, to set a good deal of written work of a fairly easy character. By so doing, the average boys were improved and the lazy ones were induced to do more; it was true the brighter boys did not benefit to the same extent because they were not provided with nuts enough to crack. He confessed that preparation for the oral construing of Latin as home work was a failure in his hands, because only a few did the work and the remainder deliberately took their chance of not being put on, leaving him with the unpleasant sense that certain folk had got the better of him.

Prof. ADAMS said he had not intended to convey that the single-sheet man was necessarily a lazy man, and stated that the plan of marking only a proportion of the papers written had worked well within his own experience in the case of advanced students, who were told at the end of the session that only one-third of the weekly papers had been marked. Such pupils were in no danger of the stereotyping of bad habits to which the Chairman had drawn attention. Replying to Mr. King as to the difficult problems not being in sufficient numbers for the cleverer pupils, Prof. Adams said he placed great reliance on the fact that it was possible to repeat the subject of a lesson three times, though not always in the same way. The first time the clever boy understood; the second time the ordinary boy understood, and the clever boy saw it in a new light; the third time the clever boy assisted in the demonstration and now understood from the point of view of the duller pupil, who was at last himself enabled to understand, care being taken that he was not humiliated. He desired to say this, by the way, in justification of his remark that home work should be of a fairly easy character.

Votes of thanks to Miss Stevens and Prof. Adams, and to the respective chairmen, were carried by acclamation.

MOVING PICTURES IN EDUCATION.

By PIERCE J. FLEMING, A.M.

[From the *Pedagogical Seminary*.]

In looking back at the progress that education, in its widest sense, has made in the history of the world, one can but be strongly impressed with the mighty part the picture has played in this advancement. In the early days the rude pictures drawn upon soft stone and allowed to harden into the "hieroglyphics" became the histories of the times, and such an inestimable value did they possess that without them, even now, we should be unable to record the world's history and its advancement. That the picture, whether scratched in Assyrian clay or cut into Egyptian stone, served well its worthy and noble purpose is readily admitted by historians, anthropologists, philologists, ethnologists, and explorers the world over. In medieval times the picture assumed an important part in the world's development, sometimes supplementing and at other times being supplemented by the library. Many of the leading incidents of the Bible have been painted and are exhibited in the picture galleries of the world. Should, therefore, all the books and writings in the world be destroyed, many of these

incidents could be reproduced for us from paintings and sculpture. Much of the history of many nations is found in the illustrative as well as in the written records. The living picture with its life portrayals and accurate descriptions is the marvel of all these things.

The cinematograph is a development of the zoetrope, or "Wheel of Life," described by W. G. Horner about 1833, which consists of a hollow cylinder turning on a vertical axis and having its surface pierced with a number of slots. Round the interior is arranged a series of pictures representing successive stages of such a subject as a horse galloping, and when this cylinder is made to rotate an observer looking through one of the slots sees the horse apparently in motion. The pictures were first drawn by hand, but afterwards photography was applied to their production. The modern cinematograph was made possible by the invention of the celluloid roll film, on which the serial pictures are impressed by instantaneous photography, a long sensitized film being moved across the focal plane of a camera and exposed intermittently. For an hour's exhibition 50,000 to 165,000 pictures are needed. In order to regulate the feed in the lantern a hole is punched in the film for each picture. The dancing and vibrating of the picture in an unpleasant manner is due in a great measure to inaccuracy in the placing of these holes or to the wearing out of them.

In modern times the impulse toward the better and more rapid cognition of a thing is evidently what all educators are striving to develop and satisfy. Regarding this, Prof. Wm. James in his "Talks to Teachers on Psychology," says: "Novelties in the way of sensible objects, especially if their sensational quality is bright, vivid, startling, invariably arrest the attention of the young and hold it until the desire to know more about the object is assuaged." Again, Dr. Wm. H. Burnham, lecturing on Education, speaks of the crying need for more action, or at least the representation of it, and less teaching. Surely, then, if this be true, no one can doubt the advantage of the moving-picture method, with its bright, vivid, novel, startling, and interesting way of presenting things. Even in the theatres, when one considers that at least four millions of people visit these places daily and remain at least an hour, what a tremendous opportunity there is for an educational as well as a moral uplift!

The cinematograph, with its compelling reality, its unlimited sources from which to draw subject-matter, and the remarkable progress which its manufacturers have made in overcoming the defects in its mechanism, represents to-day the most highly evolved instruction-giving instrument for both the many and the few that the present century has produced. When exhibited under the direct supervision of one whose ability as an educator is recognized, it is difficult to prophesy the vast amount of actual good that can be accomplished. J. E. Wallace Wallin (*Pedagogical Seminary*, June, 1910), in discussing the psychology of the moving picture craze, says: "Human culture must utilize, not suppress, native capacities, instinctive tendencies, inherited nervous organisms. . . . It would thus appear that one of the sovereign remedies for inattention and educational waste is to appeal to instinctive interests or to the hereditary forms of attention."

Now comes the question as to how we can stimulate these interests. We must use the stimuli which through the ages have played an important part, the stimuli without which the race could not have developed. What are these stimuli? They are the representations of living things rather than dead, of moving things rather than static things; they are the successive phases of some common phenomenon of Nature rather than the bare picture of some one particular phase of it; they are the actual representations of many of the things we read and hear about which by their novelty will attract the attention, and, with that desire so common to all of us, and especially the young, to see the conclusion of a series of events, will hold the attention to a considerable length of time. It was by attention to the first of these that primitive man protected himself and those dependent on him from his enemies, and it is by the strictest attention to the second of these that we of to-day are making such rapid strides in the acquisition of a more complete knowledge of Nature and its workings. The parent or teacher, therefore, should appeal to the instinctive attention, and thus work with Nature; for by so doing one takes advantage of a vast hereditary impetus; and the potentiality of hereditary interests and involuntary attention so far surpass the potentiality of acquired interests and voluntary attention in the young child, that not to use this in the accomplishing of educational ends would be to refuse to accept a priceless gift from Nature.

This compelling fascination of the moving picture is due to the fact that it is based on the dynamics of spontaneous attention, the laws that govern our inherited tendencies to attend. For this reason, then, the cinematograph, by presenting different processes or pictures in motion, rouses in us the instinctive tendency to attend to moving things. It is a fact that a great many times, on account of the very lifelike movements performed by the characters in the pictures that the pictures cease to be illustrations, and are actually changed, especially in the case of those of a more visual type, into animate existences. Exclamations of horror by the observers as a person falling from a building appears to be about to strike the ground, the attempt to shrink from an approaching animal, and various other instances are convincing proofs of this. . . .

The cinematograph also takes advantage of other instinctive interests. The constantly recurring sharp contrasts in the film as regards colour, size, and other characteristics, and the introduction of the unusual, the comic, the bizarre, &c., furnish the foundation of appeal to our instinctive desire for something new, something different. Again, the facility with which a scene, unparalleled in actual life and with so unexpected a *dénoûment*, can be made and projected, shows how the moving picture can, in a great measure, utilize the forces of attention and curiosity. Is it anything to be wondered at, therefore, that millions daily sit entranced before the cinematographic screen when their attention, with hardly an effort on their part, is not only attracted, but even held for a comparatively long time?

Another very commendable, and until a short while ago unheard of, feature of the moving picture is the possibility it presents for the popularizing of instruction in subjects vital to all of us, and regarding which little or no reading matter is available. In a great many places, notably Chicago and New York, this feature of the moving picture is being thoroughly tested, and up to the present gives every indication of becoming a permanent part of the program wherever used.

Geo. L. Voorhies, Secretary-Treasurer of the Chicago Principals' Club, District No. 4, sends the following account of the use of moving pictures in the schools there:

The Board of Education has established nine social centres in the public schools and as a part of the same. They are open two evenings a week and are available for the parents as well as the children. These centres offer the following program of instruction and entertainment: Reading rooms, music, both vocal and instrumental, gymnasium work, parlour games, amateur dramatics, dancing and the motion picture lecture. In regard to the scope of the moving picture work, I believe it should be entertaining as well as instructive, and should appeal to the various sentiments of interest, wonder, humour, and pathos.

The following is a program that Mr. Voorhies, with the co-operation of others in the same field, has mapped out:

Industrial.—(a) Food: e.g., wheat, harvesting, milling, baking. (b) Clothing: e.g., cotton; picking, ginning, weaving. (c) Shelter: Lumber; logging, milling, building. (d) Transportation: Railroads; surveying, building, running.

Nature.—(a) Plant growth: Seed, plant, flower, fruit. (b) Animals: Egg, embryo, infant, adult, adult activities; fish hatcheries, ostrich farms, &c. (c) Minerals: e.g., iron mines, smelting, steel mills.

Travels.—(a) Scenic country from train. (b) Ocean life on steamer, coast, and train, river scenery from steamer, e.g., Hudson, Rhine. (c) Views from aeroplanes and other odd modes of travel. (d) Touring: Alps, cañons, Yellowstone, Congo.

Art.—(a) Panoramic trips through noted museums, parks, cities. (b) Construction of paintings, sculptures, tapestries, buildings.

Anniversaries.—(a) Parades, coronations, Mardi Gras, Veiled Prophet.

Iranian.—(a) Classic plays by noted casts, extravaganzas.

Athletic.—(a) Field sports, ball games, rowing, races, drills, exercises.

On some of these subjects films are already available; on others they can be manufactured.

That the manufacturers of moving films are taking advantage of the educational possibilities of moving pictures is evidenced by the "Free Educational Exhibit of Animated Photography" given some time ago by one of the supply houses in Cleveland for the benefit especially of the educators of the public and private schools there. Views were exhibited of the leather industry, wild birds in their haunts, the formation of drops of water, various chemical processes, fruit-growing, and the like. All present were enthusiastic in their approval of the moving picture as an educational aid.

Prof. Frederick K. Starr, Chicago University, expresses his appreciation of the educational advantages to be derived from the moving picture in the following passage:

I have seen Niagara thunder over her gorge in the noblest frenzy ever

beheld by men ; I have watched a Queensland river under the white light of an Australasian moon go whirling and swirling through strange islands, lurking with bandicoot and kangaroo ; I have watched an English railroad train draw into a station, take on its passengers and then clug away with its stubby little engine through the Yorkshire dells, past old Norman abbeys, silhouetted against the sky line, while a cluster of century-aged cottages loomed up in the valley below, through which a yokel drove his flock of Southdowns ; I have beheld fat old Rajahs with the price of a thousand lives jewelled in their monster turbans and the price of a thousand deaths sewn in their royal nightshirts as they indolently swayed in golden howdahs, borne upon the backs of grunting elephants ; I saw a runaway horse play battledore and shuttlecock with the citizens and traffic of a little Italian town whose streets had not known so much commotion since the sailing of Columbus ; I know how the Chinaman lives, and I have been through the homes of the Japanese ; I have marvelled at the daring of Alpine tobogganists and admired the wonderful skill of Norwegian ski-jumpers ; I have seen armies upon the battlefield and their return in triumph ; I have looked upon weird dances and outlandish frolics in every quarter of the globe, and I didn't have to leave Chicago for a moment. No books have taught me all these wonderful things, no lecturer has pictured them ; I simply dropped into a moving picture theatre at various moments of leisure, and, at the total cost for all the visits of perhaps two performances of a musical show, I have learned more than a traveller could see at the cost of thousands of dollars and years of journey. Neither you nor I fully realize what the moving picture has meant to us, and what it is going to mean. We are living at a mile-a-second gait in the swiftest epoch of the world's progress, in the age of incredibilities come true. The talking machine has canned the great voices and master melodies of our time, but the moving-picture machine has done more : it is making for us volumes of history and action ; it is not only the greatest impulse of entertainment, but the mightiest force of instruction. We of to-day take so much for granted ; we are so thoroughly spoiled by our multiple luxuries, that we do not bestow more than a passing thought upon our advantages, because the moving-picture machine is an advantage, a tremendous vital force of culture as well as amusement. Its value cannot be measured now, but another generation will benefit more largely than we of to-day can possibly realize.

The United States Government has now recognized the educational value of motion pictures for the purpose of impressing on the minds of her men geographical, historical, military, naval, and other events in a manner calculated to produce a lasting memory . . . Other branches of the Government service are already making use of the moving-picture machine for special work . . .

Regarding the educational advantages offered by the moving picture, Thos. A. Edison, the well known inventor, says :

Moving pictures bring to every one an absolutely clear idea of foreign peoples through their customs, through scenes of the world, and through the industries and pursuits of man. They have a tremendous educational effect. This is true even of the seemingly purely amusement motion pictures. Little cross sections of life are shown, staged and acted better than are the shows given at a considerably higher price. The motion picture is an important factor in the world's educational development. . . . It will wipe out various prejudices which are often ignorance. It will create a feeling of sympathy and a desire to uplift the down-trodden peoples of the earth. It will give new ideals to be followed. For these reasons, I believe that moving pictures in the hands of broad-minded, intellectual, and informed workers are for the world's good, for the innocent amusement and the moral advance of the great masses of the people.

Sir E. Ray Lankester, the eminent biologist, expresses his keen appreciation of motion pictures in the following terms :

The method of instantaneous photography of minute organisms is a valuable means of research. Points of structure are revealed which were not previously seen, and, moreover, these new discoveries are permanently recorded. For the study and analysis of the movement and the details of the action of locomotor organs (such as cilia, flagella and pseudopodia) the instantaneous films are nothing less than a revelation. While these methods do not take the place of the actual microscope, they can supplement it in an invaluable way. Moreover, they can give to large gatherings of people, with the greatest ease and absolute truthfulness, a real view of microscopic life, and enable every one to have a true conception of what the microscopist and biologist are actually studying ; they make science less remote, less the possession of the privileged few, and they enlist the sympathy and interest of our fellow-citizens for its glorious work. I look forward to the provision, not later than next year, of a cinematographic lantern in every Board school and in every college classroom, and, if I still had a biological laboratory under my supervision (as for the most of my past life I have had), I would obtain the film-producing photographic apparatus and set to work to make discoveries, and—what is a great charm of the new method—their simultaneous record, by producing films of every kind of moving microscopic organisms. I should study not merely the combined effect when rolled through the lantern, but the actual instantaneous

phase permanently printed in each picture of six thousand which make up a five-minute record.

It is very evident that Sir Ray Lankester's praise of motography would be equally applicable in the realm of the physicist, the naturalist, and even the chemist. . . .

Chronophotography, on a fixed plate, has furnished the experimental solution of many problems in geometry, mechanics, physics, and physiology that no other method could so readily have solved. In geometry, for example, the "formation in space of geometrical figures of three dimensions," defined by geometers as "figures that are generated by straight lines or curves of different forms displaced in different ways," is a difficulty of no mean proportion. Chronophotography, however, realizes this conception completely. In mechanics, also, the very many difficulties which Galileo and Atwood had to surmount in order to determine the laws of motion, of velocities, and of accelerations will, for the future, be saved in like cases for those who make use of chronophotography for this purpose. Hydrodynamics is generally looked upon as one of the most complicated sciences. All the difficulties met with here find their experimental solution in chronophotography. In physiology it is to the physiological study of the different gaits of animals and of the functional movement of their different organs, &c., that chronophotography is directed. Various movements of the jaw in speech, which are exceedingly difficult of observation, are reproduced clearly and accurately through chronophotography. It is not out of place to say that the cinematograph may be a help to the psychologist. Children singing may be photographed, and their different facial expressions, such as the wrinkling of the brow, opening the eyes wide, false position of the throat, and so forth, may be studied and the results noted. . . .

The possibility of teaching geography with the aid of the cinematograph is deserving of consideration. When a child is desirous of knowing what a country looks like, does it want to know the exact height of a mountain, or the length in miles of a river ? Is it not, on the other hand, sufficient to know that there is the highest mountain in this or that country, or that that country has the longest river in the world, if one can but see the actual representations of the people, their manner of living, their customs and their industries ? The cinematograph, with its wonderful views from the polar regions of everlasting ice to the burning plains of equatorial Africa, afford a substitute for that heretofore irremediable weakness of geography textbooks, namely, the absence of reality. Give the child his geography lesson from the screen, together with a part of the regular lecture by the teacher, and, instead of a dull, uninteresting memory lesson, that child has learned a number of facts concerning some city or country that will never be forgotten.

Ordinary photography has left much to be desired in the study of the movements and habits of bird, animal, and insect life. One of the very characteristic positions of an animal, namely, that of seeking and capturing its prey, cannot be properly presented by ordinary photography, nor can it give a graphic idea of the facial expressions and characteristic movements of an animal under observation. The moving picture machine does away with these difficulties, and it is now possible to place before a natural history class "living pictures" of bird, animal, and insect life, which, by faithfully reproducing every action of the subject under discussion, more vividly impress the minds of the students than any lecture illustrated by still pictures or drawings. There can be no question as to the importance to students of natural history of using nothing but photographs as illustrations. No matter how well the artist may draw or how skilfully the engraver may copy, there cannot be the same accuracy of detail as it is possible to obtain from a photograph. . . .

One of the serious defects noted in the moving picture is its inability to display natural colours. It requires but little imagination to realize the enormous possibilities of the moving picture plus colour photography in education. It is predicted that this drawback will shortly be overcome. . . .

The very latest possibility for the use of moving pictures is that of animated journalism. The psychology of the trained photographer, whose instinctive impulse when a shot is fired or a magazine explodes is to press the button of his camera, would be an interesting study, but the fact that the omnipresence of the machine is rapidly creating a complete pictorial mirror of life is more important. So well are the camera men "covering" the events of the day that they threaten to drive the reporter out of business. . . .

What, then, is the function of motion pictures as an aid to

pedagogic instruction? Surely no one believes that they are intended to drive out or supplant the school. The motion picture *has* entered the school, and there is reason to suppose that it will do so more and more, not as an invader or conqueror, but as a humble and obedient servant trying to help along and render efficient the established methods. The object of this new method, then, is to furnish illustrations and point examples, to reduce the general to the particular, to render the subjective objective, to clothe the abstract in forms of the concrete. It is the office of the motion picture, just as it is of any still picture, to help in the reducing of general principles to particular applications. If still picture illustrations help in the teaching of geography, history, physiology, and so forth, how much more so does the motion picture illustration help with its bright, vivid, and as yet novel, way of presenting things?

REVIEWS.

THE MEDIEVAL HISTORY OF EUROPE.

"The Cambridge Medieval History." Planned by J. B. Bury, M.A., Regius Professor of Modern History in the University of Cambridge. Edited by H. M. Gwatkin, M.A., Dixie Professor of Ecclesiastical History in the University of Cambridge, late Gifford Lecturer, Edinburgh, and J. P. Whitney, B.D., Professor of Ecclesiastical History, King's College, London. In 8 Volumes. Vol. I: *The Christian Roman Empire and the Foundation of the Teutonic Kingdoms*. 20s. net per volume, with Portfolio of Maps. Subscription price for the complete work, including the portfolios of maps, £6 net. Cambridge University Press.

This new library of the history of medieval times in Europe is planned on the generous lines of the "Cambridge Modern History," with improvements in detail suggested by experience. It is intended for the general reader, as a clear and interesting narrative; for the student, as a summary of ascertained facts, with indications (not discussions) of disputed points; and as a book of reference, containing all such information as can reasonably be expected from a comprehensive work of general history. A full bibliography to each chapter is appended; and a portfolio of illustrative maps, specially prepared for the work, will accompany each volume. The type is spacious, and the get-up is substantial as well as handsome. The work will cover the whole field of European medieval history, presenting the latest results of modern research. Among the contributors are included historical specialists of America and of the eight most advanced countries of the continent of Europe, as well as of Great Britain. The scope of the work as shown in a detailed provisional list of the chapters has been most carefully planned to secure completeness without overlapping; and the present volume is an earnest of most capable treatment. While emphasizing the principle of the continuity of history, the work will exhibit with fresh force the successive steps of development. Essentially it is a more important undertaking than even its great predecessor, the *Modern History*.

When does Medieval history begin? The question has received many different answers, but there can be no doubt that the planner and the editors have done wisely in starting from the reorganization of the Empire by Diocletian and Constantine. The first volume covers a space of some two centuries—the fourth and the fifth—beginning with Constantine and stopping a little short of Justinian, and narrating momentous events political and ecclesiastical. Prof. Gwatkin describes the rise of Constantine, his renunciation of the Empire, his conversion to Christianity, the political side of the Nicene Council, and the foundation of Constantinople; and Dr. Reid sketches the reorganization of the Empire by Diocletian and Constantine. These two chapters lay a solid basis for future developments. The wars of the Empire, external and internal, under Constantine and Julian, and later under Valentinian and Theodosius, are forcibly narrated by Mr. Norman Baynes. Principal Lindsay handles in masterly fashion the triumph of Christianity over Paganism, avoiding conflict with Mr. Baynes on the wide common field of Julian's religious policy. Prof. Gwatkin ably describes Arianism and exhibits some of its relations to modern thought, expounds the religious side of the Nicene Council, and traces the complicated history of the reaction down to the overthrow of Arianism in the Empire by Theodosius. Mr. C. H. Turner then completes the religious revolution by a lucid description of

the organization of the Church, and especially of its development in the age of the great Councils.

The Teutons are introduced on the scene by Dr. Martin Bang, who follows from prehistoric times their migrations and conquests till, after a struggle of four centuries, they break through the Roman frontier of the Danube. Dr. Manutius continues the narrative through the administrations of Theodosius and Stilicho down to the sack of Rome by Alaric (378-412). The great Teutonic peoples are then reviewed severally—the settlement of the Visigoths in Gaul, and the rise and fall of their kingdom of Toulouse; the early history of the Franks (before Clovis); the Sueves, Alans, and Vandals in Spain; the Vandal Kingdom in Africa. Dr. Peisker describes Central Asia and the organization and conquests of the Asiatic nomads before they descended to the devastation of Europe in the Middle Ages; and Dr. Schmidt follows with a brief sketch of the policy of Attila and the ravages of the Huns. Prof. Haverfield deals authoritatively with the conquest, organization, and abandonment of Roman Britain; and Mr. Beck, having inquired carefully into the Continental home of the English, traces their settlement in Britain.

Mr. Barker describes with signal ability the last struggles of the Empire of the West; M. Maurice Dumoulin deals with the rule of Odovacar and Theodoric in Italy; and Mr. Brooks surveys the Eastern Provinces from Arcadius to Anastasius. We can now leave the political welter and turn to other aspects of the life of the peoples. Miss Alice Gardner expounds most capably the religious controversies in the East during the fifth century—the Chrysostom controversy, the Nestorian controversy, the Eutychian or Monophysite controversy, and the Henoticon controversy. Dom Butler traces the growth of monasticism and sets forth the ideals of its various phases in East and West, including notably the Benedictine rule. Prof. Vinogradoff deals with the social and economic conditions of the declining Empire; Mr. H. F. Stewart, with the literature of the period, heathen and Christian; and Mr. Lethaby, with the beginnings and early development of Christian Art.

Shortly: to the student of universal history, the Roman Empire is the bulwark which for near six hundred years kept back the ever-threatening attacks of Teutonic and Altaian barbarism. Behind that bulwark rose the mighty structure of Roman law, and behind it a new order of the world was beginning to unfold from the fruitful seeds of Christian thought. So, when the years of respite ended, and the universal Empire went down in universal ruin, the Christian Church was able from the first to put some check on the Northern conquerors, and then by the long training of the Middle Ages to mould the nations of Europe into forms which have issued in richer and fuller developments of life and civilization than imperial Rome had ever known.

The great work makes a most promising start, and we look forward with keen interest to the further enrolment of the history. The material is well in hand, the editors hoping to publish two volumes yearly in regular succession.

PERSON AND PERSONALITY.

Person und Persönlichkeit. Von D. F. Niebergall, Professor an der Universität Heidelberg. 3.50 M. Leipzig: Quelle & Meyer.

Prof. Niebergall considers the characters of the human entity from its advent in the world to its full development, by examining and contrasting the contents of the terms "Person" and "Persönlichkeit"; and he applies his conclusions to the explanation and solution of many questions in the most important spheres of social life. By an inductive process of illustration he leads up elaborately to a rigid discrimination of the fundamental terms. "Person" denotes a rational entity ("vernünftige Einzelsubstanz, vernünftiges Einzelwesen"), colourless at best ("gleichgültiger oder gar verächtlicher Sinn"), characterized by "Eigenart" and "Eigenrecht" ("das Recht, das mit uns geboren ist, also das Menschenrecht, oder die Eigenart, die wir von der Natur aus mitgebracht haben. . . . Wir denken jetzt nicht nur an gesetzliches Recht, wir denken auch an moralisches"). "Person" is the raw material for intelligence to work up into "Personality" ("Rohstoff für die Persönlichkeit; Rohstoff, der vom Geist zu bearbeiten ist"). It has, indeed, an Ego, but it is merely passive, and it is purely a natural (uncultured) product ("alles Natur—interessant und stark, förderlich oder schädlich, gut oder hässlich, aber immer Natur"). "Persönlichkeit," on the other hand, is a term of distinction ("Edelwort, Ehrenname"), including "Eigenart" and "Character," belonging to the world of culture, and denoting always goodness and great-

(Continued on page 252.)

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ness ("etwas Gutes und Grosses"); it is the true Ego, actively operative ("Es ist der Wille, der hier mitgespielt hat, nicht nur das Wollen"). The required greatness may be demonstrated in any sphere of serious and elevated conduct; and the required goodness must rise at least to "moral neutrality" ("wenigstens sittliche Neutralität, aber Keine widersittliche Grundrichtung"). Accordingly, Prof. Niebergall shakes his head over Richard III and Caesar Borgia. The exposition and illustration of the two terms occupies fully a third part of the volume—some seventy pages.

The second part deals with the development and operation of the two contrasted subjects ("wie sich Person und Persönlichkeit entfalten und betätigen") in the affairs of life—questions of drink, sex, manners, marriage, education, religion, society, politics, art, and so forth. The field is extended so as to embrace not only the relations of the two contrasts, but the relations of both to other persons, personalities, and things ("das grosse Problem wie sich Naturwelt und Geisteswelt verhalten und zu verhalten haben"). The treatment, whether philosophical or social, is interesting but slight. The discussions, though intelligent enough, do not seem to issue in any distinctively fresh results, and the connexion of the elaborate contrast of Person and Persönlichkeit with the results appears to be formal rather than specifically productive. That is to say, the same conclusions might have been reached without the elaborate process of discrimination of the terms. There is, however, this advantage, that the exposition emphasizes the process of development and the interconnexion of social phenomena. In the Education section, the principle of Persönlichkeit naturally leads to approval of the newer tendency to give fuller scope to the pupil to realize himself in his own way ("Dem einzelnen Gelegenheit zu geben, sein eigenes zu betätigen und auszuleben, aber mit dem Blick auf die grossen Werte des Lebens, auf die Kultur, das ist ein Erziehungs- und Bildungsprogramm auf das man stolz sein kann")—an obvious thing enough, which, however, it is well to have related with a scientific principle. If system and method be falling into disesteem as "mechanical and 'real'" ("mechanisches und dingliches"), then we should say that this is a reason for reforming them; and if the personality of the teacher is sometimes so aggressive as to provoke reaction, we should like to know the facts before adventuring comment. But Prof. Niebergall does not enter upon details in these latter cases. When we come to the section on Religion, we are interested to see how Prof. Niebergall will affirm that God is a person, though God is "Geist" and Person is "immer Natur." He simply works from the other side: God has Persönlichkeit, and must therefore be a Person ("Wenn er Träger des höchstens Wertes ist, eben der Persönlichkeit, dann muss er auch eine Person sein"). Moreover, do we touch here upon the main bearing of the arbitrary limitation of personality to persons of moral worth (however assessed)? It does seem curious that personality should be denied to any "person" on moral grounds, even to the Devil himself. Anyhow, this arbitrary definition enables the author to differentiate so far against religions other than Christianity.

So ist alles, was wir mit Recht Christentum nennen, durch unsern Gedanken der Persönlichkeit bestimmt. . . . Dieser Gehalt des Christentums setzt uns auch in den Stand, gegen alle andern Formen von Religion und Halb- oder Nicht-Religion kritisch vorzugehen. Dem dieser unser Personalismus vertragen sich weder mit dem Buddhismus und allem andern Pantheismus noch mit dem Vulgärkatholizismus und der massiven Volksreligion überhaupt, noch auch mit jeder Form von Autoritätsreligion in dem herrschenden Sinn des Wortes.

Given the premises, the conclusion follows. But there is needed a much more thorough argument and a broader outlook to carry conviction either of the propriety of the restricted premises or of the general utility of the conclusions. Prof. Niebergall, however, can write lucid German, and he has the grace to deny himself the luxury of long and involved sentences.

A MATHEMATICAL BIBLIOGRAPHY.

Bibliography of Non-Euclidean Geometry. By Duncan M. Y. Sommerville, M.A., D.Sc. 10s. net. Harrison (for the University of St. Andrews).

There are two ways in which it is at least possible to account for the unusually modest form of issue chosen for Dr. Sommerville's important work. Perhaps, on the one hand, the author thought it desirable to leave the permanent dress of the volume to the taste of the individual purchaser; perhaps, on the other, his idea was to increase the chance that so valuable a compilation

might find its way into the libraries of the growing number of those to whom it promises to be useful. The work has been in preparation during a period of nine years, and its publication notably lessens in one direction the dearth of works on mathematical bibliography which was deprecated a short time since by Dr. Thomas Muir, F.R.S.E. As a book of reference, the new volume is sure of a welcome from all who labour in the particular field of geometrical investigation with which it is connected.

Euclid's Parallel Axiom is no new topic for discussion, but non-Euclidean geometry and the study of the foundations of geometrical science are subjects of modern growth, and have in recent years attracted close attention; hence a compact index duly recording all that has been accomplished in connexion with them, and taking account of researches in the theory of parallelism must be invaluable in the promotion of further investigations. So numerous have been the recent additions to literature bearing on the above and kindred subjects that Dr. Sommerville has found it imperative to work within strictly defined limits and to deal with his material in less detail than he originally intended. He includes in his survey the following subjects: Non-Euclidean Geometry, Theory of Parallels, investigations bearing on the Foundations of Geometry, and Space in n Dimensions.

An interesting introduction to the volume gives a brief summary in its bibliographical aspect of the history of these subjects and enters with all necessary fullness into the details of the useful and elaborate plan of the present work. To establish, or even to attempt to establish, the claim that Dr. Sommerville's lists have to completeness would be in effect to collect the materials for a bibliography; the reader must therefore be content to rely on the prestige possessed by the leading sources of information on which Dr. Sommerville has based his own compilation. Of these, it will be amply sufficient to mention two, selected at random—for example, the literary work of a mathematician as well known as Prof. G. B. Halsted and a periodical publication of no less importance than the "Jahrbuch über die Fortschritte der Mathematik." In drawing up a scheme for the present work, the author adopted a plan of classification bearing in some respects a resemblance to that existing in Riccardi's "Euclidean Bibliography," a compilation which is in a certain sense complementary to the one before us.

The present volume, then, gives a triple classification of the literature considered. First, the works are arranged in chronological order as to year of publication, whilst in each year there is a subsidiary arrangement of the names of the authors placed alphabetically. Information as to later editions of a published work or memoir, together with a reference to the leading critical reviews of the production, are set down in the catalogue side by side with the notice of the original edition. Nevertheless, a later edition or a review is catalogued under its own date also, at the discretion of the writer. Effective use has been made for special purposes of varied type and characteristic methods of notation. Considerably more than half the volume is occupied by the chronological catalogue. The second mode of classification takes the form of a subject-index: this is a very valuable feature of the work. It is not surprising to recognize in this section the familiar notation and classification of the "Index du Répertoire bibliographique," and it is to be observed that the system of the "Répertoire" has been amplified in order to meet the need for extensions. In this portion of the work a subsidiary chronological arrangement under each heading will be found. The details of the subject-index require a study of the work itself. The third method of classification constitutes an author-index, in which the names are arranged alphabetically and where—it is almost superfluous to mention the fact—a subsidiary chronological tabulation of the works of each author exists. The compilation, as a whole, bears abundant testimony to the untiring patience and minutely careful research of the author.

GENERAL NOTICES.

CLASSICS.

Thucydides and the History of his Age. By G. B. Grundy, D.Litt., Fellow and Tutor of Corpus Christi College, Lecturer in Ancient History at Brasenose College, and Lecturer in Ancient Geography in the University of Oxford, author of "The Great Persian War." With maps. 16s. net. Murray.

"This book is preliminary to a historical edition of Thucydides," which will be most welcome when it comes, and scholars will hope that Dr. Grundy will obtain leisure to make rapid progress with it. The subjects

(Continued on page 254.)

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Agamemnon of Aeschylus. With Verse Translation, Introduction, and Notes. By Walter Headlam, Litt.D., late Fellow and Lecturer of King's College, Cambridge. Edited by A. C. Pearson, M.A. 10s. net. Cambridge University Press.

Mr. Pearson has faithfully sought to represent the mind of the author in putting together the materials left behind him. The introduction narrates and discusses the story on which the drama is founded, analyses and examines the drama itself, and remarks on the moral and religious ideas it contains. The verse translation, printed face to face with the text, is markedly original, vigorous, and poetic. The notes are fresh and pointed, and the illustrations from ancient and modern poetry afford yet another proof of the laborious and refined study devoted to Aeschylus by Dr. Headlam. The volume will be warmly welcomed by all students of the Greek drama.

A new edition of *Kallistratus: an Autobiography*, by A. H. Gilkes, rewritten throughout and furnished with fresh illustrations, is published by Mr. Frowde (3s. 6d. net). A capital story in itself, and illustrative of the times of Hannibal.

Messrs. Bowes & Bowes, of Cambridge, issue in pamphlet form a paper on *The Need for a Course of Study in Classical and Inter Literature combined*, by Mrs. Adela Marion Adam, recently read before the Cambridge Classical Society (6d. net).

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(Continued on page 256.)

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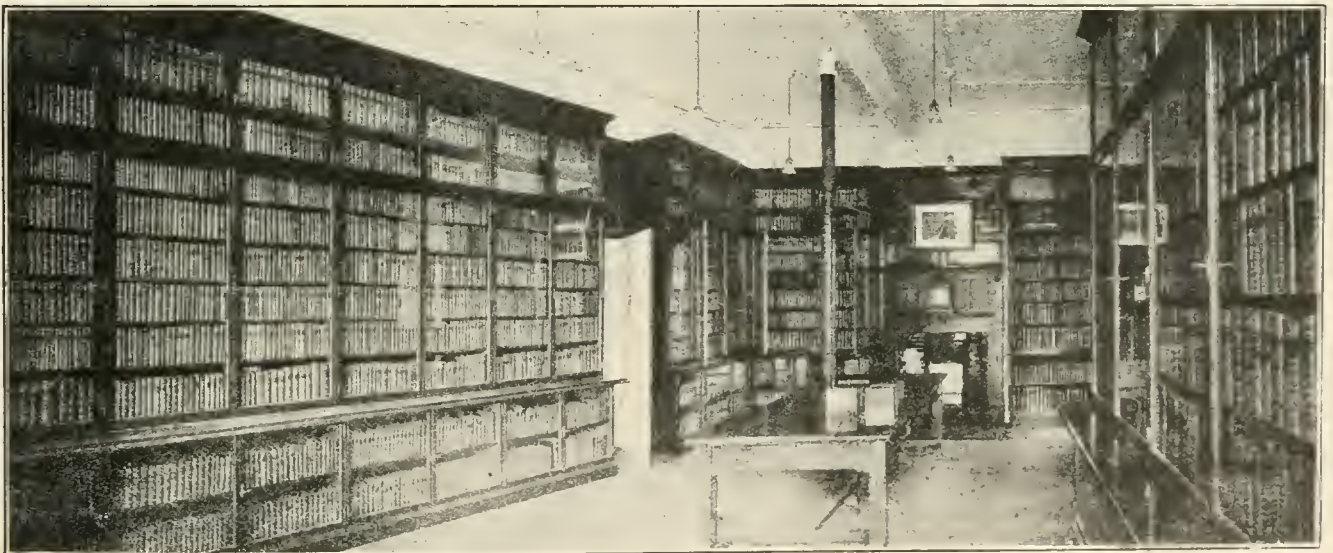
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"Cambridge English Classics."—*The Complete Works of Sir Philip Sidney*. In three volumes. Vol. I, *The Countesse of Pembroke's Arcadia*. Edited by Albert Feuillerat, Professor of English Literature in the University of Rennes. 4s. 6d. net. Cambridge University Press.

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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.

12479. (D. BIDDLE.)—A rod of given length crosses a vertical axis at random, and is made to revolve about it. Find the mean sum of the solid contents of the two right cones generated.

Solution by C. W. ADAMS.

If a be the total length of the rod, x one of its segments, and θ its inclination to the axis, the total volume

$$V = \frac{1}{3}\pi a (a^2 - 3ax + 3x^2) \sin^2 \theta \cos \theta.$$

Hence the mean volume V' is given by

$$\frac{1}{2}\pi a V' = \frac{1}{3}\pi a \int_0^a \int_0^{\pi} (a^2 - 3ax + 3x^2) \sin^2 \theta \cos \theta \, d\theta \, dx.$$

The PROPOSER remarks:—If we divide both sides of the equation by $\frac{1}{2}\pi a$, we obtain

$$V' = \frac{2}{3} [a^2 - \frac{1}{2}(3a^2 + a^2) (1 - \frac{2}{3})] = \frac{2}{3} (a^2 - \frac{1}{2}a^2) = \frac{1}{3}a^3,$$

when a = unity. This is sufficiently accurate.

13584. (REV. W. ALLEN WHITWORTH, M.A.)—A die of p faces is thrown repeatedly until the number of aces turned up is to the number of non-aces as $1 : p-1$. Show that the chance of this happening at the np -th throw, and not before, is $\frac{(np-2)! (p-1)^{p-n}}{n! (np-n-1)! p^{np-1}}$.

Solution by A. M. NESBITT, M.A.

If P_n be the required chance, and Q_n the chance of throwing n aces in np throws, without any restriction, we have

$$Q_n = P_1 Q_{n-1} + \dots + P_{n-1} Q_1 + P_n,$$

and
$$Q_n = \left(\frac{1}{p}\right)^n \left(\frac{p-1}{p}\right)^{n-1} \frac{(np)!}{n! (np-n)!} = a^n \cdot q_n,$$

where
$$a = \frac{(p-1)^{p-1}}{p^p}.$$

Write also $P_n = a^n \cdot p_n$; so that, if $n \geq 1$,

$$q_n = p_1 q_{n-1} + \dots + p_{n-1} q_1 + p_n.$$

Further, if $f(t) = 1 + \sum_1^\infty (q_r t^r)$ and $F(t) = 1 - \sum_1^\infty (p_r t^r)$,

the above relation gives us that $f(t) \cdot F(t) = 1$. Denote the coefficient of x^n in $(1-x)^b$ by ${}_a K_b$ (which is $(-1)^n \frac{b!}{n! (b-a)!}$). Then

$$\{1 - (1-x)^a\}^r = 1 + \sum_{l=1}^{l=r} \{ {}_l K_r (1-x)^{al} \}.$$

Equate coefficients of x^r ; thus

$$p^r = \sum_{l=1}^{l=r} \{ {}_l K_r \cdot r K_{lp} \},$$

and
$${}_l K_r \cdot r K_{lp} = (-1)^{l+r} \frac{r!}{l! (r-l)!} \frac{(lp)!}{r! (lp-r)!}$$

$$= (-1)^{r+l} \frac{(lp)!}{l! (lp-l)!} \frac{(lp-l)!}{(r-l)! (lp-r)!} = q_{l, l-1} K_{lp-l}.$$

Thus
$$(xp)^r = \sum_{l=1}^{l=r} \{ (x^l q_l) ({}_{l-1} K_{lp-l} x^{r-l}) \}.$$

It follows that in $\sum_1^\infty \{ (px)^r \}$, the coefficient of q_l is $x^l \sum_{r=l}^\infty \{ {}_{r-1} K_{lp-l} x^{r-l} \}$, i.e., $x^l (1-x)_{lp-l}$; so that, if $x(1-x)^{p-1} = t$, we get

$$\sum_1^\infty \{ q_l t^l \} = \sum_1^\infty \{ (px)^2 \} = \frac{1}{1-px}, \quad \text{if } px < 1.$$

Thus $\frac{1}{1-px} = f(t)$, $1-px = F(t)$, or $px = p_1 t + p_2 t^2 + \dots$ ad infin.

From this
$$p^2 t \frac{d^2 x}{dt^2} = p \sum_1^\infty (np, t^n);$$

so that
$$v \left(pt \frac{dx}{dt} - x \right) = \sum_1^\infty \{ (np-1) p_n t^n \}$$
 and $t \frac{dx}{dt} = \frac{x(1-x)}{1-px}.$

Therefore

$$\sum_1^\infty \{ (np-1) p_n t^n \} = px \left(\frac{p(1-x)}{1-px} - 1 \right) = (p-1) \frac{px}{1-px}$$

$$= (p-1) \sum_1^\infty \{ (px)^n \} = (p-1) \sum_1^\infty \{ q_n t^n \};$$

whence
$$p_n = \frac{p-1}{np-1} q_n = \frac{p(np-2)!}{n! (np-n-1)!}$$

and
$$P_n = p_n a^n = \frac{(np-2)!}{n! (np-n-1)!} \frac{(p-1)^{np-n}}{p^{np-1}}.$$

17240. (R. F. DAVIS, M.A.)*—If n is a prime number greater than 3, prove that $(n-1)! \left\{ \frac{1}{1} + \frac{1}{2} + \frac{1}{3} + \dots + \frac{1}{(n-1)} \right\}$ is divisible by n^2 .

Solutions (I) by Lieut.-Colonel ALLAN CUNNINGHAM, R.E.; (II) by D. BIDDLE; (III) by Professor SANJANA, M.A., and Professor J. C. SWAMINARAYAN, M.A.

(I) Let S = the given sum, and let $n = 2\nu + 1$, so that $\frac{1}{2}(n-1) = \nu$. Adding together in pairs the terms equidistant from the ends,

$$S = (n-1)! \left\{ \frac{1}{1(n-1)} + \frac{1}{2(n-2)} + \frac{1}{3(n-3)} + \dots + \frac{1}{\nu(\nu+1)} \right\} \quad [\nu \text{ terms}].$$

Dividing by n ,

$$\frac{1}{n} S = \frac{(n-1)!}{1(n-1)} + \frac{(n-1)!}{2(n-2)} + \frac{(n-1)!}{3(n-3)} + \dots + \frac{(n-1)!}{\nu(\nu+1)}.$$

Taking the residue for modulus n , and noting that $(n-1)! \equiv -1 \pmod{n}$,

$$\frac{1}{n} S \equiv \frac{1}{1^2} + \frac{1}{2^2} + \frac{1}{3^2} + \dots + \frac{1}{\nu^2} \pmod{n} \quad [\nu \text{ terms}].$$

Here the denominators, being the complete set of squares $\nless \nu^2$, are each congruent to some one of the complete set of 2-ic residues (ν in number) of n . Let the r -th term be $1/r^2$, and let $r^2 \equiv \rho \pmod{n}$, with $\rho < n$.

Now let ρ' be the 2-ic residue of n which is reciprocal to ρ in such a way that $\rho\rho' \equiv 1 \pmod{n}$, and note that every ρ has a reciprocal ρ' . Then $1/r^2 \equiv \rho\rho'/\rho \equiv \rho' \pmod{n}$, and every term similarly. Hence

$$1/n \cdot S \equiv \sum_1^\nu 1/r^2 \equiv \sum \rho' \pmod{n}.$$

And here $\sum \rho'$ includes the complete set of 2-ic residues of n (taken in some order different to the previous set). Hence, by a known theorem, $\sum \rho' \equiv 0 \pmod{n}$. Hence $1/n \cdot S \equiv 0 \pmod{n}$, and $S \equiv 0 \pmod{n^2}$, as required to be shown.

(II) This is equivalent to requiring proof that the numerator of the fraction, which results from summing the series within the second bracket, is divisible by n^2 when n is a prime number.

Let us write that series, consisting of an even number of terms, half in one way and half in the other:

$$\frac{1}{1} + \frac{1}{2} + \frac{1}{3} + \dots + \frac{1}{n-3} + \frac{1}{n-2} + \frac{1}{n-1}.$$

Then let us sum in pairs those terms which are equidistant from the extremities, and we obtain

$$\frac{n}{n-1} + \frac{n}{2n-2} + \frac{n}{3n-3} + \frac{n}{4n-4} + \frac{n}{5n-5} + \dots \dots \dots (a),$$

the number of terms being $\frac{1}{2}(n-1)$. The product of the denominators is unaffected; it is still $(n-1)!$, and we observe that if n be any odd number, the sum is at least divisible by n .

Now, in summing (a), we can disregard all resulting terms ending in n^2 or any higher power of n , since they are manifestly divisible by n^2 . Consequently, the squares are all that need be taken account of in the several denominators. Let $k = \frac{1}{2}(n-1)$, then the essential representative of the given quantity is

$$n(k!)^2 \left(\frac{1}{1^2} + \frac{1}{2^2} + \frac{1}{3^2} + \frac{1}{4^2} + \frac{1}{5^2} + \dots + \frac{1}{k^2} \right) \dots \dots \dots (b),$$

which is integral and divisible by n^2 , not only when n is prime, but whenever $n \equiv \pm 1 \pmod{6}$.

The fact, when n is prime, has already been proved [see Solutions (I) and (II)]. The fact, when n is composite, may thus be proved:— We have $n = 2k + 1 = ax$. The lowest value of a , in composites of the form stated, is 5. Thus, x and $2x$, at least, will be lower in value than k ; and x^2 and $(2x)^2$ will both form denominators in the series. Consequently, when the numerators are all raised to correspond with the common denominator $(k!)^2$, x^2 will appear at least once in each of them, and therefore in their sum. This saves the case when $n = \square$. When $a < x$, a^2 appears even more frequently than x^2 .

(III) This is a well-known result. If A_1, A_2, \dots, A_{n-2} denote the sums of the products of 1, 2, 3, ..., $n-1$, taken 1, 2, ..., $n-2$ at a time, each A is divisible by n (Lagrange). Now

$$1 \cdot 2 \cdot 3 \dots (n-1) = (n-1)(n-2) \dots [n - (n-1)]$$

$$= n^{n-1} - n^{n-2} A_1 + n^{n-3} A_2 + \dots + n^2 A_{n-3} - n A_{n-2} + (n-1)!,$$

* The above is found to be identical with Question 8894 (J. M. DYER, M.A.). For Solution, *v. Reprint*, O.S., Vol. XLVIII, p. 115.

as $n-1$ is necessarily even. Hence

$$n^{n-2} - n^{n-3}A_1 + \dots + nA_{n-3} - A_{n-2} = 0.$$

When $n > 3$, each of the terms n^{n-2} , $n^{n-3}A_1$, ..., nA_{n-3} is divisible by n^2 ; hence A_{n-2} is so divisible, and it is the given expression.

12735. (I. ARNOLD.)—Find a point at a given distance from the vertex of a given triangle, so that the sum of the three perpendiculars from the point on the sides shall be equal to a given line. What are the limits?

Solution by F. E. RELTON, B.A., B.Sc.

We have $a + \beta + \gamma = k$, say (1).

This is a straight line whose position is determined quite simply by finding where it cuts the external bisectors of the base angles B and C.

The limits are determined by whether the distance of A from this line is $>$ or $<$ l .

If the line cut AB, AC at X, Y respectively, we have

$$AX + BX = c, \quad AX \sin A + BX \sin B = k,$$

$$\text{whence } AX = (k - c \sin B) / (\sin A - \sin B) = 2Rm / (a - b),$$

where R is circum-radius and $m \equiv k - c \sin B$. Similarly,

$$AY = 2Rm / (a - c).$$

For real solutions we have

$$l.XY > AX.AY \sin A;$$

$$\text{therefore } l^2 (AX^2 + AY^2 - 2AX.AY \cos A) > AX^2.AY^2 \sin^2 A,$$

$$\text{or } l^2 (AX^{-2} + AY^{-2} - 2AX^{-1}.AY^{-1} \cos A) > \sin^2 A;$$

therefore

$$l^2 \{ (a-b)^2 + (a-c)^2 - 2(a-b)(a-c) \cos A \} > 4m^2 R^2 \sin^2 A \text{ or } a^2 m^2.$$

$$\text{This reduces to } l^2 (1 - 8\Delta^2 / abcs) > m^2,$$

$$\text{or } l^2 (1 - 2\Delta / Rs) > (k - h)^2.$$

where h is height of ABC.

A Compact Form for Compound Multiplication.

By Rev. J. C. DONLEVY.

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Step 3.—Go on with the multiplication of the florins.

N.B.—Reason of Step 2 is that

$$1q = £0.001 \frac{1}{24}.$$

17122. (R. F. DAVIS, M.A.)—Through an external point O are drawn two secants OPP', OQQ' to the conic

$$\phi = ax^2 + 2hxy + by^2 + 2gx + 2fy + c = 0.$$

If the equation to PQ is $\lambda x + \mu y + 1 = 0$, prove that the equation to P'Q' is $2(gx + fy + c) = c(\lambda x + \mu y + 1)$. From what considerations might this equation be written down by mental calculation only?

Solution by CONSTANCE I. MARKS, B.A.

Since the conic is given by its most general equation referred to rectangular axes, let us suppose it now referred to O as origin.

The lines joining O to the curve's intersections with $\lambda x + \mu y + 1 = 0$, namely OP, OQ, are given by

$$ax^2 + 2hxy + by^2 - 2gx(\lambda x + \mu y) - 2fy(\lambda x + \mu y) + c(\lambda x + \mu y)^2 = 0,$$

$$\text{or } ax^2 + 2hxy + by^2 + 2gx + 2fy + c - 2gx(\lambda x + \mu y + 1) - 2fy(\lambda x + \mu y + 1) + c[(\lambda x + \mu y)^2 - 1] = 0 \dots \dots \dots (a).$$

Now where the lines (a) cut the conic other than at P, Q, namely at P', Q', we have, since $\phi = 0$ and $\lambda x + \mu y + 1 \neq 0$ at these points,

$$-2gx - 2fy + c(\lambda x + \mu y - 1) = 0 \quad \text{or} \quad 2(gx + fy + c) = c(\lambda x + \mu y + 1),$$

the equation to a straight line which passes through P' and Q', and therefore the equation to P'Q'.

The PROPOSER solves mentally as follows:—

Suppose PQ, P'Q' produced to meet in T, and T joined to O and to the intersection U of PQ', P'Q.

Then TP, TP' are separated harmonically by TU, TO, giving equations of form $\alpha = 0$, $\beta = 0$, $\alpha + k\beta = 0$, $\alpha - k\beta = 0$. Equation to PQ is $\lambda x + \mu y + 1 = 0$. Equation to P'Q' is, say,

$$A(gx + fy + c) + B(\lambda x + \mu y + 1) = 0.$$

Equation to TU (the polar of O) is

$$gx + fy + c = 0 \quad \text{or} \quad A(gx + fy + c) + B(\lambda x + \mu y + 1) - B(\lambda x + \mu y + 1) = 0.$$

Therefore equation to the fourth harmonic TO is

$$A(gx + fy + c) + B(\lambda x + \mu y + 1) + B(\lambda x + \mu y + 1) = 0$$

or

$$A(gx + fy + c) + 2B(\lambda x + \mu y + 1) = 0.$$

And, since this passes through O, $Ae + 2B = 0$; therefore equation to P'Q' is

$$2(gx + fy + c) = c(\lambda x + \mu y + 1).$$

17274. (T. WORRALL, M.Sc.)—A cup containing water is of the form of a paraboloid of revolution, its centre of gravity being at the focus of the generating parabola. Show that it will stand with its axis vertical in stable equilibrium if the height of the water be $< \sqrt[3]{(3h^2l/4)}$, where l is the semi-latus rectum of the parabola and h the height of water whose weight would equal the weight of the cup.

Solution by Professor J. C. SWAMINARAYAN, M.A.

Let x be the height of the water. Let H be the centre of gravity of the water, and let S, the focus, be the centre of gravity of the cup.

$$\begin{aligned} \text{Weight of water} &= \frac{1}{2} g\rho \times \pi.2lx.x \\ &= g\rho\pi lx^2 = \lambda x^2, \end{aligned}$$

where $\lambda = g\rho\pi l$.

$$\text{Weight of the cup} = \lambda h^2.$$

Metacentric height

$$\begin{aligned} &= HM = \frac{AK^2}{V} \\ &= \frac{\pi \times 2lx \times (2xl/4)}{\pi lx^2} = l. \end{aligned}$$

Now let the cup be slightly displaced so that a point A' near the vertex comes in contact with the earth.

Hence the reaction of the earth will pass normally at A' along A'G, where G is a point on the axis at a distance equal to l from A.

Now λh^2 acting through S tries to restore equilibrium, and λx^2 acting through M tends to displace the cup more and more.

Hence, taking moments along G, we have

$$\lambda x^2 \times MG < \lambda h^2 \times SG.$$

Therefore $\lambda x^2 \times AH < \lambda h^2 \times \frac{1}{2} l$; therefore $\lambda x^2 \times \frac{2}{3} x < \frac{1}{2} (\lambda h^2 l)$;

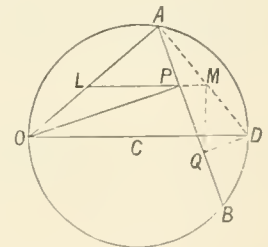
therefore $x^3 < \frac{3}{4} h^2 l$; therefore $x < \sqrt[3]{(3h^2 l/4)}$.

17030. (The late Professor COCHEZ.)—Discuss the curves

$$\rho = a \cos \omega \cos 2\omega.$$

Solution by C. E. YOUNGMAN, M.A.

On a circle OADB, with diameter OCD = a , take arcs DA, DB in opposite directions, with DA = 2DB; and on AB project the diameter OD into PQ.



Then, putting DOA = 2ω , we have

$$\text{AOP} \equiv 90^\circ - \text{OAB} = \text{DAB} = \omega;$$

therefore DOP = ω ,

$$\text{and } \text{OP} = a \cos 2\omega \cos \omega.$$

But the envelope of AB is a tricusp with vertex D and centre C; thus the curve $\rho = a \cos \omega \cos 2\omega$ is the pedal of a tricusp with respect to the mid-point of a diameter.

Similarly, since ODQ = ω and DQ = $a \sin \omega \sin 2\omega$, the curve $\rho = a \sin \omega \sin 2\omega$ is the pedal of a tricusp with respect to a vertex.

Bisect AO, AD at L, M. Then LP is parallel to OD and equal to OL; and MQ is perpendicular to OD and equal to DM. Hence convenient ways of plotting points on the two curves, since L and M describe circles with diameters OC and CD. The first curve has three loops: one large, two small; the second has two only, being β -shaped (without the tail).

17268. (M. T. NARANINGAR, M.A.)—Show that the parabola through any four co-normal points of $x^2/a^2 + y^2/b^2 = 1$ has its axis parallel to one of the equi-conjugates.

Solutions (I) by A. A. BOURNE, M.A.; (II) by Professor R. SRINIVASAN, M.A.

(I) Four co-normal points are found by combining the equation $x^2/a^2 + y^2/b^2 - 1 = 0$ with $xy + (b^2 kx - a^2 hy)/(a^2 - b^2) = 0$. Combining these so that the terms of second degree form a square, we get the equation of the required parabola, viz., $(x/a \pm y/b)^2 + \dots = 0$.

The axis of the parabola is parallel to one of the lines $x/a \pm y/b = 0$.

(II) Let $lx + my - 1 = 0$ and $l'x + m'y - 1 = 0$ be the chords passing through the feet of the co-normals. Then we have

$$ll' = mm' = -1/a^2.$$

Any conic passing through these co-normal points is

$$x^2/a^2 + y^2/b^2 - 1 + \lambda(Lx + my - 1)(Lx + my - 1) = 0,$$

i.e., $x^2(1/a^2 + \lambda L^2) + y^2(1/b^2 + \lambda m^2) + \dots = 0,$

i.e., $(1-\lambda)x^2/a^2 + (1-\lambda)y^2/b^2 + \dots = 0.$

If this be a parabola, the terms of the second degree must be a perfect square, i.e., in this case of the form $(1-\lambda)(x/a \pm y/b)^2.$

Therefore the axis is parallel to $x/a \pm y/b = 0.$

Hence the result.

17285. (Professor E. J. NANSON.)—Solve

$$(x-a)(x-b) + (y-a)(y-b) = 0, \quad x/(a+x) + y/(b+y) = 1.$$

Solutions (I) by FREDERICK PHILLIPS, F.C.P., B.Sc. (Lond.), F.C.S.; (II) by C. E. WRIGHT, and others; (III) by C. M. ROSS, B.A., J. W. BROOKS, and others.

(I) $(x-a)(x-b) + (y-a)(y-b) = 0 \dots\dots\dots(1),$
 $x/(a+x) + y/(b+y) = 1 \dots\dots\dots(2)$

From (2), $bx + xy + ay + xy = ab + ay + bx + xy, \quad xy = ab;$
 therefore $x = ab/y.$

Substituting in (1),

$$(ab/y - a)(ab/y - b) + (y-a)(y-b) = 0,$$

$$ab[(b-y)/y][(a-y)/y] + (a-y)(b-y) = 0;$$

therefore $y = a, \quad x = b$
 $y = b, \quad x = a$

and $ab/y^2 = -1;$

therefore $y = +\sqrt{-ab}, \quad x = -\sqrt{-ab}$
 $y = -\sqrt{-ab}, \quad x = +\sqrt{-ab}$

(II) Clear the second equation of fractions; $xy = ab.$ Substitute $y = ab/x$ in first equation:

$$(x-a)(x-b)(1 + ab/x^2) = 0;$$

therefore $x = a, b$ or $\pm\sqrt{ab}i$

$$y = b, a$$
 or $\mp\sqrt{ab}i$

(III) $x/(a+x) + y/(b+y) = 1 \dots\dots\dots(1),$

$$(x-a)(x-b) + (y-a)(y-b) = 0 \dots\dots\dots(2).$$

The equations easily reduce to

$$xy = ab \dots\dots\dots(3),$$

and $x^2 + y^2 - (a+b)(x+y) + 2ab = 0 \dots\dots\dots(4).$

(4) may be written, with the help of (3),

$$(x+y)^2 = (a+b)(x+y),$$

which gives $x+y = a+b$ or $x+y = 0 \dots\dots\dots(5).$

From (3) and (5), we have

$$x = a, b \quad \text{and} \quad \begin{cases} x = \pm\sqrt{-ab}, \\ y = \mp\sqrt{-ab}. \end{cases}$$

QUESTIONS FOR SOLUTION.

17310. (Professor K. J. SANJANA, M.A.)—Denoting $\int_0^\pi \theta^k \log \sin \theta \, d\theta$

by I^k and $\frac{1}{1^r} + \frac{1}{2^r} + \frac{1}{3^r} + \dots$ by S_r , prove that

$$-I_k = \frac{\pi^{k+1}}{k+1} \log 2 + \frac{k}{2^2} \pi^{k-1} S_3 + \frac{k(k-1)(k-2)}{2^4} \pi^k S_5$$

$$+ \frac{k(k-1)(k-2)(k-3)(k-4)}{2^6} \pi^{k-5} S_7 + \dots$$

Also calculate approximately the value of I_k for $k = 1, 2, 3, 4, 5.$

17311. (C. M. ROSS, B.A.)—Show that the determinant

1	-1	0	0	0	0	...	0	0
1	1	-1	0	0	0	...	0	0
1	2	1	-1	0	0	...	0	0
1	3	3	1	-1	0	...	0	0
1	4	6	4	1	-1	...	0	0
...
1	$n-1$	$\frac{(n-1)(n-2)}{2!}$	$\frac{(n-1)(n-2)(n-3)}{3!}$	...	1	...	1	-1

of n rows formed from a Pascal's triangle and by filling up with zeros and -1 's is a positive integer and the coefficient of $x/n!$ in $e^{e^x-1}.$

17312. (A. M. NESBITT, M.A. Suggested by Question 13584.)—A man throws a die of $p+q$ faces continuously. Prove that the chance that, at any stage of the proceedings, the number of aces is to the number of not-aces as $1 : p-1$ is $p/(p+q).$

17313 (J. J. BARNIVILLE, B.A.)—(1) Resolve $x^{20} - 123x^{10} + 1$ into six rational factors. (2) Resolve $x^{10} + 661x^5 - 11^5$ into three rational factors.

17314. (Lt.-Col. ALLAN CUNNINGHAM, R.E.)—Let

$$N_1 = t_1^4 - 2u_1^2, \quad N_2 = t_1^2 - 2u_1^4, \quad N_3 = 2u_3^4 - t_3^2, \quad N_4 = 2u_4^2 - t_4^4.$$

Show how to find numbers N expressible in two, three, or four ways in some one of the above forms. Show that some of those numbers are also algebraically expressible in one or more ways in a second of those forms. Find the algebraic expressions, and give numerical examples.

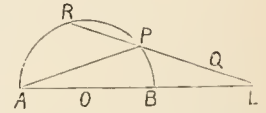
17315. (R. NORRIE, M.A.)—Solve algebraically the Diophantine equation $x^4 + y^4 = u^4 + 12v^4, \quad e.g., \quad 192^4 + 167^4 = 215^4 + 12 \cdot 2^4,$ and find the smallest solution.

17316. (F. G. W. BROWN, B.Sc., L.C.P.)—Solve simultaneously the equations:

$$xy + zw = a, \quad xz + wy = b, \quad yz + xv = c, \quad x^2 + y^2 - w^2 - z^2 = d.$$

Test the solution when $a = 71, \quad b = 61, \quad c = 59, \quad d = 79.$

17317. (R. F. DAVIS, M.A.)—Assuming that, if P is a variable point on a given circle (centre O), and AP, PL are equally inclined to a fixed diameter AOB , then the envelope of PL is a tricusp (three-cusped hypocycloid) circumscribing the given circle whose point of contact Q is found by taking $PQ = RP$, where R is the second point of intersection of PL , with the circle. Prove by means of this property (1) that tangents to a tricusp at right angles to each other intersect on the inscribed circle; (2) that the chord of contact of such tangents is itself a tangent to the curve, is of constant length (twice diameter), and has its middle point upon the circumference of the circle; (3) that the corresponding normals intersect at right angles upon the circle. [The Proposer desires the above property, first noted by him in 1884, to make now its first appearance in print.]



17318. (C. E. YOUNGMAN, M.A.)—On a fixed base BC let triangle ABC be isosceles; along BA and CA let $BF = BC$ and $CF' = \frac{1}{2}CB$, both on the same side of BC ; and let an ellipse with foci F, F' bisect BC . Prove that all such ellipses have a common tangent t , and that each touches twice the cardioide with cusp C and double tangent t ; the chord of contact also touching the cardioide.

17319. (W. F. BEARD, M.A.)— TP, TQ are tangents to a parabola. Prove that, if PQ passes through a fixed point, the locus of the circumcentre of the triangle TPQ is a parabola.

17320. (Professor R. SRINIVASAN, M.A.)— A, B, C, D are four points on an ellipse. If the line joining their mean centre to the circumcentre of the triangle ABC subtend a right angle at the centre, show that the sum of the eccentric angles of the four points is a multiple of four right angles.

17321. (H. C. POCKLINGTON, F.R.S.)—Show that any pentagon can be reciprocated into itself with respect to some conic.

17322. (Professor J. C. SWAMINARAYAN, M.A.)—Two circles, with radii a and β respectively, are described with a given point as the highest point so as to touch a given circle of radius r , externally and internally respectively. If the given point is at a distance δ from the centre of the given circle, show that $1/a - 1/\beta = 4r/(\delta^2 - r^2).$

17323. (A. W. H. THOMPSON.)—Let $a, b, c; a', b', c'$ be the angular points of two triangles, whose sides are $a, \beta, \gamma; a', b', \gamma'$ respectively. Lines λ_1, μ_1, ν_1 are drawn through a, b, c perpendicular to a', b', γ' respectively. Similarly lines λ_2, μ_2, ν_2 are drawn through a', b', c' perpendicular to a, β, γ respectively. If Δ_1, R_1 denote the area and circum-radius of the triangle $\lambda_1\mu_1\nu_1$, and Δ_2, R_2 the area and circum-radius of the triangle $\lambda_2\mu_2\nu_2$, show that $(\Delta_1/R_1)/(\Delta_2/R_2) = R/R'$, where R, R' are the circum-radii of the triangles $abc, a'b'c'.$

17324. (A. A. KRISHNASWAMI AYYANGAR, B.A.)— AQ, AN are two given straight lines. X, Y, Z are three given points. Two parallels YN, ZQ are drawn such that NQ passes through X . ZX meets YN in T . Then ZT/AN is independent of the direction of YN .

17325. (H. J. RAYMOND.)—A plane section at right angles to the parallel edges AD, BE, CF , of a prism, is an equilateral triangle ABC . Through a point P on AD a plane passes cutting the prism in PQR , such that the volume of that portion between the triangular sections ABC, PQR is constant, and the sum of the areas of PQR and one of the faces $ABQP, BCRQ, ACRP$, is a minimum. At what angle does AD meet the plane of PQR ?

17326. (Professor NEUBERG.)—Étant donnés, dans l'espace, une droite d , un plan P et un point Q , on projette un point quelconque M de d sur P en R . Trouver la surface engendrée par la perpendiculaire abaissée de R sur la droite QM .

17327. (Professor E. J. NANSON.)—If $0 < a < b < \frac{1}{2}\pi$, then $\cos(b+a) < \cos b, \quad \sin a/a < \cos(b-a).$

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OLD QUESTIONS AS YET UNSOLVED (IN OUR COLUMNS).

9759. (W. J. GREENSTREET, M.A.)—Find the curve in which the rectangle contained by the perpendiculars let fall from two fixed points on any tangent to the curve is equal to the square of the distance of this contact point from the join of the fixed points.

9854. (Professor SCHOUTE.)—Given the equations

$$\sum_1^6 g_i p_{i\pm 3} = 0 \quad \text{and} \quad \sum_1^6 g'_i p'_{i\pm 3} = 0$$

of two linear complexes; to find the equation of Plücker's conoid (Ball's cylinder).

10751. (Professor SYLVESTER.)—(1) Let M be any symmetrical matrix, D its determinant, S the sum of its principal first minors, M' what M becomes, when any line of elements in it is scored out, Σ the sum of the squares of all the complete minors in M' , D' the principal minor to M which appears in Σ , S' the sum of the principal first minors in the matrix to S' . Prove that $\Sigma = D'S - S'D$. *Ex. gr.*, let

$$M = \begin{vmatrix} a & h & g \\ h & b & f \\ g & f & c \end{vmatrix}, \quad M' = \begin{vmatrix} a & h & g' \\ h & b & f \\ h & b & f \end{vmatrix}$$

the theorem states that

$$(ab - h^2)^2 + (bc - f^2)^2 + (ca - g^2)^2 \\ = (ab - h^2)(ab - h^2 + bc - f^2 + ca - g^2) - (a + b)(abc - af^2 - bg^2 - ch^2 + 2fgh).$$

(2) Apply this theorem to prove that if Δ is the discriminant, in regard to λ of (M, λ) meaning thereby what M becomes, when λ is added to each term in its diagonal, the equation $\Delta = 0$ is, in general, the necessary and sufficient condition that the quadric function of which M is the determinant matrix shall be incapable of being transformed by any orthogonal linear transformations whatever (real or imaginary) into a sum of squares. Thus, *ex. gr.*, $x^2 + 2ixy + 3y^2$ cannot, by any orthogonal linear transformation whatever, be deprived of its middle term. (3) Show that, if $F = 0$ is the equation to a quadric surface (or any other such locus), and all the coefficients in F are real, the equation $\Delta = 0$ is the sufficient and necessary condition that such quadric surface (or other locus) shall be one of revolution.

11307 (G. F. HOWSE.)—Given three triangles in non-parallel planes, show that the necessary and sufficient conditions for the equation of a system of forces acting on a rigid body are that their moments round one side of the first triangle, two of the second, and three of the third should vanish

11553. (Professor CHAKRIVARTI.)—A given finite straight line is marked at random in three points; the chance that the square on the greatest of the four segments will not exceed the sum of the squares on the other three is $(12 \log 2 - \pi - 5)$.

11645. (R. KNOWLES, B.A.)—ABCDE is a pentagon inscribed in a conic; prove that the five points of intersection of AB, EC; EA, DB; ED, AC; DC and the tangent at A; BC and the tangent at E are collinear.

NOTICE TO CORRESPONDENTS.

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Thursday, April 11, 1912.—Dr. H. F. Baker, President, and temporarily Prof. A. E. H. Love, Vice-President, in the Chair.

Messrs. A. M. Grundy and M. Jaffee were elected members.

The following papers were communicated:—

Mersenne's Numbers: Lt.-Col. A. Cunningham.

A Modification of Liouville's Theorem: Mr. G. N. Watson.

Contributions to the Arithmetic Theory of Series: Messrs. G. H. Hardy and J. E. Littlewood.

Complex Binary Arithmetic Forms: Mr. G. B. Mathews.

An Application of the Theory of Integral Equations to the Equation $\Delta^2 n + k^2 n = 0$: Prof. H. S. Carslaw.

(i) Some Transformations of Kummer's Surface, and (ii) The Curves which lie on a Cubic Surface: Dr. H. F. Baker

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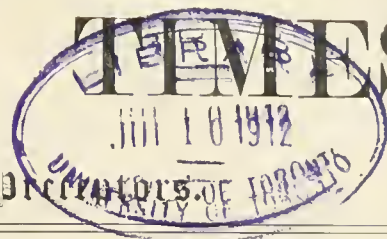
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Certificate Examinations.—The Christmas Examination for Certificates will commence on the 3rd of December, 1912.

Lower Forms Examinations.—The Christmas Examination will commence on the 3rd of December, 1912.

Professional Preliminary Examinations.—These Examinations are held in March and September. The Autumn Examination in 1912 will commence on the 3rd of September.

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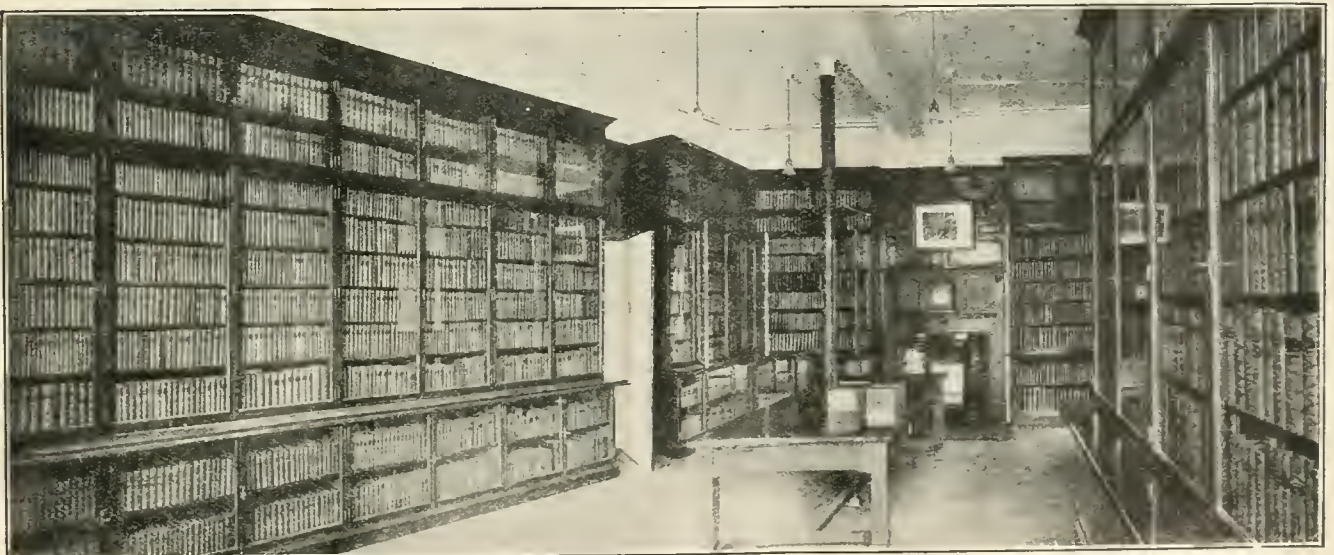
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The Educational Times.

DURING the past few years there has been a movement on foot in Germany in favour of the *Einheitsschule*—that, is a school that shall be open to all, and meet the needs of all. The promoters of the movement would like to see all the present distinctions among the different kinds of schools swept away—at least so far as the earlier stages of education are concerned—and in their place a set of uniform schools established that will provide a common groundwork for all kinds of higher education. The underlying motive is probably social and political rather than educational, for the arguments brought forward have a definite reference to the rigidity of the present social system in Germany. It is pointed out, for example, that there is as much difficulty in passing from one kind of German school to another as there is in passing from one social grade in Germany to another; and we are not left in doubt as to the cause-and-effect relation between the educational and the social system. Education is being used systematically to maintain the social *status quo*. It is remarkable to find that, just when a desire for the common school is springing up in Germany, there should arise a certain doubt among the Americans whether, after all, their common schools are just the sort of thing the Republic requires. If individual Americans are questioned on the matter, they almost invariably maintain with some heat that there is none of their institutions more firmly rooted in their national life, none more highly prized in their land, than the common school. But there is at least some uneasiness on the subject: else why does the President of one of the great Universities of America think it worth his while to defend these schools before the National Education Association in an address under the title "Call nothing Common." It would seem that social distinctions in the United States are, in some places at least, getting so well marked that there is beginning to be a demand for schools that are not "common."

At first sight it might appear that we in England stand somewhere midway between Germany and America in this matter. But, while it is true that our school scheme is much less rigidly systematized than is the German, there is at least one line of cleavage with us that is as sharp as anything to

be found on the other side of the North Sea. Up till quite recently there was an absolute gulf between elementary education and all forms of secondary education—a gulf that was both educational and social. In both France and Germany secondary education is not superimposed upon, but merely juxtaposed with, elementary, and up till the past few years the same was true of our country. Now by means of scholarships a sort of educational ladder has been set up to enable clever pupils to pass from the lower to the higher schools. But how little co-ordination there is between the two systems may be proved by the insistent demand of the secondary teachers to have pupils transferred to them at the earliest possible age. The longer the pupil remains at the elementary school, the less his chance of doing well at the secondary. It is tacitly assumed by the secondary teachers that the education is different in kind in the two classes of schools.

On the other hand, there are those who maintain that there is no reason why upper departments should not be added to elementary schools so as to carry on the elementary work to a secondary level, and that a higher elementary school need not differ radically from a secondary school. The conflict between the two views results in a curious change that is taking place in the connotation of the term "secondary" as applied to schools. Originally in England this term was applied to schools that were marked off from the elementary schools both by the social standing of the pupils and by the limitations of the curriculum. What a secondary school was did not come out very clearly—all that could be taken for granted was that it was not an elementary school. The elementary schools stood on one side, all the remaining schools on the other. Parliament itself supported the dichotomy and established the all inclusive term, schools "other than elementary."

Out of this welter has arisen a new type, the municipal secondary school, and it looks as if this type is going to monopolize the term "secondary." Especially among girls' schools two types are being generally recognized—high schools and municipal schools—the latter being more and more labelled as "secondary." The other day a professional man, writing to the newspapers about the cost of sending his girls to a high school, said that it really made him half make up his mind to "put his pride in his pocket and send them to the secondary school."

It is difficult to believe it, but the persistence with which teachers in municipal secondary schools make the complaint constrains us to accept it as a fact that quite a large proportion of parents believe that a secondary school is a secondary school. The mere sound of the word has misled them. So much in earnest are the teachers on the subject that many of them are doing all they can to get Municipal Authorities to drop the term altogether and adopt one that is free from the newly acquired connotation of "secondary."

By whatever name it is to be known in the future the municipal secondary school will make the nearest approach to the American common school, and those who are interested in democratic institutions will watch with great interest the development of this new type. It is quite certain that between the elementary and the new secondary schools there will be none of those fundamental differences that make it so difficult, at present, for the elementary pupil to pass into the full benefits of the secondary school. The girls' high schools and the well endowed boys' schools will retain their present social status whatever changes of educational method may be forced upon them. But between the more or less independent public secondary schools and the municipal schools there may be found a legitimate sphere for the private school. Signs are not lacking, indeed, that there may be an increased demand for such schools. There are already several high-class privately financed but semi-public schools, sometimes unkindly and unfairly nicknamed "freak schools," that are quite successful, and that have had the sincerest flattery from our French friends. Then many of our proprietary girls' schools are doing excellent work. English freedom cannot but gain by allowing private enterprise to do its best. Regulations may be required to see that the teachers are properly qualified and that the premises are all that they should be. But beyond this such schools must be allowed perfect freedom.

But freedom at the one end must not be balanced by paralysing restraint at the other. One of our daily contemporaries has been publishing a series of articles on the present discontents in elementary education. The *Machine* is again making itself prominent, greedily absorbing nutriment, and in return grinding out restrictions. Teachers are justly afraid that the deadening hand that has paralysed elementary education will soon be laid upon secondary. We accordingly welcome the remonstrances of a journal that speaks not in the name of the teachers, but of the public. If our elementary schools are ever to approach the dignity and importance of the American common schools, it must be through an extension of the present comparative freedom of the secondary schools rather than by an extension to the secondary schools of the deadening restraint that still prevails in the elementary.

NOTES.

It was very natural that the President of the Board of Education should "think the Board entitled to take some credit for the re-establishment of the Teachers' Registration Council." There will be no great inclination to dispute

awards of credit on the point, provided the business be carried out promptly and efficiently. We readily agree that it is most important that the Board should work in touch with the teachers, and that the Council will be a means of avoiding "those misunderstandings which have unfortunately taken place in the past"; at any rate, it will not be the fault of the Council if such difficulties as cannot be avoided are not dealt with intelligently and practically without wearisome delays. The tone of the President is sympathetic throughout, and, if it is not easy to agree with him at every point, it is something to know that he has had his eyes opened a bit since he went to the Board. The survey he presented to the House is an excellent summary. If we are not so satisfied as he is with the progress that has been made with our secondary education system, notwithstanding the numerous movements he enumerates, we can agree with him that "the great blot on the whole of our educational system" is the lack of continuity in the education of children after leaving the elementary school. Another blot, however, is the meagre remuneration of teachers in all the grades; and, with every acknowledgment of considerable advances in this respect, the position must be regarded as gravely unsatisfactory. It is time there were a Secretary of State for Education, with the knowledge and the capacity to frame and to work out a commanding scheme in harmony with the social developments of the age. It is bad business to content ourselves with going on pottering at such a vital department of State business, and with presenting a complacent survey of many doings that do not, after all, reckon up to much, just for lack of comprehensive grasp and of breadth of outlook.

APPARENTLY to the delight of the Senate (or at any rate of many not uninfluential members of the Senate) of the University of London, the splendid offers of some £300,000, more or less, have been withdrawn. No wonder they were withdrawn; such wonder as there is rises from quite another source. The Bloomsbury site, then, is presumably abandoned, and there is now some talk of buying out the Foundling Hospital. A good thing for the Foundling Hospital, which would thrive better in the country air miles from London. But who is going to buy the Foundling Hospital site for the impecunious and intractable University? And, though the Foundling site would be good in itself (though not susceptible of architectural demonstration any more than Bloomsbury—a point, however, of no moment), where would be the sense of setting down the administrative offices once more at a distance from the principal constituent College of the University? Let us ask also whether there would be any pressing need for new administrative offices if the red tape of the Imperial Institute were cut down to tolerable dimensions. Further, if money is to be spent in large measure, why not spend it upon the most urgent needs, which are the crying needs of portions of the teaching staff? We have said already, we imagine, that you cannot make a University out of bricks, however advantageously spread out in architectural array. The plain fact is that the whole question has not yet begun to be considered in any compre-

hensive or thorough scheme. Where is the guiding hand postulated by Mr. Carnegie (in his Rectorial Address at Aberdeen)—the strong guiding hand without which no successful business has ever yet been carried on?

MEANTIME the "friends" of the University are doing their best to rend it in twain. The fuss that is made about the external student would be amusing if it were not tragic. The internal side of the University, it may be safely affirmed, has not the slightest hostility to the external student. The examiners cannot discriminate between internals and externals when they have no means of knowing which is which; and, where there are distinct external and internal degree examinations in the same subjects, there is not the slightest difficulty in making the test substantially equal in the two cases. When the internal examination is alleged to be cheaper than the external, we advise that the external examiner's report be produced: that would promptly stamp out the ridiculous allegation. The Education Committee of the County Council is perfectly right in recommending that no candidate for a degree (outside medicine) "should suffer any disability in consequence solely of his being able to attend classes only in the evening"; that the University should make adequate provision of evening classes of University grade within the County of London; and that degrees of all sorts (excepting always in medicine) should be conferred "on the results of examinations only, without regard to the course of training." Nobody disputes that. But the externalist champions must also allow the internal work to develop without hindrance or baseless recrimination. Happily the difficulties are not raised by teachers or by examiners, and it is high time to bring the complaints of others to the test of strict investigation.

MOST colleges have a hard time of it, but scarcely any other has such a trying ordeal as the Hartley University College. One can hardly recall a time when it was not struggling, and even threatened with extinction. Now, let us hope, it is set on its legs with a reasonable degree of firmness. For the Town Council of Southampton the other week, in the face of a recommendation of a committee of its own, decided to guarantee a further £10,000 and a penny rate to Hartley College. The majority—22 to 20—was perilously narrow, but it suffices. An onlooker is not impressed by the liberality of the wealthy people of the neighbouring counties, though it is gratifying to note that some £18,000 has been promised outside the County Borough of Southampton. We trust, with the *Bournemouth Guardian*, "that under its new scheme and regime the College will prove to be a useful auxiliary and aid to education and rejoice in a long and prosperous career."

In a paper read before the Statistical and Social Inquiry Society of Ireland, and now reprinted, Mr. F. W. Ryan examines the school attendance under the Irish Education Act of 1892. The school age is six to fourteen, and one-sixth of the nation

come under the Act. The normal school year consists of 44 weeks, or 220 school days, and the required attendances are 150 a year—a very meagre and practically disastrous requirement, for there is nothing to prevent a child from being absent for weeks at a stretch and yet satisfying the test. Mr. Ryan finds that the latest figures available are these:

Of the 679,435 children on the rolls, 57,859, or 8.5 per cent., put in under fifty attendances; and 74,390, or 11 per cent., under a hundred attendances in the year ending December 31, 1910.

Let us go to the other extreme. Only 27,095, or 4 per cent., attended more than two hundred days in the year. . . . Out of the 679,435, only 322,089 in the first half-year of 1910 put in seventy-five or more attendances, and the corresponding number for the second half-year was 240,715. Of these, 116,733, that is to say, roughly, over a sixth of the future nation, are turned out hall-marked as "educated," who only in fact have complied with the Act by a hundred and fifty attendances.

The bad effects of this non-attendance extend materially to the children that do attend, through dislocation of the class work, and must tell heavily upon the teachers, while the loss to the absentees is only too obvious. The juvenile Irish temperament may resent compulsion, but such a state of school administration is plainly preposterous. "Mr. Graham Balfour, the educationist, estimated, not ten years ago, that one-eighth of the Irish people were illiterate." "It should be noted that the Education Office has power to make by-laws for school attendance where, in England, the Local Authority fails to do so, but that apparently no such power is exercised by the Irish Board of Education."

SUMMARY OF THE MONTH.

IN the House of Commons (June 13) Mr. KING (Somerset, N., Min.) asked the President of the Board of Education whether he could state how many inspectors of elementary and higher education respectively had been appointed during 1912; how many were graduates of Oxford or Cambridge; and how many had had teaching experience in elementary or higher schools.

Mr. J. A. PEASE (Yorks, W.R., Rotherham): Fourteen inspectors of elementary education have been appointed by me since January 1912, and ten of these have had experience in elementary schools. I have appointed nineteen inspectors of other schools, all of whom have had teaching experience, three of them in elementary schools. Out of the thirty-three four are graduates of Oxford and four of Cambridge.

SIR PHILIP MAGNUS (U., London University) asked the President of the Board of Education whether the royal charter granted to the Imperial College of Science and Technology imposed on the governing body of the college an obligation to carry on the work of the Royal College of Science, London; and, if so, whether that obligation would be consistent with the restriction of the teaching at the Imperial College to post-graduate research work.

Mr. J. A. PEASE: The answer to the first part of the question is in the affirmative so far as the purposes referred to in Article 2 are concerned. When there is any proposal on the part of the governors to confine the work to post-graduate research a question of the interpretation of the charter will arise, on which I may have to express my opinion as visitor on behalf of the Crown. Until then I do not think I should be called on to answer the question.

As explained in the memorandum accompanying the Continuation Schools Bill, the object of the measure is to make school attendance compulsory for all children not exceeding fourteen years of age, and also to make attendance at day continuation schools compulsory for all children whose age exceeds fourteen but does not exceed seventeen years, who are not otherwise being systematically educated. The minimum attendance demanded at continuation schools is fixed at eight hours per week, and employers are placed under penalties to allow their due attendance

of the continuation scholars in their employ. No fees are to be charged. Local Education Authorities are allowed to co-opt local employers for the purposes of the administration of the measure. The system of continuation schools which this Bill seeks to enact is almost the same in detail as that which is in successful operation in Munich. The cost of carrying out the provisions of the Bill is made a national charge. The Bill is presented by Mr. Chiozza Money, and "backed" by Mr. Alden, Mr. Ellis Davies, Mr. Robert Harcourt, Mr. Arthur Henderson, and Mr. Whitehouse.

THE Board of Education gave notice by Circulars 747 and 772 (May 2, 1910, and May 5, 1911), that Article 38 of the Regulations for Secondary Schools would not necessarily be continued indefinitely in its present form. The chief objections that have been brought against the Article are: that it has proved capricious in its working; that, inasmuch as the demand for women teachers is greater than that for men, it has placed boys' schools at a disadvantage; that the conditions are too rigid in view of the financial loss involved in a slight failure to comply with them; and that these objections have been accentuated by the marked and continuous decrease in the number of secondary school pupils intending to become teachers in public elementary schools. The Board have always regarded this particular application of the funds at their disposal as experimental, and, being now satisfied that the money available under the Article may with greater advantage be utilized in other ways, have decided (Circular 796, May 8) that Article 38 shall be withdrawn as from July 31 next, and that from that date no further grant will be paid to schools under the present provisions of the Article. The Board hope to communicate at an early date with the Authorities and schools concerned as to the arrangements which it is proposed to make for the disposal of the money set free by the withdrawal of the Article.

THE Chancellor of the Exchequer, with whom were the President of the Board of Education and Mr. C. F. G. Masterman, received a deputation representative of secondary and technical teachers in England and Wales (May 9). The deputation was introduced by the Right Hon. A. Dyke Acland, formerly head of the Education Department, and included Mr. J. F. P. Rawlinson, M.P. for Cambridge University. Mr. Acland pointed out that elementary teachers possessed a complete pension system, and that a beginning had been made for University teachers by setting aside for pensions £10,000 of the recent £50,000 to the Universities. He drew attention to the responsibility of the State for secondary education, both with regard to State inspection and State aid. It was essential to complete a national pension system by providing pensions for secondary and technical teachers. Mr. Lloyd George, in reply, said: "I have consulted with my colleagues, and a scheme has been considered at the Board of Education. My position is, perhaps, the more difficult one of finding the cash. We are prepared to meet you to a certain extent. I am quite prepared to assist my colleague in finding the cash for the purpose of working out a scheme of superannuation as far as grant-earning schools are concerned. When the scheme is formulated I will see exactly what it costs. I am prepared, as Chancellor of the Exchequer, to recommend the Government to meet substantially the claim which is made here to-day, subject to one or two exceptions." Mr. Rawlinson, in thanking the Chancellor of the Exchequer on behalf of the deputation for his sympathetic and encouraging reply, said that a compulsory pensions scheme would be impracticable without the assistance which the Treasury had indicated it would give—viz. £1 for each year of recorded service.

For some ten years the Library Association has been carrying on a system of technical training and examination in the different branches of library economy and the science of books. It has held lectures at the London School of Economics, the British Museum, and other London and provincial institutions, and has conducted a series of correspondence classes for the annual examinations, which have been attended during the last few years by an average of more than three hundred candidates. Encouraged by the success of the correspondence classes, the Education Committee now invite the general public to enter for these courses. Among the subjects treated are classification and cataloguing, the history and administration of libraries, and literary history and bibliography.

UNIVERSITIES AND COLLEGES.

A DEPUTATION, consisting of Profs. Gilbert Murray, Sir William Osler, J. A. Smith, and H. H. Turner, Dr. A. J. Oxford. Carlyle, and Messrs. Sidney Ball, H. A. L. Fisher, D. G. Hogarth, and A. W. Pickard, Cambridge, had an interview with the Chancellor (Earl Curzon) on June 7. The deputation represented the signatories to a memorial for a University Commission urging that the Commission should inquire into such changes as the conditions of the present time may suggest in regard to (a) the constitution and legislative machinery of the University; (b) the administration of the resources of the University and the Colleges: with a view to the better organization of teaching and research and the increased efficiency of the University. The proceedings were confidential, but the Chancellor has subsequently declared against a Commission.

(From our own Correspondent.)

ANOTHER May term has gone. Hardly have the guests taken their departure when two sad events have cast a gloom over the place: two typical Cambridge men have passed away. Elsewhere we have seen long accounts of academical successes and brilliant records, but in these notes the writer may speak of our loss from a different standpoint. The Master of Caius, Mr. E. S. Roberts, was taken suddenly ill while encouraging his college boat in the May races, and after a few days' struggle has passed away. It may fairly be said that Mr. Roberts absolutely devoted his life to the interests of his men and his college: he built up its success, and he looked for no further reward than its advancement. Though he played no insignificant part in University life, yet it was his deep and lifelong attachment to the college ideal that will make him remembered with regret and affection by the generations of Caius men who have passed through his hands. There was not a single department of college life in which his influence was not felt. By the death of Prof. Verrall, scholarship and literature have lost much, but that fact is patent to the world. The writer of these notes wishes to speak of Dr. Verrall's work as a college tutor: courtesy, sympathy, and kindly service were always at the disposal of his men, and all over the world Trinity men will hear with grief of the death of one who, without loss of dignity as an official, proved himself the trusted friend and adviser of his pupils. Others he spared, but never himself. For years the Professor has been an invalid in body but not in brain, and he has borne his sufferings with heroic fortitude. Such are the men who have made Cambridge what it is.

Another personal note. The resignation of the Pembroke Mastership by Canon Mason has been followed in due course by the appointment of Mr. W. S. Hadley. As a college tutor Mr. Hadley has been successful. Pembroke has increased in numbers and in athletic prestige, and doubtless will maintain that high place among colleges to which it may now fairly aspire.

The end of the May term is always a time of rejoicing mixed with regrets: we cannot all pass, and if we do we have to go out into the world as a necessary consequence. This is perhaps the secret of the peculiar attractions of our May festivities. To celebrate successes or to wipe away dull care the gaieties of the "week" are equally potent. Concerts, dances, balls, and garden parties—of these we have had our fill. Fortunately, most of the lists are out before the carnival begins, but some men are unfortunate enough to have their trials on during the festive week, while Little-go candidates have to wait till Cambridge is deserted before they try their luck against the examiners.

There is not the smallest doubt that some rearrangement of the dates of our Triposes is necessary; the last weeks of the May term are absolutely the worst time for trials upon the result of which a man gets a label which will make or mar him for life. Everyone sees this, but nobody moves.

The honorary degrees have this year been practically omitted: rumour has it that, like peerages, they are getting too cheap. *En revanche*, ex-Prof. Waldstein has been dubbed a knight, just as a beginning.

The new Vice-Chancellor is Dr. S. A. Donaldson, of Magda-

lene. He will doubtless fill the chair with efficiency and dignity. We have been singularly fortunate in our Vices lately.

The May races were very exciting; only on the last night were Jesus able to displace First Trinity from the headship. The Fairbairn school of "leg-drivers" at last saw the fruition of their hopes. The lessons which "Duggy" Stuart tried to teach Cambridge rowing men are at last taking effect.

Alarums and excursions anent University reform have aroused many this term: petitions and counter-petitions to the Prime Minister all about nothing have been presented, and it is at any rate arguable that both petitioners and abhorrrers are thinking as much about their own sordid interests as of the interests of the youth of the country for whom (in part at any rate) the Universities are deemed to exist. Both sides ignore two patent facts: (1) that the expenses of a Cambridge education are unjustifiably high, college bills for necessities being roughly 30 per cent. higher than they ought to be; and (2) that the present system practically makes the possession of a fellowship the necessary prelude to teaching offices. These are the blots on our Cambridge organization. In places where a free hand is given, as in the medical and engineering schools, things are quite different. Two-thirds of our residents are presumably Free Traders in Imperial politics, but hardened Protectionists where vital University issues are concerned.

It is supposed that we are going to lose the cricket match through weakness in the bowling department. We shall see.

It is stated in the report of the Finance Committee of Edinburgh University that the Funds now amount to nearly £364,000. The number of matriculated students for the year 1910-11 is the highest since 1890; the increase in the number of students in the Faculties of Arts and Science more than makes up for the decrease in the number of students in the Faculties of Divinity, Law, and Medicine. The total number of students for the year 1910-11 was 3,367, as compared with 3,279 for 1909-10. There is an increase in the total funds of £27,078.

WE (*Medical Press*) learn that the authorities of University College, Dublin, have determined to build college premises without further delay, and have invited architects to submit plans. It is now four years since the Universities Act became law, and during that time the college staff has had to teach under great difficulties. Some of the classes were held in the premises of the Royal University, now the property of the College, some in the former premises of University College in St. Stephen's Green, and some a mile away in the Cecilia Street School of Medicine. There has been considerable discussion as to the best site for the new buildings, and many hoped that it would be possible to obtain a country site, where extensive playing fields would be available. The inconveniences of a location at a distance from the city would, however, be very great, and the Governing Body is doubtless right in its decision to build in the city. With great generosity Lord Iveagh has placed at their disposal a suitable piece of ground adjoining the Royal University buildings. By availing themselves of this offer the college authorities will have their buildings conveniently situated in a central site of the city.

THE attendance at German Universities, says *Nature*, forms the subject of an article by Mr. R. Tombo, jun., in the issue of *Science* for April 26. Mr. Tombo analyses the statistics given in the *Deutscher Universitäts-Kalendar* for the summer semester of the present year. There are 57,398 students in German Universities, as contrasted with 57,200 for the preceding summer semester. This is, however, exclusive of 5,563 auditors, who, if added, would run the grand total to 62,961, as against 61,274 during the summer semester. The University of Berlin continues to lead the list with an enrolment of 9,829 matriculated students. The University of Berlin is followed by the University of Munich, with an enrolment of 6,797 matriculated students and 782 auditors. The University of Leipzig ranks third with 5,170 matriculated students and 925 auditors. Of the remaining Universities, Bonn, Breslau, and

Halle each have more than three thousand students; Göttingen, Freiburg, Heidelberg, Münster, Strasburg, and Marburg each have more than two thousand, and all the other Universities, except Rostock with 955, have each more than a thousand students. Of the total number of students in German Universities, 52,435 are from Germany, and of the remainder 160 only are from the British Isles.

THE EDUCATIONAL LADDER.

BRADFIELD COLLEGE.—Foundation Scholarships.—In Classics: A. J. Arkell (Mr. E. H. Parry, Stoke House, Stoke Poges), J. B. Dalison (Mr. A. S. Tabor, Cheam School, Surrey). In Mathematics: R. H. Reid (Mr. J. Barthelemy, Douglas Grammar School, Isle of Man). Major Exhibition in Classics and Mathematics: F. L. Kingdon (Mr. W. A. Walker, Upcott House, Okehampton). Minor Exhibitions: F. W. Smith (Mr. A. M. Kilby, Lindisfarne, Blackheath), A. Whitmore (Mr. H. Frampton Stallard, Heddon Court, Cockfosters, East Barnet), E. F. Robson (Mr. W. Storrs Fox, St. Anselm's, Bakewell), G. P. Keef (Bradfield College), H. L. Batty Smith (Bradfield College), C. G. Clarke (Mr. M. E. Wilkinson, Aldeburgh Lodge, Aldeburgh), J. B. Garside (Mr. J. Barthelemy, Douglas Grammar School, Isle of Man), G. N. Trace (Mr. G. H. Gowring, St. Bede's, Eastbourne), R. S. Lewis (Mr. E. Cotgreave Brown, Amesbury School, Bickley Hall, Kent), A. B. Smith (Mr. S. S. Harris, St. Rouan's, Worthing).

CANTERBURY: KING'S SCHOOL.—Junior Foundation King's Scholarships: G. L. D. Davidson, G. W. M. Burton, A. Lindsey, all of the King's School. Probationer Foundation King's Scholarships: P. J. F. Cooper (Rev. G. Cooper, St. Philip's, Conway), F. K. Stranack (Mr. Hayman, Beckenham), A. G. Cole (Mr. Faulkner, Purley), A. V. T. Dean (Junior King's School), R. E. Page (Rev. E. Browne, Bracknell), J. E. Scantlebury (Junior King's School). Entrance Scholarships: L. H. Thomas (Rev. S. Shilcock, Kenley), P. J. F. Cooper, R. E. Page, F. K. Stranack, A. G. Cole, F. R. G. Shephard (Mrs. Edwards, S. Godstone), W. West (The College, Herne Bay), L. Dade (Mr. Hayman, Beckenham). House Scholarship: C. E. V. Philipps (King's College Choir School).

CAMBRIDGE UNIVERSITY.—Harkness Scholarship: W. B. R. King, B.A., Jesus.—Wiltshire Prize: not awarded.—Frank Smart Prizes: M. J. Le Goc, B.A., Non-Coll. (Botany); F. Kidd, St. John's (Zoology).—Craven Studentship: M. S. W. Laistner, Jesus. Grant of £50 each: G. E. K. Brannholtz, B.A., Emmanuel, and R. Gardner, B.A., Emmanuel.—Tiarks Scholarship (German): H. J. Benoly, B.A., Scholar of Christ's.—Prendergast Studentship (Greek): C. A. Scutt, B.A., Clare (and Wakefield Grammar School).—Charles Oldham Classical Scholarship: F. W. Haskins, B.A., Trinity (and Charterhouse).

There are 29 wranglers this year, including two women. They are (in alphabetical order): J. H. Clarke, St. Paul's and Trinity; A. G. Clow, Merchiston Castle, Edinburgh, and St. John's; J. H. Cole, Gresham's Holt, and St. John's; E. M. Daltroff, Owen's, Islington, and Queens'; R. A. Fisher, Harrow and Caius; R. A. Frazer, City of London and Pembroke; P. J. Grigg, Bournemouth and St. John's; O. H. Grove, Sutton Coldfield and Christ's; J. Jackson, Paisley, Glasgow University, and Trinity; F. C. Johnson, Leeds Grammar and Sidney Sussex; G. J. Lamb, East London College and Trinity; A. W. C. Mitchell, Aberdeen University and Caius; F. M. Morris, Manchester University and St. John's; J. L. Naylor, King's School, Chester, and Peterhouse; J. Proudman, Liverpool University and Trinity; S. V. Ramamurty, Madras University and Trinity; F. Sandon, Owen's, Islington, and Corpus Christi; M. Segal, St. Paul's and Clare; B. M. Sen, Presidency College, Calcutta, and King's; F. C. Stephen, Aberdeen University and Emmanuel; C. A. Stewart, Glasgow University and Trinity; S. H. Thomas, King Edward School, Birmingham, and Pembroke; G. P. Thomson, Perse and Trinity; H. Townshend, King's, Canterbury, and Trinity; C. W. Tregenza, Truro College and Downing; D. J. Watson, High Wycombe Grammar School and Clare; W. C. S. Wigley, King Edward School, Birmingham, and Emmanuel; the two lady wranglers being E. R. Behrman, Cape University and Newnham, and I. B. Pypier, Girton. There are 18 men and 7 women Senior Optimes, and 9 men and 7 women Junior Optimes. Mr. G. P. Thomson is a son of Sir J. J. Thomson, the distinguished physicist. Mr. J. Jackson is awarded the Tyson Medal for Astronomy and allied subjects: he had previously gained the Sheepshanks Astronomical Exhibition at Trinity. Mr. Ramamurty has been a contributor to our mathematical columns.

Downing.—Foundation Scholarships: W. F. Armstrong, N. Back, and J. D. Fisher, Natural Sciences; M. M. Lewis, Law. Minor Scholars, elected or re-elected: A. E. Neales, £40; P. S. Ham, £40; H. L. Stevens, £40; Cunningham, £40; C. M. Jones, £30; W. H. Ehrhardt,

£40; F. H. Monekton, £40; and R. A. Woodhouse, £40. Exhibitions of £40: G. R. Ball and C. C. Thacker.

Emmanuel.—Scholarships of £60: E. D. Marris, W. H. Milburn, £40; A. J. Brearley, B.A., J. L. Davies, B.A., H. G. Dennehy, B.A., W. A. Nowers, B.A., F. W. Wallace, B.A., E. J. Wilson, B.A., J. Almond, H. G. Dorrell, J. Macdonald, S. R. Prall, C. E. Wurtzburg. Thorpe Scholarships of £30: L. W. Jones, E. D. Tongue.

Jesus.—Elected or re-elected to Foundation Scholarships: E. M. Aron, £50; G. M. Bradley, £40; W. J. G. Hands, £40; W. B. R. King, £40; H. D. L. Minton, £60; J. P. Moffitt, £40; H. G. Vincent, £60. Rustat Scholarships: A. E. Aldous, £60; G. E. Cuffe, £60; G. Y. Loveband, £40; H. L. Tyndale-Biscoe, £40; G. G. Webster, £40. Exhibitions: J. B. Calkin, £30; L. L. Loewe, £40; I. A. Mack, £30; P. J. Richardson, £30; T. A. C. Rubie, £30. Gairford Scholarship: H. Burnaby. Tew Scholarship: H. B. Salmon. Somerville Scholarship: S. Wadsworth.

King's.—Elected to Eton Foundation Scholarships: F. McM. Hardman, G. C. T. Giles, and E. W. Armstrong, Classics; R. S. Clarke, Natural Science; R. L. Creasy and G. W. Deighton, Classics. Open Foundation Scholarships: C. O. F. Jenkin, Natural Science; H. G. Alexander, History; F. K. Bliss, Classics; A. A. Fundukian, Modern Languages. Vintner Exhibitions: A. W. Graveson, Natural Science. Price Exhibitions: C. Wahnsley, Mathematics; and W. J. Oatfield, Classics.

Magdalene.—Scholarships: L. H. Stern, A. E. Collier, W. Fairley, and T. J. Y. Roxburgh, £40 each.

Queens'.—B.A. Scholars: G. Storey, £40; E. M. Daltroff, R. Taylor, J. T. Scott, S. J. Cowell, P. A. Tharp, R. A. Marsh, F. A. Redwood, S. R. Gibson, and A. Jephcott, £25 each. Foundation Scholars: A. D. Hayward, £45; N. Miller, £40; M. Thompson, £45. Minor Scholars: E. W. Hickie, F. R. W. Hunt, and H. J. L. Leigh-Clare, £50 each; C. A. Duke-Baker, £40; G. R. Sandford, £45; H. D. Anthony, £40; O. H. Williams, £40.

St. John's.—Open Exhibitions: W. E. Palmer, Bishop Stortford, £75, for Natural Science; N. Grice, Bradford Grammar School, £50, for Natural Science; D. A. G. Ryley, St. Olave's, £30, for Classics. Sizarships: E. L. Lloyd, Aldenham; N. B. Hudson, St. Edward's, Oxford; G. E. Smith, Wilson's Grammar School, Camberwell. Close Exhibitions: J. H. Burrell, Durham; W. J. Chambers, Sutton Valence; H. J. Goolden, Shrewsbury; T. Millward, Hereford; W. T. Williams, Bury. Foundation Scholarships: H. Jeffries, E. M. Maccoby, F. M. Morris, T. H. Sharp, G. N. L. Hall, F. L. Engledon, A. T. Hedgecock, W. G. Palmer, N. D. Coleman, D. G. Garabedian. Exhibitions: C. W. T. Hook, W. Saddle, H. B. Shivdasani, J. E. P. Wagstaff, E. V. Appleton, J. B. Sullivan, T. Trought, H. L. Gwynne. Hutchinson Studentship: W. W. P. Pitton. Slater Studentship: F. Kidd. Naden Divinity Studentships: J. W. Gleave, F. P. Cheatham, E. E. Raven. Hughes Exhibition: N. D. Coleman.

Sidney Sussex.—Studentship of £100 for Chemical Research: E. J. Holmyard. B.A. Scholarships: F. C. Johnson and V. C. Hling, £60 each; W. Buddin, £40. Scholarships: K. V. Hamitsch and N. S. Hewitt, £40 each. Exhibitions: L. S. Gathergood, J. Hall, A. V. O'Keefe, T. C. Rapp, and H. R. Simpson, £30 each. Barcroft Exhibition: C. K. H. Wyche.

Trinity Hall.—Fellow: John E. S. Green, B.A., Peterhouse.

CHELTEMHAM COLLEGE.—Entrance Scholarships: A. B. Whithy (Mr. Soames, Suffolk Hall, Cheltenham), £80*; J. R. T. Aldous (Messrs. Biddle and Barton, Wilslesh House, Kensington), £50; W. F. N. Churchill (Mrs. Wolsey White, Marlborough House, Hove), £30, with Jex-Blake Army Scholarship, £20; J. A. S. Jackson (Mr. Dobie, Moorland House, Hieswall), £30, with Old Cheltonian Scholarship, £20; J. M. B. Chicheley Plowden (Mr. Richardson, Beadesert Park, Henley-in-Arden, James of Hereford Scholar), £35; P. G. Henderson (Mr. Risley, The Hall, Sydenham), £30; A. L. Hovenden (Mr. Phillips, The Old Ride, Bournemouth), £30; W. Hume-Rothery (Mr. Soames, Suffolk Hall, Cheltenham), £20*; R. H. B. Longland (Mr. Gurney, Brandon House, Cheltenham), £20; H. K. Prescott (Mr. Gurney, Brandon House, Cheltenham), £20*; O. L. Roberts (Mr. Cotgreave-Brown, Bickley Hall, Kent), £20; G. N. Rodnan (Mr. Waterfield, Temple Grove, Eastbourne), £20; W. N. Roe (Mr. Royle, Stannore Park), £20; R. J. C. Shipley (Portsmouth Grammar School), £20*; S. C. G. Young (Mr. Vaughan Pott, Parkside, Ewell), £20; M. F. T. Baines (Mr. Royle, Stannore Park, Old Cheltonian Scholar), £20. Scholarships awarded to boys already in College: E. E. G. L. Searight (Southwood Scholar), £80*; C. M. Bowra, £50; J. A. Graham, £40, with Dobson Scholarship, £20; R. C. D. Moore, £30*; N. J. G. Russell, £30*; K. G. Hay, £30; H. L. H. Du-Boulay, £20*, with Francis Wyllie Scholarship, £20; E. G. Pottinger, £20; C. C. S. White, £20. [* In the case of day boys, the value of an ordinary scholarship is reduced by half.]

DUBLIN, TRINITY COLLEGE.—Fellowship: Rev. Arthur A. Luce. Madden Prize and £60: Joseph Johnston. Fellowship Prizes: £60, J. M. Henry; £40, N. B. White; £30, T. P. O'Nolan; £20, C. B. Armstrong. Mathematical Scholars: James Woodside, Margaret A. Webster, J. M.

Meade, T. J. McClure, J. P. Lavery, C. G. White. Classical Scholars: Max Nurock, F. V. Wylie, Elsie R. Patton, M. C. Noble, S. W. Jamison, O. E. Venables, R. Boyd, C. Ellis, C. S. Mullan. Experimental Science Scholars: R. Fleming and W. J. A. Moore. Modern Languages Scholars: Kathleen A. Lewis, W. A. Dillon, Mary S. H. Kilroe.

DURHAM SCHOOL.—King's Scholarships: A. Clatworthy (Mr. Wilkinson, Newcastle-on-Tyne), £40; G. T. W. Crawhall (Durham School and Sea Bank, Almouth), £25; F. E. P. Langton (Durham School and Mr. Benson, Filey), £25; H. C. Ferens (Durham School and Mr. Castley, Durham), £16 16s.

DURHAM UNIVERSITY.—Long Reading Prize: G. N. Bacon, St. Chad's Hall, and T. Redfern, St. John's Hall, equal.

LONDON UNIVERSITY.—Lindley Studentship (Physiology), £100: P. E. Lander. University Studentship in Physiology, £50: Evelyn E. Hewer, B.Sc., Bedford College.

Bedford College for Women.—Reid Fellowship in Science (renewed for third year): Helen Pixell, B.Sc., Demonstrator in Zoology at Bedford College, to enable her to complete her researches begun in Vancouver last year. Fellowship in Arts (for session 1912-13): M. H. Mills, B.A. (Historical Research).

MALVERN COLLEGE.—Entrance Scholarships—Senior: H. G. Nelson (Mr. Stallard, Heddon Court), T. A. C. Oliver (Mr. A. C. Allen, Malvern), S. N. Browne (Mr. Hickman, Wellington, Salop), J. B. Knoeker (Mr. Grant, Putney). Minor: J. C. B. Wakeford (Mr. Hardeman, Liverpool), W. Pakenham-Walsh (Mr. Waterfield, Eastbourne), A. B. Bushby (Mr. Hardeman, Liverpool), W. A. Pembroke (Mr. Kilby, Blackheath), C. R. Harington (Mr. Frederick, Malvern Wells), F. K. Stranack (Mr. Hayman, Beckenham), C. D. Mattox (Mr. Stoney, Wootton Court).

MARLBOROUGH COLLEGE.—Scholarships Examination—Senior Classical:—R. Y. T. Kendall, Marlborough College; A. C. V. de Candole, Marlborough College; A. Ross, Marlborough College. Ireland: S. Bell (Honorary), Marlborough College; R. G. B. Farrar, Marlborough College; honourable mention: A. L. Holland, Marlborough College. Senior Modern: A. W. Gordon, Marlborough College; honourable mention: A. C. Pochin, Marlborough College. Senior Mathematical: J. H. Addenbrooke, Marlborough College. Authors: A. N. Rücker, Marlborough College. Junior: N. C. Harrison, Marlborough College; A. L. Maycock, Rev. J. Bullick, Marlborough House, Hove; C. Crutenden, Mr. Grenfell, Mostyn House, Chester; W. C. Streatfield, Mr. Elliott, Braidle, Stoke-Bishop; H. M. Eyres, Mr. Pellatt, Durnford House, Wareham; C. R. Waller, Mr. Palmer, Hill House, St. Leonards; H. B. Watson, Mr. Gruggen, Hinwick House, Wellingborough; honourable mention: J. P. Bardsley, Marlborough College. Modern School Junior: E. H. C. Frith, Marlborough College; honourable mention: C. H. Coxé, Marlborough College.

OXFORD UNIVERSITY.—Hertford Scholarship: Charles E. S. Dodd, Exhibitioner of Balliol. Distinguished: C. B. Moss-Blundell, Scholar of New College, and Frank Whittle, Scholar of Balliol.—Conington Prize: Marcus M. Tod, M.A., Fellow of Oriel. Distinguished: W. M. Calder, B.A., Brasenose, and W. R. Holiday, B.A., New College.—Boden Scholarship for Sanskrit: M. H. B. Lethbridge, B.A., Scholar of Christ Church; highly commended, Godfrey F. S. Collins, B.A., Exhibitioner of Christ Church.—Abbott Scholarship: Henry A. H. Bren, Exhibitioner of Oriel; *proxime accessit* W. D. Wilkinson, Bradford School.—Chancellor's Prizes—Latin Essay: G. L. Marriott, Scholar of Exeter; Latin Verse, no award. English Essay: David Ogg, late Scholar of Lincoln.—Newdigate Prize: W. C. Greene, Balliol (Rhodes Scholar).—Gairford Prizes—Greek Verse: T. F. Higham, Scholar of Trinity; *proxime accessit* Godfrey R. Driver, Scholar of New College. Greek Prose: C. J. Ellingham, Scholar of St. John's.—Charles Oldham Prize: M. R. Ridley, Exhibitioner of Balliol.

Christ Church.—Holford Exhibition, £60: J. N. Le Fleming, Charterhouse. Fell Exhibition: H. G. Burford, Commoner of the House. Boulter Exhibition, Irvine F. Belser, Rhodes Scholar of the House.

Exeter.—Tutorial Fellowship: Geoffrey C. Cheshire, B.A., Merton.

Magdalen.—Academical Clerkship: E. C. Dunstan, Radley College.

Pembroke.—Tutorial Fellowship: R. G. Collingwood, Scholar of University College. Theodore Williams Scholarship for Medicine (£100): J. L. Maddox, Science School, Bournemouth. Foundation Scholarship for Modern History (£80): E. K. O. Fergusson, Berkhamsted School. Exhibition for Modern History (£40): W. E. Marler, Mill Hill School. Oudes and Stafford Scholarship for Classics (£80): A. Raisman, Leeds University. King Charles I Scholarship for Classics (£80): R. W. Sterling, Sedburgh School. Bishop Morley Scholarship for Classics (£80): R. B. J. Marx, City of London School. Foundation Scholarship for Classics (£72): A. A. Cullen, Christ's Hospital. Exhibition in Modern History (£40): W. D. Bryars, King Edward VII School, Sheffield.

University.—Parker Scholarship in Modern History: W. E. Marler, Mill Hill School.

TEACHERS AND THE INSURANCE ACT.

TEACHERS may, broadly speaking, be very clearly defined to be "employed persons," or contributors, within the meaning of those phrases, for the purposes of National Insurance. Many thousands of them will, in consequence, be brought compulsorily into the scheme, and will have to pay weekly, the men 4d. and the women 3d., or—if the employer pay full wages for six weeks of illness—the men 3d. and the women 2d. The grounds of exemption are comparatively few. They may be conveniently summarized thus: (1) Income over £160 a year (£3 a week); (2) Pension of £20 a year; (3) Inclusion (elementary teachers) in the Superannuation Act of 1898, or the London County Council superannuation; (4) Employment under local or public authority, with "not less favourable terms" for benefit than under the Act.

In connexion with the first of these grounds, it may be well to point out that "rate of remuneration" means all rewards for service, whether in cash or kind, and, as regards the last of them, it should be observed that it is for the Commissioners to certify whether the terms of the employment are "not less favourable" than under the Act.

For secondary teachers, it will be apparent, there is no such general exemption as that for the primary teachers—namely, the Superannuation Act. It is safe to say, therefore, that the great majority of the secondary teachers will come under the Act for at least a few years of their career. Generally, they will remain under it until the £160 income limit has been passed. The prospect of attaining to that exemption opens up an interesting question—that of forfeited or lapsed contributions. Generally, these would go to what may be called the "pool," which would represent, of course, a kind of community of benefit. It is, however, possible to divert them from that destination, and the question is, in fact, being actively mooted whether secondary teachers should not have their own special "approved" society, to which those lapsed contributions would flow for the benefit of the teaching profession exclusively. An organization which has applied for approval, with this object largely in view, is the Secondary, Technical, and University Teachers' Provident Society (see "Correspondence," page 288, below).

All "insured persons" must either belong to an approved society, or else become deposit, or Post Office, contributors. There can be no doubt which of these two courses it is advisable to follow. Only by joining an approved society can the contributor obtain full advantage of the Act. Contributions are the same for both classes of contributors; but the sickness benefit of the Post Office contributor comes to an end when the amount paid in contributions is exhausted.

In return for the weekly contributions of the State, the employer, and the employee, the benefits which are offered under the State scheme are:—(1) Sickness, per week, 10s. men, 7s. 6d. women (for the first 26 weeks); (2) Disablement, per week, 5s. men, 5s. women (until the end of the illness); (3) Medical treatment, with medicine and certain appliances; (4) Sanatorium; (5) Maternity.

The sanatorium benefit may be extended to cover other diseases than tuberculosis, and may be given, moreover, to dependants of the insured person. It should also be mentioned that where the maternity benefit (30s.) is paid in respect of a wife who is herself an insured person, sickness allowance may also be claimed for her. The vast majority of secondary teachers are, however, unmarried—a further point to consider in determining whether or not they will join an approved society devoted to their own profession in particular or one intended for "employed persons" in general.

A fact which often needs emphasising, amongst teachers as amongst other classes of the community, is that no payments by way of contribution are made in cash. The stamps affixed by the employer to the employee's contribution card cover both the employer's own contribution and that of the employee, the value of the latter being deducted, of course, by the employer from the employee's salary. One further point—contributions are not paid while the insured person is ill, nor will arrears due to unemployment be regarded for three weeks in each year.

B. F.

THE COLLEGE OF PRECEPTORS.

MEETING OF THE COUNCIL.

A MEETING of the Council took place at the College, Bloomsbury Square, on June 15. Present: Rev. Dr. Scott, Vice-President, in the chair; Prof. Adams, Dr. Armitage-Smith, Mr. Bain, Mr. Barlet, Rev. J. O. Bevan, Rev. J. B. Blomfield, Mr. Brown, Mr. J. L. Butler, Mr. Charles, Miss Crookshank, Mrs. Felkin, Mr. Hawe, Mr. Hay, Mr. Pendlebury, Mr. Rushbrooke, Mr. Starbuck, Mr. Vincent, and Mr. White.

The Secretary reported that the number of candidates entered for the Midsummer Certificate and Lower Forms Examinations was 4,160.

On the recommendation of the Education Committee, it was agreed that inquiries be addressed to Local Education Authorities as to (1) whether they recognized private schools in any way; (2) whether they allowed pupils of private schools to compete for their scholarships, and whether they allowed such scholarships to be held at private schools; and (3) what other privileges were open to private schools to which the recognition of the Local Authority had been accorded.

Saturday, July 20, was fixed as the date of the forthcoming General Meeting of the members of the College.

Prof. John Adams was appointed to deliver the Autumn Course of Lectures to Teachers.

The draft Report of the Council to the General Meeting was considered, and was referred to the President, Vice-Presidents, and Dean for final revision.

The Rev. C. J. Smith, Head Master of Latymer Upper School, was elected a member of the Council, in place of Dr. Moody, retired.

The Council expressed by resolution the opinion that the efficiency of the College would be increased by the organization of its members in sections representing the different branches of the scholastic profession from which they are drawn; and a special committee was appointed to consider by what means such organization might be effected.

It was referred to the Literary Committee to take measures to remove from the library books which are of no practical use, and to arrange for the construction of a card catalogue for the pedagogic section.

A House Committee was appointed to deal with all matters relating to the building and its uses.

The following persons were elected members of the College:—

Mr. F. A. Beesley, B.Sc. Lond., Darenth Cottage, Chipstead, Kent.
Miss M. A. Douglas, Godolphin School, Salisbury.
Mr. F. Hepworth, M.A. Vict., L.C.P., Holmgarth, Dewsbury.
Miss C. E. Rigg, 79 Brixton Hill, S.W.
Mrs. Woodhouse, 37 Belgrave Road, S.W.

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

By G. BELL & SONS.—Openshaw's Examination Papers in Mathematics; Wimbolt's Matriculation Précis, and Key.

By A. & C. BLACK.—Black's Geographical Pictures, Series III (2 Packets); Batchelor's Lectures et Exercices, Cours Supérieur; Keatinge and Frazer's Documents of British History 1603-1715; Shenestey's The Children's World; von Wyss's Gardens in their Seasons.

By BLACKIE & SOX.—Goldschild's Picard's La Petite Ville; Jones's First English Exercises; Magee's Le Savetier des Fées; Vinnall's School Drawing in its Psychological Aspect; Wimbolt's Historical Lyrics and Ballads, Book I.

By W. B. CLIVE.—Bausor's Junior Practical Chemistry; Briggs and Bausor's Elementary Quantitative Analysis; Chalke's Synthesis of Froebel and Herbart; Don and Jameson's Laboratory Test Cards (First, Second, and Third Years).

By MACMILLAN & Co.—Barbard and Child's New Algebra, Vol. II; Morton's Legends of Gods and Heroes; Smith's Geography of Europe.

By MILLS & BOON.—Baron's Exercises in French Free Composition; Drennan's Peter Pan; Hood's Problems in Practical Chemistry; Selous' The Zoo Conversation Book.

By J. MURRAY.—Proceedings of the Classical Association, Vol. IX; Layng's Elementary Geometry; Spilsbury's Life of Augustus.

By THE OXFORD UNIVERSITY PRESS.—Typical Selections from English Writers, Vols. I and II; Brentnall and Carter's The Marlborough Country; Fitzgerald's Letters of Robert Southey; Lieder's Schiller's Don Carlos; Makower and Blackwell's English Essays (1600-1900); Payne's Select Works of Burke (American Taxation, Conciliation with the Colonies, Present Discontents); Peacock and Balston's English Prose from Mandeville to Ruskin; Stein's Goldsmith's Vicar of Wakefield; Wilson's Outlines of German Grammar.
N.U.T. Report, 1912.

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 May 1912:—

<i>Class I.</i>		
Hollirake, F.	|	Jennings, F. H.

<i>Class II.</i>		
Collinson, Miss S. I.	|	Croot, B. W.
Dodd, Miss J. E.	|	Finch, G. J.

ENGLAND'S DEBT TO GERMAN EDUCATION.

At the meeting of the Allgemeiner Deutscher Neuphilologen-Verband, at Frankfurt-on-Main (May 28), Dr. M. E. Sadler, Vice-Chancellor of the University of Leeds, delivered, at the Committee's invitation, an address on "England's Debt to German Education."

Dr. Sadler said that of all foreign influences upon English methods of teaching and educational ideals, the German had, during the last hundred years, been the most formative and penetrating. It had touched every grade of our education from the Kindergarten to the University. To Froebel and his followers was chiefly due the more evolutionary, gentle, and spontaneous training of little children. The official definition of the purpose of the public elementary school, now printed in the Code of the English Board of Education, bore the impress of the ideas of Fichte and of Herbart. Compulsory attendance at school was in great measure the outcome of German example. School hygiene and the medical inspection of school children owed much to German precedent, especially to the researches of Hermann Cohn, of Breslau, into the eye-sight of children in 1866, to the appointment of a school doctor at Frankfurt in 1883, and to the establishment of a school dental clinic at Strassburg in 1902. The part now borne by the English Government in the organization of secondary schools, and in the subsidizing of University studies, was in large measure due to German precedent. The encouragement of higher technical instruction of University rank was the direct result of German example. The new methods of teaching modern languages owed much to Victor, of Marburg, and to Dörr and Max Walter, of Frankfurt. The new movement for a rearrangement of the course of language teaching in the classical schools (with the provision of a common basis of modern studies for all pupils up to twelve years of age and the postponement of Latin till twelve and of Greek till fourteen) had been inspired by Dr. Reinhardt's reforms at the Goethe Gymnasium at Frankfurt, which in turn were a development of Dr. Schlee's experiment at Altona.

The new conception of the continuation school, at once technical and humane, organized in direct relation to industry, but with a broad civic purpose, was mainly derived from German sources, and especially from the work of Dr. Kerschesteiner at Munich. German educational ideas had been popularized in England by a succession of great writers—S. T. Coleridge, Thomas Carlyle, Charles Dickens (who was an ardent Froebelian from 1855), Herbert Spencer, and Matthew Arnold. They had also been diffused amongst us by many English residents of German birth or stock; by statesmen like the late Prince Consort, by scholars like Max Müller, by teachers like Miss Heerwart, Mme Michaelis, and Mr. Sonnenschein.

In our schools and colleges the courses of study and methods of instruction owed a great debt to German scholars and men of science, not least to Grimm, Bopp, F. A. Wolf, Niebuhr, and Liebig. Our courses of professional training for teachers were much indebted to the writings of Herbart and to the personal influence of Prof. W. Rein, of Jena. But perhaps the greatest debt of English education to Germany lay in our having learned, though as yet imperfectly, from German thinkers, and especially from Fichte, Wilhelm von Humboldt, Hegel, and Friedrich Paulsen, that the encouragement and intellectual guidance of all grades of national education is one of the highest functions of the State, provided that the State is enlightened enough to give freedom to the investigator and to the teacher, and to plan wisely for far-off returns, not with the narrow purpose of securing money profit, but with faith in the character-forming power of great ideas.

INTERNATIONAL EXCHANGE OF CHILDREN.

THE exchange of children between families of different nationalities has become during the last few years one of the recognized instruments for supplementing the work in schools in teaching modern languages. The principal agency in England for arranging such exchanges is the Modern Language Association, of which Dr. Macan, Master of University College, Oxford, is the President for the year. Acting in co-operation with various societies abroad, it has effected 125 exchanges during the last four years and is now seeking to give a great development to the work. A pamphlet on the subject, which it has just published, states that the movement has the support of Dr. Sadler, Vice-Chancellor of the University of Leeds, Viscount Esher, the Bishop of Hereford, Bishop Welldon, Sir John Simon, K. C., M. P., Sir T. Vezey Strong, and others, including some well known head masters and educationists. The procedure is very simple. Parents apply to the Hon. Secretary of the Organizing Committee (Miss Batchelor, Grassendale, Southbourne-on-Sea, Hants), who puts them in communication with a family on the other side of the Channel, which can be safely recommended and is of approximately the same social status as themselves. There are no expenses, except a fee of 5s. and, of course, the child's travelling expenses.

It is claimed that these Exchanges have resulted almost invariably in the English boy or girl having a pleasant holiday amongst French or German folk, and in most cases in making great progress in conversational fluency. Its value in helping to promote friendly feeling between nations must be obvious to everyone.

A LINK WITH FROEBEL.

VICE-CHANCELLOR SADLER writes (in *Indian Education*): "The last link between Froebel as a living teacher and the English-speaking people has just been broken by the death of Fräulein Eleonore Heerwart. She knew Froebel personally and had been inspired by contact with him and with his fellow workers. In the later sixties she conducted a kindergarten for children of the upper classes in Dublin, an enterprise which met with great success. In 1872 she decided to retire and to spend the rest of her life in Germany. But, passing through London, she met some of the Governors and staff of the Stockwell Training College, which is maintained by the British and Foreign School Society. At this time the College was reorganizing its training work and was opening a department for teachers intending to work in infant schools. Miss Heerwart was asked to introduce Froebel's methods into these classes. With much reluctance she accepted the invitation, and remained on the staff of Stockwell College for twelve years. During this time she took an active part in the formation of the Froebel Society, the founders of which were Miss Shirreff, Mrs. William Grey, Mme Salis Schwabe, Mme Michaelis, Prof. Joseph Payne, and others. In 1884 she settled in Germany, devoting herself to the foundation of a German Kindergarten Society. In this work she was untiring. She formed a Froebel Museum, which contains memorials of the great educational reformer, including some of the original 'Gifts' which had been made for Froebel by the village carpenter. Every year, in August, she held a teachers' week. To this students came from all parts of the world. She took her visitors to the places in which Froebel had worked, held discussions with them and opened to them her museum. She was the first President of the United Kindergarten Societies of Germany. She was an orthodox exponent of the Froebelian doctrine. She laid great stress upon handwork, making every exercise, however, a training in individual thought and avoiding with horror anything like copying on the part of student or teacher. She served for many years as one of the examiners of the Froebel Society, but always shrank at heart from the idea of applying methods of examination to the testing of the abilities of kindergarten teachers. Fräulein Heerwart is one of the many German teachers to whom English education owes inspiration and faithful service."

THE EDUCATION VOTE.

THE PRESIDENT'S SURVEY.

THE House of Commons went into Committee of Supply on the Civil Service Estimates (June 6), and, on the Vote to complete the sum of £14,504,765 for the salaries and expenses of the Board of Education and the various establishments in connexion therewith, Mr. Pease submitted the Education Estimates of the year. We quote a few of the more salient points of his speech.

TEACHERS.

We have of certificated teachers approximately 101,000 trained and untrained. One of the main difficulties at the present time is the threatened shortage of teachers, a difficulty which has been prominently before the country, and I will not dwell on the figures more than to say that their importance is somewhat discounted by the fact that, while the number of teachers entering for preliminary certificate examinations has shown a reduction, that reduction may be partly accounted for by a large number of intending teachers obtaining entrance to training colleges through the Oxford and Cambridge examinations, which they are able to do as well as by obtaining preliminary examination passes. It is not true to say that it is within the power of the Education Department to control or adjust the supply and demand of, and for, school teachers. We are unable to forecast how many will be likely to enter the profession, how many will leave the service after entering it, and we have no knowledge of how many who have left may return to the profession. Undoubtedly a not inconsiderable number do return to the service from time to time after they have left. I suppose it will not be suggested by any member of the Committee that we should lower the standard of qualification for the teaching profession? That would be a retrograde policy that would certainly not be supported by the present Board of Education. We are, however, very anxious to stimulate recruiting for the profession. I have listened to deputations and I have consulted many authorities on this subject. It is a subject upon which you cannot generalize. . . .

PENSIONS.

One of the problems, no doubt, is how to attract the best teachers into the profession. Obviously an increase in salaries is the best way of doing this. That duty, however, does not rest with the Board of Education so long as the schools are efficiently carried on. The payment and arrangement of salaries rests entirely with the Local Education Authority. One thing we can do, and are about to do—that is, to make the service more attractive by increasing the pensions of the certificated elementary-school teachers. I stood almost aghast when I realized what the position was when I came to my present office. The average salary of an elementary-school teacher is £145 for men and £99 for women, and the maximum pension which they can receive at the present time under the existing system is £59 for men and £40. 14s. for women. I have been consulting on this matter and making inquiries to see whether I can secure an increase of the Pension Vote. On this matter the Board of Education has not rested quietly, and I am very glad that we have not only been able to secure a grant from the Treasury which will double the present pension of elementary-school teachers in regard to the payment from the State, but we shall also be able to increase the disablement allowance from £1 to 30s. in the case of men, and from 13s. 4d. to £1 for women. I have had placed at my disposal by the Treasury a sum equivalent to a perpetual annuity of £200,000. Whether out of this sum any further benefits can be provided in addition to those which I have already mentioned I cannot say, but I propose to refer the matter to a Departmental Committee which I am about to appoint to look into this question. . . . In proportion as we are generous I think we shall attract the best teachers into the profession, and in proportion as we are parsimonious we shall fail to secure the best results. . . .

SECONDARY EDUCATION.

We are satisfied with the progress that has been made with our secondary education system. The Act of 1902 certainly left a big gap between the elementary school and the secondary

school, but to a certain extent that gap is being filled up by the higher elementary schools that have been established, by the central schools, and the higher classes in elementary schools which do a certain amount of the work that is required to co-ordinate and systematize the educational system. One of our first objects is to widen the character of the education in our secondary schools and to give it an increased commercial, industrial, or agricultural bias, according to the needs of various localities. Another object is to try to extend the number of years of school life. During the last three years we have been inspecting a large number of these schools, and at the present moment I think we are inspecting about two hundred schools thoroughly every year. We are also doing something to promote the teaching of modern languages. We are behindhand, as compared with some of our competitors on the Continent, in the teaching of foreign languages, and we are doing what we can to encourage the better teaching of them in our secondary schools; and I am very glad to be able to report considerable improvement in that respect. We are also interchanging with France and Prussia a certain number of student teachers, so that we get the benefit of the teachers from those countries, while some of our teachers go over to Germany and France and acquire better linguistic knowledge by teaching in those countries. We are also indebted, to a certain extent, to a trust of which Lord Shuttleworth is Chairman for being able to encourage certain masters in secondary schools by having their expenses paid for visiting other secondary schools and thereby getting a wider experience in the work of their profession. A consultative committee, over which Mr. Acland presides, has reported during the year with regard to the examinations in secondary schools. We are in substantial agreement with most of the principles that committee has laid down, and I am hoping to invite the leading English Universities to confer with the Board of Education with a view to meeting some of the most practical suggestions. The financial aspects of the proposals are of the most difficult nature, but unfortunately the committee do not see their way to deal very fully with the problem. The committee is now engaged in doing what it can to help us by taking evidence with a view to reporting the best means of promoting practical work, and we are asking them to report how it should be encouraged and developed in secondary schools. In regard to pensions for old age for secondary-school teachers, I have had several interviews with representatives of the secondary-school teachers, and we have together secured from the Treasury a promise of a substantial grant to enable those teachers in secondary schools which are receiving a Government grant to receive a contribution towards the old-age pension. The scheme is not sufficiently developed for me to be able to say exactly what lines we should take in connexion with it; but, generally speaking, it will be more or less equivalent to the grant given to the certificated teachers in elementary schools.

TRAINING COLLEGES.

I should like now to say one or two words in connexion with our training colleges. We have introduced a four years' course. It is a voluntary system, but we have found in practice that a three years' course in which students are not only expected to take their degree, but also to learn how to teach, is an inadequate period for the work which we are expecting them to undertake; and, if they can add another year on to their period of residence and attendance in a training college, they will be free from that strain and pressure which in many cases have broken down many students. Sir Alfred Dale, in addressing a meeting the other day, approved the proposal, and he said it would ensure solid and sound work without undue strain or pressure, and he welcomed the proposal. In order to make the proposal as attractive as we can we have done two things. We have abolished the obligation on the part of the student who enters a training college for four years to pay fees and we pay them from the State. The net result to the men and women attending these training colleges will be, if they are resident at a hostel, that men instead of receiving £30 a year net will now receive £35 for each of the four years, and women instead of receiving £15 net will receive in future £25 a year for the four years, in the event of their attending for the full period. There are two other alterations which we

are making. We are reducing the number of subjects which we are encouraging to be taught in the training colleges with a view of trying to prevent that strain and pressure of which complaint has been made, and we find in connexion with the subjects of hygiene and physical drill that they are to a very large extent taught already in secondary schools, and the students have acquired a knowledge of them before they enter the training colleges. While we do not bar them, we do not put such pressure upon the principals and the managers of training colleges that those two subjects should be taught so extensively as they have been in the past. Another alteration of which we have approved is to encourage the students to go into training colleges at different periods of the year, so that instead of all leaving at one particular time, after having completed their course, they will leave at different periods, and there will be less likelihood of many remaining out of a position as they may at present.

THE LACK OF CONTINUITY.

Perhaps I may say one word with regard to what I believe to be the great blot on the whole of our educational system in this country—the lack of continuity in the education of children after they leave our elementary schools. The number of children who are at school between the ages of twelve and thirteen is about 593,000; between the ages of thirteen and fourteen, 384,000; between fourteen and fifteen they suddenly drop down to 36,000; and, of course, after fifteen there are none in any of our elementary schools except in the few higher elementary schools. As a consequence a great number of these children—a very able writer in the *Yorkshire Post* gave the figure the other day as six out of seven—never continue their education again in this country. At any rate, the proportion of individuals who are educated only up to the age of fourteen is enormous, and enormous sums of this country's money are being wasted because we have no proper system of continuing the education of our young people. There are three directions in which I think work can be done. Of course in connexion with our evening technical schools we do work of a very satisfactory character and of an increasingly satisfactory character: but what we want employers to do is to make it a condition of employment that wherever it is possible those young people whom they employ, who leave school at the age of fourteen, shall on one or two afternoons or mornings in each week be compelled to attend some higher technical class or some trade class. There are some employers who are doing it in this country. The North-Eastern Railway Company are doing it to a certain extent. They send some of their young people to the Armstrong College at Newcastle, and they not only pay their fees but also their wages while they are attending those technical classes. I instance that as a case in point, and hold it up as an example which many others might follow with advantage to the community. At present we have only thirty-two day or evening trade schools in this country, with only 2,813 students attending them. The experience connected with these schools is surprisingly satisfactory. Before these students have completed their full course they are snapped up, and a great attempt is made to take these children away before they have completed their two years' course. I would like to urge on those who desire to take those children into their works that they should leave them at the trade school until they have completed their full two years' course. The last few months are most important in connexion with the teaching of trade classes. I should like also in connexion with our technical work to pay a tribute to the excellent work which is being done by the Workers' Educational Association in London. The tutorial classes have grown until there are now a hundred of them. The best intellects in the University are being brought into contact with the most progressive working men in London.

UNIVERSITY WORK.

I come to University work. It is becoming of increasing interest to the whole community. The Universities are becoming more open to the humbler classes than they have ever been. One great advantage in connexion with University work is that it is outside the sphere of both religious and political polemics. We have at our disposal £42,000, which we are distributing among twenty-two institutions. Of that sum £12,000 is new

money. This money is given to colleges, hospitals, and other institutions, not merely to the Universities. We have also at our disposal for distribution £150,000, which is now being distributed in accordance with the recommendations of a committee who have visited practically the whole of the Universities of the country. Nottingham is an exception, and in regard to that case they have a very full report of the inspection. I should also like to say how much the public are indebted to certain individuals who have endowed the Universities. We are hoping we may receive more of these endowments, because they are badly needed in many of the Universities of this country. It is only fair I should acknowledge some of the generosity recently exhibited in connexion with London University. Very large sums have been given. We have had £100,000 given us for Bedford College, £100,000 for domestic science at King's College, £60,000 for laboratories, £30,000 for a school of architecture, and £11,000 has been left by will for scholarships to University College. The average income from endowments of these various Universities is 15 per cent., from the State 28.5 per cent., and from fees 32 per cent. The Board of Education are very anxious that scholarships should not be established out of fees which are paid by the poorer classes in the community. Where scholarships are established they ought to be paid for out of the endowments which are given by individuals. The University of Wales will continue during the next five years to receive the £31,000 promised. . . .

TEACHERS' REGISTRATION COUNCIL.

I think the Board are entitled to take some credit for the re-establishment of the Teachers' Registration Council. We have been very anxious that the teachers should be able to arrange their own organization, unfettered by the Board of Education, but it was essential that it should be established on a firm financial footing. We have obtained from the Treasury a sum amounting to about £10,000, which includes £2,800 of the money which still remains in their hands, with a view to paying off what are usually called the Column B subscribers under the old Registration Council Scheme. We have also obtained permission from the Treasury for a loan of £9,000 to enable the Teachers' Registration Council to be placed on a really satisfactory basis for the next few years so that it may be really well established. One great advantage of a council of this kind, especially from the point of view of the Board of Education, is that we shall be able from time to time to consult the representatives of the teaching profession upon matters which we either propose to change or which have been changed in connexion with the work of the Board. It is most important that we should work in touch with the teachers, and I think the establishment of this Registration Council will remove, I hope for all time, any possibility of those misunderstandings which have unfortunately taken place in the past.

THE BOARD AND LOCAL EDUCATION AUTHORITIES.

If we can work in touch with the teachers through the Registration Council, as I believe we can, I also think we ought to work in closer touch with the representatives of the Local Education Authorities. The Local Education Authorities have many organizations at the present time—the Association of Directors and Secretaries, County Councils Association, Municipal Corporations Association, the Association of Education Committees, and the London County Council Education Committee. These organizations speak with different voices, they work for different ends, and they promote different interests. What I desire is that we shall be able to focus these several organizations as far as possible in one representative committee of an advisory character, who will be able to meet the Board of Education from time to time, so that there shall be no misunderstanding between the Board and the Local Education Authorities. I have communicated with these organizations and I believe they are now about to summon a meeting of representatives, which, I trust, will bring about an organization which will prevent any feeling in the future that the Board of Education is at arm's length with the Local Education Authorities, and that, if jealousy, hostile criticism, or backbiting have occurred in the past, they shall be replaced by goodwill, so that a great addition may be made to the forces for promoting educational progress in the country.

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CURRENT EVENTS.

Fixtures. THE Half-yearly General Meeting of the members of the College of Preceptors will take place on Saturday, July 20, at 3 p.m.

THE Congress of Universities of the Empire—54 in number—opens at the University of London on July 2.

A SPECIAL *matinée* will be given at the Haymarket Theatre on July 9 for the benefit of the Université des Lettres Françaises, founded and conducted by Mlle D'Orliac at the Marble Arch.

A SUMMER School of Town Planning will meet at the Hampstead Garden Suburb August 3-17. Inaugural Address by the Marquess of Crewe. Information from Mr. J. S. Rathbone, The Institute, Hampstead Garden Suburb, London, N.W.

COURSES of lectures and exercises for students in German literature, conversation, and phonetics will be held at the University of Freiburg, Baden, August 5-31. Program from the Verkehrsverein, Freiburg, Baden, or from Prof. Glattes, 71 Zasnissstrasse, Freiburg.

Honours. THE University of Oxford has conferred the following honorary degrees:—

- D.C.L.: The Marquess of Crewe, Secretary of State for India; Admiral of the Fleet Sir A. K. Wilson; Sir G. R. Askwith.
- D.LITT.: Prof. Franz Cumont, Keeper of Antiquities in the Musée du Cinquantenaire, Brussels; Mr. Henry James; Mr. Robert S. Bridges (Hon. Fellow of Corpus Christi).
- D.Sc.: Mr. Franz Boas, Ph.D., LL.D., Professor of Anthropology, Columbia University, New York, and Mr. A. P. Maudslay, M.A., F.S.A., President of the Royal Anthropological Institute of Great Britain and Ireland.
- M.A.: Mr. George W. Forrest, C.I.E., Librarian of the Indian Institute.

THE University of Cambridge has conferred the honorary degree of LL.D. upon Count Paul Wolff-Metternich zur Gracht, G.C.V.O., late German Ambassador to the Court of St. James's; the honorary degree of Sc.D. upon Prof. F. H. Marsh, Master of Downing College and Professor of Human Anatomy in the University; and the honorary degree of M.A. upon Mr. R. C. Brown, M.B. Lond., F.R.C.P. & S., of Preston.

THE University of Durham has conferred the following honorary degrees:—

- D.C.L.: Sir Thomas Barlow; Sir Frederick D. Lugard, G.C.M.G., C.B.; Sir William Osler; Mr. J. S. G. Pemberton, formerly M.P. for Sunderland; Mr. W. H. St. John Hope.
- D.Sc.: Prof. T. P. Anderson Stuart, Sydney University; Prof. P. C. Roy, Calcutta University.
- D.LITT.: Mr. A. Curtis Clark; Prof. Oliver Elton; Dr. W. Peterson, Vice-Chancellor of McGill University; Mr. G. M. Trevelyan.
- Mvs.Doc.: Sir Walter Parratt.

THE University of Glasgow has conferred the honorary degree of LL.D. upon Mirza Abbas Ali Baig, B.A., Member of the Council of India; Robert Alexander Falconer, C.M.G., M.A., D. Litt., President of the University of Toronto; the Hon. Sir John McCall, M.D., Agent-General for Tasmania; and W. H. Warren, M.Inst.C.E., Professor of Engineering and Dean of the Faculty of Science in the University of Sydney.

* * *

SIR JOHN A. SIMON, K.C., M.P., Solicitor-General, has been elected to a Fellowship at All Souls College, Oxford.

* * *

THE RT. HON. SIR CECIL CLEMENTI SMITH, G.C.M.G., late Governor of the Straits Settlements, and the Rev. H. P. Stokes, LL.D., Vicar of St. Paul's, Cambridge, have been elected Honorary Fellows of Corpus Christi College, Cambridge.

* * *

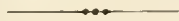
THE Weldon Memorial Prize (Oxford), recently declined by Prof. Karl Pearson, has been awarded to Dr. David Heron.

* * *

FORMER students of Prof. O. Henrici, F.R.S., who recently retired from the Chair of Mathematics at the City and Guilds Engineering College, have had engraved in his honour a medal to be awarded annually for Mathematics. The first copy of the medal has been presented to Prof. Henrici.

* * *

MRS. CHARLOTTE CARMICHAEL STOPES has been elected an Honorary Fellow of the Royal Society of Literature in recognition of her indefatigable work on Shakespearean records.



Endowments and Benefactions.

MR. WALTER MORRISON (Messrs. Morrison, Dillon, & Co., Fore Street, E.C.) has given three sums of £10,000 each to Oxford University: (1) for the promotion of the study of Agriculture, (2) for the establishment of a professional pension fund, and (3) for the promotion of the study of Egyptology.

* * *

THE University of London has received from Mr. Ratan Tata a donation of £1,400 a year for three years "for the endowment of research into the principles and methods of preventing and relieving destitution and poverty"; and from Sir C. Welby the library of the late Hon. Victoria Lady Welby, consisting of some 3,000 books and pamphlets with special reference to "significs."

* * *

LORD IVEAGH has made a further gift of £10,000 (in addition to some £40,000 given previously) to Dublin University, for research assistance and cost of apparatus in the Department of Geology and Mineralogy.

* * *

MRS. LECKY, widow of the historian, has bequeathed a considerable sum to Dublin University to establish a Chair of History. Mr. Lecky, it will be remembered, was for some time M.P. for Dublin University.

* * *

LIVERPOOL CITY COUNCIL have made a grant of £10,000 to the University of Liverpool for the present year, one-tenth of the sum being intended for scholarships for the children of rate-payers, including the assistance of undergraduates and post-graduates and payment and remission of fees.

* * *

It is intimated that a sum of £15,000 has been assigned by a gentleman, who wishes his name not to be disclosed in the

meantime, payable on the death of the survivor of his wife and himself, for the purpose of founding a Chair of Political Philosophy in the University of St. Andrews.

* * *

SIR JULIUS WERNHER bequeathed £250,000 to assist in building and (if sufficient) partially endowing a University at Groote Schuur, near Cape Town, provided the constitution of such University be approved in writing by Sir L. S. Jameson and Sir Lionel Phillips; and £100,000, together with two-twelfths of his residuary estate (but not exceeding £50,000), to the Imperial College of Science and Technology, South Kensington.

* * *

CORNELL UNIVERSITY receives £160,000 under the will of the late Prof. Goldwin Smith.

* * *

HARVARD UNIVERSITY will receive the splendid collection of books formed by Mr. Harry Elkins Widener, who perished (with son) in the wreck of the "Titanic."

* * *

Science (says *Nature*) states that by the will of Mr. C. H. Pratt, the Massachusetts Institute of Technology receives a large bequest to endow a Pratt school of naval architecture and marine engineering. The income of the estate is to accumulate until the sum of £125,000 has been reached, though it may be used at the expiration of twenty-one years.—The Governor has signed the Bill passed by the Massachusetts Legislature appropriating £10,000 annually for five years to the Worcester Polytechnic Institute. The grant is to be extended for an additional five years if in the meantime the institute obtains £70,000.—An anonymous benefactor has given £20,000 to Hamilton College for the erection of a new library building.—Columbia University has received from Mr. and Mrs. W. R. Peters a gift of £10,000 to establish a fund for engineering research in memory of their son.—A second gift of £5,000 to Brown University from Mr. John D. Rockefeller, jun., is announced. The endowment has now reached £163,000 toward the desired £200,000.—Appropriation Bills for the College of Agriculture, Cornell University, to the amount of £181,000, of which £158,000 is immediately available, were passed by the New York Legislature at its recent session.—The Veterinary College received an appropriation of £21,000, bringing the total up to £202,400.



Scholarships and Prizes.

AT Oxford, College Scholarships and Exhibitions will be offered for competition as follows:—Classics: December 3, University, Oriel, New, Brasenose, Corpus Christi, Trinity, and Wadham; Queen's, St. John's, Hertford, and Keble; December 10, Merton and Exeter. Mathematics: December 3, Balliol, Queen's, Corpus Christi, and St. John's. February 25, Magdalen, Brasenose, Christ Church, and Worcester. Natural Science: July 2, Balliol and Brasenose. History: December 3, Queen's, Hertford, and Keble. December 10, Lincoln. Hebrew: December 3, Wadham.

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JESUS COLLEGE, Cambridge, offers one (or two) Kay Theological Scholarships, £40 to £60 for three years; and an exhibition not exceeding £40 a year may be awarded to a Kay scholar of exceptional merit. No examination. Testimonials as to qualifications to be sent to the Vice-Master by July 10.

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UNIVERSITY COLLEGE, London, offers the Bucknill Entrance Scholarship of 135 guineas and two Exhibitions of 55 guineas each, tenable in the Faculty of Medical Sciences at Univer-

University College. Examinations in July. Apply to the Secretary of the College by July 9.

* * *

THE Misses Elinor and Frances Busk have presented to the Departments of Zoology and Botany of Bedford College for Women a large number of valuable books and specimens. The books formed part of the library of their father, the late Mr. George Busk, F.R.S.

* * *

UNIVERSITY COLLEGE, Reading, offers three scholarships of £26 a year, tenable one, two, or three years, and one or more exhibitions of about £12 each for one year, on July 18. Subjects of competition: Singing, Pianoforte, Violin, Viola, Violoncello, or Organ. Apply to the Tutorial Secretary by July 7.

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CRANLEIGH SCHOOL, Surrey, offers five scholarships, open to boys under fourteen on August 1, and one choral scholarship, open to boys under twelve. Examination begins July 23. Particulars from the Head Master.

Appointments and Vacancies

DR. S. A. DONALDSON, Master of Magdalene, has been elected Vice-Chancellor of the University of Cambridge for the ensuing academic year.

* * *

THE Professorship of English Literature in the University of Cambridge is vacant through the death of Dr. Verrall.

* * *

THE Mastership of Gonville and Caius College, Cambridge, is vacant through the death of the Rev. E. S. Roberts, M.A.

* * *

MR. W. SHELDON HADLEY, M.A., Fellow and Tutor, has been appointed Master of Pembroke College, Cambridge, in succession to the Rev. Dr. Mason.

* * *

MR. D'ARCY W. THOMPSON, C.B., M.A., Professor of Natural History, University College, Dundee, has been appointed Herbert Spencer Lecturer at Oxford for 1912.

* * *

IN University College, London, Dr. W. H. Eccles, has been appointed to the new University Readership in Graphics; and Dr. J. D. Dakin, Assistant Lecturer in Geology, Liverpool University, has been appointed Senior Assistant in the Department of Zoology and Comparative Anatomy.

Dr. Donnan, who was appointed to the Chair of General Chemistry in succession to Sir William Ramsay, has resigned and will remain at Liverpool.

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IN Manchester University. Mr. M. A. Canney, M.A. Oxon., Lecturer in, has been appointed Professor of Semitic Languages and Literatures; Mr. G. Warre-Cornish, M.A., Junior Assistant Lecturer in Classics, has been appointed Senior Assistant Lecturer, in room of Mr. R. H. Hackforth, B.A., resigned (on his election as Fellow and Tutor of Sidney Sussex College, Cambridge); Mr. R. S. Adamson, M.A., B.Sc. Edin., B.A. Cantab., Assistant Demonstrator in Botany in Cambridge University, has been appointed Assistant Lecturer and Demonstrator in Botany; Mr. W. B. Brierley, M.Sc. Manc., Assistant Lecturer in Economic Botany and Demonstrator in Botany; Mr. A. F. Jack, M.Com. Manc., and Mr. R. B. Forrester, M.A. Edin., Assistant Lecturers in Economics; and Mr. G. W. Daniells, B.A., Junior Assistant

Lecturer in Economics and Lecturer to Tutorial Classes for Workpeople.

* * *

A PROFESSOR of English Literature and a Professor of Modern History are required at University College, Reading. Apply to the Registrar by July 6.

* * *

MR. M. POWER, M.A., B.Sc., Lecturer in Mathematics, University College, Dublin, has been appointed Professor of Mathematics in University College, Galway.

* * *

THE Professorship of Classics in Canterbury College, Christchurch, New Zealand, is vacant. £650 (without fees). Forms (on receipt of stamped addressed envelope) from the High Commissioner for New Zealand, 13 Victoria Street, S.W., with whom applications are to be lodged by August 15.

* * *

MR. C. B. JONES, Professor of Agriculture, Aberystwyth, has been appointed by the Board of Agriculture Chief of the Department for Wales.

* * *

THE REV. C. H. K. BOUGHTON, Vice-Principal of Wycliffe Hall, Oxford, has been appointed Principal of Ripon Theological College.

Exhibitor of Wadham; Second Class in Classical and Mathematical Mods.; First Class in Classical and Theological Final Schools.

* * *

THE Principalship of Winchester Training College will be vacant at the end of the current term by the resignation of Canon Martin, who has held the post for thirty-four years.

* * *

MR. A. J. B. WACE, M.A., Fellow of Pembroke College, Cambridge, has been appointed Lecturer in Ancient History and Archaeology in St. Andrews University.

Has been a member of the British School at Rome and of the British School at Athens, and has engaged in archaeological work both at Rome and at Athens.

* * *

A LECTURER in Physiology is required in Birmingham University. £200. Apply to the Secretary by July 6.

* * *

A LECTURER in English is required at University College, Nottingham. £150. Apply (special form) to the Registrar by July 6.

* * *

MR. H. M. HOLLSWORTH, Lecturer in Economics at Armstrong College, has been appointed to the new Sir David Dale Chair of Economics at the College.

* * *

AT Bedford College for Women (York Place, Baker Street, W.) are required (1) an Assistant Lecturer in Botany, £165, rising to £200; (2) an Assistant Lecturer in Mathematics, £165, rising to £200; (3) an Assistant in French, £120, rising to £150; (4) an Assistant in History, £120, rising to £150; (5) an Assistant Librarian for Session 1912-13, £80. Apply (six copies, not more than three testimonials) to the Secretary by July 6.

* * *

DR. JANET LANE-CLAYTON, Lecturer in Hygiene and Physiology at Battersea Polytechnic, has been appointed Lecturer in Hygiene and Physiology at King's College for Women (Home Science Department).

* * *

MR. ALEXANDER RADWAY ALLEN, M.A. Cantab., B.A., B.Sc. Lond., Second Master at the Central Foundation School,

London, has been appointed Head Master of the Hereford County School.

Cavendish School, Matlock, and St. John's College, Cambridge (Scholar). Thirtieth Wrangler 1899. B.A. Lond. (Second Class Honours in English) 1894; B.Sc. 1906. Experience: Cavendish School, Matlock; Bootham School, York; Sandroyd School, Cobham; Bury Grammar School; Central Foundation School, since 1907.

* * *

MR. ERNEST H. S. WALDE, M.A. Oxon, Assistant Master at Berkhamsted School, has been appointed Head Master of Chigwell School.

Charterhouse (Scholar) and Hertford College, Oxford (Scholar). Second Class Classical Mods. 1895; Third Class Lit. Hum. 1897. Experience: Marlborough College; Llandovery College; Bradfield College (two years); Berkhamsted, since 1902.

* * *

MISS WINIFRED A. TODHUNTER, B.A. Lond., Lecturer in History, Stockwell Training College, has been appointed Principal of Lincoln Training College, in succession to Canon Rowe, who retires at the end of the current term.

Educated at Cheltenham Ladies' College. B.A. Lond.; first in First Class Honours in History, winning the Derby Prize. Post-graduate study at Oxford. Holds training certificates of Oxford and London. Gilchrist Travelling Student. Head of Training Department of Exeter School; Mistress of Method, Moorfield College.

* * *

A HEAD MASTER (Church of England, graduate of Oxford or Cambridge in high Classical or Mathematical Honours) is required for King William's College, Isle of Man. £600, with capitation fee of £5 per boy for all boys over 100 (166 boys now in school). Residence; no boarders. Apply (marking outside "Head Mastership, King William's College") to his Excellency the Lieutenant-Governor (Chairman of the Trustees), Government Offices, Douglas, Isle of Man, by July 6.

* * *

A HEAD MASTER is required for Beverley Grammar School. £350; no house. Graduate of University of the United Kingdom. Apply (copies of not more than three testimonials) to Mr. F. G. Hobson, Newbegin, Beverley, by July 8.

* * *

A HEAD MISTRESS is required for the Girls' Department of Blyth Secondary School (to be opened in January). Graduate of a British University; age 30 to 45. £190, rising to £250. Forms on receipt of stamped addressed envelope; returnable to Mr. T. R. Guthrie, Clerk to the Governors, Blyth, Northumberland, by July 6.

* * *

A TEACHER of English and Modern History (either sex) is required at the City of London College for the Day School. Preference to Graduate (or equivalent). £150 commencing. Apply to Mr. D. Savage, Secretary to the College, by July 4.

MESSRS. DUCKWORTH & Co. are about to publish a translation of Prof. Boutroux's "The Beyond that is Within," by Mr. Jonathan Nield, whose rendering of the same author's "Science and Religion in Contemporary Philosophy" we recently noticed with approval. Prof. Boutroux contributes a special preface outlining the central problem of present-day thought.

* * *

It is proposed to issue a new monthly magazine—the *Dial*—"for Churchwomen and others." Information and preliminary circular from the Hon. Secretary, Miss Helen Blagg, 54 Lissenenden Mansions, Highgate Road, N.W.

A SCHEME is now on foot, and is receiving General. the support of Mr. John Burns, Sir Aston Webb, Sir Philip Magnus, Sir William Collins, and Sir Henry Miers, for the establishment of a Chair of Town Planning at the University of London.

* * *

It is proposed to commemorate the late Dr. Gregory, Dean of St. Paul's, by the foundation of a Leaving Scholarship at the Cathedral Choir School.

* * *

MISS STEUART and Miss Yoxall, daughters of well-known writers, are to be congratulated on the First Classes in the Classical Tripos.

* * *

CLASSICAL students in this country will regret to hear of the death of Dr. W. W. Goodwin, Emeritus Professor of Greek Literature at Harvard. Aged 81.

* * *

CANON BARNETT appeals for contributions to the Children's Country Holidays Fund. Last year 45,174 London elementary-school children were sent for a fortnight, the parents contributing £10,329 and the fund reaching £22,605. Railway fares absorbed over £7,000, and this year, fares being raised by 12½ per cent., £800 more is required to send the same number of children. Contributions to the Earl of Arran, Children's Country Holidays Fund, 18 Buckingham Street, Strand, W.C.

CORRESPONDENCE.

[We do not hold ourselves responsible for the opinions expressed by our correspondents.—Ed. E.T.]

PRIVATE TUTORS AND GOVERNESSES AND THE INSURANCE ACT.

To the Editor of "The Educational Times."

SIR,—Among the classes affected by the Insurance Act in a way that may have been hardly reckoned on by its promoters are the governesses and tutors in private families. This particular section of the community will need to join, in their own interest, some recognized provident society which understands their needs, and which will do its best to meet them, within the limits of the Act.

The Secondary, Technical, and University Teachers' Provident Society is being organized by a Conference, of which we have the honour to be respectively Chairman and Honorary Secretary, representing the leading secondary and technical associations—the Assistant Masters', the Assistant Mistresses', the University Women Teachers', the Technical Teachers' and the Teachers' Guild.

It offers the privilege of membership to all secondary, University, and technical teachers, and to *bona fide* tutors and governesses who come under the Act, and though only offering normal benefits in the first instance hopes, owing to the exceptional healthiness of the majority of its members, to be able in the future to give additional benefits especially adapted to the needs of its members.

May we be permitted through the columns of your paper to ask those interested, either as employers of secondary teachers or of governesses, or as employed persons eligible for membership, to write to the Secretary at 35 John Street, Bedford Row, W.C., for further particulars?

The employer is now beginning to realize that he is responsible for the due payment of contributions. Moreover, it is to the advantage of all concerned that the employed person shall become a member of a provident society rather than a deposit contributor. On the other hand, governesses and their employers will find it difficult to get into touch with a suitable society. It is for this reason that we venture to trespass upon your space.—We are Sir, &c.,

GERALD T. HANKIN,
ERNEST TIDSWELL.

June 4, 1912.

INDUSTRIAL SCHOOLS IN GERMANY.

CIRCULAR OF INFORMATION ISSUED BY THE BUREAU OF EDUCATION,
WASHINGTON.*

THE marked advance of Germany along industrial lines during the past few years is by common consent ascribed in large measure to the number and excellence of her industrial schools.

As a result those schools have frequently been studied by Americans, and a number of excellent descriptions of them have appeared. One of the best of the briefer descriptions appears in the Report of the Wisconsin Commission upon the Plans for the Extension of Industrial and Agricultural Training, which formed the basis of the notable law upon that subject enacted by the recent session of the Wisconsin Legislature. The following is a digest of a portion of the report:

The fact that the Germans are going into the commercial markets and underselling us is shown by cold, dry statistics. German sales in the United States have increased nearly 100 per cent. since 1900; and to the English colonies, South America, China, and the entire world German products are going in a great and overwhelming stream. Nevertheless, your committee does not recommend that we copy the methods of Germany; we cannot apply German methods in our work. What appears to the German as superficial in our education is sometimes the basis of that quickness of comprehension, that intuitive insight and readiness which cannot be replaced by the tremendous care and ponderous exactness of certain German methods. We must not forget that peoples differ in temperament. The psychology and the general make-up of the people, and the physical characteristics of the country must be taken into account. We must build upon what we already have and add to it from the best of all other lands.

In considering the specific causes of Germany's educational success in detail, the first point which astonishes us is the heavy investment made in industrial education. Nearly every small village has at least one industrial school, and often in small cities several are found. In Hanau, a place not much larger than Madison, there are five industrial or commercial schools, including an industrial art school and also what is practically a mechanical engineering school. The equipment of some of these schools is very complete and costly, but in most instances is very economical and surprisingly simple. The buildings are well adapted to the work in hand. Some idea of the investment can be obtained from the fact that the little province of Württemberg, which has a population less than Wisconsin by at least one-fourth of a million persons, and which is on the whole a poor, hilly country, with very poor transportation facilities, has, besides its splendid system of elementary and secondary schools, about two hundred and fifty industrial schools in its towns and villages, one knitting school, three weaving schools, two industrial workshops for actual practice in weaving, two technical schools for textile and mechanical work, a large State University, technical University, a royal building-trades school, a great commercial college, several commercial improvement schools, a great agricultural school, many farming schools (similar to county agricultural schools here), an art trade school for industrial art, a pure art school, and many miscellaneous schools of all kinds for workmen of various grades, evening schools, continuation schools, &c., including schools in domestic economy for women. The tremendous investment made by this little province is far beyond anything of which we, in our prosperity, have thought.

In one of the industrial schools in Munich are equipment and workshops in the following work: Electric motive power, electric lighting, locksmith and machine forging, book printing and lithography, cabinet-making, stucco work, carving, chain making, metal work, plumbing fittings, tinsmith work, and photography.

There are in Munich about sixty continuation classes. A great many industrial schools are maintained both by the city of Munich and by the kingdom of Bavaria.

PRACTICAL NATURE OF THE WORK.

Almost without exception there is in Germany a correlation between the industrial conditions in the cities or towns in which these schools exist and the industrial schools. In fact, it is impossible to define exactly a German industrial school. Each city meets the problem differently. Each tries to adapt the teaching to its own needs, and sometimes the curriculum in a school in a certain village is entirely different from that in any other community. The schools are a striking reflex of the industrial conditions of the communities in which they are found. The reason for this can no doubt be found in the gradual growth of these schools and in the masterly way in which they are made to meet the wants of the great masses of the people. Instead of starting with a few costly trade and technical schools, the Germans have encouraged a gradual growth in the entire field of industrial education, and they have put the emphasis upon the average man of an industry and the teaching of the average workman at the bench or at the machine. They have realized that the success of an enterprise depends in the long run upon the men in the ranks. They are now putting as much strength into building up the average man—the average workman—as in building up the higher education, although the investment in higher institutions is as great in proportion as ours, if not greater. The technical schools of collegiate grade are splendid, yet it is to the miscellaneous continuation schools that Germany owes a great measure of her success.

CONTINUATION SCHOOLS.

Your committee believes that it is the German industrial continuation school which especially deserves study. The German continuation school is made possible by the fact that practically every one is compelled to go to school until he is fourteen years of age. From fourteen to eighteen he is compelled to go to school a certain portion of his time. This would average perhaps a day in a week. He may go to school in some places from 4 to 6 in the afternoon; in other places and other trades two mornings a week, and in still other places (and this is the popular way) he may go to school for one day in a week; but he must go to school. The reason for this is the sensible way in which the Germans have studied out a plan for replacing the apprenticeship system. Taking the remnants of that system, which of course still exists here and there, they have added to it the continuation school.

The apprentice in the jewellery firm begins work, we shall say, at fourteen years of age. On Friday or Saturday he has to go to school. In that school he may have one hour of German, one hour of freehand drawing, one hour of plastic design, one hour of commercial geography, and in general everything which will give him a broad view of the other departments of the work in which he is engaged. If he is a merchant's clerk, he may be given a course in a mercantile continuation school, which would teach him how to buy and sell, do accounting, and to understand the general features of a thorough commercial education. Everything is applied directly to the business in which he finds himself, and which perhaps in his own town or village is a specialty. For instance, the city of Hanau is largely engaged in jewellery work. Instruction in selling jewellery and the manufacture of jewellery is the chief work of the continuation school. Continuation classes are held in most cases, so that in the industrial school where boys between fourteen and twenty years of age and even men up to twenty-five or thirty go to school from two to four years to learn trades; there are also many boys coming in every day of the week from different manufacturing establishments. Evening classes are also held, but if a boy goes to an evening class the manufacturer is compelled to allow him a certain number of hours each day away from his work, so that the total number of hours for the evening school and day work is not greater than one day's work. This is also the law in Scotland. The classes are small in these schools, and the "task" system is so used that a class may include one boy who is doing very elementary work and another who is finishing the highest task given by the teacher.

In the beginning only a few of these classes were organized as the need became evident. There always remained boys in unskilled or miscellaneous work. General continuation classes

* Reprinted in the *Pedagogical Seminary* as "an excellent brief description of the industrial schools in Germany." Dated December 15, 1911.

were founded for them, and as courses could be provided for special trades or pursuits, separate courses were instituted for such trade or pursuit. Those who remained in the general courses were given general manual training, literature, arithmetic, citizenship, &c. Schools of like nature exist for girls, and special classes have been rapidly organized in the different work in which the girls are employed. Above the continuation course are a great variety of schools—lower industrial schools, middle industrial schools, higher industrial schools, and special schools of all ranks and descriptions, apparently not strictly classified and differing in curriculum and standard from city to city and from division to division of the empire, making a whole great irregular democratic educational system, fitted to the needs of the different localities in a wonderful manner, and meeting the conditions much better than if they were regularly classified and standardized.

ADMINISTRATION.

After a very severe trial, reaching over a period of years, it was found that the inevitable tendency of all industrial schools was to become theoretical and to turn out theoretical students rather than practical men who would be of use in building up the industrial resources and commercial prosperity of the country. The Germans have established, almost universally, local committees of business men, manufacturers, and workmen who control these schools wherever they are. The result is that the manufacturers and the working people take the utmost pride and interest in these schools, and watch closely their development. In talking with the heads of the industrial schools in Germany one is impressed by the fact that these men always say that if the employers would only allow them to have the boys for full time, or have them for longer periods, and would not interfere so much with the management of the school, they could do splendid work. But the general history of industrial education in this country, as well as the German experience, shows us that if these schools are all put on a full-time basis, the boy who works in the factory and earns his living after he is fourteen years of age is gradually crowded out, and schools are formed which turn out engineers, professional or cultured men, but which do not meet the needs of the great mass of the people. It is far better to have the management of the schools in the hands of the employers and employees than to be hampered by the theoretical standpoint which inevitably would result if the teachers or schoolmen had it all in their own hands.

TEACHERS.

Another great element in the success of this work is the kind of teachers employed. Every means has been used to get the right kind of teachers. Very wisely indeed the Germans have paid the teachers in this work higher wages than for similar grades in the other schools; they have laid the stress and emphasis upon this work. In almost every place one sees men teaching in these schools who are really artists in their work. The committees of manufacturers and employers see to it that this is the case. Special inducements have been held out for good workmen. Private rooms have been furnished in the schools where they can carry on their researches; every man has a studio. Recently special schools for teachers in industrial teaching have been founded, where men and women are specially trained.

TASK SYSTEM.

There is another element which has been neglected by most of the investigators of the German industrial educational system. That is the "task system" which is in vogue there. Small classes of from sixteen to twenty are usual, and the "tasks" are assigned for each member in the class. All who are prepared alike begin at the same "task." If a boy has but one day in the week in which to do his work, he can come in and work at his task. When he has finished that he will go on to the next task. Beside him in the room are men, who are perhaps working every day, learning a trade in the trade school. These men, of course, have many more tasks completed than the part-time student, but are under the same teacher. One man may be working at task No. 3, another at task No. 20, another at task No. 60, but sixteen of these men constitute one class under one teacher. It is a question of individual ability and the tasks completed rather than a question of a certain amount of time put in to advance a grade. The whole thing adds to the simplicity and economy of management.

VOCATIONAL TRAINING IN AMERICAN PUBLIC SCHOOLS.

By CHARLES A. KING,
Eastern High School, Bay City, Michigan.

[From *Education* (Boston).]

THERE is abundant evidence of a growing sentiment that the curriculum of the grade schools should include some form of vocational training. The attention which the subject is receiving, and the attempts that are being made by educators and manufacturers to create a source of supply of skilled workmen, indicate that the conditions which create the above sentiment are realized, and that progress is being made toward the solution of some of the problems involved, but it seems that one of the greatest factors in the development of skilled workmen is not receiving the attention which its importance justifies.

The mental and physical limitations of children under fifteen years of age effectively restricts the possibilities of trade instruction, but instead, furnishes an opportunity for a preparatory training which will add more to the efficiency of the future workman than would actual trade instruction during the same years. The absence of the qualities which this preparatory training should develop can not be fully compensated at any future stage of life.

In the study of these limitations, and the devising of methods by which the opportunity they furnish may be turned to the best advantage, will be found the most important problems to be considered in the development of a system of vocational training in the grades, not in the preparation of a series of problems or models, which will contain certain principles of some special trade.

Woodworking in its various branches is generally the only subject taught in the grades which would be considered as directly related to the important mechanical trades. If the vocational good accomplished by such work consisted only of the facility acquired in the processes taught, it seems that the students destined for trades which work in other materials than wood, or for any profession in which hand skill is necessary, do not receive the training which will best prepare them for their work, therefore destroying the democracy of the public school. Then why has it become an established fact that boys who have had manual training make better progress in any line of work requiring hand skill than other boys who have had only the ordinary scholastic education?

Let us suppose that a boy who has passed through the manual training, or woodwork of the grades, enters a cabinet shop with the intention of learning the trade. The work of furniture making which he performed in the school would, in a factory, be performed only by a workman of experience, whom it was known could perform it well, economically, and every time with the least possible oversight from the foreman; a large part of this work would be done by machinery, instruction in the use of which is not practicable in the grade schools.

This would be a decidedly different proposition than working under school conditions, where the student is continuously under the eye of the teacher, and time, which is of the utmost importance in a shop, is not considered in connexion with the results obtained. He will find that the facility in performing a few simple processes, and the knowledge he may have gained in his two years of manual training, will be acquired in a few weeks by another boy who has never had any preliminary training, yet the former boy will generally make more rapid progress throughout his work.

He will probably be surprised to discover that his advancement is not based upon his knowledge of a few facts and processes, but upon his general adaptability to his work. In fact, he may work a long time in the shop with no opportunity to apply the problems which he worked out in his manual train-

ing classes. A comparison of the quality of the work done in manual training classes with that necessary to meet commercial requirements, and of the economy of the work made in the school and the shop, if the former had been paid for at a fair rate, will explain why this is so.

Considering the above, we must realize two things: first, that there are other reasons for the rapid progress of the manual training student than appear in the models he may have made; second, that there is somewhere in the curriculum a dividing line between the special trade processes necessary to construct the models which are the visible results of a course in tool work, and that part of the work which develops the physical and mental qualities, which gives the average manual training student his superior mechanical adaptability.

Hence it seems a reasonable conclusion that the most practical benefit to be derived from vocational training in the grades will be found in developing those qualities which will be valuable to every one who engages in any form of hand work. While manual training has demonstrated that these qualities may be developed, these results have been an incident, and not the object of the work.

During thirty years of daily contact with workmen, students, or both, the writer has observed of the mass, that about 25 per cent. have good, or first class, 50 per cent. have fair or average, and about 25 per cent. poor or ordinary mechanical abilities. If the mass of workmen could have been classified, and their progress carefully observed from their entrance to the completion of their apprenticeship, and to their permanent rank as workmen, or their development as students, we would find that in a general way, the difference in the mechanical adaptability of individuals at the beginning of their work will be maintained. The boy of awkward, slovenly habits, with little or no mechanical insight or instinct, will usually develop into a workman of the same qualifications, while the boy with good natural mechanical abilities, and who is neat in his personal habits, will make a first class workman. Thus we see that the dearth of first class workmen is not due entirely to the lack of training facilities, but largely to the fact that the available supply of raw material from which good workmen may be evolved is not sufficient to meet modern demands. Therefore, there are thousands of workmen who do not develop beyond mediocrity because they lack the fundamental qualities which allow them to attain the position which might be theirs if their natural mechanical abilities, however small, had been fostered in their childhood.

Judging from what has been accomplished by manual training, there is no doubt that much can be done toward remedying this condition and it seems the province and privilege of the grade schools to perform this important service, as the problems can be most effectively treated during the years spent in the lower grades, for the reason that this is the most impressionable period in life and the opportunity passes with the years, never to return.

The brain of the first class workman must possess the ability to conceive form, the eye must be able to recognize the slightest deviation from that form, and the muscles which guide the hand in its endeavours to shape the object to meet the approval of the brain and eye must be controlled automatically by the nerves connecting them with the brain. It is the difference in the degree of co-ordination or of the automatic control of either, or all of the three above factors of skill that makes the ordinary, the average, and the first class workman. This co-ordination we will designate as "basic skill" that it may be readily understood as separate from the special skill necessary to the practice of any trade.

The work intended to develop basic skill may be taught both boys and girls, as the mental and physical results should in every respect be equal to those attained by the present manual training methods; in fact many of these methods have been proven to be highly efficient in the development of basic skill. The future occupations of grade school students are not an important consideration, as basic skill is equally adaptable to all walks in life in which hand skill is an important factor.

The forms of manual training at present taught in the lower grades, which may be adapted to the development of basic skill,

(Continued on page 292.)

MR. MURRAY'S LIST.

The special attention of all interested in new methods of teaching English is called to the two following books, which possess the merit of having been thoroughly tested in class before publication.

English Grammar.

For Junior Forms. By R. B. MORGAN, M.Litt., Whitgift School, Croydon. 1s. 6d.

As the author is convinced that the teaching of Grammar is largely a matter for the teacher and the blackboard, he has endeavoured to reduce all explanatory matter to a minimum. The exercises are drawn from the literature that most boys are familiar with, and in the early parts of the book the author has not hesitated to use for this purpose the Nursery Rhymes, "Alice in Wonderland," and similar literature. Most of the exercises are intended to be done orally, an exception being the constructive exercises at the end of each group. The terminology employed throughout the book is that recommended by the Joint Committee on Grammatical Terminology.

English Composition.

For Junior Forms. By E. E. KITCHENER, M.A., Whitgift School, Croydon. 1s. 6d.

In this book the mother tongue is treated as a living and spoken language. It aims at developing the power of connected thought clearly and readily in speech and writing. This is worked out by means of synthetic and analytic exercises on sentence construction leading up to the ordinary rules of composition. Special attention has been given to punctuation and to repetition of *prose* passages, and a large amount of oral practice is included.

Matter, Form, and Style.

A Manual of Practice in English Written Composition. By H. A. DRESS O'GRADY, Lecturer at Goldsmiths' College. 2s.

This book treats English Written Composition in an original manner, and is intended as a help to, and not a substitute for, the teacher. It is suitable for the higher forms in schools and students in colleges. Great stress is laid on the broader aspects of the subject, on the need for sincerity in description and discussion, on form as essential to the successful presentation of the matter. Style is treated rather from the point of view of logical sequence, vividness, and clearness. The book is chiefly remarkable for the number of exercises and questions to which answers must be given in writing.

Elementary Geometry.

By A. E. LAYNG, M.A., Late Head Master of Stafford Grammar School. Complete, 3s. 6d. Also in parts, 1s. 6d. each.

As regards the fundamental part, this book follows the lines indicated in the circular on the Teaching of Geometry issued by the Board of Education in 1909.

The Theorems and Constructions enunciated in the Syllabus on Elementary Geometry issued by Cambridge University constitute the "book-work."

The order in which theorems are placed has been chosen with the view of grouping together, as far as possible, closely allied theorems; for instance, the three fundamental theorems relating to congruent triangles. Among the exercises are included nearly all the questions set in the Cambridge Local Examinations during the last eight years.

LONDON:
JOHN MURRAY, ALBEMARLE STREET, W.

are those which require a constant and moderate degree of concentration of the brain, eye, and hand, without the assistance of any tool or appliance which performs any part of the work automatically, or compels the accuracy which should result only from the co-ordination of the three factors of skill. Those forms of manual training are suitable which will allow of the utmost simplicity of equipment and design, the greatest freedom from fine and fussy details, and which will not require a degree of concentration or hand skill beyond the ability of the average child of the grade school age.

The most important vocational ideal for students of grade school ages is that each student shall acquire the greatest possible degree of the ability necessary to conceive, recognize, and execute true form. This ability is limited in the poor and average mechanics, and possessed to a high degree by the first class workman.

It is granted without dispute that the finished work of a class following these methods will not be as geometrically accurate as if mechanical aids were used, but the results will be entirely the work of students, and not largely the work of tools which compel accuracy. This preliminary training will prepare the student to make rapid progress when he begins to use the tools in the seventh grade, as his brain, eye, and hand will have become skilled in performing their functions in the production of form.

The degree of basic skill possessed by the workman beyond that with which he was naturally endowed is the result of his early environment, or acquired in connexion with his daily work after he has passed the age during which his mind and body was most impressionable, and he will never attain as high a place in his trade as if his special training had been given a good foundation before he was twelve years of age.

The most important definite accomplishment which the future artisan may acquire from the usual manual training of the grades is the ability to read and understand simple working drawings; the result of manual training which will be the greatest factor in his progress in his trade is the basic skill which he has incidentally acquired, not the knowledge of the few processes he may have performed in the course of his tool work. Thus, to emphasize a previous statement, the most important ideal of vocational training in the grade schools should be the development of basic skill: instead of being only an incident, it should be the object of all of the hand work of the grades.

The work of the lower grades should lead to that of the seventh and eighth grades, which should consist of the fundamentals of wood and iron working, and mechanical drawing, after which the average student who is obliged to go to work as soon as he leaves the grades would have a fair prospect of attaining as desirable a place in his trade as the boy who has a high natural endowment of mechanical skill without the grade school vocational training, and it is this latter class that has always supplied the first class workmen.

A system of vocational training in the public schools should include special trade instruction in the high school, or in an institution especially for this purpose, in which should also be taught the mathematics, literature, and sciences which are a part of the high school curriculum; these should be adapted to bear directly upon industrial problems. The entire course should be such that the average student completing it would be qualified to enter the shops upon the basis of an ordinary workman, and as his instruction should have covered, by theory or practice, the entire field of his trade, he should make rapid progress into the ranks of the highest skilled workmen.

The majority of the students upon leaving the high school trade courses will enter the shops, because they can at once command a higher salary at their trades, than to begin at the bottom in some other work. Thus the future supply of skilled workmen would be largely augmented, and from a class of young men who are ambitious and intelligent to a degree which will lead them to ever strive to improve their skill and knowledge, and better their positions in their trades. This will naturally result in an improvement in methods and products, and an increasing absorption of the better class of young men into the production departments of our industries, the result of which is the most fervent desire of our manufacturers.

REVIEWS.

The Evolution of Educational Theory. By John Adams, M.A., B.Sc., LL.D., Professor of Education in the University of London. 10s. net. Macmillan.

Sir Henry Jones has planned an important series in which he hopes to give a history of the movement of philosophical thought comparable with the classic works of Hegel and Erdmann, with the advantage that, being written by British philosophers, it will make a more intimate appeal to English readers. We note with much satisfaction that the first part of this programme actually carried out is the part covered by the volume before us. Upon this ground alone hearty congratulations would be due to Prof. Adams. For by publishing his contribution ahead of his colleagues he has demonstrated in a courageous and impressive way that the philosophy of education is no mere aftermath of metaphysical and ethical speculation, but, when expounded by a master, may be made an independent critique of an important department of human history and thought. But praise may go much farther than this. If the rest of Sir Henry Jones's notable company perform their tasks equally well, their enterprise will certainly be a brilliant success and will confer a great benefit upon the English-reading world. "The Evolution of Education" is an admirable book and will greatly enhance the author's already great reputation. That it is delightful to read may be taken for granted, for no one acquainted with Prof. Adams's works will believe that he can write a page which is not full of vivacity and illuminated with wit. Even more conspicuous than these graces is the range and variety of the author's learning, and even more delightful is the natural and unpretentious way in which his erudition appears. He bids us to a wonderful feast, yet one can imagine him to say with perfect sincerity "Persicos odi apparatus." The explanation is simple and indicates one of the most signal merits of the work. Prof. Adams quotes neither for literary ornament nor in the spirit of an antiquary, nor even, as a rule, to defend his own opinions by authority. He turns to authors of all kinds and times—from Socrates to Mark Twain and Mr. Arnold Bennett—simply as to competent observers of life and critics of education, and when his converse with them brings out things pertinent to the questions in debate these things he sets down. As a consequence of this sincerity, vitality, and catholicity of interests, Prof. Adams's philosophy of Education is in the best sense a philosophy of the market place. The most serious student cannot afford to pass him by, yet he will be heard gladly by hundreds who have no love of the academic point of view and are repelled by the academic idiom.

In relation to the book as a whole, the first three chapters are introductory. The first defines the nature and scope of educational theory. The second inquires what are the data upon which educational theory must build. The third deals with the question—so much more difficult than it appears at first sight—as to the sense in which there is a "history" or "evolution" of Education, and effects a preliminary analysis of the secular educational movement to serve as a basis for the detailed studies of the next eight chapters. The work concludes, as is meet, with a chapter on the Educational Outlook.

The first chapter should be read very attentively, for it contains the key to Prof. Adams's whole view of educational development. After demonstrating the practical importance—and, indeed, the inevitableness—of theories of education, he seeks to define the true nature of the educational process. After showing the inadequacy of the view covered by the familiar derivation "*e* = out of, and *duco* = I lead" (a view to which, by the way, even so cautious a writer as Mr. McDougall seems in his latest book to subscribe), he elaborates the doctrine that education is essentially a "bi-polar" process. In order to describe this process, we have need of a term correlative to "educator." Prof. Adams offers us the word "educand," a term which will, no doubt, be widely accepted, for it suggests very aptly the *purposiveness* which is a necessary feature of any truly educational process. Thus, what Schopenhauer calls "natürliche Erziehung," and Huxley "education by Nature's methods," cannot properly be called education unless we are prepared to read rational purpose into the cosmic forces. It is, however, vital to note that education, though always bi-polar, does not necessarily involve two distinct personalities. The educand may pass from a stage in which he is not aware that he is being educated, through one in which he takes a conscious share in the process, to a final

(Continued on page 293.)

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stage in which he deliberately sets himself to continue it. We have here an "evolution" within the limits of the individual which recapitulates the educational evolution of the race.

The endowment of the educand, of course, supplies the fundamental data of education. If we consider a single educand the most important questions are, in what sense and how far his endowment is capable of being modified by education. If we take the longer view, we have to discuss the means by which the education of the present generation may be made to subserve the development of the next. Here the inquiry inevitably enters into regions of controversy. The relative importance of nature and nurture, the possibility of transmitting acquired characters by inheritance—these and similar unsettled questions vex the souls of educational reformers and are the happy hunting grounds of the eugenists. They are all discussed with the author's characteristic insight, moderation, and breadth of view.

Chapter III, on the historical aspect of educational theory, brings us face to face with very different problems. The fundamental question here is: in what does educational progress consist? Is it a process of evolution in the Hegelian sense, or is it what Driesch has called a "cumulation"? That is to say, is the history of educational thought a movement which expresses an inner unity and is directed towards a preordained end, or is it simply a series of events running rhythmically in cycles in accordance with certain laws of individual and "collective" psychology? On the whole, Prof. Adams appears to lean to the second alternative. In the strict sense of the term, there is no evolution of educational theory as a single whole. Special circumstances give rise every now and again to a new theory which makes its way in the world more or less at the expense of its predecessors; but after a time the new-comer settles down among the oldsters upon the basis of some *modus vivendi*. Thus, "probably at the present day examples could be found of practical applications of all the theories of education that have ever been promulgated" (page 100). All these theories tend to run a similar course. "Each new system, or each variant of an old system, begins with a rich content, and supplies the educand with abundant material to work upon. Gradually this material gets thoroughly well arranged, and thus forms a capital basis for educational work. The next step is the over-organization of matter, with the consequent predominance of the formal element. By and by formalism develops to such an extent that there is little but form left, and there is room for the negative movement and a new kind of education" (page 157).

The main part of the book exhibits the application of this law to the most important educational theories. It is impossible to follow here the course of Prof. Adams's illuminating exposition. It must suffice to say in general that his discussions are interesting and instructive in the highest degree, and that they focus a body of opinion and criticism which is truly remarkable. The chapter on the Pre-historic Stage contains some charming pages on the social value of convention. The chapter on the Social and the Individual Aim in Education treats an old topic in a highly original and suggestive way. The interest of the discussion centres round two nuclei: the relation between the two ideals of "self-expression" and "self-realization" and the significance of Monasticism and Scholasticism in educational history. The former topic is of special practical importance in view of certain doctrines which are beginning to find their way eastwards across the Atlantic. From the discussion of the latter we call the following *obiter dicta*:—"Anyone comparing the essays in 'Lux Mundi' with the work of the scholastic masters dealing with the same topics must feel that *logical* deterioration has taken place. So far as it represented an educational system, Scholasticism must be regarded as the most nearly perfect formal development ever reached. . . . If formal training ever had a chance of developing its possibilities, it was then" (page 158).

The next chapters fall naturally into three pairs. Each of these pairs treats of two phases of educational theory which are mutually complementary or opposed. In Chapters VI and VII the view that education should prepare the educand specifically for a definite calling in life is contrasted with the doctrine that its function is to give a "general mental training" which will fit him to go anywhere and do anything. Prof. Adams shows very clearly how naturally the former of these views passed over into the latter in spite of their apparent diametrical opposition. His discussion of Knowledge as an Organon leads him also to a very valuable summary of the latter stages of the controversy about "formal training."

Humanism and Naturalism are the second pair of opposites or complements. Of these we are told that "Humanism may be said to have the same relation to Naturalism that Scholasticism has to Monasticism. Naturalism and Monasticism deal with education practically from the point of view of the formation of character. Their aim is to produce a certain kind of man. Humanism and Scholasticism are mainly concerned with knowledge" (page 229). Realism Prof. Adams is hardly inclined to recognize as an independent educational system. "The realist was merely a humanist whose conscience was aroused at the distance to which humanism had wandered from the realities of life" (page 237). The analysis of the notions underlying the rather hazy pronouncements of Naturalism is penetrating and convincing. Incidentally the author gives the Jesuits the credit they deserve for making "the educand himself the centre around which their methods worked" generations before Rousseau "re-discovered paidocentricism" and popularized it" (page 262).

Thirdly comes the pair of opposed views which the author calls respectively "the idealistic basis of education" and "the mechanical view." In this context idealism means the assumption that the universe is rational and governed by laws which work together to secure systematic order in its development. This assumption works out into a doctrine first consistently preached by Froebel and latterly endorsed by Mr. Bernard Shaw. According to this doctrine the function of the teacher is the negative one of the gardener who has done all that can be expected of him if he "seeks out the best site for his plants, and sees that they get a sufficient supply of air and water" (page 290). In education the mechanical view is opposed to the idealistic, not necessarily as materialism is opposed to what Prof. Ward calls "spiritualism." It means, in brief, the belief that the mind of the educand can be fashioned by external forces. Thus it stands for optimism in education and for the exaltation of the rôle of the educator. Herbart's pedagogy is the most notable expression of this belief. Most readers of the present work will already be familiar with Prof. Adams's book on the Herbartian Psychology applied to Education. They will be prepared, therefore, for a masterly analysis of the doctrine of presentations. The author is careful, however, not to work again over the ground which he explored in his earlier book. Moreover, his criticism of a thinker with whose work his own reputation is so closely linked exhibits in a striking way his characteristic balance and fairness of mind.

The prophecies of a distinguished man about his own department have a peculiar fascination for those who follow the same *métier*. It is probable that many readers will find Prof. Adams's "educational outlook" as interesting as anything in the book. We must be content with a few indications of what he sees ahead. In the first place he foretells important developments from the quantitative investigations into faculty pursued on the Continent by Binet, and in England by Prof. Spearman, his followers and his critics. He thinks that "the trend of educational theory is certainly in the direction of giving a bias towards the future life-work of the educand." Speaking of the increasing grip of administration over our educational system, he complains that "the trouble is that administrators can hardly be got to realize that the important element in education is the teacher." Finally, after discussing Mr. Holmes's demand for "160,000 Egerias" to man the elementary school as one impossible to meet, he tells us that "all the present indications . . . point . . . to a future in which the profession will be made up of a great mass of men and women of a high level of average intelligence and virtue, but without 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 initiative." With this prediction we must take leave of a book which will speedily be recognized as one of the most important and stimulating works in the whole range of modern pedagogy.

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(Continued on page 296.)

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manuals. The new work is perhaps even better suited to the shelves of a college library than to the private collection of the individual, and when it has been in circulation for a prolonged period, readers of mathematics will be in a far better position than they are at the present moment to estimate truly the value of the work in the special directions in which the editor desired to promote advance. His aim has been to construct bridges connecting the region of elementary mathematics with the extensive field of higher mathematical study and to further, by means of them, the desire for wider knowledge which certainly exists in many teachers and students to whom perhaps the directive influence is of importance or with whom, it may be, the leisure for study is limited, whilst they nevertheless wish to obtain insight into some one branch of higher mathematics. The tendency in these days is to specialize; the expert in the Theory of Numbers and the Higher Arithmetic is not likely to be the man best fitted to write, say, on the Foundations of Geometry or on the Fundamental Notions of the Infinitesimal Calculus. Yet the mental bias of many a student may be towards either of these or some other special subject, and may induce a desire for initiation into some of its mysteries. Hence we find Dr. Young inviting and securing the able co-operation of men whose names are well known beyond the lecture rooms of the various Universities of America in which their principal work lies. The result is the production of the present unusually designed and interesting volume, which embraces, as its title suggests, a series of instructive mathematical essays. Every essay is essentially independent of the others, save that, since references may be more readily made to pages of the volume in course of perusal than to other treatises, these are often given. Every essay is in very fact a bridge, for it is more or less connected with elementary material, but at the same time it is the product of modern thought and modern methods and its treatment leads to advanced work. Of the nine "Monographs" which combine to form the volume, four—the first three and the eighth—are devoted to geometrical subjects—namely, "The Foundations of Geometry," by Prof. Oswald Veblen; "Modern Pure Geometry," by Dr. T. F. Holgate; "Non-Euclidean Geometry," by Dr. F. S. Woods; and "Constructions with Ruler and Compasses: Regular Polygons," by Dr. L. E. Dickson. Again, two essays treat of Algebraic subjects. These are due to Drs. E. V. Huntington and G. A. Miller respectively. The remaining "Monographs" are severally occupied with "The Function Concept and the Fundamental Notions of the Calculus," "Theory of Numbers," and "The History and Transcendence of π "; they are respectively from the pens of Dr. G. A. Bliss, Dr. J. W. A. Young—the editor of the volume—and Dr. D. E. Smith. The professional status of the various authors is sufficient to assure the student of the value in a general sense of the "Monographs"; and, whilst these are all useful and interesting, it is manifest that they will win a degree of popularity varying in the case of the individual student in direct proportion to his predilections in favour of the several subjects considered.

EXPERIMENTAL PSYCHOLOGY.

A Textbook of Experimental Psychology, with Laboratory Exercises. Second edition. In two parts (I, Textbook; II, Laboratory Exercises). Figures and diagrams. By Charles S. Myers, University Lecturer in Experimental Psychology, Cambridge. 2 vols., 10s. 6d. net. Cambridge University Press.

This second edition of a pioneer book in the English field has undergone extensive revision in the light of recent knowledge, more especially of nervous mechanism and process, and the very useful bibliographies which close each of the twenty-six chapters have been brought down to date. An entirely new chapter has been added on "Thought and Volition." The separation of the work into two volumes has made the exercises easier, or more convenient, of reference, while the format is a distinct improvement on the first edition.

Teachers, and students of education generally, will probably find most to interest them in the chapters on memory, fatigue, attention, thought, and volition; to which may be added the account, in Chapter X, of statistical methods. It is characteristic of the book that these chapters record, rather than explain; the author—rightly, as we think—holds that in all, or nearly all, its fields of inquiry experimental psychology is as yet more profitably engaged in the accumulation of data than in attempting to rationalize them. The view is justified by some of the dogmatic propositions laid down by less cautious students, who find sim-

licity and a clear issue where Dr. Myers seems to be most impressed by the complexity and individual variations of the phenomena investigated. The fact that, within less than three years, the earliest English textbook on its subject could undergo extensive changes, made needful by advance in knowledge within the interval, speaks plainly as to the inchoate character of the study at the present time. It seems evident that it is too soon to look with any great confidence for results—at least, on a great scale; a much longer period of trial and error is required before that stage can be attained. Meantime, much can be done in the elaboration and criticism of method, for both of which purposes the book under notice is very helpful. From this point of view the new chapter is instructive, in spite of the somewhat inconclusive character of the discussion.

So far, results appear to be most assured and, for teaching purposes, of most value in those experimental studies which deal with memorizing. Dr. Myers sums up in a brief space our present knowledge of processes which concern, in varying degrees, all kinds of instruction given to children. The account is not less valuable because the author fully recognizes the difference between the conditions and exercises of the laboratory and the everyday life of the school.

GENERAL NOTICES.

CLASSICS.

Thucydides, Book IV. Edited by A. W. Spratt, M.A., Fellow and Tutor of St. Catharine's College, Cambridge. Cambridge University Press (Pitt Press Series).

This is the third volume of the scholarly series from the pen of Mr. Spratt, Books III and VI being its predecessors. The introduction furnishes a compact and clear narrative of "the prelude to the Ten Years' War." In referring to the causes of the Peloponnesian war, he mentions "the commercial rivalry of Corinth and Athens" as a new cause suggested by modern criticism, and he is familiar with Dr. Grundy's work, but he does not commit himself to an opinion. On page ix (line 8 from bottom), surely "Corinth" is a slip for "Epidamnus" (or at least "Apollonia"), and on page xii, line 2, "Corecyreans" should be "Corinthians." For school use the *apparatus criticus* seems considerably in excess; but we are glad to note that Mr. Spratt has "already collected material for a critical edition of all eight books." The notes are quite sufficiently copious, and they are good. There are ample indexes. A very elaborate and valuable edition.

The Peace of Aristophanes. Translated into Corresponding Metres by R. F. Patterson. 1s. net. Nutt.

Mr. Patterson has aimed at a literary rather than at a literal translation. In the blank verse, however, he sticks very closely to the original; it is in the lyrics, naturally, that he has taken a freer hand. He enters into the spirit of the play, and effects a scholarly reproduction. There are clever turns in the lyrical parts, and the parabasis goes with stately verve. The pre-eminence of Dr. Rogers need not deter Mr. Patterson from attempting another play.

The ninth annual volume of the *Proceedings of the Classical Association* has just been published by Mr. John Murray (2s. 6d. net). The papers and the discussions contain many points of interest.

Mr. Murray also publishes the *Recommendations of the Classical Association on the Teaching of Latin and Greek*—a series of reports by committees (1s. net). These are Reports on the Spelling and Printing of Latin Texts (1905), on the pronunciation of Latin (1906) and of Greek (1908), on the teaching of Latin in secondary schools (1907), and on a four years' Latin Course for secondary schools in which the leaving age is about sixteen (1909). These reports represent a great deal of thought and discussion, and cannot fail to engage a wide interest.

The University Press of Stanford University, California, reprints separately a paper on *Early Etruscan Inscriptions* (Fabretti 2343-2346), contributed by Dr. George Hempl, Professor of Germanic Philology in Stanford University, to the recent memorial volume in honour of the late Prof. Matzke. The paper is an abstract from a promised volume on "The Etruscan Tongue," which claims to furnish "the first authentic report on Prof. Hempl's discoveries as to the nature of the Etruscan language and its relation to other Italic dialects." In the present paper he deals with three very early inscriptions, with a view to making it clear that "early Etruscan can scarcely be distinguished from Old Latin." But he does not here investigate the question whether these inscriptions are indubitably Etruscan. The inquiry is ingenious and interesting.

MATHEMATICS.

A School Algebra. Part II. By H. S. Hall, M.A. 1s. 6d. Macmillan.

The author has long been deservedly popular as a writer on elementary algebra. The little volume before us is the second of three sections of a work on the subject, the aim of which is to provide a complete school course of modern type. Pupils commencing to use the second of the

(Continued on page 298.)

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three Parts are supposed to have studied algebra as far as and including quadratic equations. Those who have completed its course are, or should be, ready to proceed to the binomial theorem. A chapter on progressions opens the present volume, subjects usually placed earlier, but often presenting more difficulty to pupils, being deferred till later. The course of study suggested by Parts I and II combined is sufficiently advanced to cover the work required for the University Entrance Examinations and others of similar standard.

The Board of Education has published in the section of series of "Special Reports on Educational Subjects" reviewing the teaching of mathematics in the United Kingdom the following further papers: No. 19, *Mathematics in Scotch Schools*, by Dr. G. A. Gibson, Professor of Mathematics in the University of Glasgow; No. 20, *The Calculus as a School Subject*, by Mr. C. S. Jackson, Instructor in Mathematics at the Royal Military Academy, Woolwich; and No. 21, *The Relation of Mathematics to Engineering at Cambridge*, by Mr. B. Hopkinson, Professor of Mechanism and Applied Mechanics in the University of Cambridge.

SCIENCE.

An Introduction to Quantitative Analysis. By S. J. M. Auld, D.Sc. Lond., Ph.D., F.I.C., F.C.S., Head of the Chemical Department, South-eastern Agricultural College (University of London), Wye, Kent. 5s. Methuen.

Dr. Auld furnishes a businesslike introductory course for college and University students, keeping the theoretical treatment to narrow limits and excluding matters unnecessary for the average learner. After full introductory explanations as to materials and apparatus, he describes successively volumetric and gravimetric analysis, and adds chapters on separations, analysis of minerals, and on water, vapour densities, and equivalent and combining weights. "The treatment adopted has been to give, as far as possible, standard and well proved methods only, although no effort has been spared to bring the volume up to date with regard to well attested recent processes of estimation." The book is the work of a lucid and discriminating practical teacher. There are seventy-four figures and a number of useful tables are appended.

"International Scientific Series."—Vol. XCVIII, *Crystals*. By A. E. H. Tutton, D.Sc., M.A. Oxon., F.R.S., Vice-President of the Mineralogical Society. 5s. Kegan Paul, Trench, Trübner, & Co.

Dr. Tutton presents the phenomena of crystallography in a most engaging way to readers of ordinary culture without forbidding mathematical formulæ or unnecessary technical terms. He traces the historical development of the study from the middle of the sixteenth century, but especially from the year 1782, when the Abbé Hauy laid before the French Academy the investigations that placed the new science on a firm footing. He outlines efficiently the immense progress of recent years and points out carefully how far the latest theories are supported by actual experimental facts. The subject is of enthralling interest, and the historical treatment, with incidental biographical notes, enhances the attraction of the volume. There are 120 illustrations.

Messrs. Chambers issue an "entirely new edition" (November 1911) of Part I of *Organic Chemistry*, by W. H. Perkin, Ph.D., Sc.D., LL.D., F.R.S., Professor of Chemistry, Victoria University, Manchester, and F. Stanley Kipping, Ph.D., Sc.D., F.R.S., Professor of Chemistry, University College, Nottingham. While the original aims and general plan remain unaltered, the matter has been considerably rearranged, new chapters or sections have been added, and the scope of the work has been somewhat extended, especially to meet the requirements of medical students and of students preparing for an Honours degree examination. The names of the authors guarantee the quality and suitableness of the exposition.

MODERN LANGUAGES.

Outlines of the History of German Literature. By J. G. Robertson, Professor of German in the University of London. 3s. 6d. net. Blackwood.

Prof. Robertson has not contented himself with a mere abridgment of his excellent "History." This is a fresh book, though written from practically the same standpoint. The author's aim has been "rather to lay down general lines of development than to heap up biographies or critical detail." He has firmly excluded or cut down minor writers in order to find space for a substantial treatment of the chief writers and works. He thus presents a clear and fluent outline of the development of the literature, admirably adapted as an introduction. Extensive chronological tables are appended, and an index.

The Oxford Book of German Verse (Das Oxford Book Deutscher Dichtung) from the twelfth to the twentieth century. Edited by H. G. Fiedler, Taylorian Professor of German Language and Literature in the University of Oxford. With a preface by Gerhart Hauptmann, Hon. D.Litt. Oxon., Hon. Ph.D. Leipzig. 6s. net. Clarendon Press (Frowde).

This is an excellent anthology of German lyrics, ballads, and "Spruchdichtung," presented in the same charming form as the English, French, and Italian anthologies preceding it. The selection is substantially chronological. A considerable number of copyright pieces are included, while many poems, even in the older periods, have been diligently sought out for first appearance in such a collection. The poems and "Sprüche" of the Minnesinger period are translated into modern German, and the

spelling of the fifteenth, sixteenth, and first half of the seventeenth century has been modernized. Instructive notes (in German) are added; and there are serviceable indexes of poets, composers, and first lines.

The Scholar's Italian Book: an Introduction to the study of the Latin origins of Italian. By J. E. Flecker. 3s. 6d. Nutt.

The Latin origins of Italian must be found indirectly: Mr. Flecker provides only some incidental illustrations. His "sole object has been to enable any intelligent student who knows some Latin and French to learn with the minimum of labour to read a great literature." To this end he furnishes a skeleton grammar, sufficient to start with; and then an anthology of Italian prose and verse, with foot-notes mainly in the nature of a vocabulary, and with an English translation of a few of the earlier extracts on the page opposite the Italian text. Two or three Dante passages are given in appendix by way of introduction to the great master. The volume will be very useful for collateral reading, and it will be welcome to adults that wish an introduction uncluttered by a multiplicity of grammatical details.

STORIES FOR YOUNG READERS.

Messrs. Methuen issue three series of stories, all edited by Miss E. M. Wilmot-Buxton, F.R.Hist.S., (1s. 6d. a volume). The first is a series of "Stories from Old Romance," which may be used as literary readings by children of eight to ten. There are (1) *Stories from Old French Romance*, by E. M. Wilmot-Buxton; (2) *Stories from Old Italian Romance*, by Susan Cunningham; and (3) *Stories from Old English Romance*, by Joyce Pollard.—The second series consists of "Stories from the Great Writers"; of which we have (1) *Stories from Dickens*, by Joyce Cobb; (2) *Stories from Bunyan*, by Edith L. Elias; and (3) *Stories from Chaucer*, by Ada Hales. The selected incidents have been abridged or retold.—The third series is "Stories from the Histories," narrating great events and displaying great characters. There are (1) *Tales from Irish History*, by Alice Birkhead, M.A. (with a map); and (2) *Stories from French History*, by Taylor Dyson, M.A., Nottingham High School (with a map of Europe in time of Charlemagne). Each volume runs to about 150 pages. The stories are well chosen and simply told; and all the series ought to be very attractive to young readers. Type and get-up very agreeable.

Messrs. Ralph, Holland, & Co. publish two volumes "with the object of providing Upper Classes in Primary Schools and First Year Scholars in Secondary Schools with typical European hero-lore"—(1) *A Book of Northern Heroes*, and (2) *A Book of Southern Heroes*, both by A. J. Dicks, B.A., B.Sc. Lond., Principal of Walthamstow County High School (1s. 6d. each). There are stories of Norse, Finnish, Anglo-Saxon, and Germanic heroes, and stories of Old Greece and Rome, happily selected, admirably told, and with a large admixture of poetical pieces. These delightful volumes cannot fail to be very widely appreciated. Each of them has a frontispiece and a heroically illustrated cover.

The same firm has just published also *The Story Threads*, by Edith Kimpton, M.A., A.K.C., Assistant English Mistress, Lady Holles' School for Girls (1s.). It tells in simple form a number of most interesting stories from English literature—an exceedingly effective way of attracting young people to further study. But Miss Kimpton must calculate the age of Shakespeare again; he did not die at the age of 42. There are numerous pretty illustrations by Peter Campbell.

Stories from Old Chronicles, chosen and edited with brief introductions by Kate Stephens (Sidgwick & Jackson), narrate incidents and movements, legendary and (mainly) historical, from King Lear down to the Two Princes in London Tower. The originals are freely adapted, but the quaint flavour is kept. A very interesting and attractive series of episodes, in Scotland and France as well as in England.

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In noticing the first volume we indicated the general plan of the work, which is steadily followed out in these later volumes. The treatment of the actual subjects of instruction in elementary and secondary schools, begun in the first volume, is continued in the second and third volumes, in the latter of which it is supplemented by some general articles still dealing with the Child as a Mind; and the fourth volume takes up the consideration of the Child as an Animal. The second volume contains eleven articles—on Nature Study; Phonetics of English, French, and German; the Teaching of English; Geography; History; Educational Handwork; Music; Domestic Science; and School Gardening. The third volume has ten articles—on Mathematics (chiefly in the elementary school); Modern Languages; Classics; Elementary Physics and Chemistry; Botany, Biology, and Geology; Commercial subjects (in schools and institutes); School Libraries; Co-education; School Employment Bureaux; and the Child and the Law. The fourth volume deals, in eight articles, with the Child and School Hygiene; Medical Supervision of School Children; Provision of School Meals for the Children of Poor Parents; Physical Training in Elementary and Sec-

dary Schools; Gymnastics and Games for Girls; and Play. The fifth volume completes this subject in five articles, and describes in 14 more articles various types of schools. The sixth volume treats of the blind and deaf, organization and finance, and education in various countries. The seventh and last volume is mainly occupied with a history of educational thought, but deals also with training, and has a suggestive paper on "The Teacher's Library," by Prof. Adams. The articles are generally on a high level, though some of them are weaker than one might have anticipated. There are a good many excellent plates, usefully illustrative. Altogether the work will form a valuable addition to the library of the teacher.

We welcome a second edition of "*Experimentelle Pädagogik, mit besonderer Rücksicht auf die Erziehung durch die Tat.*" by Dr. W. A. Lay (M. 1.25, Teubner—"Aus Natur und Geisteswelt" series). The volume has been thoroughly revised and somewhat enlarged. It has had a very extensive circulation in Germany and has been translated into Russian, Bohemian, and Japanese.

THE HOME UNIVERSITY LIBRARY.

Messrs. Williams & Norgate's "Home University Library of Modern Knowledge" is expanding rapidly. The April contingent of ten volumes is as follows:—(1) *Agriculture*, by Prof. Somerville, of Oxford; (2) *Matter and Energy*, by Frederick Soddy, F.R.S., Lecturer in Physical Chemistry and Radioactivity, University of Glasgow; (3) *The English Language*, by Logan Pearsall Smith, M.A.; (4) *The Principles of Physiology*, by Emeritus Professor J. Gray McKendrick, F.R.S.; (5) *Psychology—the Study of Behaviour*, by William McDougall, M.B., Reader in Mental Philosophy in Oxford University; (6) *The American Civil War*, by Frederic L. Paxson, Professor of American History in the University of Wisconsin; (7) *Buddhism: a Study of the Buddhist Norm*, by Mrs. Rhys Davids, M.A., Lecturer in Indian Philosophy in Manchester University, Fellow of University College, London; (8) *English Literature—Medieval*, by Prof. W. P. Ker, F.B.A., University College, London; (9) *Non-conformity*, by Principal W. B. Selbie, D.D., Mausfield College, Oxford; (10) *Conservatism*, by Lord Hugh Cecil, M.A., M.P. The quality of the volumes is well sustained, as might be expected from the names of the authors. Each volume, we may repeat, has been specially written for the series.

CAMBRIDGE MANUALS.

The Cambridge University Press, with commendable promptitude, has just issued another batch of ten volumes of the series of "Cambridge Manuals of Science and Literature" (1s. net each). (1) *Methodism*, by H. B. Workman, D.Lit., Principal of the Westminster Training College; (2) *Life in the Medieval University*, by R. S. Rait, M.A., Fellow and Tutor of New College, Oxford; (3) *Goethe and the Twentieth Century*, by J. G. Robertson, M.A., Ph.D., Professor of German Language and Literature in the University of London; (4) *A History of Civilization in Palestine*, by R. A. S. Macalister, M.A., F.S.A., Professor of Celtic Archaeology in University College, Dublin, sometime Director of Excavations, Palestine Exploration Fund; (5) *The Ballad in Literature*, by T. F. Henderson; (6) *Ancient Assyria*, by C. H. W. Johns, Litt.D., Master of St. Catharine's College, Cambridge; (7) *The Troubadours*, by the Rev. H. J. Chaytor, M.A.; (8) *Rocks and their Origins*, by Grenville A. J. Cole, Professor of Geology in the Royal College of Science for Ireland; (9) *The Origin of Earthquakes*, by Charles Davison, Sc.D., F.G.S.; (10) *Spiders*, by Cecil Warburton, M.A., Christ's College, Zoologist to the Royal Agricultural Society. The variety of the volumes is obvious, and the names of the authors guarantee the quality of the text.

MISCELLANEOUS.

The Post Office and its Story. By Edward Bennett.
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The volume contains "an interesting account of the activities of a great Government department," the earlier times being treated briefly, and the more modern developments, especially the rapid extensions of the past twenty years, being more fully narrated. Mr. Bennett describes the successive buildings that have housed the General Post Office in London, the Travelling Post Office, the Parcel Post, and Motor Mails; deals with the Undelivered Postal Packet, Money Orders and Postal Orders, the Post Office Savings Bank, the Telegraph, the Telephone, Engineers' Stores and Factories, Ocean Mails; and, having explained the Postal Union, tackles Foreign Post Offices and the Post Offices of the Empire; and concludes with the Staff, the Post Office Guide, and the special work entailed by the payment of Old Age Pensions, &c. The work is comprehensive, well informed, and written in an easy, popular style. It impresses the magnitude of the business, the efficiency of its conduct, and importance of the human factor in the working of the huge machine. There are 31 useful and interesting illustrations.

Bush Days, by Amy E. Mack (Mrs. Launcelot Harrison) is a charming series of a long score of articles reprinted from the *Sydney Morning Herald*, mainly about birds, but also about trees and flowers and other natural objects. The sketches are written with much observation and sympathy, and in very simple style. The book is liberally illustrated by excellent photographs.

The Dream of Gerontius, by Cardinal Newman, with many appropriate

illustrations by Francis E. Hiley, forms the fifth volume of Messrs. Gay & Hancock's delightful "Garrick Series" (1s. net).

The Yearbook Press (31 Museum Street, W.C.) issues *The Girls' School Yearbook (Public Schools)*—the official book of reference of the Association of Head Mistresses (3s. 6d. net). This is the seventh year of publication. The information is very full and clearly disposed, and every effort has been made to render it accurate. The "Directory of Women Teachers" is now definitely promised for the coming autumn.

HOLIDAYS.

Switzerland (Grieben's Guide Books, Vol. 123) reappears opportunely in a second edition, revised and enlarged, with seven maps. It is very handy for the pocket and very clearly printed, and the information is ample for most travellers. 3s. net, Williams & Norgate.

Mr. Francis Hodgson (89 Farringdon Street, E.C.) issues for the Teachers' Guild the twenty-ninth annual edition of *Holiday Resorts and Recommended Addresses at Home and Abroad* (1s. net; 1s. 2d. post free). It contains a vast amount of carefully selected information, which every teacher ought to see before starting on holiday.

The Great Eastern Railway Company issue an attractively illustrated guide to *The Moselle*, by Percy Lindley. It can be obtained free by sending a post card to the Continental Manager, G.E.R., Liverpool Street Station, London, E.C.

FIRST GLANCES.

MATHEMATICS.

Algebra for Beginners. By C. Godfrey, M.V.O., M.A., Head Master of the Royal Naval College, Osborne, formerly Senior Mathematical Master at Winchester College, and A. W. Siddons, M.A., late Fellow of Jesus College, Cambridge, Assistant Master at Harrow School. 2s. 6d. Cambridge University Press.

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- Cape of Good Hope. Report of the Superintendent-General of Education for 1909-10.
- Carnegie Foundation for the Advancement of Teaching.—Medical Education in Europe. Bulletin No. 6.
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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.

17259. (NORMAN ALLISTON.)—Whenever m is prime to r (m and r being whole positive exponents), integral solutions of $x^m \pm y^r = z^m$ are possible. (Cf. Fermat's power summation theorem.)

Solution by the PROPOSER.

(1) $x^m \pm y^r = z^1$ admits of integral solution.

Consequently (2) $x^m \pm y^r = z^{m+1}$ " " " " ;
for the multiplication of (1) by z^m gives (2) $(z^m x)^m \pm (z^m y)^r = z^{m+1}$.

Whenever $m+1$ is a composite number, any one of its factors may stand in place of $m+1$ itself and still leave the root whole, viz., some power of z . Therefore, if any multiple of m is among the series of $rn+1$ numbers, $x^m \pm y^r = z^m$ admits of integral solution.

But all numbers prime to r have multiples among the series of $rn+1$ numbers, as may be proved by Fermat's method of indefinite descent.

Suppose that there is, if possible, a number p , an exception to the rule.

(I) No multiple of p , prime to r , is of the form $rn+1$.

But p itself is of the form $rn+s$, and $=ra+s$.

The residue s is here made $< r$; but it cannot be zero, for then p would be rn ; would be a multiple of r instead of being prime to it. Neither can s be unity, since $ra+s=p$, the one fold of which, as a virtual multiple, is not of the form $rn+1$. Again, s must be prime to r , for otherwise r and p would have a common divisor. Lastly, no multiple of s can be of the form $rn+1$; because if some multiple $sx = ry+1$, then $x(ra+s)$ would be $r(xa+y)+1$; that is, the multiple xp would be of the form $rn+1$, contrary to supposition.

(II) No multiple of s is of the form $rn+1$; and, conversely,

No multiple of r is of the form $sn-1$.

Neither is any multiple of r of the form $sn+1$; because, if some multiple $rx = sy+1$, other multiples $r(sn-x)$ would be $s(rn-y)-1$; that is, some multiples of r would be of the form $sn-1$, contrary to deduction.

(III) Therefore no multiple of r , prime to s , is of the form $sn+1$.

This instance is similar to the original one, but the form is a lower one; and from it, by parity of reasoning, a third similar instance may be reached, in which the number and the form are still lower; and so on indefinitely, for the residues, whilst they are thus constantly diminished, can never become unity or zero.

But there cannot be an infinity of forms of the form $rn+1$ lower than $rn+1$, or of whole number residues less than s , any particular residue.

Therefore the assumption is false; and there is no number p , prime to r , no multiple of which is among the series $rn+1$. Therefore some multiples of all numbers prime to r are among the series $rn+1$; and numbers of the form $rn+1$ are themselves prime to r .

Therefore, whenever m is prime to r , &c.

Corollary.—Whenever a couple of the exponents are interprimary,

$$x^n \pm y^q = z^m \quad \text{and} \quad w^p \pm v^q \pm \dots \pm y^r = z^m$$

admit of integral solutions.

17249. (W. F. BEARD, M.A. Suggested by Question 17176.)—CP, CD are conjugate semi-diameters of an ellipse; the chords of curvature at P, D meet at O. Prove that (i) O lies on the circle CPD, (ii) the locus of O is a sextic through the meets of the tangents at the ends of the axes, and touching the axes at C.

Solutions (I) by E. L. SCOTT, M.A., and Prof. J. C. SWAMINARAYAN, M.A.; (II), by M. SATYANARAYANA, M.A.

(I) Let $\theta, \theta + \frac{1}{2}\pi$, be the eccentric angles of P, D. Then OP is the line $x/a \cos \theta - y/b \sin \theta = \cos 2\theta$ (i),

and OD the line $x/a \sin \theta + y/b \cos \theta = \cos 2\theta$ (ii).

The co-ordinates of O are, therefore, given by the equations

$$x/a = \cos 2\theta (\cos \theta + \sin \theta) \quad \text{.....(iii),}$$

$$y/b = \cos 2\theta (\cos \theta - \sin \theta) \quad \text{..... (iv).}$$

The equation of PD is

$$x/a (\cos \theta - \sin \theta) + y/b (\cos \theta + \sin \theta) = 1.$$

The circle which meets the ellipse at the extremities of this chord, and

also passes through C, is given by the equation

$$\begin{aligned} & [x/a (\cos \theta - \sin \theta) + y/b (\cos \theta + \sin \theta) - 1] \\ & \quad \times [x/a (\cos \theta - \sin \theta) - y/b (\cos \theta + \sin \theta) - \lambda] \\ & \quad + \lambda (x^2/a^2 + y^2/b^2 - 1) = 0, \end{aligned}$$

where $1/a^2 [(\cos \theta - \sin \theta)^2 + \lambda] = 1/b^2 [\lambda - (\cos \theta + \sin \theta)^2]$,
 i.e., $\lambda = [b^2 (\cos \theta - \sin \theta)^2 + a^2 (\cos \theta + \sin \theta)^2] / (a^2 - b^2)$
 $= (a^2 + b^2) / (a^2 - b^2) + \sin 2\theta$.

Upon substituting this value of λ the equation of the circle CPD becomes

$$2(x^2 + y^2) - x/a (\cos \theta - \sin \theta) [2a^2 + (a^2 - b^2) \sin 2\theta] - y/b (\cos \theta + \sin \theta) [2b^2 + (a^2 - b^2) \sin 2\theta] = 0,$$

and it is easily verified that this equation is satisfied by substitutions for x and y from equations (iii) and (iv). Hence O lies on the circle CPD. From (iii) and (iv),

$$x/a + y/b = 2 \cos 2\theta \cos \theta, \quad x/a - y/b = 2 \cos 2\theta \sin \theta;$$

therefore $x^2/a^2 + y^2/b^2 = 2 \cos^2 2\theta$.

Also $\tan \theta = (bx - ay) / (bx + ay)$,

whence $\sin^2 \theta / \cos^2 \theta = [(bx - ay) / (bx + ay)]^2$,

and $\cos 2\theta = 4abxy / 2(b^2x^2 + a^2y^2)$.

Elimination of θ from (iii), (iv) gives, therefore, as the locus of O, the curve

$$\frac{1}{2} (x^2/a^2 + y^2/b^2) = (4a^2b^2x^2y^2) / (b^2x^2 + a^2y^2)^2,$$

or $(b^2x^2 + a^2y^2)^3 = 8a^4b^4x^2y^2$,

a sextic touching the axes at C, and passing through the corners of the rectangle circumscribing the ellipse.

[Rest in Reprint.]

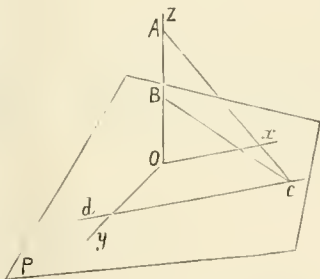
17233. (Professor NEUBERG.)—On donne une droite d située dans un plan P et sur une perpendiculaire à ce plan (qui ne rencontre pas d) deux points A, B. Trouver le lieu de l'orthocentre H d'un triangle ABC dont le sommet parcourt d .

Solutions (I) by R. F. DAVIS, M.A.; (II) by C. M. ROSS, B.A.

(I) Let the straight line AB intersect the plane P at right angles in Z; and let H be the orthocentre of any triangle ABC whose vertex lies on d in the plane P. Since AB is perpendicular to the plane P, it is perpendicular to ZC. Hence H lies on ZC in the plane P. Since ZA.ZB = ZH.ZC, the locus of H is the inverse with respect to Z of the locus of C (the straight line d), that is a circle in the plane P passing through Z.

(II) Let the perpendicular on which A and B lie be the z -axis, and O, where it meets the plane P, the origin. Through O draw a line parallel to d for x -axis, and a perpendicular through O to it as y -axis.

Let A be (0, 0, a), B (0, 0, b), and C the variable point (λ , c , 0), c being the distance of d from the x -axis.



The equations of AC and BC are

$$x/\lambda = y/c = (z-a)/(-a) \dots (1),$$

$$x/\lambda = y/c = (z-b)/(-b) \dots (2).$$

The equations of the perpendiculars from A and B on BC and AC are easily found to be

$$x/\lambda b = y/bc = (z-a)/(\lambda^2 + c^2), \quad x/a\lambda = y/ca = (z-b)/(\lambda^2 + c^2) \dots (3, 4).$$

The intersection of (3) and (4) gives the orthocentre H of the triangle ABC.

From (3) and (4), by dividing corresponding members of the equations, we have $(z-a)/(z-b) = a/b$,

which gives $z = 0$, the xy -plane.

Hence the locus of H is the plane P.

17208. (KRISHNA PRASAD DE, M.A. Communicated by KESHU DASS DE.)—Prove that the envelope of all the Simson lines of a triangle is a three-cusped hypocycloid.

Note by R. F. DAVIS, M.A.

About twenty-five years ago I stated in the *Educational Times Reprint* that the theorem in this Question (as well as several others in which the three-cusped hypocycloid appears as an envelope) proceeds very simply from the following property:—

If O is a fixed point on a given circle and PQ a variable chord having a fixed direction, the envelope of a line through Q parallel to OP is a three-cusped hypocycloid circumscribing the given circle.

There are therefore three special points on the circum-circle of any triangle ABC whose Simson lines are the tangents at the three cusp.

So far as I can remember, I have never seen in treatises on the Modern Geometry of the Triangle any investigation of these points.

17277. (Lt.-Col. ALLAN CUNNINGHAM, R.E.)—Let $N_m = x^m - y^m$, $N_n = x^n - y^n$. Show that N_m, N_n can be expressed algebraically in an infinity of ways in the following forms, with the same x, y in each:—

(1) $N_m = t_m^2 - nu_m^2, \quad N_n = t_n^2 - mu_n^2,$

where m, n are primes of form $(4k+1)$,

(2) $N_m = t_m^2 + nu_m^2, \quad N_n = t_n^2 + mu_n^2,$

where m, n are primes of form $(4k+3)$. Give an example of each.

Solution by the PROPOSER.

Write $N_m = (x^m - y^m) \div (x - y), \quad N_n = (x^n - y^n) \div (x - y).$

It is known that N_m, N_n can always be expressed* in the 2-ic forms

$$N_m = T_m^2 \mp mxyU_m^2, \quad N_n = T_n^2 \mp nxyU_n^2,$$

with the upper (−) signs when m, n are primes of form $(4k+1)$, and with the lower (+) signs when m, n are primes of form $(4k+3)$.

Now take x, y as follows:—Either

i. $x = \xi^2, \quad y = m\nu\eta^2$; with $x - y = \xi^2 - m\nu\eta^2 = +1$

(which is always possible in integers);

ii. $x = m\xi^2, \quad y = n\eta^2$; with $x - y = m\xi^2 - n\eta^2 = +1$,

when possible in integers (as it is in many cases).

Each of these values of x, y reduce N_m, N_n to

$$N_m = T_m^2 \mp n(m\xi\eta U_m)^2, \quad N_n = T_n^2 \mp m(n\xi\eta U_n)^2,$$

which are of the forms required.

The set of values in Case ii usually give much smaller values of x, y than those of Case i.

Example 1.—Take $m = 5, n = 13$; $x = \xi^2, y = 65\eta^2$.

The least values are $x = 129^2, y = 65.16^2$, in Case i.

With these values $m = 5, n = 13$, there are no solutions in Case ii.

Example 2.—Take $m = 7, n = 3$.

Case i. $x = \xi^2, y = 2\eta^2$; the least values are $x = 55^2, y = 21.12^2$;

$$N_7 = 3025^2 - 3024^2 = 1^2 + 3(4620.27442801)^2,$$

$$N_3 = 3025^3 - 3024^3 = 1^2 + 7.1980^2.$$

Case ii. $x = 7\xi^2, y = 3\eta^2$; the least values are $x = 28, y = 27$;

$$N_7 = 28^2 - 27^2 = 1^2 + 3.31794^2,$$

$$N_3 = 28^3 - 27^3 = 1^2 + 7.18^2.$$

This property that $T_m = 1, T_n = 1$ in the 2-ic forms above is peculiar to the forms arising from $m = 7, n = 3$.

12531. (Professor NEUBERG.)—Trouver la trajectoire orthogonale des surfaces représentées par l'équation $xy^2z^2 = K$, K étant un paramètre variable.

Solution by F. E. RELTON, B.A., B.Sc.

The surfaces being $f(xyz) = x^2y^2z^2 - K = 0$,

we have $df/dx = 2x^2y^2z^2 = K\alpha/x, df/dy = K\beta/y, df/dz = K\gamma/z$.

The orthogonal trajectories are given by

$$(dx/ds)/(K\alpha/x) = \dots = \dots;$$

therefore

$$x/a \cdot dx = y/b \cdot dy = z/\gamma \cdot dz,$$

and

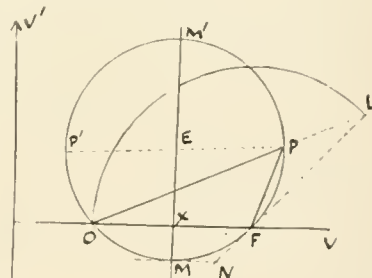
$$x^2/a = y^2/b + a = z^2/\gamma + b.$$

Notes on Maclaurin's Trisectrix.

By C. E. YOUNGMAN, M.A.

I. Definition.—The locus of the vertex P of a triangle POF, of which the base OF is fixed, and the moving angle P is double the base-angle O. The angle O is always one-third of the exterior angle at F.

This definition is not complete, as it only lets O range from 0° to 60° , and does not carry the curve beyond the loop; but no more is needed for any trisection. For the rest of the curve the angle at P or O, or both, must be exterior; or, more smoothly, over the whole of it P is the intersection of two lines which revolve about O and F, the second three times as fast as the first.

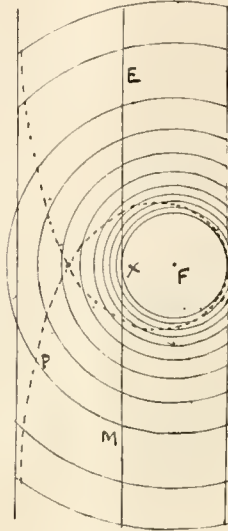


* For the general formulæ for all values of $m, n > 33$, see Ed. Lucas's Memoir, *Sur la Série récurrente de Fermat*, Rome, 1879, p. 6.

The curve is symmetrical about OF, and P coincides with O when $O = 60^\circ$, $P = 120^\circ$; thus O is a node, its tangents making 60° with OF.

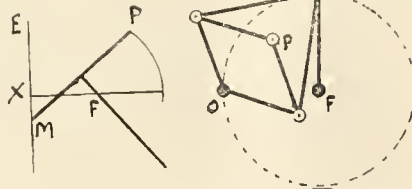
2. *Construction Point by Point.*—Draw a series of circles (E) through O and F, noting the points M, M' where each cuts the line of centres EX; and on each circle mark P and P' where $FP = FM$, $FP' = FM'$. This is right, because it gives the angle FPO twice the arc of the angle POF. PP' is a diameter

The larger (E) is, the smaller is (F); thus the vertex V of the curve falls on OF where $FV = FX$, and pairs off with V', the real point at infinity. And since EX bisects VV', the asymptote is a parallel to EX, twice as far from V.



3. Since $MP = OF$ there is a more convenient construction for P: Given a point F and a line EX, draw a set of circles with centre F, cutting EX at M, ..., and mark P on each where $MP = OF$ (There are, of course, two such points on each circle, but only one belongs to the trisectrix; the other lies on the tangent at the vertex.)

4. *Organic Description.*
—Make the stem of a T-square FMP pass through a fixed point F, and one end M of its head-piece slide along a fixed line EX; then the other end P will trace the curve.



5. One of the first curves for which an inverting linkage can be used is this trisectrix; for if with centre F we draw a circle through O cutting OP again at L, the angle $FLO = FOP = \frac{1}{2}FPO = MPO$, so that FL is parallel to MP and touches the circle POF; therefore $L.P.LO = LF^2$; that is, P is the inverse of a fixed point O on a given circle, with respect to an equal circle passing through the centre of the first.

Hence if a Peaucellier linkage be arranged as in the figure, with O and F fixed, P will describe a trisectrix. The extra link FL (= FO) must be such that its square is the difference between the squares on the unequal links of the cell.

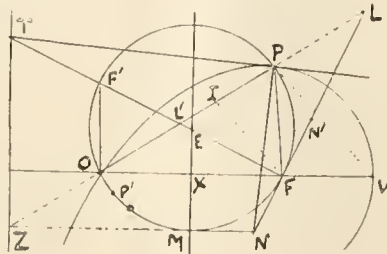
6. *Normal at P.*—On OP find L making $FL = FO$ (or $PL = PF$), and on FL find N equidistant from O and P; PN is the normal.

For the figure PFMO is symmetrical, with N on its axis of symmetry; and since LFN touches its circum-circle, so does MN. Thus N is equidistant from F and EX, and its motion at the moment is perpendicular to FM or OP; hence, since $NO = NP$, the point P lies on the envelope of a circle with centre N drawn through O; and PN is normal to this.

The locus of N is a parabola with focus F and directrix EX; it follows that the pedal of a parabola with respect to the image of its focus in the directrix is Maclaurin's trisectrix.

7. *Tangent at P.*—On PO take $PL' = PF$, and draw FL' to meet the asymptote at T; PT' is the tangent.

For $FL'T$ perpendicular to FL goes through the centre E of the circle POF, and ET is bisected at F' opposite to F on that circle, OF' being halfway between EX and the asymptote; and, if N' be the pole of PF, the triangle PEF' is similar to $PN'F$, turned through a right angle; but F' and F are the mid-points of ET and N'N;



therefore T is the homologue of N, and consequently PT is perpendicular to PN.

Cor.—TP' is the tangent at P'.

8. In the original triangle POF, the tangent PT and the chord PV (to the vertex) are isogonal in the angle P. To prove this, compound the velocities of P, which, by the definition, are perpendicular to OP and FP and proportional to OP and 3FP, or, more conveniently, to $\frac{1}{2}OP$ and FP. Take accordingly $PI = \frac{1}{2}PO$ (so that IF is parallel to PV); then perpendiculars at I and F to OP and FP must meet on the normal; therefore the circle IPF touches PT, and

$$\text{angle TPO} = \text{PFI} = \text{FPV}.$$

(Rest in Reprint.)

The Excellent Adaptation of Mersenne's Numbers for Factorization by the Method set forth in Vol. XIV, New Series, p. 34, of "Mathematical Reprints from the Educational Times."

By D. BIDDLE, M.R.C.S.

The method referred to consists in utilizing the factors of neighbouring numbers—by preference, $N + 1$ and $N - 1$. Of Mersenne's numbers, of form $2^n - 1$, there are still 15, stated by him to be composite, which await verification, namely:

N	N + 1	N - 1
$2^{101} - 1$	2^{101}	$2(2^{100} - 1)$,
$2^{103} - 1$	2^{103}	$2(2^{102} - 1)$,
$2^{107} - 1$	2^{107}	$2(2^{106} - 1)$,
$2^{109} - 1$	2^{109}	$2(2^{108} - 1)$,
$2^{137} - 1$	2^{137}	$2(2^{136} - 1)$,
$2^{139} - 1$	2^{139}	$2(2^{138} - 1)$,
$2^{149} - 1$	2^{149}	$2(2^{148} - 1)$,
$2^{157} - 1$	2^{157}	$2(2^{156} - 1)$,
$2^{167} - 1$	2^{167}	$2(2^{166} - 1)$,
$2^{173} - 1$	2^{173}	$2(2^{172} - 1)$,
$2^{193} - 1$	2^{193}	$2(2^{192} - 1)$,
$2^{199} - 1$	2^{199}	$2(2^{198} - 1)$,
$2^{227} - 1$	2^{227}	$2(2^{226} - 1)$,
$2^{229} - 1$	2^{229}	$2(2^{228} - 1)$,
$2^{241} - 1$	2^{241}	$2(2^{240} - 1)$.

N.B.—All possible factors not greater than 500,000 have been tried for these numbers by Lt.-Col. Allan Cunningham, R.E.

Take, as an example, $2^{27} - 1$, in which $N + 1 = 2^{27}$, $N - 1 = 2(2^{26} - 1)$. Here $N + 1$ yields $G = 1$, $N - 1$ yields $K = 2.3.73$, and $G + K = 439$, found by Euler as a factor of N. Contributors are requested to try the method.

QUESTIONS FOR SOLUTION.

17328. (Professor J. C. SWAMINARAYAN, M.A.)—Show that the determinant

$$\begin{vmatrix} (a_1^2 + b_1^2)(a_2 a_3 - b_2 b_3) & a_1 & b_1 \\ (a_2^2 + b_2^2)(a_3 a_1 - b_3 b_1) & a_2 & b_2 \\ (a_3^2 + b_3^2)(a_1 a_2 - b_1 b_2) & a_3 & b_3 \end{vmatrix}$$

vanishes identically.

17329. (Communicated by C. M. ROSS, B.A.)—Prove that

$$\int_0^x \int_0^y \int_0^z \dots e^{-[x+y+\dots+t+z^n(\dots)]} x^{n-1} y^{2n-1} \dots t^{(n-1)/n-1} dx dy \dots dt = (2\pi)^{\frac{1}{2}(n-1)} \cdot e^{-n/n^{\frac{1}{2}}}$$

the number of variables x, y, z, \dots, t being $n - 1$. Apply this result to prove the formula

$$\Gamma(a) \Gamma(a + 1/n) \Gamma(a + 2/n) \dots \Gamma(a + (n-1)/n) = 2\pi^{\frac{1}{2}(n-1)} n^{-na + \frac{1}{2}}$$

Math. Tripos, Pt. II, 1887.

17330. (N. SANKARA Aiyar, B.A.)—A Knight and Queen are placed at random on a chess-board. What is the ratio of the chances of either piece taking the other? How would it be altered if the Queen were replaced by a rook?

17331. (B. A. SWINDEN.)—Prove (a) that $2^{2^n} + 1$ is prime, and (b) that $x^{2^{2^n} + 1} - x$ is divisible by $2^{2^n + 1} - 2$.

17332. (D. BIDDLE.)—Prove (1) that

$$\sum_{n=1}^{n=x} \frac{1}{2n(2n-1)} = \sum_{n=x+1}^{n=2x} \frac{1}{n}$$

(2) that consequently, when $n = 2^r$, $\sum_{n=1}^{n=2^r} \frac{1}{n}$ may be written as follows:

$1 + \frac{1}{2}(r) + \frac{1}{12}(r-1) + (\frac{1}{30} + \frac{1}{56})(r-2) + (\frac{1}{90} + \frac{1}{132} + \frac{1}{152} + \frac{1}{240})(r-3) + \dots$
 Now, $\frac{1}{2} \times 6144 = \frac{1}{30} + \frac{1}{56}$; this, by $\cdot 5538$, $= \frac{1}{90} + \frac{1}{132} + \frac{1}{152} + \frac{1}{240}$; this, by $\cdot 5254$, = 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 $\sum_{n=1}^{n=2^r} \frac{1}{2n(2n-1)}$; and to the lower powers of 2, as representing n .

17333. (Professor K. J. SANJANA, M.A.)—"To find three numbers such that the product of any two minus the third gives a square," *Diophantus*, III, 13. Obtain the following solutions:

$$(a+1)/(a-4), (a^2-3a+1)/(a-4), (a^2+a)/(a-4);$$

$$a+1, (a+1)/a, (a^2+a+1)/a;$$

and show how others may be found.

17334. (R. F. DAVIS, M.A.)—Express U, V in terms of a, b, c , so that $U-aV, U-bV, U-cV$ are each perfect cubes.

17335. (Professor E. J. NANSON.)—If the complex variables w, z are connected by the equation $wf(z) = g(z)$, where f, g are rational integral functions of orders m, n , and the point z describes a circle, show that the point w describes a unicursal curve of order $2k$ with multiple points of order k at the focioids and $(k-1)^2$ double points, k being the greater of the two m, n .

17336. (C. E. YOUNGMAN, M.A.)—The chord PQ of a tricuspid (hypocycloid) goes through one of the cusps, and the tangents at P and Q meet at T; prove that the circle TPQ touches the cusp-circle.

17337. (A. M. NESBITT, M.A. Suggested by Question 17231.)—An equilateral triangle circumscribes a parabola. Show that the lines joining the vertices to the points of contact of the opposite sides meet at the focus.

17338. (E. G. HOGG, M.A.)—The four common tangents of the conic $a^2x^2 - 4bcy = 0$, and the circle ABC form a cyclic quadrilateral.

17339. (W. F. BEARD, M.A.)—A is a fixed point; B, C are points on a fixed straight line such that the angle BAC is constant. Show that, if AB is divided at P so that AP.AB = AC², the locus of P is a parabola.

17340. (A. W. H. THOMPSON.)—The length of the perpendicular from a point a on a line β being denoted by $(a\beta)$ or (βa) , the cross-ratio of two points a, b , and two lines γ, δ being defined as $\frac{(a\gamma)(b\delta)}{(a\delta)(b\gamma)}$, and denoted by $\{ab, \gamma\delta\}$ or $\{\gamma\delta, ab\}$; show, if $\frac{abc}{a\beta\gamma}, \frac{a'b'c'}{a'\beta'\gamma'}$ be the points and sides of two triangles, that $(\mu\nu, aa') = (m\mu, aa')$, where μ, ν are the joins of b, b' ; c, c' , and m, n are the intersections of β, β' ; γ, γ' . Deduce Desargues' theorem.

17341. (F. G. W. BROWN, B.Sc., L.C.P.)—Find the equation of the locus of the centre of the circle which touches and encloses two given circles of unequal radii.

17342. (A. A. KRISHNASWAMI AYYANGAR, B.A.)—Draw through the vertex of a triangle a straight line such that the sum of the squares of the perpendiculars on it from the other two angular points may be equal to a given square (with the first three books of Euclid's elements only).

17343. (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.

17344. (D. M. Y. SOMMERVILLE, M.A., D.Sc.)—Find a construction for the common perpendicular to two skew lines in space, without assuming the parallel-postulate.

17345. (Professor NEUBERG.)—On donne, dans l'espace, une courbe quelconque (C), un plan P et un point Q. On projette un point quelconque M de (C) sur P en R, et par R on mène un plan P' perpendiculaire à la droite QM. Construire la ligne de contact du plan P' avec son enveloppe lorsque M parcourt (C).

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1930. (Professor SYLVESTER.)—A uniform ellipsoid, with fixed centre, rolls on an indefinitely rough plane. Determine the time, pressure, and friction of the plane corresponding to any given position of the body. Find also the same when the axes of the ellipsoid remain the principal axes of the body, but the principal moments of the latter are in any given ratios to one another: state the condition in order that, during the whole continuance of the motion, the pressure and friction

may be nil, and also, in general, under what circumstances the time will be expressible by an elliptic function.

1998. (R. BALL, M.A.)—If k be the constant term in the equation of a surface, and $\Delta = 0$ the condition necessary that this surface and three others pass through a point, what is the geometrical meaning of the roots of the equation $e^{-x} d^3k \Delta = 0$?

2611. (W. S. B. WOOLHOUSE, F.R.A.S.)—Let $1, \delta_1, \delta_2, \delta_3, \dots, \delta_n$ be the first differences of the coefficients of the expansion of the binomial $(1+x)^{2n}$ taken as far as the central or maximum coefficient; also let $\nu = \frac{1}{2}(n+1)n, \nu' = \frac{1}{2}n(n-1), \nu'' = \frac{1}{2}(n-1)(n-2), \dots$. Then show that the algebraic function $x^\nu - \delta_1 x^{\nu'} + \delta_2 x^{\nu''} - \delta_3 x^{\nu'''} + \dots$ is divisible by $(x-1)^n$ without a remainder, and that the sum of the numerical coefficients of the quotient is $1.3.5 \dots (2n-1)$. [See Solution to Question 1894, *Reprint*, Vol. v, p. 113.]

6332. (Professor E. B. ELLIOTT, F.R.S.)—A ray of light, polarized at right angles to the principal plane in a uniaxial crystal, is incident internally on a face of the crystal in such a manner that the reflected ray returns along the line of incidence; the plane of incidence is a principal one, α is the angle between the axis and the normal to the face, β that between the axis and the line of incidence, and a and c are the principal elasticities; prove that $a^2 \tan \beta = c^2 \tan \alpha$.

6558. (A. MARTIN, M.A.)—If an experiment succeeds in three trials out of four, show that the chance that in n consecutive trials there are never three consecutive successes is $(\frac{3}{4})^{n+1} (2 + a^{n+1} + \beta^{n+1})$, where α and β are the roots of the equation $3x^2 + 2x + 1 = 0$.

6808. (C. LEUDESORF, M.A.)—If S_n denote the sum of the products taken n together, of the five quantities $\log a, \log b, \log c, \log d, \log e$, and if S'_n denote similar expressions with regard to $\log a', \log b', \dots$, show that the five conditions

$$ab = d'e', \quad cde = a'b'e',$$

$$\log a/a' \log a/b' \log a/c' = -\log c, e' \log d/e' \log e, e'$$

$$= \log a/e' \log b/b' \log a'b'/ab$$

$$= \log c'/d' \log c/e' \log de/d'e',$$

include the four $S_1/S'_1 = S_2/S'_2 = S_3/S'_3 = S_4/S'_4 = 1$.

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THE LONDON MATHEMATICAL SOCIETY.

Thursday, May 9, 1912. 5.30.—Dr. H. F. Baker, President, in the Chair.

Messrs. L. Isserlis, F. J. M. Stratton, and M. J. Courau were elected members.

The following paper was communicated:—
 The Irreducibility of Legendre's Polynomials: Mr. J. B. Holt.
 Profs. Love and Lamb made informal communications.

Thursday, June 13, 1912. 5.30.—Dr. H. F. Baker presided over an attendance of twelve members.

Messrs. A. B. Grieve and L. J. Mordell were elected members.

The following papers were communicated:—
 Some Properties of Symmetric and Orthogonal Substitutions: Mr. H. Hilton.
 Closed Orbits of Ejection and Related Periodic Orbits: Prof. F. R. Moulton.

(i) On a Certain Series of Fourier, and (ii) The Fourier Series of Bounded Functions: Prof. W. H. Young.

Some Properties of the Extended Zeta-function: Mr. G. N. Watson.
 Curves of Contact of any Order on Algebraic Surfaces: Miss H. P. Hudson.

Dr. Bromwich made an informal communication.

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The Educational Times.

HOLIDAYS.

THE summer holidays are upon us. The schools are closed, and for a period which varies between four and nine weeks, we are jerked out of the even tenor of our ways. Our friends sometimes envy our long periods of leisure, and sometimes they wonder how we can call ourselves busy people when we "work" for thirty-five to forty-four weeks only in the year. We who work in schools know the need of long holidays. Perhaps in their origin holidays have sprung from the boarding school and the desire that children should have a good slice of the year at home. However that may be, it is now quite certain that holidays, and long ones, are an absolute necessity for two reasons. The spirit of unrest that pervades the ranks of the idle rich no less than of the industrial poor cannot altogether be kept outside the school doors. The feverish pressure of life in school increases; the strain becomes greater. This may not be a good thing and we may fight against it; but it is there. We could not keep up the strain for eleven months. That is the first justification for long holidays.

In no walk of life is it more necessary to remain fresh and unjaded than that in which we are called upon to spend day after day with children, inspiring, guiding, controlling, and teaching them. The teacher has to be as a bent bow, morning, noon, and evening. The second reason is no less imperative. Dealing all and every day with immature minds, going over and over again the same range of limited knowledge, the teacher's mental outlook would grow narrow and his mental vigour would wither and decay, were it not for the times of refreshment that are allowed. We have spoken of the mental outlook; but the spiritual outlook is so closely bound up with this, that the one may be said to include the other. Mental and spiritual stagnation are the worst disasters that can befall the teacher. Yet they would surely come, if the work in school were continuous. Indeed these unfortunate conditions do occur as things are; they would

occur earlier and with greater frequency if it were not for the holidays. We teachers may require the qualities of a saint to perform our work as nursemaids upon the wages of a navvy, but we may thank our stars that we do enjoy these times of leisure when we can get a fresh grip of ourselves. And so at the end of July we troop off, to the sea, to the hills, to the moors, to holiday courses, to other work. Our tastes are varied. Each must choose, so far as choice is possible, the best sort of holiday for the particular temperament. Holiday courses are popular. They increase in number every year. For the study of French or German on the Continent, of Latin at Bangor, for manual work, geography, the Bible, and so on, there are a hundred courses arranged. Perhaps the only two school activities in which, so far as we know, holiday courses have not been organized, are the Montessori method of dealing with young children, and the Daleroze method of rhythmical gymnastics. Yet no doubt there will be pilgrimages to Rome and to Dresden this summer. No one has a right to sneer at another because he goes or refrains from going to a holiday course. One man's meat is another man's poison. The essential thing is to remember that in our holidays we want rest, refreshment, stimulation, and a wider mental outlook. Many find these in holiday courses. The talk to fellow teachers is a great stimulus to some of us; putting ourselves in the position of learners enables us better to understand the attitude of mind of our pupils; gives us patience and sympathy. To others holiday courses are anathema. Let these not go. To take a holiday that leaves one more jaded than before is an act of folly to ourselves and to the school alike.

No rule can be laid down for holidays. Some will climb mountains, or spend the days in other forms of active exercise. Others will lie upon the sea-shore and seek the life contemplative. Others will find in the life of big cities, with their art treasures and their musical feasts, the change and stimulation they need. Others again will spend the holidays in the domestic circle, some from preference, some from the stern necessity that results from an inadequate salary scale. It is no bad thing to spend the holidays in domestic or family life, especially for unmarried teachers. Teachers are apt to become un-

social; during term-time they are too fully occupied to share in the social life of their neighbours, and in the holidays they are off to the hotels or boarding houses. This very severance from social life has much influence in bringing about mental and spiritual stagnation, and it is to be avoided when possible. One thing to beware of is to follow a fashionable cry, without making sure that it suits one's temperament or mood. Some come back from mountain sports quite fagged out and needing a fortnight's rest. The stimulation of the climate produces an unnatural power of exertion and reaction ensues. Some go to holiday courses because they deem it a duty, and come back without any renewed fund of vigour for the battle of the term.

Holidays are not the reward we get for a term of unpleasant work; they are rather the opportunity of fitting ourselves to perform the work of the coming term in such a way that we and our pupils shall derive satisfaction from it. We want to enlarge our mental outlook, to fan the flame of our inner life, to see things as they are in their right proportion and not distorted by the petty worries of the classroom, to regain our normal poise, and to reassert our bodily activity. How these aims are to be attained, each must decide for himself or herself. It is worth a little thought to plan the right holiday.

NOTES.

THE London Education Committee is still young as an administrative power. Ten years is not a long experience for the control and government of schools and institutions that have traditions running back for tens of ten years. Indignation in London has been growing apace, and has now broken out upon the financial proposals of the Education Committee with regard to polytechnic institutions. We are absolutely in favour of a degree of administrative co-ordination and control; we gladly recognize the general wisdom with which the London Authority has spent the money entrusted to it for the cause of education. It has been spent to aid education: certain conformities there must be. But it is now unfortunately clear that the L.C.C. want to have one type of secondary school only and one type of polytechnic. The Council seem to think that they can "run" education as they "run" a business. They cannot. If they persist, governing bodies will become the straw figures that managers of elementary schools have become, and head masters will become as shop walkers. Education must have liberty or it dies. The Council suffers from the headiness of youth. Schools must fight for their freedom.

THE formation of sectional associations within the area of secondary education has been a necessary stage in the development of corporate feeling. The value of these sectional associations has been enormous, no less to the individuals

composing them than to the nation at large, which depends to so great an extent upon schools and teachers. The work these associations do is twofold: they strengthen the individual members, and they give educational administrators the benefit of expert advice. Now that each section has asserted its own powers and its rights to consideration, the time has come for some form of union between the sectional associations that concern secondary schools. When the federation of secondary associations has found itself, the time will be ripe for a measure of co-operation between the associations covering the secondary and primary fields respectively; but that time is not yet.

THE Congress of the Universities of the Empire has had a marked effect in helping us to realize the union of thought existing between these islands and the vast overseas dominions in which the same torch of learning is upheld that we respect here. Universities can no longer remain isolated bodies. Like all other institutions, they are beginning to feel the necessity of mutual co-operation and support, if it is only to guide and control the influence of the State in education. Some day, perhaps, we may see a common Matriculation examination giving entrance to any University; but this is the first Congress, and it can do little more than enable the different Universities to make one another's acquaintance. But it is evident that, both in schools and in Universities, the ties between the mother country and the colonies are being drawn closer. We give in another column the actual net results of the Congress so far as formal administration is concerned.

THE Board of Education have appointed a Departmental Committee to inquire into questions connected with the superannuation of teachers in public elementary schools, in reference to the proposed amendment of the Superannuation Act of 1898. No mention is made in the terms of reference to teachers in secondary schools, and we may perhaps assume that the Treasury have not yet made up their minds how to act in this respect. There is no doubt that great political pressure will be brought to bear in order to induce the Government to deal with secondary as with elementary teachers. Secondary teachers claim, and rightly, a higher scale of superannuation allowance. And for these reasons: their education is more costly and it is not paid for by the State; their education continues to a later age; they teach in schools where the average incomes of parents are higher than those of parents of elementary scholars—this necessitates a higher standard of living. Secondary teachers are also, we believe, prepared to pay a higher annual premium. As the terms of reference to this Committee are important, we give them in full on another page. Since writing the above, additional terms of reference have been issued concerning teachers in secondary schools.

THE London Education Committee have lost no time in showing that they are "up to date" by recommending the introduction, as an experiment, of the Montessori system of education in one of their elementary schools. We wish the "experiment" all success. The Montessori method is Froebel plus modern medical science plus the wonderful personality of the directress. But there is one important difference between the Countess Montessori and Froebel. In the more recent scheme individual activity takes the place of class work; each child is to some extent a law to himself. It is the teaching of Tolstoy made possible. Mme Montessori is doing a remarkable work which cannot fail to exercise a stimulating influence upon teaching the wide world over. But, so far, her work deals with very young children, and her school is like a *crèche*. The system cannot be applied wholesale to older children, nor is there much virtue in the apparatus apart from the inspiring inventor; but perhaps the system may solve the problem how to deal with our "under fives."

THE real meaning of the Report of the Consultative Committee on Examinations in Secondary Schools is a desire to combine the opinions of the teaching staff, the Inspectors, and the external examiners in one judgment upon the candidate. An external examiner who sees the written work only of the candidate can do no more than give an opinion upon the work before him, whether or not that work enables him to judge the candidate's industry, power of work, determination, firmness, and intellectual power. Indeed, it is generally felt that written examinations do little more than show the power of absorbing and reproducing information. In Prussia the final judgment on a boy when he leaves school is more thorough, and includes many matters that a written examination must omit. There is no better account of the Prussian system than a paper prepared by Dr. M. E. Sadler for the Royal Commission of 1895. This we reprint on another page. Without adopting the Prussian system, we may be able to devise some plan by which the three sets of opinions may be secured and combined into one considered judgment.

THE teachers of modern languages of this generation, apart from the improvements that they may have made in their own subjects, have done one useful thing that is beginning to affect, and will more deeply affect, the whole work of the school. They have insisted that language is not only written, but that it is also spoken. They have aroused opposition, as is inevitable, but they persist and are succeeding. Their work is beginning to react upon the teaching of English. The power of clear and pleasant enunciation, the power of expressing ideas in the spoken language without hesitation and with due arrangement, the power of using correctly in speech one's own language to express one's thoughts, and, above all, readiness and

confidence—these can be acquired at school. Their value is unquestioned. In the past English lessons have often consisted of formal grammar, the study of the printed word, or exercises in writing; to these must be added exercises in speaking. We are poor speakers because we read and write too much, and we neglect the beauty of the spoken tongue.

NOTHING more clearly demonstrates the fact that we have made a fetish of the written word, while neglecting speech, than the value that we attach to correct spelling. To spell the word "separate" with an *e* in the penultimate syllable is, as most schoolboys know, to make a heinous mistake that meets with instant punishment, while to pronounce the word as a dissyllable is an error that meets with no reproof. It is only of recent years that spelling has become so tyrannical—since, in fact, the introduction of printing and the formation in printing offices of strict regulations as to spelling. It will be a hard task to make a change, but it can be done gradually. In a recent number of *Modern Language Teaching* Prof. Rippmann shows in a most interesting article that the spoken word lives, but that the written word is dead. He ends his article:

We wont yuer help in fieting the oeld bad speling. Yu hav restord the spoecken wurd tu its rieful plais in the teeching ov moderu langwijez; du wrot yu can tu reform the teeching ov the muther tung. Thair iz no beter wai than tu insist, with umerst perseveerans, on the need ov a living speling in plais ov a speling that iz ded.

DR. ERIC PRITCHARD'S paper, prepared for the Child Study Conference, is reprinted in this number and merits careful study. We all know that the subject is a most difficult one to deal with, and we know that great reverence and reticence are needed; but reticence may be carried too far, as, indeed, it has been in the past. In these days few would quote with approval the old saying that "where ignorance is bliss 'tis folly to be wise"; and for this reason (if for no other), that a condition of complete ignorance is not possible. Knowledge comes. The question is whether it shall come from a tainted and curiosity-rousing source or whether it shall be given with dignity and understanding. It seems to us essential that both parents and teachers must, in the first place, acquire the requisite knowledge (and books on the subject are legion), and secondly, that they must train themselves to speak of these matters with composure. Half the difficulty comes from diffidence and self-distrust, which can be overcome; the other half from the lack of a suitable vocabulary, which can be learnt.

A CORRESPONDENT, over the signature "An Experienced Teacher," sends us a pitiful account of the prospects of assistant mistresses who are over forty years of age. After an expensive course of education and training, the assistant mistress may look forward to about twenty years' work at a

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salary that scarcely admits of making any savings for old age, which, so our correspondent affirms, begins at the age of forty. "No registry will enter the name of an assistant mistress or governess who is over forty." We are not quite sure that our correspondent does not overstate the case. Salaries are certainly low, partly because it is often assumed that a mistress either lives at home or else is not entirely dependent upon her earnings. We wonder if it is true that no mistress over forty years of age can secure a post. Young mistresses, with their youthful vigour and keenness in games, are valuable in a school: experience, too, is valuable. Perhaps some of our readers will tell us if "An Experienced Teacher" is merely stating the facts.

SUMMARY OF THE MONTH.

"I SUPPOSE the work of the Universities may be roughly divided into three parts—the part of research, which can take its own burden so long as it is sufficiently equipped with funds, for every University will do as much research as it has money to undertake; then it has the training of the higher intelligences, who also, if they have fibre, can take care of themselves. But the great mass of students have nothing to do with either the one or the other. They are pass men wanting their degree as a stamp of their education, or else as a means of earning their bread. That, after all, is the important part of the University—they and the teachers who control them, because to form the men I am asking for you cannot appeal to any professor or any class. You cannot have a class of character or a class of morals; but you can infuse character and morals, and energy and patriotism by the tone and atmosphere of your Universities, and of your professors. So far as you in your different Universities can fulfil that task of sending out men—I care less about their brains than their character for the purpose I am speaking of—you are rendering by far the greatest service to the Empire that any bodies within the Empire can render."—Lord Rosebery to the Universities of the Empire.

MR. ALFRED LYTTELTON, at the Shrewsbury Speech Day, said that every class now, and still more in the future, had got to justify its existence. There was unhappily a profound sense of discontent and disquiet in the working classes, and there was also, what was good, a profound sense of uneasiness at the possession of wealth by those who possessed it. That state of things could only be dispelled by those who had leisure and wealth getting a personal knowledge of, and giving some personal service to, those who were less happily situated.

"I CALL him a seer. What is it that he saw? What he saw was the neglect by the scientific mind, engaged in verbal disputes, of the patient and childlike attitude of those who come to Nature, not to impose upon Nature their own ideas, but to learn from Nature what it is that she has to teach us. Bacon is never tired of telling us that the kingdom of Nature, like the Kingdom of God, can only be entered by those who approach it in the spirit of a child. And there, surely, he was right. There, surely, he really did much to correct the almost insolent futility of those philosophers who thought they could impose upon Nature the hasty generalizations which they had picked up partly from their crude observations, partly from their own imaginations."—Mr. Balfour on Francis Bacon.

THE Head Master of Sherborne School, speaking at the prize-giving, implored parents to have a real faith in edu-

cation. The English upper middle classes of the present day had a great deal of belief in the value of other things connected with education—health, for instance—but there was a great lack of belief in the real value of education. Nothing struck him more than that in reading newspapers or private letters. The idea that education was not of value unless it was obvious to the meanest capacity that the particular piece of work was going to bring monetary value within six months was one which would have a very bad effect on our national life and in the solution of national problems.

OXFORD has done a very sensible thing in reducing the fees which a man has to pay for keeping his name on the books and having a vote in Convocation. A composition of £10 for a man under forty, £7.10s. between forty and fifty, and £5 over fifty is most reasonable. We gather from the *Oxford Magazine* for this week that the colleges are following suit, as they should. Surely Oxford men generally will take advantage of this really good move, especially as those not now on the books can get themselves restored without penalty. We have often wondered why so few care to keep up this connexion with their University, a connexion not merely sentimental. Few now can honestly plead want of means.—*Saturday Review*.

DICK TURPIN'S PISTOL.—While taking down the panelling and ceiling of the Globe Room behind the Reindeer Inn, Banbury, recently, the workmen found a double-barrelled horse pistol with flint locks, on which was inscribed, "Presented to Dick Turpin at the White Bear Inn, Drury Lane, February 7, 1735." The pistol has been submitted to Messrs. Westley Richards & Co., and their opinion is that it is undoubtedly a genuine weapon of the date. It has smooth-bore barrels of a 16 gauge. The flash holes are inlaid with gold, and there is a gold band round the breech end of each barrel. The maker's name is marked in four places as "Baker, London."

THE papers read at the Conference on Scripture Teaching in Secondary Schools, held last April, have been published in volume form by the Cambridge University Press. The following is an extract from the preface:—

The importance of giving senior schoolboys—and schoolgirls—sound and adequate Scripture teaching has always been recognized in theory, but the grave difficulties in practically doing it are not even yet always recognized. The Conference reported in this volume was a meeting of schoolmasters who have both given thought to the problems and methods of the modern teaching of Scripture and have also practical experience of the work. . . . On all sides we hear regrets that the Bible is no longer known as it used to be. . . . With the decay of belief in verbal inspiration, the most potent stimulus to private Bible reading has gone. . . . The man who used to read his Bible, believing that every word of it was not only true, but also that every word might contain teaching of the greatest importance, had every inducement to read carefully, and this hid from him the difficulty of the study in which he was engaged. Now we are trying to get behind the Bible record. We want to get a reasonable idea of the course of Israelite history and of the progress of religious ideas in Israel. We want to disentangle the historical from the mythical, and, above all, we want to understand Jesus Christ as well as to reverence Him. Further, we want to teach all this view of the Bible to boys and girls without shaking their religious convictions.

THE most interesting feature of the session of the Congress of Empire Universities, on July 4, was the discussion on the Workers' Educational Association. We welcome it because there is no widespread recognition of the aims and progress of University extension. Too often, we are afraid, this movement is regarded as a means of providing lectures on Dante and the earlier Italian poets for the benefit of dilettante ladies. Even so, it should not be despised. But, really, it is much more. The Universities have awakened to—if all of them have not fully realized—their responsibility towards the working man. He needs educating quite as much as the young man who had a father before him. And often he desires education more earnestly than this young

man. The Rev. W. Temple put the position tersely and well when he said it was a supreme function of the Universities to guide the thought of those who were to mould the destiny of the nation and the Empire, and, if this was to be done, they must now be exerting their influence on the working classes. Unless the Universities would do that, they would themselves be out of touch with the world around them.—*Evening Standard*.

A MEETING of delegates to the Empire Universities Congress has passed the following resolutions:—

- (1) That, in the opinion of the Congress, it is desirable that a Committee be appointed for the purpose of instituting similar Congresses at intervals of five years.
- (2) That the Home Universities Committee of the Congress be invited to arrange for an annual meeting of the representatives of the several Home Universities.
- (3) That it is desirable that the Universities of the various Dominions overseas should arrange for periodical meetings of their representatives.
- (4) That a Committee of the Congress be now appointed to take steps for the purpose of the formation in London of a bureau of information for the Universities of the Empire.
- (5) That the Committee consists of fourteen members, of whom seven shall be nominated by the Home Universities Committee of the Congress and seven by the Universities overseas—viz., for Canada, 2; Australia, 1; New Zealand, 1; the Cape, 1; India, 1; and the Crown Colonies, 1.

THE Senate of the University of London have recently established an examination for a certificate in French and for a certificate in German. A certificate will not be awarded unless the candidate gives evidence of an adequate colloquial command of the language offered. The first examination will be held early in August 1913; forms of entry may be obtained after May 2 and not later than June 20; they must be sent to the Registrar, accompanied by Postal Orders for the amount of the fee, on or before July 4, 1913. The Scheme and Regulations for the examination are as follows:—An examination for the certificate in French and an examination for the certificate in German shall be held once in each year in the month of August or at such other time as shall hereafter be arranged. The examination in each case is intended primarily for teachers who are not specialists in the language, but who require a certificate testifying to their practical working knowledge of the language. It is not intended that the certificate shall be regarded as a certificate of ability to teach, and a teacher who enters for the examination should normally have undergone a recognized course of training for the profession of teacher. The certificate is intended to testify that the knowledge of the language to which it refers includes those elements, such as conversational facility and a sufficient acquaintance with phonetics, which have special value for teaching and which may not be guaranteed by the teacher's other certificates. The examination shall be both written and oral, and the written examination shall be conducted by means of printed papers. All communications concerning this examination should be addressed to The Registrar, University Extension Board, University of London, South Kensington, London, S.W.

THE following extracts from the Will of the late Charles Brinsley Marlay, M.A., of Trinity College, Cambridge, are of considerable interest:—

I direct the Trustees or Trustee as soon as conveniently may be after my death to cause an inventory to be taken of all the pictures, prints, manuscripts, statues, sculptures, articles of virtu, works of art, china, books, and jewellery (including diamonds and the settings thereof) belonging to me at my death, and not then in Ireland and not specifically disposed of by this my Will or any Codicil hereto (except such as from their trifling value or perishable nature or from any other reason it may be deemed by the said Trustees or Trustee inexpedient to include in the said inventory, as to which I give full and absolute discretion to the Trustees or Trustee). And I direct that, as soon as such inventory shall have been taken, the Trustees or Trustee shall offer the chattels and effects comprised in such inventory to the University of Cambridge, or other the proper

Authority for the time being having the control of the Museum at Cambridge connected with that University, and known as "the Fitzwilliam Museum" (who are hereinafter referred to as "the Museum Authorities"). And, if the Museum Authorities shall accept such offer within twelve calendar months after the same shall have been made to them, then I bequeath to them absolutely and free of all duties the chattels and effects specified in such inventory, the same to be held by them either by way of addition to the then existing collection in the said Museum or as a separate collection. But, if such offer shall not be accepted within the period aforesaid, then I direct that the said chattels and effects shall fall into and be treated as part of my residuary personal estate.

If the said Museum Authorities shall accept such bequest within the period aforesaid, and shall give the assurance aforesaid, then and in such case I bequeath to them the sum of eighty thousand pounds, free of all duties. And I direct that they shall pay and apply the same in such proportions as they in their absolute discretion shall think fit for all or any of the purposes following. That is to say: (a) In the extension (if by them deemed necessary or desirable) of the said Museum for the purpose of properly accommodating and exhibiting the said chattels and effects; (b) in providing a separate building for the same purpose; and (c) as an endowment fund or an additional endowment fund for providing a salary for or increasing the salary of the curator or assistant curator or other person or persons for the time having the superintendence or charge of the Marlay Collection or the bulk thereof.

IN reference to the view that "a public school and University education fit a man for nothing but teaching and the Civil Service, and that its result is, in a large number of cases, to produce mere loafers," Mr. J. Wells, Fellow and Tutor of Wadham College, Oxford, gives in the *Daily Mail* the following interesting particulars of the careers of men who have left the College recently. With regard to the twenty-two whose career is said to be "uncertain" they are chiefly men from the Colonies who have been lost sight of:—

At Wadham College during the five years October 1903 to June 1907 there were admitted 155 men. They have adopted the following careers:—

Clergy (including five Nonconformists)	37
(four of these are missionaries)	
Civil Service—Home	10
Colonial	14
Indian	5
Teaching in schools—Home	17
Abroad	3
Law—Solicitors	8
Bar	5
Abroad	5
Business—Home	7
Abroad	5
University Teachers and Researchers	7
Doctors	4
Musicians	2
Army, Farming (abroad), Journalism, Stage (one each)	4
Uncertain or unsettled at present	22
	155

THE President of the Board of Education has appointed a Departmental Committee to inquire into certain questions connected with the proposed amendment of the Elementary School Teachers (Superannuation) Act of 1898. The Committee will consist of: The Hon. E. S. Montagu, M.P. (Chairman), Lord Farrer, II. FitzHerbert Wright, Esq., M.P., Sir Thomas L. Heath, K.C.B., F.R.S., Assistant Secretary to the Treasury; H. W. Orange, Esq., C.I.E., Accountant-General to the Board of Education; with W. F. Sheppard, Esq., Senior Examiner in the Board of Education, as Secretary. The following are the terms of reference:—

1. To consider and report whether, and by what amount, the total cost of the proposed amendments of the Elementary School Teachers (Superannuation) Act, 1898, will fall short of the equivalent of a perpetual annuity of £200,000 accruing from April 1, 1912.
2. To consider and report upon the methods by which the system of superannuation of elementary-school teachers might be further

improved without incurring an expenditure from public funds in excess of the surplus (if any) remaining from such annuity of £200,000.

3. In considering the cost both proximate and ultimate of the proposed amendments, the Committee will base their calculations on the existing number of teachers in recorded service, and will assume that this number remains constant, except in so far as the teachers who did not accept the Act of 1898, and whose service is therefore not recorded, will be gradually replaced by new teachers subject to that Act.

4. The equivalent of the annuity of £200,000 per annum will be reckoned as if so much of it as remains unexpended year by year were to be accumulated at 3 per cent. compound interest.

5. Among the alternative methods of improving the system, the Committee will consider proposals for (a) permitting the teachers who did not accept the Act to accept it now, if otherwise qualified; (b) improving the superannuation allowances payable in the case of such of the existing teachers referred to in Section 5 (2) of the Act of 1898 as may retire in the near future, either by increasing the amounts of 2d. and 3d. prescribed by that Section or otherwise; (c) increasing the rates of superannuation and disablement allowances now being paid under the Act to teachers who have retired; (d) increasing the rates of pension now being paid under the Code to teachers who have retired; (e) permitting retirement of teachers at ages not earlier than sixty for men and fifty-five for women on reduced pensions.

Note.—The effect of the proposed amendments of the Act of 1898 will be to increase the rate of the annual superannuation allowance from 10s. to £1 for each complete year of recorded service and to increase the additional annual disablement allowance in the case of men from £1 to £1. 10s., and in the case of women from 13s. 4d. to £1 for each complete year of recorded service in excess of ten years.

THE President of the Board of Education has requested the Departmental Committee which he recently appointed to inquire into certain questions connected with the proposed amendment of the Elementary School Teachers (Superannuation) Act, 1898, to undertake a further inquiry relating to the establishment of a system of superannuation for teachers in schools and institutions (not being elementary schools or Universities or University colleges) which are aided by grants from the Board of Education. The following are the terms of reference:—

1. To consider and report upon the best system by which provision can be made for the superannuation of teachers in secondary and technical schools and institutions, schools of art, colleges and schools for the training of teachers, pupil-teacher centres and other schools and institutions (not being Universities or University Colleges) which are aided by grants from the Board of Education, and upon its cost, both immediate and ultimate.

2. The system should be confined to teachers who are in full-time employment; it should be optional for teachers at present serving and compulsory for those who begin service in future. The benefits should include allowances payable on retirement at suitable ages, with or without allowances payable alternatively on disablement, and the basis of the system should be the payment of suitable contributions by the teachers themselves, supplemented by State assistance approximately equivalent to, though not necessarily the same as, that given to elementary-school teachers.

3. The Committee should, in particular, report upon the nature and length of the service which should be recorded as qualifying for pension, the employment which should be regarded as full-time employment, the extent to which and the conditions under which service already rendered can be taken into account in fixing the allowances received on retirement by teachers now in service, and the conditions under which a pension should be obtainable by service rendered partly in elementary schools and partly in secondary or other grant-aided schools and institutions.

At an Extraordinary Meeting of the Senate of the University of London, held on July 17 by order of the Vice-Chancellor, a report of the Site and Accommodation Committee was presented. After an amendment in the following terms "That the report be referred back to the Committee for further consideration with a view to its fuller elaboration in regard to the question generally and more particularly to its bearing on the general policy of the University" had been negatived, the following three recommendations of the Committee were adopted without a division:—

1. That the Chairman of the Site and Accommodation Committee and the Principal be requested to communicate with the Drapers' Company with a view to ascertaining whether the Foundling Hospital Site would receive their approval for the erection thereon of a Senate House and Administrative Offices at an Approximate cost of £60,000.

2. That the Vice-Chancellor be requested to inform His Majesty's Government that the Senate, after having carefully considered the advantages and disadvantages of the various sites which have been brought to their notice, have come to the conclusion that the site of the Foundling Hospital is the most suitable now available for the provision and erection of new head-quarters for the University; and to ascertain whether, if promises for a substantial sum of money be obtained towards the cost of the acquisition of the site, His Majesty's Government would be prepared to give effect to the Treasury Minutes of February 16, 1899, and July 13, 1899, so as to enable the site suggested to be secured and suitable buildings to be erected thereon.

3. That the Vice-Chancellor be requested to communicate Resolution 2 above to Viscount Haldane, and to invite him to submit it to those persons who have already shown their interest in the University by offering donations towards the purchase of a site, with an expression of the hope that he will use his influence with them so that their offers may be available for the purchase of the site named in that resolution.

REGISTRATION COUNCIL REPRESENTATIVE OF THE TEACHING PROFESSION.

LIST OF MEMBERS APPOINTED UNDER CLAUSE 3 OF THE ORDER IN COUNCIL MADE ON FEBRUARY 29, 1912.

I. APPOINTMENTS MADE BY BODIES SHOWN IN PART I OF THE FIRST SCHEDULE TO THE ORDER IN COUNCIL.

- The Hebdomadal Council of the University of Oxford—The Very Rev. Thomas Banks Strong, Christ Church, Oxford.
The Council of the Senate of the University of Cambridge—Mr. W. Durnford, King's College, Cambridge.
The Senate of the University of Durham—Mr. Frank Byron Jevons, Hatfield, Durham.
The Senate of the University of London—Sir Henry Miers, London University.
The Council of the Victoria University of Manchester—Prof. Joseph John Findlay, Victoria University of Manchester.
The Council of the University of Birmingham—Prof. Alfred Hughes, Birmingham University.
The Council of the University of Liverpool—Prof. Ernest Trafford Campagna, Green Gate, Dingle Lane, Liverpool.
The Council of the University of Leeds—Prof. Arthur Smithells, Leeds University.
The Council of the University of Sheffield—[The Vice-Chancellor, when appointed], [Sheffield University].
The Council of the University of Bristol—Prof. Julius Wertheimer, Merchant Venturers' Technical College, Bristol.
The University Court of the University of Wales—Sir Harry Reichel, University College, Bangor.
National Union of Teachers—Miss A. L. Broome, Girls' Central Council School, Ipswich; Miss I. Cleghorn, Council School, Heeley Bank, Sheffield; Miss E. R. Conway, Council School, Tiber Street, Liverpool; Mr. W. D. Bentliff, L.C.C. School, Haselrigge Road, Clapham, S.W.; Mr. Allen Croft, Lenton County School, Nottingham; Mr. Marshall Jackman, L.C.C. School, Sidney Road, Homerton, N.E.; Mr. G. Sharples, Municipal School, Waterloo Road, Manchester.
National Association of Head Teachers—Mr. J. W. Hliffe, Oak Tower, Uppertorpe, Sheffield; Miss E. F. L. Goodwin, 111 Northam Road, Southampton.
National Federation of Class Teachers—Miss E. Phillips, Gorsley, Pen-y-lan Place, Roath Park, Cardiff; Mr. T. H. J. Underdown, 39 Ruby Street, Bedminster, Bristol.
Head Masters' Conference—Rev. Dr. James Gow, Westminster School.
Head Masters' Association—Dr. McClure, Mill Hill School.

Head Mistresses' Association—Miss M. A. Douglas, Godolphin School, Salisbury; Miss Florence Gadesden, Blackheath High School.
 Assistant Masters' Association—Mr. A. A. Somerville, Eton College.
 Assistant Mistresses' Association—Miss E. S. Lees, Clapham High School.
 Association of Preparatory Schools—Mr. Frank Ritchie, Beechview, St. John's Road, Sevenoaks.
 Private Schools Association—Dr. F. A. Sibly, Haywardsfield, Stonehouse, Gloucestershire.
 College of Preceptors, Mr. W. G. Rushbrooke, St. Olave's Grammar School, Tower Bridge.
 Teachers' Guild—Mr. Francis Storr, 40 Mecklenburgh Square, London, W.C.
 Froebel Society—Miss E. R. Murray, Maria Gray Training College, Salisbury Road, Brondesbury, N.W.

2. APPOINTMENTS MADE BY BODIES OR GROUPS OF BODIES SHOWN IN PART II OF THE FIRST SCHEDULE TO THE ORDER IN COUNCIL.

Association of Technical Institutions—Mr. F. Wilkinson, Municipal Technical School, Bolton.
 Association of Teachers in Technical Institutions—Mr. P. Abbott, 5 West View, Highgate Hill, N.
 National Society of Art Masters; Art Teachers' Guild; Royal Drawing Society—Mr. Carpenter.
 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—Dr. H. W. Richards, 6 Norfolk Square, Hyde Park, W.
 National Shorthand Association (Incorporated), Teachers' Section; Society of Certificated Teachers of Shorthand; Association of Bookkeeping Teachers; Incorporated Society of Commercial Teachers—Mr. Alfred Nixon, 7 Oak Road, Sale.
 Association of Teachers of Domestic Subjects—Miss Marsden, Domestic Science Training Department, Battersea Polytechnic, S.W.
 National Association of Manual Training Teachers; Educational Handwork Association—Mr. W. Pearson Smith, 258 Barry Road, East Dulwich, S.E.
 Incorporated Gymnastic Teachers' Institute; British College of Physical Education; Ling Association; National Society of Physical Education—Mr. Guy M. Campbell, The Royal Normal College, Upper Norwood, S.E.
 Union of Teachers of the Deaf on the Pure Oral System; National Association of Teachers of the Deaf—Mr. A. J. Story, The Mount, Stoke-on-Trent.
 College of Teachers of the Blind; Smith Training College of the Royal Normal College for the Blind—Lady Francis Campbell, The Royal Normal College, Upper Norwood, S.E.
 Training College Association; Teachers' Training Association—Prof. John Adams, 23 Tanza Road, Hampstead, N.W.

A UNION OF SECONDARY TEACHERS.

SIXTY-SIX years ago a number of private-school masters met at Brighton to consider how they might advance the cause of education and raise the status of teachers. From that meeting sprang a movement which has powerfully affected the development of education in English secondary schools. The immediate outcome was the formation of an association of teachers which was called the College of Preceptors. Consisting at first of principals of private schools, it gradually, as its work became known, attracted members of other branches of the profession. Heads of public schools, assistant masters, and assistant mistresses joined the College, and it ultimately became, on a small scale, a union of secondary teachers.

Like other associations the College has at times found its work hampered through lack of funds; but it is now in

a sound financial position, and it is able to offer many advantages to its members. It provides courses of lectures on the theory and practice of education, which are free to members. In the College building there are rooms set apart for the use of members, and a large library of educational works from which members may borrow. There is a fund for the relief of distressed members, and another fund for the provision of life annuities. Social meetings of the members are held at the College, and arrangements are occasionally made for series of social and educative meetings in the winter vacations. Members of the College who apply to the Joint Agencies for employment are exempt from payment of registration fees; and if they obtain posts through those agencies the College repays the whole or part of the commission. The College has made arrangements for the admission of its members to the benefits of the Secondary, Technical, and University Teachers' Insurance Society. Members receive free copies of the *Educational Times*, and after this year each member will receive a free copy of the College Calendar. There are other minor advantages.

The founders of the College believed that if teachers were to secure recognition as a profession there must be professional training, or, at the least, distinctive professional study; and they early set up examinations of teachers, requiring all candidates for diplomas to show a knowledge of methods of teaching and of the principles underlying those methods. In 1871 the College commenced the annual series of lectures and lessons on the science and art of education which have continued up to the present day. This work was successful from the outset, and the College had the gratification of seeing its example followed by the Universities, which founded professorships of education and granted special diplomas for proficiency in the science and art of teaching. From 1895 to 1898 a day training college for teachers was carried on in the College building. This effort was costly, and the immediate results were discouraging, for heads of schools were not yet convinced of the utility of training. But the action of the College was vindicated when the registration regulations issued by the Board of Education prescribed training as an essential part of the equipment of a teacher.

As an additional means of encouraging sound teaching and of detecting faulty methods, the College in 1854 instituted examinations of pupils by identical papers. In this work also the Universities co-operated, and thus the foundations were laid for a system of impartial examination by experts. Whatever defects the system may have, there can be no doubt that the stimulating and directive influence of these examinations has been a great instrument for good, and this is frankly recognized in the recent report of the Consultative Committee.

As time went on, the College realized that, before teachers could expect to play an adequate part in the organization of education, they must themselves be organized: and in 1860 it began to advocate statutory registration. The College tried to awaken head masters of public schools to the advantages of registration, but for many years it was left to bear the brunt of the fight alone. It endeavoured, by appeals to the Government and by promoting Bills in Parliament, to bring about the desired result. That it did not achieve success was not due to any want of effort on the part of the College, but to the inability of the mass of teachers to understand the importance of the movement and their consequent failure to extend timely support. Had that support been given, it is not too much to say that registration of secondary teachers would have been in effective operation at least twenty years ago.

In its advocacy of registration and in its efforts for other reforms the College acted with an enlightenment in advance of the time; and in no respect has this enlightenment been more conspicuous than in its attitude towards women. At a time when women were commonly looked upon as intellectually inferior to men, the College offered the same rights and privileges to women as to men. Teachers of both sexes

were accepted on equal terms as members of the College, and there was only one exception to absolute equality of treatment: in consideration of the comparative deficiency in the provision of higher education for women, the College admitted women to its diplomas on easier terms than men. At a later stage the College showed its recognition of the changed circumstances by making the conditions equal.

While endeavouring to raise the status of teachers and the standard of their attainments, the College has not neglected other practical needs. It started a Provident Insurance Society for Teachers. For many years it conducted an agency for assistant masters and mistresses, charging no fees or commission to those who were members. At a later date the College took a prominent part in establishing the Joint Agencies for men and women teachers, and it was due to the help given by the College in the shape of free quarters and loans without interest or security that the men's agency was enabled to gain a footing. The College has demonstrated its sympathy with the activities of other associations of teachers by affording facilities for meetings and by taking part in the work of joint committees.

The attempts at federation which have been made during the past few years seem to indicate a widespread desire for cohesion. Federation may be excellent, but union is better; it is simpler, cheaper, and more efficient. The need for union is urgent. A registration scheme of the kind desired by secondary teachers has still to be attained, and this and other questions affecting their status and welfare are capable of satisfactory solution if secondary teachers will speak with one voice. The Board of Education has shown its willingness to be guided by the views of teachers; but disunion among secondary teachers is at once a source of weakness to that branch of the profession and of embarrassment to the Board.

The College is the natural centre for a union of secondary teachers. It has a long record of useful work, and it has shown itself capable of interpreting the needs of the profession before these needs were understood by the majority of teachers. Its Royal Charter empowers it to undertake any work calculated to advance the interests of the scholastic profession. Its material resources are considerable: it has a building specially designed to serve the purposes of an association of teachers, and it possesses substantial accumulated funds. Its constitution is democratic: every member, man or woman, can exercise equal influence through the vote on the policy and work of the College, and is eligible for a seat on the Council. In order that it may be in a position to promote the sectional interests of teachers, the College is now engaged in organizing its members in sections representing the several branches of the profession from which they are drawn. Thus the College offers a solid basis for union. But the question of union cannot be determined by the College. The decision rests with the individual members of the profession. If every teacher will do his part by joining the College and attaching himself to one or other of the sections, union will be accomplished.

MR. J. A. PEASE (President of the Board of Education), speaking at the annual prize distribution at the George Dixon Secondary School, Birmingham, said the school in which they met was one of the most interesting. The founder, Mr. George Dixon, was a remarkable man and an educational enthusiast. They were very much impressed at the Board of Education with the importance of parents making a great sacrifice for their boys' continued attendance at secondary schools. He also spoke of the value of manual labour and the healthy influence of exercise and recreative games.

At a Conference of West Riding teachers held at the Bingley Training College, Prof. J. A. Green, of Sheffield University, speaking on the teaching of English, said that the key of the problem lay in the development of the student's self-expression. The problem they had to tackle was the growth and expansion of the self. They must not make their English lessons a series of exercises, or the emotional self would be stirred in too limited a way. The world was small that the students lived in, but by taking them out of their limited surroundings they would help them to complete self-expression.

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 on Saturday, July 20.

The Secretary having read the advertisement convening the meeting, Dr. G. ARMITAGE-SMITH was elected Chairman.

The report of the Council was laid before the meeting, and was taken as read, a copy having previously been sent to every member. 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. A Course of Twelve Lectures to Teachers on "The Psychology essential to Efficient Work in School" has been delivered by Prof. John Adams. A Course of Twelve Lectures on "Schoolroom Practice" will be delivered by Prof. Adams in the autumn.

2. The Christmas Examination for the College Diplomas was held in the first week in January, and was attended by 448 candidates—353 men and 95 women. During the past half-year the Diploma of Fellow was conferred on two candidates, that of Licentiate on 40, and that of Associate on 111, who had satisfied the prescribed conditions.

3. (a) Improvements are being made in the scheme of the Certificate Examinations, and some of these will come into operation in June 1913. In order to meet the cost of these improvements and of others which have already been made, the Council have found it necessary to raise the amount of the fees payable in and after June 1913, from 10s. 6d. to 15s. in the case of First and Second Class candidates, and from 5s. to 7s. 6d. in the case of Lower Forms candidates. (b) The entries for the Midsummer Certificate and Lower Forms Examinations were about 4,170. (c) The Professional Preliminary Examination was held in the second week in March, and was attended by 365 candidates.

4. The Council have conducted the Examination and Inspection of four schools by Visiting Examiners.

5. The examination of pupils of schools in Newfoundland, which the Council are conducting on behalf of the Newfoundland Council of Higher Education, will be held at 156 Centres, and the number of candidates entered for the various grades of certificates is nearly 4,200.

6. The Council deeply regret to report the death of Mr. E. E. Pinches, who was for forty years a member of their body and for twenty-five of these years Treasurer of the College; by his wise administration of the funds of the College as well as by his sound judgment and generous devotion to its interests he contributed very largely to its stability and influence.

7. In accordance with the provisions of the Order in Council made in February last the Council have appointed Mr. W. G. Rushbrooke, Dean of the College, the representative of the College on the Teachers' Registration Council.

8. Meetings of Members were held in February, March, and May. At the February Meeting a Lecture on "The Middleman in Education: the Appearance of a new Functionary," was given by Prof. Adams. At the March Meeting Mr. M. W. Keatinge gave a Lecture on "The Danger of Aesthetics in Schools." At the May Meeting there were Discussions on "The Self-Education of the Teacher," opened by Miss Kate Stevens, and on "The Correction of Home-work by Teachers," opened by Prof. Adams. Reports of the Meetings and Discussions have been published, as usual, in *The Educational Times*.

9. (a) During the past half-year thirty-four new members have been elected. Five names have been removed from the list, and thirty-three 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:—Mr. H. Baumann, F.C.P., Rev. A. J. Church, Mr. A. Hosking, Miss E. Hulland, A.C.P., Mr. D. Munro, Mr. J. Pembridge, Mr. F. R. Ransome, and Miss C. Sanderson, L.C.P. (b) In order that the College may be in a position to render fuller service to its members, the Council are endeavouring to organize among the members sections representing the various branches of the profession from which they are drawn. It is hoped that this movement may strengthen the influence of the College, and pave the way for the union of all secondary teachers in one organization. A preliminary circular of inquiry which was issued to members has met with an encouraging response, and the Council intend to proceed with the work of organization after the summer vacation. (c) The Council are con-

sidering the possibility of making beneficial arrangements for their members in connexion with the National Insurance Act.

10. The Council have decided in future to issue the College Calendar without the Examination Papers, and to send copies of the Calendar in its new form to every life-member and subscribing member of the College. The Examination Papers will be issued in six sets—viz. Midsummer Certificate and Lower Forms Papers, Christmas Certificate and Lower Forms Papers, March Professional Preliminary Papers, September Professional Preliminary Papers, Summer Diploma Papers, and Winter Diploma Papers. The price of each set of papers will be 1s. (not including postage), but life-members and subscribing members will be able to obtain them at half-price.

11. As a preliminary to the preparation of a new Catalogue of the Library, the Council have decided to arrange for the removal from the Library of books which after careful consideration are found to be no longer of use to members. They have also decided to arrange for the construction of a card catalogue of the Education Section, which it is hoped will greatly increase the usefulness of that section.

12. A new editor has been appointed for the *Educational Times*. He will enter on his duties in the course of the present month.

13. Grants amounting to £75 from the Benevolent Fund have been made to beneficiaries during the past half-year.

14. During the past half-year five annuities have been granted from the Hopkins Benevolent Fund for Teachers.

15. Representatives of the Council have taken part in the work of the Federal Council of Secondary School Associations, the Joint Scholarships Board, the Joint Scholastic Agency, the Joint Agency for Women Teachers, and a Committee on Superannuation and Pensions. The last-named Committee has held many meetings at the College, under the presidency of the Right Hon. A. H. D. Acland, and has been principally engaged in discussing a Pension Scheme drawn up by the Board of Education.

With reference to paragraph 6, the CHAIRMAN read the following letter from Dr. Wormell, a former President of the Council:—

I am strained between two influences. I should like to be present to-morrow as a listener to the appreciation of the members of the College of Preceptors of the devotion to their interests that dominated the career of my very dear friend Mr. Pinches. I should have liked to add my reminiscences to those of others; but I distrust my own powers. Whatever I may have done in the past for the College (in an effort to carry out its Charter) has been successful in so far as it was guided by his wisdom and friendly counsel. His sympathy, his dauntless pluck, his manhood, his constancy, made a combination unique in excellence and kind that we cannot expect to see again. Gone beyond further avail are those qualities of heart and mind upon which many of us drew so abundantly—his tact, his saving common sense, his readiness in emergency, his aptitude for seeing the other side, his unflinching loyalty to those who won his confidence, his large allowance to those who made mistakes.

His friendship with myself is too sacred a thing to speak of freely, and so I have resolved to bow my head in reverent solitude at the time I know that equally tender hearts will be expressing their tribute of affection at the Half-yearly Meeting. Still I am at one with you all.—Sincerely yours,
R. WORMELL.

He said no one could have expressed more appropriately the feelings of the Council and of all the members. The College had sustained a great loss, one not easily surmounted. Mr. Pinches devoted the best part of his life to its interests. He gave of his best, and the College had prospered through his unique powers of administration. They would miss him greatly, but his passing away was what must happen to all, and they must accept the inevitable with submission.

With reference to the figures in Paragraph 9 (a) the DEAN suggested that the members of the College should endeavour to add new members to the ranks. Fresh recruits were wanted, especially now when the College was moving in so many and varied directions.

The CHAIRMAN said that the subject of Paragraph 9 (b) had already been brought before members in a circular letter. It was felt that the College could promote union, and thus render a great service to education, by providing means for the full consideration of all matters that interested teachers. This the Council would endeavour to do by giving the different sections opportunities for expressing their views collectively, and it was hoped that the views of the different interests in the College would subsequently be considered by the Council and would lead to some practical results. Much would depend,

however, upon the way in which the proposal was taken up, and an effort should be made to interest the members in the movement. Each section might then contribute in its own particular way to the well-being of the whole institution.

Mr. WILSON understood that what had been done so far was a matter of internal economy moved in the Council, which had not yet contemplated entering into federation with any of the existing organizations. He regarded it as an attempt by the Council to work for the advantage of the College by bringing together members of like experiences, and bringing the whole of their experience to bear upon any given subject. With that object he hoped there would be some co-ordination of the various sections.

Prof. LANGHORNE ORCHARD said it appeared to him that the idea in this proposed organization was similar to that of the formation of regiments in an army. There could be no question that through the formation of regiments an especial *esprit de corps* had been fostered, and the efficiency of armies had been increased thereby. The hope expressed in the report that this movement might strengthen the influence of the College appeared to him a reasonable one, and he thought they might look forward to good results.

Mr. MILLAR INGLIS said that for some years private-school teachers who were members of the Council had made a practice of meeting to discuss matters which specially affected private schools. He was glad that the Council had now recognized the advantage of referring to each section of the members of the College matters specially affecting that section, in order that there might be preliminary discussion before such matters were brought before the Council. Such a course would enable the Council to have fuller information at their command when they were considering any proposed action, and he believed that this method of federation would prove an inducement to teachers to join the College, and would make it less necessary to have separate associations to represent different sections.

With reference to paragraph 9 (c), the CHAIRMAN announced that the Council had made arrangements for the admission of its life members and subscribing members to the benefits offered by the Secondary, Technical, and University Teachers' Insurance Society. That Society was now an Approved Society under the National Insurance Act, 1911. Its General Section was open to all teachers, but membership of its Dividend Section would be restricted to members of the associations which constituted the Society. Of these associations, the College of Preceptors was one. The others were the Assistant Masters' Association, the Assistant Mistresses' Association, the Association of University Women Teachers, the Association of Teachers in Technical Institutions, the Teachers' Guild, the Private Schools Association, the Preparatory Schools Association. Full particulars of the conditions of admission to the Dividend Section and of the benefits offered had already been sent to all members of the College.

Mr. BARLET asked whether the College was to pay an annual sum in order to enable members to be admitted to the benefits of the Society.

The CHAIRMAN said the Council had agreed to make a contribution towards the preliminary expenses. All expenses other than preliminary would be paid by the Society itself out of the members' contributions.

On paragraph 11, the CHAIRMAN said that a good many books in the library were out of date, and might very well be eliminated, and some weeding out was necessary in order that space might be found for the additions that were constantly being made.

On Paragraph 12, Mr. MILLAR INGLIS expressed the hope that members would do all they could in the way of interesting members in the College journal. At present there was very little correspondence and very few subjects were discussed. Some members had felt that *The Educational Times* for some time past had not been truly in sympathy, or in touch rather, with what had been going on in the College. He would like to see the College journal deal with matters of importance in the educational world in a way that would render it unnecessary for members to look to other publications for advocacy of their special interests.

The DEAN hoped the meeting would credit the Council with having considered this important question with great de-

liberation and care. They had appointed the new editor in full conviction that he would do well by the paper and truly serve the interests of the College. They knew him to have had great experience in the educational world, and to have made himself felt in other journals in which he had written, and the Council believed that his appointment would result in a very great improvement in *The Educational Times*.

Dr. DICKINSON, in moving the adoption of the Report as a whole, said he would like to congratulate the Council on the activity they had shown in strengthening and developing the work of the College, and in devising new ways of promoting the interests of teachers. He would exhort all members of the College to do their very best to get other members of the profession to join the College and thus extend its influence.

The report of the Council was then adopted.

The DEAN then presented his report, which had been printed and circulated among the members attending the meeting. 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 Midsummer Examination of candidates for Certificates was held at 105 Local Centres and Schools from June 25 to 29. In the United Kingdom the Examination was held at the following places:—Balham, Belfast, Birmingham, Blackpool, Boston Spa (Yorks), Brighton, Bristol, Bruff, Buttevant, Cabra, Cardiff, Carlisle, Carmarthen, Carnarvon, Charleville, Cheltenham, Cheshunt, Clapham, Cork, Croydon, Drogheda, Dublin, Dumfries, Ealing, Eccles, Edinburgh, Exeter, Falmouth, Farnborough, Felixstowe, Forest Hill, Fraserburgh, Glasgow, Goudhurst, Grove Ferry, Herne Bay, Highgate, Huddersfield, Ilunstanton, Hutton (Preston), Inverurie, Kennington, Launceston, Leeds, Lincoln, Liverpool, London, Manchester, Margate, Market Harborough, Melton Mowbray, Merthyr Tydfil, Mountmellick, Newcastle-on-Tyne, Newquay (Cornwall), Nottingham, Ongar, Pencader, Plymouth, Porth, Portsmouth, Richmond (Surrey), Rochester, Rugeley, St. Leonards-on-Sea, Scorton, Seaford, Sheffield, Skegness, Southampton, Southport, Stamford Hill, Sunderland, Taunton, Thurles, Wainfleet (Lincs), Waterford, Wellington (Salop), Westcliff-on-Sea, West Hartlepool, West Norwood, Weston-super-Mare, Weybridge, Whittington (Worcester), Wicklow, Wigton, York. The Examination was also held at Constantinople, Gibraltar, Colombo (Ceylon), Rangoon (Burmah), Cape Town, Nassau (Bahamas), Mandeville (Jamaica), Port of Spain (Trinidad), and Georgetown and New Amsterdam (British Guiana).

The total number of candidates examined (not including 249 examined at Colonial Centres) was 2706—1957 boys and 749 girls.

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

	Examined.	Passed.	Percentage.
BOYS.			
First Class	240	132	55
Second Class ...	713	386	54
Third Class	554	420	76
GIRLS.			
First Class	141	51	36
Second Class ...	207	122	59
Third Class	381	309	81

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 (470 in number) who entered for certain subjects required for professional preliminary purposes.

The number of candidates entered for the Lower Forms Examination (not including 129 examined at Colonial Centres) was 970—538 boys and 432 girls. Of these 412 boys and 332 girls passed, or 77 per cent. in either case.

At the Professional Preliminary Examination for First and Second Class Certificates, which was held from the 5th to the 7th of March, in London and at ten Provincial Centres, viz., Birmingham, Bristol, Cardiff, Edinburgh, Inverness, Leeds, Liverpool, Manchester, Newcastle-on-Tyne, and Nottingham, 361 candidates presented themselves.

During the past half-year 2 candidates have obtained the Diploma of Fellow, 39 that of Licentiate, and 110 that of Associate.

Practical Examinations to test Ability to Teach were held in February and May. At these Examinations 10 candidates presented themselves, and 9 obtained Certificates.

Mr. CRICHTON suggested that, in addition to the dry bones of fact contained in the Dean's Report, it would interest the members, and those who used the examinations, if the

examiners would furnish verbal reports on the work of the candidates, as was done at the Oxford and Cambridge Local Examinations.

The DEAN promised that the suggestion should be carefully considered.

The Report of the Dean was then adopted.

A vote of thanks to the Chairman concluded the proceedings.

THE COLLEGE OF PRECEPTORS.

ADJOURNED MEETING OF THE COUNCIL.

AN adjourned meeting of the Council was held on July 20. Present: Dr. Armitage Smith, in the chair, Mr. Bain, Mr. Barlet, Rev. J. B. Blomfield, Miss Crookshank, Mr. Eagles, Mrs. Felkin, Mr. Pendlebury, Mr. Rushbrooke, Mr. Thornton, and Mr. Wilson.

The Secretary reported that the College of Preceptors had been accepted as one of the seven constituent associations of the "Secondary, Technical, and University Teachers' Insurance Society." Circulars giving full information as to the operations of the Society had been sent out to all members of the College residing in the British Isles.

On the recommendation of the Special Committee on Sectional Organization, it was resolved that arrangements should be made for meetings of three of the sections to take place at the College about the middle of October next.

CURRENT EVENTS.

THE Second International Moral Education Congress will take place at the Hague, August 22-7.

* * *

DR. H. K. ANDERSON has been elected Master of Gonville and Caius College, Cambridge.

* * *

It is proposed to raise a memorial to the late Sir Nathan Bodington, Principal of the Yorkshire College from 1883 to 1904 and first Vice-Chancellor of the University of Leeds from its foundation in 1904 to his death in 1911. The memorial will consist (1) of a portrait to be presented to the University of Leeds, and (2) of a University Fellowship or prize devoted to the encouragement of a branch of study in which the late Vice-Chancellor took an especial interest.

* * *

THE President of the Board of Education has made the following additional appointments of members of the Standing Committee of Advice for Education in Art:—Sir Swire Smith and C. Stephenson, Esq. (Principal of the City of Bradford School of Art).

* * *

PROF. ARTHUR SMITHELLS, F.R.S., has been appointed by the Leeds University Council, on the recommendation of the Senate, a member of the Teachers' Registration Council.

* * *

MR. HENRY CLAY, B.A. (University College, Oxford), and Mr. R. S. Dower, M.A. (Trinity College, Cambridge), have been appointed University Lecturers in the Department of Economics of Leeds University, with special reference to the new courses of instruction in Social Organization and Public Service.

* * *

PROF. RIPPMANN proposes to deliver in the autumn a short course of lectures for modern language teachers. There will be five lectures, from 10.15 to 11.45 a.m., on October 12 and 26, November 9 and 23, and December 6

on Phonetics, in which the sounds of English will be made the basis, French and German sounds being compared and contrasted; and five lectures, from 12.15 to 1.15 p.m. on the same days, dealing with methods of modern language teaching. It is intended that the lectures shall be of direct use to teachers in their daily work, and there will be opportunities for the discussion of difficulties.

* * *

WE are glad to give publicity to the following announcement of the Jaques-Dalcroze Rhythmic Gymnastics. The series of lecture-demonstrations arranged for last March, and postponed owing to the Coal Strike, will be given next November. M. Jaques-Dalcroze, who will be accompanied by six advanced pupils from his college at Hellerau, near Dresden, has made the following engagements:—Friday, November 15, 8 p.m., in the Caxton Hall, Westminster: The Music Teachers' Association. Saturday, November 16, 3 p.m., The Ladies' College, Cheltenham. Monday-Tuesday, November 18 and 19, 7 p.m., Leeds. Wednesday, November 27, Manchester. Saturday, November 23, 3 p.m., at the Goldsmiths' College, New Cross Station: Demonstration especially arranged for teachers and students. Monday, November 25, 8.15 p.m., in the Great Hall of the London University, South Kensington: The University Extension Guild. Inquiries may be addressed to Mr. P. B. Ingham, Merchant Taylors School, E C.

* * *

ON July 6, at Colston's Girls' School, Bristol, was opened the room recently built to accommodate the library (numbering 12,000 volumes) bequeathed to the school by the late Mr. C. J. Ryland. The Lord Bishop of Bristol, who, with the other governors of the school, was present at the opening, gave a short address to the girls, in the course of which he pointed out the immense value to the school of such a possession, and expressed his wish that a library chosen with such good taste and discrimination as this, their Ryland Library, might inspire them, in their turn, to care only for really good literature.

* * *

THE honorary degree of Doctor of Letters was conferred at Sheffield University upon the Archbishop of York, and the degree of Doctor of Laws upon Mr. Balfour, Judge Benson, Sir William Clegg, Colonel Herbert Hughes, and Mr. Stuart-Wortley, M.P. The Archbishop announced a message from the King, stating that his Majesty followed the welfare of Sheffield University with the greatest interest, and desired to express cordial wishes for its continued prosperity. Mr. Balfour stated that the more they looked upon modern conditions the more they became convinced that the great development in our Universities in recent years was a development on the right side. There was no place where the scientific and technical side of University training had been more successfully developed than in Sheffield. The Duke of Norfolk presided at the degree congregation.—*Morning Post*.

* * *

A POWERFUL impetus has been given to the Labour University movement by the Amalgamated Society of Engineers, which has decided by a large majority to levy its members one penny per head for the benefit of Ruskin College. This is equivalent to an annual grant of £520 to the college, and it is expected that other trade unions will follow the example of the engineers. The Amalgamated Society of Engineers have nominated twenty-one students, who will take up their residence at Oxford in September next.

A DECISION has now been reached by the University College Committee as to the action to be taken in consequence of the death of Miss Rosa Morison, who had held the office of lady superintendent to women students since 1883. It has been decided to appoint a tutor to women students. Miss Winifred Smith, B.Sc., formerly 1851 scholar, and a former student of the College, has been appointed to this office, upon the duties of which she will enter as from September next.

* * *

THE Board of Education have issued—as Volume XXV of the series of Special Reports—an account of the constitution and organization of the various Overseas Universities. This volume has been compiled in view of the Congress of Universities of the Empire, held last month. In a prefatory note the official responsible says: "The recent history of University institutions within the British Dominions has been marked by an increasing interchange of students between the Mother Country and the Overseas Dominions, and also by a growing practice which leads young men intending to take up a professional career in a new country to undergo part at least of their preparation in the country of their adoption. This fact . . . has made a more accurate knowledge of the opportunities and conditions of study in the Overseas Universities a matter of immediate concern to many parents and young men and women in this country."—*Morning Post*.

* * *

THE College of Preceptors has become one of the bodies constituting the Secondary, Technical, and University Teachers' Insurance Society, which has been accepted as an approved society under the National Insurance Act.

BRITISH ASSOCIATION DUNDEE MEETING.

SEPTEMBER 4, 1912.

PROVISIONAL PROGRAM OF THE EDUCATION SECTION.

The President, Prof. J. Adams, has selected for his subject "The Possibility of Objective Standards in Education." His aim is to estimate how far education has progressed on its way to be a science, and, with this in view, he proposes to examine the various developments of experimental work in Psychology and Pedagogy.

In the section itself, the papers and discussions will centre chiefly in the subjects which, for some years past, have been arousing popular interest. Thus, the chief matters already down for consideration are "Vocational Training," "The Present Position of Mathematical Teaching," "The Psychological Processes involved in learning to Read, Write, and Spell, with special reference to their practical bearings," "Leaving Certificates," and "The Scottish Education Department." In the discussion on Vocational Training, Miss Faithfull (of the Cheltenham Ladies' College), Miss Burstall (of the Manchester High School), Mr. J. L. Holland (Director of Education to the Northamptonshire County Council), Mr. J. W. Peck (Clerk to the Edinburgh School Board), and Dr. Morgan (President of the Educational Institute of Scotland) have promised to take part. The discussion on the present position of mathematical teaching is particularly opportune, as it was Prof. Perry's paper on "The Teaching of Mathematics," read at the Glasgow Meeting of the Association, that was responsible for many of the recent developments that have been keenly criticized. Among those who have promised to take part are Sir Oliver Lodge, Prof. Perry, Dr. T. P. Nunn, Dr. Pinkerton, Mr. W. P. Milne, and Mr. Eggar. The discussion on the psychological processes involved in learning to read, write, and to spell has been organized by the Sectional Committee on "Mental and Physical Factors involved in Education." Papers will be read by Miss Foxley, Prof. Green, Dr. Rusk, Mr. F. Smith, and Mr. Dumville, and it is hoped that Dr. C. S. Myers, Mr. Bompas Smith, Dr. Rivers, Mr. W. McDougall, Dr. W. Brown, and others will attend and take part in the discussion. The discussion on the Scottish Education Department is to be opened by Principal Donaldson. Mr. J. Strong will deal with the Scotch Leaving Certificate. The reports to be presented to the section deal with the questions of "Overlapping between School and University," "The Relation of School Books to Eyesight," and "Tests for Mental Defect."

THE COLLEGE OF PRECEPTORS.

Lectures for Teachers

ON THE

SCIENCE, ART, AND HISTORY OF EDUCATION.

SCHOOLROOM PRACTICE.

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 Second Course of Lectures (Fortieth Annual Series) will commence on Thursday, September 26th, at 7 p.m.

SYLLABUS.

I. (Sep. 26.) *Organization*.—Limitation of teacher's power: freedom still left to him: relation between curricula and organization: organization by "sides": the form system: the *ordinarius*: the specialist system: the synchronous system: combination of systems: various bases of classification of pupils: co-education: staff and size of classes: share of assistant teacher in organization: visiting masters: prefects and delegated authority.

II. (Oct. 3.) *Time-tables*.—Length of whole school-day: relation between class work and preparation work: arrangement of the major divisions of the day: theory of fatigue and its application to (a) rest intervals, (b) sequence of studies, (c) length of study periods at different stages and for different subjects, (d) relation between physical exercise and mental effort: form in which time-tables should be drawn up: rigidity and elasticity: esoteric and exoteric time-tables.

III. (Oct. 10.) *Discipline*.—Varying meaning of term: special sense of *control*: basis of discipline: "nature of things": authority: place of consciousness in the maintaining of discipline: "personality": fabled power of the eye: cause and effect: different ideals of class discipline: "talking" in class: relation between discipline and class work: possibility of teaching on the control maintained by another: the "discipline master."

IV. (Oct. 17.) *Relation between Home and School*.—Principle of *in loco parentis*: theory of the "Poster Parent" and the "Elder Brother": unreasonable attitude of many teachers towards parents: *Fluchmann als Erzieher*: relation between social rank of parents and their attitude to the teacher: methods of securing co-operation between home and school: American examples: special difficulties of different classes of teachers: conflicting influences of fathers and mothers: home work and home help: school reports and their manipulation.

V. (Oct. 24.) *Types of Troublesome Pupils*.—Meaning of the terms "average pupil" and "type": advantages of classification by types: dangers of such classifications: temperament and possibility of modifying it: method of superimposing class lists of different "years": correction of character: the ideal pupil as standard: deflection from the standard in two directions according to we consider intellect or conduct: manipulation of characters as actually found in school: specification of types and suggestions for their treatment.

VI. (Oct. 31.) *The Newer Methods*.—Quickened consciences of earnest teachers: danger of falling behind the times: nature of theory: its inevitableness: relation of theory to experience: practical dangers of lack of theory and of excess of theory: the doctrine and the empiric: the pedagogic type of mind: means of keeping in touch with new developments: sunny side of freaks and fads: canons of criticism: examples from actual experience.

VII. (Nov. 7.) *General Methods*.—The place in *practical* school work of the various general methods, such as the Dialectic, the Socratic, the Heuristic, the Concentric: the principle of the correlation of studies: dangers of the rigid application of any of the general methods: examples of excess of the various methods: need for the modification of each to suit the needs of special subjects: dangers of friction among teachers in applying general methods: need for subordination of individual preferences in favour of general good of school: need for concerted action in the matter of general methods.

VIII. (Nov. 14.) *Art of Illustration*.—Illustration is best test of a teacher's power: need for continual reading and observation to maintain freshness: stock illustrations and their place: danger of neglect of verbal illustration as compared with real and graphic illustrations: analogy and exemplification fundamental forms of verbal illustration: various degrees of *reality* of illustrations—actual objects, models, pictures, diagrams: point of view in illustration: appeal to the preferred sense: dangers of illustration: sources from which illustrative material may be obtained.

IX. (Nov. 21.) *The Key Subject of the Curriculum*.—The *mother tongue* occupies a unique place in the curriculum: always receives recognition in examinations other than those in languages: in social life it again receives special recognition: relation between knowledge and expression: vocabulary and construction: important point is *use* of language, not its analysis: composition best taught by the development of "purpose": place of imitation and precept in training in the mother tongue: danger of over-emphasis of form as compared with matter.

X. (Nov. 28.) *Note-making and note-taking*.—Importance of "notes" in the newer forms of school inspection: teacher's notes take two forms—(a) *teaching notes* and (b) *notes of lessons*: the real value of teacher's notes: relation between teacher's notes and the pupil's reproduction of them: time when notes should be made by pupil: taking note *versus* taking notes: pupil's notes as his textbook: the relation of note-taking to the newer ways of teaching history and mathematics: relation of teacher's authority to the textbook and the notebook.

XI. (Dec. 5.) *Examinations and how to prepare for them*.—Determining power of the examiner: external examinations and how to make the best of them without damage to the pupil: the "personal equation": the use of old examination papers: preparation of "set books": use of "the index" in revision: the teacher as examiner: how to prepare an examination paper: allocation of marks: alternative questions: advice to pupils about to sit for an examination: the marking of answers: numerical *versus* literal marks: how to secure uniformity of standard.

XII. (Dec. 12.) *Under the King and Over Us*.—A study in superiors: teacher's relation to the various powers that be: need for the teacher to study adult psychology: the characteristics of the official as such: the invariable third: official questions and answers: the official mind and how to approach it: an instructive bit of law: the official art of compromise: manipulation of conflicting official regulations: the fundamental agreement: the authorities as the teacher's allies: the whole question reviewed from the point of view of the teacher as himself an official.

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ESPRIT DE CORPS.

By ARTHUR CHRISTOPHER BENSON.

I HAVE been reading an interesting American novel called “Stover at Yale.” It is a lively picture of undergraduate life at an American University. It is full of almost impenetrable slang, of football and debating societies. I do not know if it is veracious, but it is certainly extremely life-like, and I believe that is a very good thing for all people who are interested in education to try to get an inkling of a different point of view of the working of another type of educational theory. There is little or nothing in the book about intellectual pursuits or aims. The undergraduates occasionally seem to be “grinding up recitations,” but the authorities appear to be almost non-existent. The real life of the place is an intense social affair very minutely organized, full of sets and cliques, dominated by eager personal ambitions, principally athletic. The football captains and coaches are spoken of with bated breath and unfeigned enthusiasm as men of vast responsibilities, just as a book of military memoirs might speak of Napoleon and his marshals. The aim of the whole business appears to be as far as possible to destroy and merge all personal independence, and to subordinate everyone to a system, the end of which is the glory and honour of Yale. It is thus a Spartan rather than an Athenian community, and the interest of it is the deep and almost ethical preoccupation with a self-sacrifice, all devoted to what seems ultimately a very petty kind of triumph. It gives the impression—rather a painful impression—of a strenuous discipline with a very inadequate motive, a waste of rather vigorous qualities and moral earnestness in a rather narrow and circumscribed purpose. But the aim of the writer is, I think, to bring this out clearly, and not to glorify the system. The hero gets disgusted with the spirit of the place, and for a time goes off the lines altogether.

There is no parade of youthful cynicism in the book, none of the English tendency to dissemble enthusiasm and to pretend not to be interested. These young Americans are always asking each other, “What are you out for? What are you working for?” “We’re trying to do something here!” is the response; “we want to be with the crowd that’s doing things!” One of the undergraduates says firmly that the object of Universities is to raise the average, to inspire the indolent, to construct a fine type. “Yes,” says the hero very pertinently, “but what does the type take to the nation?”

That is, I think, a very serious and important question,

to which all educationists ought to have in their own minds a clear and definite answer. I think it is a question which deserves to be insistently pressed home at the present time in England. We do not claim to produce an intellectual type in our public schools, but we profess to educate character, to develop a wholesome, manly, modest, courageous type of man. Very good! But what does the type take to the nation?

The spirit which the new type of schoolmaster tries with all his might to develop is *esprit de corps*. The young generation of schoolmasters is a breezy, wholesome, athletic type, rather disposed to decry intellectuality as a sort of priggishness, and looking with some suspicion on attempts to interest boys in ideas. Education is regarded as a gymnastic process rather than as a stimulating process. Knowledge, erudition, culture are the sort of things we leave gladly to Germany. We do not care much about originality or independent tastes. We want conformity. The boy is to sacrifice himself to the team, the house, the school. If he does this keenly—"keenness" is the saving quality—it will come back to him in the form of personal distinction, and he may pursue personal distinction if he only will do it without jealousy and modestly depreciate his merits when they are recognized.

But I think that we do not look closely enough into what this *esprit de corps* is going to do. We take for granted that if we can develop it in a school it will continue in after life in the form of good citizenship. But I think that this is not by any means the case. The result too often of feeding the immature mind on athletic distinction, and gratifying the instinct so lavishly, is that a young man tends to be rather disillusioned and disappointed when he enters life and finds that the warm atmosphere of mutual admiration in schools and colleges does not correspond with anything in the larger world. We tend in fact to encourage the spirit of clique and coterie, not to encourage patriotism and polity.

One of the radical mistakes often made in education is to believe that, if one teaches young people the principles of one art or accomplishment, they will instinctively apply them to other and larger subjects. That is not the usual result: geometry is a logical science, but one does not teach most boys logic by teaching them geometry, but only the logic of geometry. And I am not at all clear that, by teaching boys the lesser patriotism of school and college, one teaches them the larger patriotism of nation and race. I think in fact that the danger of enforcing the smaller *esprit de corps* is to turn out individualists, and that the training of school is so complete in itself, passing as it does through the stages of immature ambition, gradual success, serene security of achievement, that the world, when it comes, seems vague and indefinite, and perseverance a tedious business.

In fact, I believe that it is a short-sighted policy to allow personal prowess to be so lavishly rewarded at school, and that instead of rounding the horizon of school life so narrowly, concentrating the view upon such small and tangible interests, a great effort should be made to

widen the outlook and to give some notion of the size and complexity of the world. The conscientious schoolmaster tends to put the goal of life too close to the boys, rather as though life ended at twenty-two instead of only then dawning. I believe that boys ought to be taught much more about the actual work of the world, the political, social, commercial interests of nations. Looking back at my own education, it seems to me that I left school believing in athletics, over-valuing correct tone, trusting in social influence, with mild literary tastes, utterly and blandly unaware of the real forces and problems of the world. I had not the smallest idea of the duty of social service. My idea was that I must keep myself respectable, and earn as much money as would enable me to live in the right sort of style. Whether or not a sense of social service could have been inculcated in me, I do not know; but no attempt was made to do it, and I think that our own educators saved themselves trouble by working on the convenient instincts of the boys. Games, they held, were good things because they kept the boys employed and, on the whole, tended to healthy morality. I do honestly think that higher and bigger motives were not sufficiently put before us. The horror of the possibility of priggishness was so great that I do not believe I ever suspected that my teachers had any enthusiasm or were in earnest about anything. And thus I believe that, though *esprit de corps* is a very convenient thing for schoolmasters to cultivate, a good many finer and bigger things are frankly sacrificed to it. The best public-school product is a fine and sensible type; but the inferior product is a poor thing, because it is exclusive and contemptuous, and tends to make a merit out of its good fortune.

How would I meet this? Well, I would frankly clear a space in the poor congested curriculum for teaching the boys something of the very complicated and serious problems of the age—the political, social, and economical problems. I would try to make them feel that they belonged to a nation with a past, a present, and a future. I would make a real attempt to decry and belittle class distinction, condescension, superiority. Instead of taking for granted that the boys were instinctively aware of national greatness, as a sort of inherited right, I would show them plainly how it was won and how it could be maintained. I would try to make them feel that men were not what they were born, but what they could make themselves. We have great national faults. We are vain, confident, conventional, hypocritical; and we worship property and position with a surpassing love. One cannot at once eradicate these faults, but we need not foster them. The book which I began by mentioning shows clearly enough the mischief of concentrating energy and enthusiasm on narrow ideals and focusing, all the combativeness of youth upon a local and sterile conception of honour. We do not make quite the same mistake in England, but I think that in our education, conscientious and vigorous as it is, we similarly emphasize our national faults, and tend to produce a complacent provinciality. I believe that we should do better if, instead of

seeking to conform our boys to a type, we encouraged more independence and indicated larger views. Our secondary education is in a very confused state. It does not cultivate practical efficiency, it is suspicious of ideas, it derides enthusiasm. What we want is to have a clearer conception of our duty to the nation, and, instead of aiming at a sort of unexceptionable common sense, we ought to keep in view the higher interests of the race, and inspire a devotion to the cause of labour, order, and peace.

THE LEAVING EXAMINATION IN PRUSSIA.

THE view has been expressed in several quarters that the recent report of the Consultative Committee on Examinations in Secondary Schools is to some extent based on the system adopted in Germany. This view is not altogether without justification, seeing that the Consultative Committee propose a combination of examination, inspection, and school record; but no one desires to introduce into England in its entirety the German method. The weakness of the English plan is the total severance of examination from other data. In England a pupil in a secondary school is almost entirely judged from written answers to questions. Some modification of this method of forming a judgment is desirable. References to the German system are often somewhat loose and indefinite. So far as we know, there is only one memorandum on the subject from which reliable information can be had. This is the memorandum prepared by Dr. Sadler for Mr. Bryce's Commission. Memoranda embedded in parliamentary reports are often forgotten. Our readers will be glad, therefore, to have the salient passages of Dr. Sadler's memorandum reproduced. At the present moment the information is very apposite. This is what Dr. Sadler has to tell us:—

The leaving examination is confined to boys in the first class. Under ordinary circumstances about twenty-five boys will enter for it in each school. Three months before the examination begins, each boy prepares a biographical sketch in which he shortly reports on his education from its commencement to the date of the composition. He is allowed to specify the subjects of which he is particularly fond (including any subjects not taught in the school) and those which he had special difficulty in studying. Two months before the examination each master sends to the head master a paper of questions or problems in the subject on which he has given instruction. This paper contains three times as many questions as will be required in the leaving examination. The head master examines the questions and either approves them as they stand or revises them after consultation with the teacher concerned. These sets of questions are then sent to the inspector, together with a long characterization of each pupil, written by the class master and agreed to by all the masters engaged in teaching the boy, as well as by the head master. This report on the character of the pupil's work is long and full, being written, partly in symbols and partly in words, on printed schedules. At the same time also each master has to report of each individual pupil whether he thinks him "ripe" to pass the examination. On this point the opinion of the master, on which much depends, is expressed in the words "yes," "no," or "doubtful." His decision, which is based on the boy's work during the year, weighs as much as the written and oral examinations, which follow, put together. Each boy must have reached in his year's work a certain standard in eight or nine subjects, but special success in a "compensatory subject" countervails failure in one other, German excepted.

On receiving the papers of proposed questions and the reports on the individual pupils, the inspector carefully examines them and may refer the questions in any subject,

with which he himself is not familiar, to one of his colleagues in the "college" of inspectors to which he belongs. Each "college" will naturally have among its members an expert in each branch of the school curriculum, but different parts of the same school are not assigned to the different inspectors. On the contrary, each of the schools is placed, as a whole, under the care of one inspector only, for a term of years.

When the inspector has perused the papers of questions and the reports, he fixes the date for the oral examination. The head master of the school then appoints a day for the written examination, usually choosing a date that will fall from four to five weeks before that fixed by the inspector for the oral examination. The day before the written examination the inspector sends back to the school the papers of questions, having marked on each paper one-third of the questions. The questions so marked are set in the examination. The papers of questions are sent to the head master by the inspector in sealed envelopes, each under a separate cover. The questions are not printed. On the day of examination the head master is required to hand the envelope containing the questions, with the seal still unbroken, to the class master in the presence of the candidates. The envelope is then opened and the marked questions are dictated to the candidates, one or more of the latter being asked to repeat them in order to prevent mistakes. From two to five hours are given for each paper, allowance being made for the time taken by the dictation of the questions. The master concerned fills in a certificate showing the exact time at which the seal was broken, when the dictation began and ended, and when the worked papers were collected by him. There are five subjects in which written examinations are held, and the papers are set on consecutive days. Only one paper is given on each day. The dates of the written examination are sometimes so arranged that a Sunday falls in the middle of the examination. . .

Each set of answers is looked over by the master, who marks each answer 1, 2, 3, or 4—*i.e.* very good, good, sufficient, or insufficient. Papers receiving any one of the three highest marks are allowed to "pass." The master is required to set forth in writing the grounds of his decision in respect of each paper. Furthermore, all the teachers concerned with the class look at the papers of all the candidates, and at the biographical sketches prepared by them, in order to form an opinion about each boy. When all this is done, the masters meet and make collectively a short report as to the "ripeness" of the various candidates for passing the examination. In making this supplementary report they take into account both their own first decision and the boys' work in the written examination.

All the worked papers, together with this second report and the boys' own biographical sketches, are now sent to the inspector, who, on the day before his visit for the *viva voce* examination, looks through representative parts of the candidates' work.

On the day of the *viva voce* examination the inspector first presides over a meeting of the examination board, which consists of those masters to whom the head master has entrusted the care of the highest form during the preceding year, together with the head master and the inspector; the presence of the latter being required to make the board technically complete. On the board each man has one vote, the inspector having also a casting vote on any subject on which the opinion of the board happens to be equally divided.

At this meeting of the examination board the inspector first makes general comments and criticisms on the work done in the class. Next, he criticizes the papers set for the examination, with special reference to their fitness to the particular school, and to their easiness and difficulty as compared with other papers set in corresponding schools elsewhere. He then reviews the corrections made by the teachers on the boys' worked papers. Of these corrections the inspector either states his approval or suggests alterations in them. Next he turns to the marks of each candidate, and goes carefully through the record of his work. In

case of any doubt he questions the teacher as to the boy's work, or looks into his exercise book for the last two years, these books being required to be at hand during the meeting. Finally, he takes a vote on each boy. According to this vote the candidate is (1) either declared "ripe" without any further *viva voce* examination (which is equivalent to passing with honours); or (2) admitted to the *viva voce* examination, in which case he is so examined only in those subjects in which he has not been marked as "sufficient," both for his year's work and in his written examination; or (3) excluded from the *viva voce* examination. A candidate so excluded is considered as having failed in the examination, and after three such failures a boy cannot be admitted to the leaving examination again.

As soon as it has been decided at the meeting of the examining board which of the candidates are to be excused from the *viva voce* examination, which are to be admitted (and in what subjects), and which are to be excluded, all the candidates are assembled for prayers and are afterwards introduced to the inspector by the head master. The inspector then announces the names of those who have passed the examination without having to undergo *viva voce* questioning, and, with a few words of congratulation, excuses them from further attendance. He will then tell the other candidates in what subjects they will be required to be examined *viva voce*, and the oral examination begins at once.

A candidate who is admitted to this *viva voce* examination can "pull himself up" in any subject in which he has failed to obtain the mark "sufficient" in the written examination. The master, however, may refuse to allow him this to retrieve his failure. In case of such refusal, however, the candidate may ask to be examined *viva voce* in any subject in which he has been marked "very good" or "good," special success compensating for failure in any subject except German and religious knowledge. If a boy's written examination work is marked higher than was his year's work, he must be examined orally in order to compensate for loss of marks in respect of his comparative failure in the course of instruction given during the year. If, on the other hand, a boy does badly in the year's work, and passes in the written examination but fails in the *viva voce*, he is regarded as having failed in the examination. . .

At the close of the examination day the examination board meets once more, the inspector being present. At this meeting all the other masters attend and may be asked questions by the inspector; but they have no vote or voice in the discussion. The results of the examination are announced at the end of the day, each candidate being simply told whether he has passed or failed. But the certificate, which the candidate receives afterwards, goes into very considerable detail.

THE INSTRUCTION OF THE YOUNG IN SEXUAL HYGIENE.*

By ERIC PRITCHARD, M.A., M.D.

IN the first place, some explanation is due from me in justification of the title which I have adopted for this paper. It has been suggested that it would have been better to have employed the comprehensive term "Sexual Pedagogy," or that for "Sexual Hygiene" the term "Sexual Matters" or "Sexual Physiology" might have been profitably substituted. I thought, however, that the larger term, "Sexual Hygiene," might be understood to include those many aspects of the sex question which have for their common objective the scientific teaching of morality. The truth of the matter is that in this comparatively new science we are faced, as Dr. Saleeby has expressed it, with terminological difficulties. We have no suitable vocabulary, and such words as "Sexual Hygiene," "Sexual Instinct," "Reproduction,"

"Pregnancy," are not only distasteful to those who are entrusted with the difficult task of explaining the origin of life to young persons, but it is also very doubtful whether they are capable of conveying the desired shades of meaning to the undeveloped understanding. With the growing importance of this subject it is to be hoped that our language may be enriched with a more dignified and picturesque nomenclature. In examining the reports of the Successive International Congress on School Hygiene it will be noticed that both the French and German languages are equally sterile in this respect.

But these successive reports, published respectively in the years 1904, 1907, and 1910, prove that, if its vocabulary has not been materially enriched, at least public interest in the subject itself, as measured by the length and number of the papers recorded, has increased by leaps and bounds. It is now no longer a matter of debate amongst international experts whether children are to receive instruction on matters which relate to sex hygiene. No! The question that now demands attention is who is to teach them, how, when, and where! But so far only some slight echo of this agitation which has aroused educationists on the Continent and in America has reached our shores.

Although we have not yet accurately determined the position of sexual hygiene in our system of education, none the less there are certain points with respect to which there does appear to be universal agreement, and on which our ideas have attained to a condition of crystallization. First and foremost among these accepted postulates is the demand that children should be told the truth, not necessarily the whole truth, but truth sufficient for their present needs, and co-ordinated to their powers of understanding. "Better," said Ruskin thirty years ago, "a child should be ignorant of a thousand truths than have consecrated in its heart a single lie." And to-day we cannot improve on this apophthegm. It is quite impossible for a normal child to remain in entire ignorance of the phenomena of sex: such a belief assumes that it has neither eyes nor ears, that it is void of curiosity, and barren of the great primary instinct of sex. No normally constituted child can avoid drawing inferences from what he sees and what he hears, from the conversation of others, from the biological experiences of everyday life, and this under the most favourable circumstances of the sheltered life in a well-conducted home. But even in these sheltered homes there is always a very real danger of wilful contamination by impure-minded servants or older children. Enlightenment of this kind is the very worst sort of enlightenment that can illumine the innocence of the still unformed mind. But it is nearly always from pernicious sources of this kind that the child acquires his pseudo-knowledge on matters sexual, unless his enlightenment has been deliberately designed by his parents or teachers. To allow a child to run the risk of acquiring undesirable knowledge of this kind in an undesirable way from undesirable sources is, as Havelock Ellis puts it, like admitting "that there is no need to supply sources of pure water when there are puddles in the street that anyone can drink of." Thanks to the findings and operation of impure-minded servants or older children, enlightenment is much wider and richer than it was formerly supposed to be. And that their relationships with others, their affections, their aversions, their hatreds, their joys and fears are often swayed and determined by that prime mover of our psychological activities, the sexual instinct. Although, perhaps, we should receive with caution some of the assertions made by the more zealous exponents of the psycho-analytical methods, there can be no doubt whatsoever that a vast number of hysterical manifestations, obsessions, psychoses, and other abnormal, mental, and physical states of children owe their origin to the operations of the sexual instinct, perhaps unduly provoked, almost certainly unnaturally repressed. It is indeed difficult for the uninitiated to understand that such apparently innocent habits as the making of grimaces and the biting of nails can have for their basis a simple repression of this natural and overwhelming instinct. To Prof. Sigmund Freud, of Vienna, and his

* A Paper read at Conference of the Child-Study Society, held in the University of London, Saturday, May 11, 1912.

followers, we owe this unexpected interpretation of many otherwise inexplicable psychological phenomena.

We know, then, that the sexual instinct is far more precocious in its development than we formerly suspected. And we know, thanks to the work of Freud, that when this instinct is suppressed or repressed it may give rise to strange vagaries of conduct, not only in children but in individuals of all ages and both sexes. It becomes, then, a matter of the highest importance that this dominating instinct—an instinct which indeed does not arise quite spontaneously but at the dictate of some liberating stimulus—should be safeguarded and protected from every conceivable circumstance in the environment which is calculated to exercise upon it a detrimental influence. What are these influences, and how can they be controlled? How can you protect a child of five or six years from circumstances in the environment which can arouse from its dormant state this master instinct? How can we prevent its repression giving place to some equally disastrous neurosis? It certainly cannot be done on the customary nursery principles of instruction. How with our present conception of the propriety of social conduct can we prevent the repression of those lines of conduct to which the awakening of the sexual instinct inevitably leads the child? Let me give you an instance which actually came under my notice. A small child, four years of age, with the awakening of the sexual instinct, was observed with an imperative desire to expose itself. The child was promptly punished by the nurse, and the incident was not allowed to be forgotten, but the child was frequently warned against a repetition of the misconduct. The child evidently brooded over the trouble, and subsequently developed a serious neurosis. Under these circumstances how should the nurse or the mother have acted? I do not adduce this incident because I have an answer ready, but because I wish to impress upon all concerned the extreme difficulty of dealing with cases of this kind in accordance with rational methods.

I submit that these questions are of enormous importance and most difficult to deal with, and I cannot think that we shall find a satisfactory solution to the problem by burying our heads, ostrich-wise, in the sand and saying that they do not exist. I am not one of those who believe that every child should receive its first lesson in sexual knowledge from its mother, and I am of this opinion because I have seen enough of mothers to know that, for the most part, they are absolutely incompetent of conveying this knowledge in a way that would be calculated to be of benefit to the child. Further, I would remind you that most of those who, with the utmost assurance, give the advice that the mother, and the mother alone, should supply this early instruction to the child, are clearly thinking only about classes who at least have an education, if they have not an understanding.

But how about the great masses of the people who have neither understanding nor education—how are these mothers to give their children the requisite foundation of sexual knowledge? Among these classes, and I say it with the greatest deliberation, the majority of children have learned more by ocular demonstration before they are three years of age than the children of the upper classes leading sheltered lives learn by the time they are fifteen years of age.

How young children are to be taught the elements of sexual hygiene, how they are to be protected from the stimuli which awaken precocious instincts, how they are to be saved from developing serious neurosis as the result of the repression of these insistent reflexes; surely these are matters which call for the exercise of the best brain power in the country—surely they are not to be dismissed as offensive to our over-refined sense of decorum and modesty. Personally I have no great opinion of amateur work when there are experts or professionals to be procured. I believe that parents make very bad instructors for their children, and I believe that the two great classes of individuals who are best qualified to formulate an opinion on this question—namely, school teachers and doctors—share this opinion with me. I do not know how young children, say of three to six years of age, should be instructed in matters relating to repro-

duction and the origin of life; but I think that even children of tender age, if they are to be instructed at all, should be taught in the most skilful way and by the most competent teachers. I believe it to be work for experts, and I contend that we must make and create these experts, for we have not got them now. After a time a certain proportion of mothers may perhaps be taught how to perform these difficult duties for themselves.

The psychological moment, or moments, at which children should be instructed in these important matters cannot, in my opinion, be fixed by the criterion of age or the degree of mental development. Each case must be judged on its own merits and by those *imponderabilia* of character which are sometimes known in the aggregate as temperament. Dr. Blom says "better a year too early than an hour too late," but here again I maintain the success or failure of any particular system of teaching depends not so much on the time or the system as on the individual capacity of the teacher. Writing on this subject* Dr. Ira S. Wile suggests that the education of children in sexual hygiene naturally divides into three age periods—(1) the age of mythology, (2) the age of chivalry, (3) the age of civic awakening—for each of which special rules of instruction are indicated. On the other hand, Dr. Ernest Jones† claims that the aims of enlightenment should be based on the following considerations:—(1) In the first place, to inculcate an attitude of purity and naturalness towards matters of sex, so that the child will be steeled against impure suggestions and thereby enabled to maintain high ideals in this respect. (2) To prepare children for the physiological occurrences inseparable from their sexual development, and, above all, for the function of parenthood. (3) To provide them with such knowledge of sexual hygiene as to enable them to guide their sexual lives amidst the numerous dangers and difficulties that are likely to beset them. According to this regime enlightenment should be brought about by a series of graduated steps, and should be adjusted to the varying needs of the individual child. Dr. Martin Chotzen, of Breslau, one of the greatest authorities on the sexual education of children, lays down somewhat arbitrary rules‡ for a progressive course of sexual instruction which is designed to extend from infancy until the time of marriage. He insists that, for the pre-ent. lectures in sexual hygiene must be given by medical men for the reason that doctors alone possess the necessary knowledge for this kind of teaching. Further, he insists that if sexual education is to be crowned with success it is desirable that the parents and school teachers should be instructed in the necessary details and principles of physiology, psychology, and hygiene. Dr. Chotzen seems to me to fall into the same kind of error that is noticeable in the writing of nearly all authorities who write on this subject—he legislates for the children of the privileged classes. This narrow conception of the sphere of usefulness of sexual pedagogy must be banished from our minds if we are to do justice to the immensity of the subject and the vast numbers of children who have claim to its benefits. We have not to consider the half million children of the upper classes, but the six million children of the proletariat.

I do not pretend to any special knowledge of the practical details of the teaching of sexual hygiene to young children, but of this I feel convinced: the real obstacle in teaching children the elements of sexual hygiene is the difficulty most of us experience in effacing from our minds our own shamefaced conceptions of these fundamental and physiological truths. We find it difficult to forget impure sources of our own information on these subjects, and impose unnatural barriers to the satisfaction of the child's legitimate curiosity on these points. The object of this paper is not so much to offer suggestion as to invite discussion and stimulate thought. For the present those who are interested in these

* "Archives of Pediatrics," Vol. XXIX, page 131.

† "School Hygiene," Vol. III, page 135.

‡ "Reports Third International Congress of School Hygiene," Vol. II, page 17.

matters can best expend their energies in preparing public opinion for the changes which are inevitable in dispelling from the average mind the belief that ignorance is synonymous with innocence, and that purity cannot only be maintained by hiding from the child those fundamental truths which sooner or later it must discover for itself. For my part I believe we are wrong to suggest that parents should themselves attempt to undertake so difficult and delicate a matter as the instruction of their children in the matters of sexual hygiene. I do not think that uninformed individuals should attempt to step in where the best instructed and most competent experts only tread with the greatest diffidence and fear.

As I have already indicated, children are extremely apt to develop strange and unexpected neuroses as the consequence of the repression of natural sexual instincts. I think it extremely likely that we shall meet with a very luxuriant crop of such neuroses if, without wider knowledge of the subject, parents attempt to repress these natural instincts by artificial means. I think that the conception that parents can perform this difficult task is a wrong one. I think we are commencing at the wrong end. I would rather suggest that for the present we direct our energies to the formation of societies (Volksbildungsvereine and Elternabende) for the debate and discussion of these questions among parents and teachers: that lectures on sexual hygiene be included in the syllabus of instruction for intending teachers, and that others be arranged in post-graduate courses for masters already in the profession; and that, with respect to the actual teaching of children and young persons, we should for the present confine ourselves to the instruction of adolescents and those who have already passed through the critical period of puberty. There does not seem to me to be any pressing hurry to reach the lower levels of childhood; the younger the child the more difficult is it to instruct without incurring the very real danger of repressing natural instincts in a manner that will react most injuriously on its entire organization. I do not for one moment believe that the child by its unaided judgment will arrive at the best solution of this most difficult problem. I believe that in ninety-nine cases out of a hundred the solution arrived at by this means is bad, thoroughly bad; but all the same I do not consider that we are likely to discover any much more satisfactory solution until we know a great deal more about the subject than we do at present. My view, therefore, is that we should essay the easy task first and attempt to instruct young adolescents, and then, as we gradually acquire more knowledge of the technical difficulties, and become more skilled in the practical details of teaching, we should take up the instruction of younger and younger classes of children, leave as little as possible to the parents who have already given abundant proofs of their willingness to shirk this responsibility and rely to a very large extent on expert knowledge and expert teaching.

THE DIRECT METHOD.

THE following statement (taken from the Board of Education Memorandum on Modern Languages), which has been prepared by Mr. L. von Glehn, the Chief Modern Language Master of the Perse School, is a brief sketch of the theory and practice of what is generally called the Direct Method, which it is attempted to carry out at this school.

The Direct Method rests on the following principle:—

The essential condition for acquiring a real command of a language—both of the spoken and of the written idiom—is to establish in connexion with that language the same Direct Association between experience and expression as exists in the use of the mother-tongue.

Since the best means of establishing this Direct Association is the constant hearing and speaking of the language,

especially the rapid give-and-take of dialogue, the spoken idiom must be made the basis and, as far as possible, the medium of instruction.

Further, now that psychological research has shown the important part played in the acquisition of language by auditory and motor associations—*i.e.* the memory of the physical experience in hearing and in articulation—it is obvious that language teachers must make full use of these factors in the building up of the foreign language in their pupils, instead of relying mainly on visual associations as has been done hitherto.

This means shifting the centre of gravity of language teaching from the aim of training one's pupils to *understand* the language and *know* its grammar, to the aim of giving one's pupils first and foremost *the command of the language as a means of self-expression*, to serve as a basis for the study of its literature and structure. It means that, especially in the elementary and intermediate stages, the inevitable gap between the "active" and "passive" knowledge of the language—*i.e.* between the power to use it and the power to understand it—should be kept as narrow as possible. In short, the key-note, the guiding principle of the modern language course, must be *self-expression*, with all the forms of intellectual training that this word implies—composition in its widest sense, both oral and written.

It follows from the considerations here laid down that the intrusion of the mother-tongue into the modern language classroom must be rigorously restricted, if not deliberately avoided, at every point.

Now, in the acquisition of a language one may distinguish four different processes. They consist in the "understanding" followed by the "use" of new material—*i.e.* the processes of (i) *interpretation* and (ii) *assimilation*; and in the "understanding" and "use" of old material, *i.e.* the processes of (iii) *recognition* and (iv) *self-expression* (in all its varying degrees, extending from free reproduction to free composition). In the case of each fresh linguistic acquisition these processes occur in the above order, the last two of course being interchangeable; in practice, however, in any given piece of oral linguistic work the four alternate all the time, but in different proportions, so that it is quite legitimate to say that each of these processes in turn occurs predominantly in one of the following stages of class work: (i) in the reading of a new portion of text used as a basis for definite instruction, (ii) in the reproduction exercises based on that passage, (iii) in the revision of that text or the reading of a similar one, and (iv) in the various exercises in composition in which the knowledge acquired may be turned to account.

Now, whereas translational methods tend to prevent the Direct Association from being established, by making the mother-tongue intervene in each of these processes or stages, the Direct Method enables one, in each of them, to dispense with the mother-tongue more and more as the pupils advance, for it is based on a system of reproduction (leading to free composition), in which question and answer in the foreign tongue form the regular means of communication between teacher and taught, the new being linked to and explained by the old at every point, and thus follows a course similar to that of the acquisition and study of the mother-tongue.

It is obvious that the process in which it is most difficult to avoid the intrusion of the mother-tongue is that of *Interpretation*. Most teachers agree that it is inadvisable to make a fetish of explaining everything in the foreign tongue; but, while some, as we do at the Perse, aim deliberately at eventually eliminating the mother-tongue completely from this process, others make a point of using it freely and of testing comprehension by careful translation.

But the essential points, and those on which the exponents of the Direct Method are in practical agreement, are that

(a) whatever be the treatment applied in the *Interpretation* stage, the stage of *Assimilation* should not be disturbed by the intrusion of the mother-tongue; (b) the old continuous *Construe* should be abandoned altogether, as leading to the reading off of a foreign text in English, and in English of very poor quality indeed; (c) there must be ample opportunity for all the different degrees of self-expression, ranging from free reproduction to free composition. This implies two kinds of reading—*Intensive* and *Extensive*. On the one hand, the very thorough study of special passages or texts, carefully graduated and selected for the supply of the linguistic and grammatical facts required, these being assimilated by the various processes of reproduction; the aim being that in this portion of the work *everything* should pass into the pupil's "active" control. On the other hand, the reading of complete texts, well within the comprehension of the pupils, so that they can be read rapidly, thus giving that sense of power which is the best incentive to further efforts—texts selected (as early as possible in the modern language course) for their literary value and for their content, which is summed up at intervals in the form of *précis*, by means of question and answer.

It also implies a continuous and carefully graduated course of composition or self-expression, closely correlated to the reading course, and, indeed, in the lower stages, indistinguishable from it, in which written work is based on oral work and where the passage from reproduction to free composition will occur at every stage of knowledge, free composition constituting the crowning assurance of progress at every step forward.

But it follows from all that has been said that this course of training in self-expression must not be disturbed, above all in its earlier stages, by the regular practice of translation from the mother-tongue into the foreign language, and that this should not be attempted until a considerable mastery of the foreign idiom has been acquired.

There is much difference of opinion as to the proper moment for introducing this form of exercise. It is, however, fairly obvious that, while training in self-expression is an excellent preparation for translation into the foreign tongue, the practice of the latter is by no means the natural approach to self-expression.

Translation *from* the foreign language, accurate and idiomatic translation, stands on quite a different footing, and, provided it is not done often enough to interfere with the Direct Association and is always limited to short specially selected passages, so that it can be done with the greatest care possible, it supplies a very useful training in accuracy and a convenient test of the understanding of the language, but only one among many. Its use as an exercise in English concerns the modern language teacher and must be acknowledged; but it is not its *raison d'être*, and the amount that should be done depends on the number of foreign languages studied by the pupil.

In the higher stages of study the *intensive* as well as the *extensive* reading is supplied by original texts of literary value and the two processes are often combined in the same work. But the principle is still maintained of only devoting part of the pupils' reading to a very thorough and formal study of the text, which always includes the treatment known as *Lecture Expliquée* and occasionally culminates in artistic and scholarly translation, whereas, other works or portions of the work are read more rapidly for the sake of the content, which is so chosen as to increase the pupils' knowledge and appreciation of the foreign people, its history, and its literature.

To sum up, the new conception of language study is based on the "stylistic" rather than on the grammatical aspect of language. It demands the systematic study of the resources of a language as a means of expression, and not of its structure, except in so far as this is necessary for grammatical correctness.

THE JAQUES-DALCROZE METHOD OF RHYTHMIC GYMNASTICS.

WHEN Monsieur Jaques-Dalcroze was a Professor of Music in the Geneva Conservatorium he was dissatisfied with the lifelessness of music theory teaching, and, searching for a remedy, he first tried vocal exercises as an addition to harmony lessons. Each new chord, each progression or resolution, was sung analytically or in chorus. This certainly made the work more real to the pupils, but not sufficiently so. Then Monsieur Jaques-Dalcroze's attention was drawn, quite by chance, to the ease with which children learn words and music when these are accompanied by actions. Following up this clue, he was soon led to the conclusion that this ease is due to the fact that the child, when learning its part in an "action play," uses not only the memory areas of its brain, but also the motor centres, that the mental action as a whole approaches more closely to the natural, and is more complete, than in the case of pure memory work; and he gradually realized the importance of his ideas, not merely in musical training, but as bearing on education in general. With the help of a class of volunteers at Geneva, many experiments were made, and from these small beginnings a system has been elaborated which bids fair to become an important factor in all present methods of education, for it is essentially fundamental, and a basis on which to plant special training of any kind and in any direction afterwards. It is an excellent balance to the ordinary school memory work, for it trains the pupil to think to some purpose, which is, or should be, the aim of all true education.

The effects of this method are more far-reaching than can be realized all at once; indeed Monsieur Jaques-Dalcroze himself is still finding results which he had not anticipated when he first systematized his ideas. There also seems to be no limit to the number and manner of means which may be employed to instil a sense of rhythm into the consciousness of an individual. Monsieur Jaques-Dalcroze is continually evolving new exercises as well as augmenting the uses of old ones. The interest which the system arouses only increases with the knowledge of it; to study it, therefore, is a perpetual source of pleasure, and the admiration which is felt for the genius who has invented it ever grows.

That feelings and emotions should be expressed by movements of the limbs was not intended to be one of the aims of the Dalcroze method, though it has become one of the results. But as every means of self-expression helps to deepen the intellectual and emotional life, the method is to be highly valued on that account.

It is also much more than a system for promoting physical culture and the graceful carriage of the body, though these are also a natural outcome. *All* people can benefit by it, men and women, boys and girls; even children from the age of six enjoy it and profit by it. Its chief value lies in its fundamental educational power: self-control and adaptability, both mental and physical, and the ability of thinking to some purpose, being the most desirable ends achieved.

The fascinating exercises demand perfect concentration of thought and attention, and help to establish in the pupil the habit of thinking quickly and definitely, which is an invaluable mental training for life generally, and for musicians especially, since rhythm is the basis of the method and music the means used to teach it.

This method trains people to become musicians—the technical facilities for any special instrument can be attained independently of music, and are not necessary in order to become an appreciative listener; it trains people to become artists, by accustoming the eye to see rhythmic and harmonious movements and positions, and by giving the power to translate thought into movement, what is technically

called "plastic expression." It trains people to become nobler and more helpful members of any community by giving them self-control, concentration of thought and purpose, and a better understanding of the rhythm which permeates all true life.

The most elementary exercises of the rhythmic gymnastics consist in marking the time of a bar with the arms, and the rhythm or number of notes in a bar with the feet. For instance, in a bar of $\frac{4}{4}$ time such as the following:—



the arms would beat four and the feet take five steps forward; if beginning with the left foot, the last step would also be taken with the left foot, and the next bar would begin with the right foot. With the first beat one step is taken, with the second beat two steps are taken, with the third beat one step, and with the fourth beat one step. Every kind of note in music has its own particular movement, or group of movements, if it be a note comprising more than one beat, such as a minim in a bar of common time.

There are also exercises for developing independence of arm movements, the arms each beating a different time simultaneously, or beating one given time in canon—that is, one arm beginning one beat later than the other. Later comes the attempt to realize three different rhythms simultaneously: the right arm beats one rhythm, the left arm beats another, and the feet move to a third. As soon as any movements begin to become in the least degree automatic they are varied, perhaps by reversing the actions of the arms and legs, or added to, until by degrees the most difficult and complicated times and rhythms are realized with ease after being heard but two or three times.

When the sense of rhythm has begun to be well established, more freedom is allowed in the movements, in the special branch of plastic exercises, and they are made with expression—that is, showing the feeling which the music to be realized creates in the consciousness of the individual. The cut-and-dried movements of the beginner become softened and rounded until the whole body expresses the rhythm and the emotion of the music played. That of Bach, Beethoven, Chopin—indeed, any kind of music—can thus be interpreted in movement.

The amount of thoughtful attention and degree of control of mind over body which is needed for such exercises can be known only to those who try to do them, and the good mental habits which are established from a course of this training cannot be too highly prized, whatever be the work or the walk in life of the individual afterwards.

For children the method is invaluable, and should in every school take the place of the ordinary mechanical gymnastics or drill, which have none of the refreshing effects that the Dalcroze exercises have. These brighten the general intelligence of children to a remarkable degree, and the benefit is shown in all their studies. They become more alert, more observant, and more responsive; apathy disappears, and the habit of being more alive to their surroundings, and more intelligently interested in everything that takes place around them, becomes thoroughly established.

It is essentially a life-giving study, for it makes the student realize something of the power he has or is able to develop in himself, as well as improving his general mentality and helping him to acquire a real and deep sense of the artistic, whether it be in music, painting, modelling, or literature—for the feeling for rhythm is innate in everybody, and only needs to be developed in order to be applied.

E. M. INGHAM.

CORRESPONDENCE.

THE NATIONAL INSURANCE ACT AND THE BEST SOCIETY FOR TEACHERS.

To the Editor of "The Educational Times."

SIR,—The hundreds of letters from teachers in other than public elementary schools which reach the offices of the Secondary, Technical, and University Teachers' Insurance Society daily prove conclusively that there is still much uncertainty existing in teachers' minds as to the wisest course for them to pursue, and much ignorance upon some important points connected with the above subject.

Bearing in mind that teaching is a far healthier occupation than most of those from which the great friendly societies are obtaining their members, it is obvious that, as the whole of the contributions to a society must be expended in providing benefits for the members of that society, a society consisting exclusively of teachers must ultimately be in a position to offer greater and more suitable benefits than other societies.

The Secondary, Technical, and University Teachers' Insurance Society has been organized by teachers for teachers, and it will continue to be managed by those elected for the purpose by its members. Its present Committee consists of representatives appointed by the College of Preceptors, Assistant Masters' Association, Assistant Mistresses' Association, Technical Teachers' Association, University Women Teachers' Association, Teachers' Guild, Preparatory Schools Association, and the Private Schools Association. Hence the interests of all these various classes of teachers will be thoroughly safeguarded.

The Society, which is approved by the National Health Commissioners, consists of two parts—the State Section and the Dividend Section. The former is reserved exclusively for those who are eligible for insurance under the National Insurance Act. You are not eligible unless you are (1) in employment at a rate of remuneration not exceeding in value £160 a year; or (2) engaged in some regular occupation, and wholly or mainly dependent for your livelihood on the earnings derived by you from that occupation, and have a total income, including earnings, not exceeding £160 a year.

Those in the position of (1) must insure in the State Section, being compulsorily insured persons; those in the position of (2) may please themselves whether they insure in the State Section or not; if they do, they are known as "voluntary contributors." The proprietor of a small private school, or a teacher whose remuneration consists entirely of fees paid by pupils, is entitled to come under this heading.

Those in this class who are under forty-five years of age and become insured before January 15, 1913, will place on a special insurance card each week a 7d. stamp for men, a 6d. stamp for women, and will be entitled to the full normal benefits: sickness allowance, 10s. or 7s. 6d. per week, disablement allowance, 5s. per week, free medical treatment including medicine, sanatorium treatment, and maternity allowance of 30s. Those who are over forty-five years of age, however, will have to stamp their cards weekly with stamps varying in value according to age or sex, from 8d. at forty-five to 1s. 1½d. at sixty-four; but if they become insured after January 15, 1913, they must pay higher rates than if they insure before that date.

Insurance in the Dividend Section has nothing whatever to do with the National Insurance Act, nor can it be taken in lieu of compulsory insurance under the Act. This section is intended to provide insurance against sickness for those who are not compulsorily insured, whatever their income may be, and to provide additional insurance for those who are. The scheme is one that is especially adapted to teachers, by providing against times of sickness and at the same time retaining the greater part of one's contributions under one's own control. It is, in fact, a glorified savings bank, and the scheme has been examined and reported upon favourably by experts of national reputation.

One essential difference between the Dividend Section and voluntary insurance under the Act is that, in the former, contributions are paid direct to the Society in cash; in the

latter all contributions are paid by means of stamps. Another difference is, that while the State Section—compulsory or voluntary—is open to all teaching in other than public elementary schools who fulfil the State requirements, the Dividend Section is only open to those who are members of the College of Preceptors or of some other association mentioned above.

In conclusion, I would impress upon all teachers this important fact, that it does not matter in the least when, where, or under what circumstances, their first insurance card was obtained, whether from the post office or elsewhere. If they desire to become members of the Secondary, Technical, and University Teachers' Insurance Society, all they have to do is to fill in an application form and to return their card, when full, to the offices of that society, 35 John Street, Bedford Row, W.C.

It has been stated in Parliament that a person becomes a member of the society with which he lodges his first card, provided that society will accept him, even though he may have filled up some other application form. All teachers who are eligible should therefore send their cards to the above Society, and meanwhile send for application forms and further particulars of either section to the address given.—I am, yours &c.,

ERNEST TIDSWELL, M.A.

35 John Street, Bedford Row, W.C.

WHY NOT "SPEECH-TESTS" AT TEACHERS' EXAMINATIONS?

To the Editor of "The Educational Times."

SIR,—Surely it is much to be regretted that so many candidates, presenting themselves for public examinations in this country, and especially examinations for teachers, should speak their own language so badly. These same persons, in most cases, can "satisfy the examiner"—on paper, but a *viva voce* examination (except in a foreign language, where a standard of real excellence is wellnigh impossible) seems to be considered unnecessary.

But is it not falsely representing these Examining Bodies, and the educational worth of the degrees—or diplomas, &c., which they confer—when obviously uncultivated persons are the recipients of the same? And is it not also probable that those candidates who are in the habit of speaking good English and who are of a circle wherein it is habitually spoken, may suffer by association in the public mind with the majority who fail so visibly in the essentials of true education? Could there not be a preliminary "speech-test," the failure of which would exclude a candidate from all examinations for teaching, but which would not debar him from commercial examinations of any kind, the idea of this eliminating process being "not to perpetuate so vital a fault as defective English in the lower-class schools"? It may be urged that the children in these schools hear nothing but bad English in their home life; but we are obliged to admit, from observation and considerable experience, that the same conditions sometimes exist among the members of the school staff. That the latter should be drawn invariably from the higher classes to counteract this great everyday evil is perhaps an impracticable and too ideal a scheme to be carried out.

Still, the importance of the "speech-test" question with regard to all examinations that may be in any degree "literary" in character should commend itself to all Examining Authorities in the interests of their educational status and those among their candidates who speak English as it should be spoken.—I am, Sir, &c.,

V. V.

In giving away the prizes at the Salford Municipal Secondary School for Girls the Bishop of Lincoln supplied an answer to the question "What is an educated person?" It was a question hard to answer, he said, but he would reply, the man who knew a fine thing when he saw it, whether in the beauty of nature, or in the realm of art, or in the glories of literature, or in the fine scenes of history.

REVIEWS.

SCHOOL ADMINISTRATION.

Outlines of School Administration. By Arthur C. Perry. (6s. net. Macmillan.)

School administration is now included in the curriculum of the education departments of many of the American colleges and Universities, and Dr. Perry has written this volume in the hope that it may prove an acceptable textbook in the subject. This has to be kept in view in any attempt to value his work. We do not find here the freshness and vigour that mark the author's other books, notably his "Problems of the Elementary School." There is little scope for individuality, and our author is somewhat economical of generalizations. The reader feels that he is not getting enough of the author himself. It is not suggested that in the text there are too many quotations—the needs of the book make it essential that much of it should be made up of the evidence of others—but the excerpts at the head of each chapter might have been quite well omitted. They do not really help the argument, their connexion with what follows is not always quite clear, and in any case Dr. Perry could put the matter at least as attractively as those writers whom he cites.

The plan adopted involves a certain amount of repetition. Dr. Perry prefers to deal with his subjects in what he calls a "spiral" way, rather than to dispose of points "country by country." This spiral approach leads to the division of the book into five parts, of which the first is by far the longest. These are: (1) School Organization, under the three sub-heads of (a) the Organic Structure, (b) the Curriculum, (c) the Norm of Public Education; (2) School Direction; (3) School Supervision; (4) School Management; (5) Class Management. Under each of these headings matters are treated in connexion with the various countries of the world. It will be gathered, therefore, that the work is of a somewhat encyclopædic character: and, in fact, many of the sections read exactly like extracts from "Whitaker's Almanack." The author realizes this himself, for he tells us that he hopes the volume will be found of service as a book of reference. From this point of view accuracy is of the first importance. With such a mass of facts as are here dealt with, it is impossible to secure immunity from error, but Dr. Perry has contrived to keep his mistakes to a very creditable minimum. In several cases it is difficult for the reader to get at the true state of affairs described in the text, merely because very wide subjects have to be dismissed in a few lines. For example, it is quite impossible for the intelligent outsider to gather an accurate conception of the English method of training teachers for elementary schools from what we find on page 413. As "errors of condensation" we may refer to the implication that the University of Glasgow was founded in 1893; that the provincial Universities of England confine themselves to the degrees of B.A. and M.A.; that Harrow receives 25 per cent. of County Council scholars. On page 132, however, we are told categorically that the University of Dublin "is now entitled the National University of Ireland," and on page 246 there is a curious misuse of the masculine pronoun.

A very valuable feature of the book is the skilful introduction of diagrams. These supply most helpful generalizations that enable the reader to get rapidly at the inner meaning of the statistics so lavishly supplied. In connexion with the proportion between men and women teachers, the table on page 417, coupled with the comment in the text, would lead us to think that Canada was a grievous sinner in the matter: but the diagram on page 418 shows that our colony is only 43 per cent. behind the United States themselves. As a matter of fact, our author is conspicuously fair in his estimates of his own and other nations. He knows that outsiders speak freely of "American complacency," and is obviously on his guard against any such amiable weakness. He faces facts in a way that does not always characterize the writings of his countrymen.

The book is an excellent preliminary study in a subject that is daily becoming of greater importance to the world at large. It is valuable rather as supplying materials than as setting forth principles. It includes an excellent bibliography.

and should find its way into every County Council library as well as into the educational libraries of Universities and training colleges. If we are dissatisfied with the small amount we get of Dr. Perry himself, he must accept our complaint as, after all, a compliment. His previous books have made us want more.

TEACHER AND SCHOOL.

The Teacher and the School. By Chauncey P. Colgrove. (4s. 6d. net. Fisher Unwin.)

We have here a practical book written by a teacher for teachers. "The aim of the book is not technical, but practical," says the author, and it is not meant for Prof. Laurie's "Teachers by the Grace of God." It is frankly a textbook, and has to be judged accordingly. A student in training for the profession of teaching will find here all that he needs in the way of theoretical preparation for the practice of his life-work. The book falls into five parts: (1) The Making of a Teacher; (2) The Teacher as Organizer; (3) The Teacher as Instructor; (4) The Teacher as Trainer; (5) The Teacher as Ruler and Manager.

In a textbook it is necessary to say a great many things that sound very platitudinous, so we find no fault with Dr. Colgrove for plainly stating facts with which we are painfully familiar. But he would have been wise to set forth these educational commonplaces on his own responsibility rather than to proclaim them as the opinions of various more or less well known writers. There is too much of the "As-Arnold-Tompkins-so-well-says" style. Why drag in authorities to say things that are common property and that nobody would think of denying? The inexperienced reader may very easily be led to suppose that certain fundamental principles are the discovery of the persons to whose credit they are placed in the text. In fact, on page 223, there is attributed to Comenius a commonplace of the schoolmen that goes at least as far back as Occam. Apart from this parade of authorities, Dr. Colgrove's style is easy and attractive. He writes directly and simply, and whatever pedantry is found in the book is carefully penned in by quotation marks. A great merit of the book is that the author has kept steadily before him the idea of a reader who does not know very much, but is anxious to learn. This is the person that is considered throughout, with the result that everything is made particularly plain. This attitude to the learning process is quite in keeping with the change that has recently taken place in the view taken of the relation between the teacher and the pupil. The fact that no fewer than four books have now appeared on "How to Study" shows that teachers are beginning to realize that one great part of their work is to show their pupils how to go about the preparation of their school lessons. We are not surprised, therefore, to find the whole of Chapter XX given up to "The Pupil's Study of the Lesson." A section of this kind is badly needed in our own textbooks, and our writers might do much worse than take this chapter for a model.

This last sentence brings to clear consciousness what must have been subconsciously influencing us throughout. The American atmosphere of the book is so marked that the English reader almost necessarily regards it as something foreign, something that is clearly marked off from "our own textbooks." Naturally this is less prominent in the section on "The Teacher as Instructor," and here much of the matter is of universal application. Yet elsewhere the American setting, though marked, is not altogether a disadvantage to English readers. Very frequently we understand our own problems the better for seeing them projected against an unfamiliar background. We may not know the word "putter-jug," but some of our indolent teachers would be none the worse for reading what our author has to say on this head.

True to his scheme of putting himself in the place of the teacher beginning his work, Dr. Colgrove has an excellent chapter on "Planning the Campaign." Here the American background becomes extremely prominent, and readers are supplied with an interesting glimpse of the relation between teachers and their employers. Our author feels it necessary to give a paragraph reminding teachers of their responsibility, and warning them that one "who attempts to secure a certificate through favour, misrepresentation, or positive cheating

and fraud is unfit to be a teacher." Is it necessary to insert this in a textbook? Dr. Colgrove seems to think so, and he goes farther: he urges the need for teachers keeping to their contracts. "So common has contract-breaking become among teachers that School Boards in many places feel compelled to require all teachers to furnish a bond for the faithful performance of a solemn written promise." He is no doubt right in saying that contract-breaking teachers are a disgrace to the profession; and again we wonder whether it is necessary to bring such matters into a textbook. On the whole, we think it is. It is, no doubt, a pity that such things have to be said; but it is a much greater pity that such things can be done; and it is, after all, necessary to recognize that all a teacher's activities deserve the consideration of any one who ventures to write for their instruction. Dr. Colgrove's book takes a wide view of the teacher's life; he regards it as a whole. He is not what he himself condemns under the questionable term an "ultra-theorist," but he has a sufficient theory for all the needs of teacher life, and he sees to it that this theory is fully illustrated by reference to real conditions.

THE THEORY OF DETERMINANTS.

The Theory of Determinants. Vol. II. By Thomas Muir, C.M.G., LL.D., F.R.S. (17s. net. Macmillan.)

The first volume of Dr. Muir's very notable work investigates the History of the Theory of Determinants during a period of ninety years commencing with the time when, through the work of Cramer in the latter half of the eighteenth century, the subject first openly attracted the attention of mathematicians. The first volume of Dr. Muir's History closes with an account of the productions connected with the theory which were published in the year 1840. The nature and importance of this first volume have both been discussed already in these columns. Hence brief allusion to the book is perhaps sufficient in this place. Reference to it is nevertheless a necessary accompaniment to any notice of the second volume, in which the work is carried on in a precisely similar manner, and treats of the subject in its development between the years of 1841 and 1860. The popularity acquired by the branch of mathematics dealt with by the author is self-evident from the fact that it has needed as much space to chronicle on similar lines the progress of the later period of twenty years as the author found requisite for the narration of the history of the previous nine decades. Dr. Muir's textbook furnishes probably a complete bibliography of the subject, for he has been careful to include in his second volume discoveries of items that properly belong to the earlier period. The small number of additional contributions to which allusion is here made remained undiscovered by the author not only when he was collecting the material for the first portion of the work, but until Vol. I was in its second edition. For nearly a century the theory of determinants owed its development chiefly to the labours of mathematicians on the Continent, and Vol. I of Dr. Muir's work draws attention to a French and to a German period. On the other hand in the two decades with which the later volume is occupied, English contributions to the progress of the subject form such a marked feature that the writer considers that it would be fitting to style the years 1841-1860 the English period, or more specifically still the Cayley-Sylvester period, seeing how unrivalled is the collective importance of the contributions of those two mathematicians.

Dr. Muir proceeds, as before, from the general to the particular, and as may be anticipated, in each section of the text he arranges his material in chronological order. Priority of position has therefore been accorded to the contributions to the general theory of the subject; subsequently the author discusses the advance made in connexion with the various determinants of special form. Of the separate textbooks on the subject, of the complete memoirs devoted to it, of the papers touching on but not entirely occupied with it, each in turn is passed under careful review, whilst the author himself constructs with consummate skill the framework in which each borrowed gem is suitably and

firmly set. Sometimes the stone is costly; at others it is of comparatively slight value, though none the less it is of course an integral and essential part of the entire structure. It is in describing each gem and setting forth its history, in appraising it at its true value, in stamping its actual worth on the face of it, and in combining all into one compact and attractive whole that the great mastery which Dr. Muir has over his subject is everywhere evident. Others endowed with the same enthusiasm and the same indefatigable patience could, without a doubt, have collected the outside contributions to the material of which the textbook is composed; few, if indeed any, could have dealt with it as it is here discussed. It is to be hoped very sincerely that the author will be moved to bring his work down to a still later date, and that he will have the opportunities requisite for the accomplishment of such a task.

CHILD STUDY.

Experimental Pedagogy and the Psychology of the Child. By Dr. Ed. Claparède. Translated by Mary Louch and Henry Holman. (5s. net. Edward Arnold.)

This is a translation from the enlarged fourth edition of "Psychologie de l'Enfant et Pédagogie Expérimentale," by the well known Genevese professor. The merits and defects of the original are familiar to a numerous body of readers, and a lengthy notice of the book would be something of a *bitise* at this stage in its history. Its chief defect is the want of continuity between the preliminary chapters on experimental psychology and the real subjects which it treats, and treats most ably: viz., mental development and "intellectual" fatigue, so called. The latest edition, owing to the considerable enlargement of the early chapters, accentuates the defect, and the translators have made matters worse by inverting the order of Prof. Claparède's title. As a matter of fact, the work is an admirable textbook on a restricted field of child study; of pedagogy, experimental or otherwise, there is small measure.

The translation reads smoothly and pleasantly, bearing very few reminders of its French origin, with which it stands the test of comparison very well. On page 9 "five years" appears in place of the "quinze ans" of the third edition. Elsewhere, "Haeckel" becomes "Haecklm." But our chief complaint is that the translators "follow copy" too closely for the English reader, who is left without information which he may fairly expect to find in an English book. There is no mention of the work of C. S. Myers, nor of the *Journal of Experimental Pedagogy*. The last edition of the "Grammar of Science" recorded is that of 1900, and the reference to Galton's "Inquiries into Human Faculty" is to the rare and out-of-print edition of 1883. Binet still lives, and Meumann's "Die experimentelle Pädagogik" continues to appear in these pages. A little editing of such references may fairly be asked from translators who scrupulously reproduce the titles of works in Flemish, Hungarian, and Japanese. But this notice must not end on the note of complaint. All who are desirous of learning the present state of our knowledge respecting the development of the child, and the modes of studying the phenomena of fatigue, may be confidently referred to this work.

GENERAL NOTICES.

EDUCATION.

Annals of Educational Progress in 1910: a Report upon Current Educational Activities throughout the World. By John Palmer Garber, Ph.D., Associate Superintendent of the Public Schools of Philadelphia. (4s. 6d. net. Lippincott; Educational Series.)

The volume "aims to unfold in concise form a picture of present-day conditions in the educational world"—"to report with some degree of accuracy the dominant current forces in educational procedure." The task calls for severe selection and catholic treatment. Vocational education is placed in the foreground; next, agricultural education, for the rising prices of food products has caused some alarm; then developments affecting the public schools and the higher institutions of learning; the emoluments and professional standing of teachers; social and political problems; morals and religion. So

far Dr. Garber is concerned with America. Now follows a comprehensive chapter on "Foreign Educational Interests"—from Argentina to United South Africa, alphabetically. The closing chapters deal with the meetings of the great educational associations, the educational situation in the several States (briefly), and the principal endowments of the year. A well written and interesting record, valuable beyond its particular year.

The Conflict of Naturalism and Humanism. By Willystine Goodsell, Ph.D. (1 dol. 50 c. net. Published by Teachers College, Columbia University, New York City. "Contributions to Education." No. 33.)

After indicating the antiquity of the problems suggested by naturalism and humanism, Dr. Goodsell states the fourfold purpose of his work: "(1) to describe the re-emergence of these ancient world attitudes during the intellectual ferment of the Renaissance, their more clear definition in the seventeenth and eighteenth centuries, and their conscious opposition in the nineteenth; (2) to trace the profound influence of this opposition upon educational theory and practice in different periods; (3) to attempt a reconciliation of the views of naturalist and humanist upon the basis of the theory of pragmatism; and (4) to suggest the implications of such a synthesis for the philosophy and art of education." The exposition is conducted with knowledge and acumen, and will be found to be very interesting and suggestive whatever view the reader may take of the philosophical standpoint.

Elementary Education and Our Village. By J. Vine Milne, B.A. Reprinted from *Secondary Education*. (Francis Hodgson, 89 Farringdon Street, E.C.)

The pamphlet contains observations and comments of a retired private-school master, acute, careful, and well worth perusal. "If life is found in a school, it is because the teacher has a soul which even the Inspector cannot kill." "Seeing the present condition of elementary education, which has now been directed by Governmental hands, can we have any confidence that State-directed schools will be successful?" There is much that is thought-provoking and true; but is it the whole truth? At any rate, it is a contribution from a point of view that is not to be neglected.

We find, with regret, that we have long overlooked a third edition (1909) of the late Prof. S. S. Laurie's very able work, *Institutes of Education*, comprising an Introduction to Rational Psychology (6s. 6d., Oliver & Boyd). The volume contains Prof. Laurie's class lectures, "after frequent revision and condensations," and "the changes on the second edition are merely verbal." The author is nothing if not ethical, and, though always clear, he is sometimes not easy to follow; but the effort to follow is rewarding.

MATHEMATICS.

An Elementary Treatise on Cross-Ratio Geometry. By the Rev. John J. Milne, M.A. (6s. Cambridge University Press.)

Probably for the first time in the history of English textbooks on mathematics, the theory of cross-ratio geometry, so instructively developed in the present treatise, forms the subject of a separate volume. Discovered on the Continent by the genius of two independent workers, the theory has been applied for nearly a century as a powerful method of attacking many problems in geometry. As a part of modern geometry, English writers have indeed discussed some of its fundamental principles; it was, however, reserved for Mr. Milne, whose name is a familiar one to students of mathematics, to gather together the various parts of the theory and to develop it fully for the English reader. The author's style is interesting; moreover, he approaches his subject in the spirit of a teacher. For the average student, whether of mathematics or of any other branch of knowledge, the attitude is very valuable. Such readers appreciate the methods of the writer who discusses with them the principles and difficulties of his subject instead of treating his material from the purely academic standpoint of the ripe scholar. An excellent preface fully establishes the claim which the theory of cross-ratio has to the consideration of mathematicians; further, it indicates within defined limits the state of geometrical knowledge in ancient times. The first half of the work treats of cross-ratio in its relation to the point and the straight line; in the second, the direct application of the principles to the properties of certain systems of conics forms the theme, and the writer ably supports his method of dealing with the more general curve rather than proving his principles merely for the particular case of the circle, and then extending the results by means of projection. The value of the main body of the text is enhanced both by a full table of contents and by an index. The book has been produced with the customary care bestowed by the Cambridge Press. Good paper, clear type, and well executed diagrams help to make the publication attractive.

Second Course in Algebra. By Herbert E. Hawkes, Ph.D., William A. Luby, A.B., and Frank C. Touton, Ph.B. (3s. 6d. Ginn.)

The present volume forms an ably written sequel to the authors' earlier "Course" in the subject. The latter book came before us for

notice some time since. Before breaking fresh ground, the writers devote their attention to the revision of subjects treated in the earlier volume, and in this part of their new textbook they have been content to frame carefully formulated rules and to illustrate them by worked examples. The topics considered in the later chapters and taken up for the first time are more fully discussed, the treatment being attractive and very suggestive. For example, the subject of the solution of simultaneous equations, involving at least some of a degree higher than the first, yields much information of a really valuable and interesting character. In this connexion excellent use is made of graphical methods. Again, the relation existing between the principle of variation and that of proportion has been brought into prominence in the present work.

MENTAL SCIENCE.

Grosse Denker. Edited by E. von Aster. In two Volumes. (M. 14, brosch. Leipzig: Quelle & Meyer.)

The first volume treats of the pre-Socratic Philosophy, Socrates and the Sophists, Plato, Aristotle, the Hellenistic-Roman Philosophy, Augustine, Thomas Aquinas, Bruno, and Descartes; the second volume, of Spinoza, Leibniz, Locke and Hume, Kant, Fichte, Hegel, Schelling, Schopenhauer, Herbart, Nietzsche, with a concluding article on the philosophical tendencies of the present time. The work does not profess to furnish a complete survey of philosophical speculation: in conformity with its title, it simply assembles a series of monographs upon "Great Thinkers," the first and the last chapters being of a summary character. Dr. von Aster tells us in his brief introduction that each writer has had a free hand to treat his subject from his own philosophical standpoint. This is undoubtedly an advantage, for each writer has won his spurs in his own department. The "Einzeldarstellungen" are in general very ably treated, and they are all written in remarkably clear and fluent style. What strikes a British reader is the paucity of British "Great Thinkers," Locke and Hume standing alone, and possibly being confined together in a single chapter. Herbart's name is disposed of in eleven lines in Windelband's summary of the modern tendencies; Green and Bradley get a line or two; American and English "Pragmatism" barely a line. And British thinkers or scholars are very rarely referred to in the argument. Moreover, the bibliographies to each chapter refer but two or three times to British scholars (and little more frequently to French scholars): Burnet's is acknowledged the standard text of Plato, but even Edward Caird is not cited for Kant. It seems a pity—for it is a grievous waste—that brain-workers in the leading civilized countries should not know more of each other's work. For all that, these two handsome volumes are well worth careful perusal.

Introduction to Psychology. By Robert M. Yerkes, Assistant Professor of Comparative Psychology, Harvard University. (6s. 6d. net. Bell.)

"Too often," says Mr. Yerkes, "it is either impossible or extremely difficult for a student to discover a plan in his teacher's presentation of psychology." The statement seems amazing. However, Mr. Yerkes has written his "Introduction" with the view of obviating this strange misfortune. The purpose of the volume is twofold: "first, to give the reader a definite idea of what the science of psychology is trying to do; second, to make the beginner realize that he is at the threshold of a subject which is as interesting as it is important, and to arouse a desire to know it intimately." It consists of six main parts. The first part discusses the nature of the materials, aims, methods, and values of the science, to help the reader to formulate a working definition of psychology. The other five parts deal with (1) Description, (2) Genetic Description or History, (3) Generalization, (4) Explanation and Correlation, and (5) Control. Class exercises and references for supplementary reading are appended to each chapter. The handling is often immature and lacking in concentration. We should not start students with the book; they might find it useful for early collateral reading.

HISTORY.

The Growth of the British Empire. By P. H. & A. C. Kerr. (1s. 9d. Longmans.)

This book makes a strong appeal to young people. The matter is divided into four Periods—Training (to 1600), Colonization by Settlement (seventeenth century), Colonization by Conquest (eighteenth century), and Internal Development (1800 onwards). Aided by artistically coloured pictures, sketch maps, and statistical diagrams, the letterpress describes realistically the chief events of each period. As a rule, the facts are reported correctly. On page 122, indeed, there is manifest confusion between the Congress of Vienna and the Treaties of Paris. And the clap-trap in the last chapter about the responsibilities of Empire might well have been reserved: it makes little or no appeal to boys and girls; why not let the facts speak for themselves? The type, paper, and general get-up are attractive. The book should prove very popular with higher elementary and secondary scholars.

A History of some French Kings. By Blanche Behm. (5s. net. Macmillan.)

Miss Behm disclaims any attempt at instruction; she aims at amusement. A true disciple of Locke, she would cheat us into learning history by clothing it in the garb of romance. The stories that compose the book tell of such notables as Louis XI ("The Universal Spider"), Francis I ("The Fair," Coligny, and Henry of Navarre). Charmingly written with verve and dramatic skill, this "history" cannot fail "to awaken interest and stimulate to more earnest study of the subject." Girls and boys will eagerly read these fascinating stories. Young teachers of history to junior classes, too, would do well to study Miss Behm's methods of narration, for such power of graphic and vivid presentation of historical subjects is a rare gift. Fortunate, indeed, are the author's "children friends." The book will prove a certain favourite in school libraries and on the prize list.

Industrial England in the Eighteenth Century. By Sir Henry Trueman Wood, M.A. (5s. Murray.)

The author, as Secretary of the Society of Arts, "has been obliged for many years past to familiarize himself to some extent with the science and technics of our industries, and to make a special study of the history of invention in England." Few historians, apparently, have the requisite knowledge or the opportunity to treat adequately the industrial development of England. Here, however, is a full, accurate and racy account of the growth of our manufactures and arts, generally from their beginnings, but with more especial consideration of their rapid advance between 1700 and 1800. Sir Henry has availed himself of the best authorities, and his book contains much information that is not easily accessible to the student.

ENGLISH LITERATURE.

A First Book of English Literature. By Henry S. Pancoast and Percy Vanduyke Shelly. (5s. net. Bell.)

The volume follows the general plan of Mr. Pancoast's "Introduction to English Literature," but it is on a reduced scale, contains less literary criticism and relatively more biography, and passes over, with briefer notice or with no notice at all, many authors and books mentioned in the larger work. The aim is "to treat the history of English literature in its broad relations to the social, religious, and political history of England and of Europe," impressing the development of one age from another. It is a good book, but we imagine that a sound revision of the earlier work would have served the turn quite as well. There are numerous portraits and other illustrations, and suggestions and directions for guidance in reading are appended.

A charming book for young folk is *Stories from Chaucer*, retold from "The Canterbury Tales," with a good introduction and some usefully explanatory notes, by Margaret C. Macaulay (1s. 6d., Cambridge University Press). "An attempt has been made to exhibit the general scheme and conduct of 'The Canterbury Tales,' including the Prologue and some of the conversations of the pilgrims on the road." The work is most capably executed. There are some thirty illustrations in the text.

An attractive version of *The Story of Bayard*, based on the "Histoire du Bon Chevalier Bayard" by the Loyal Serviteur, and edited by Amy G. Andrews, is published by Messrs. Methuen (2s. 6d.). There are eight characteristic illustrations by V. Lecomte.

SHAKESPEARE.

"The Tudor Shakespeare." General editors: William Allan Neilson, Ph.D., Professor of English in Harvard University, and Ashley Horace Thorndike, Ph.D., Litt.D., Professor of English in Columbia University. (1s. net each volume. Macmillan.)

The series will be completed in forty volumes, including all the plays and poems. Each volume is edited, with useful introduction, notes, and glossary, by an American scholar. So far we have (1) *Romeo and Juliet*, by the General Editors; (2) *A Midsummer Night's Dream*, by John W. Cunliffe, D.Lit., Professor of English, University of Wisconsin; (3) *Macbeth*, by Arthur C. L. Brown, Ph.D., Professor of English, North-western University; (4) *Henry IV, Part I*, by F. W. Chandler, Ph.D., Professor of English and of Comparative Literature, University of Cincinnati; (5) *Troilus and Cressida*, by John S. P. Tatlock, Ph.D., Professor of English, University of Michigan; (6) *Henry V*, by Lewis F. Mott, Professor of English, College of the City of New York; (7) *The Merchant of Venice*, by Harry M. Ayres, Ph.D., Assistant Professor of English, Columbia University; (8) *As You Like It*, by Martha H. Shackford, Ph.D., Associate Professor of English Literature, Wellesley College; (9) *Coriolanus*, by Stuart Sherman, Ph.D., Professor of English, University of Illinois; (10) *Henry VI, Part I*, by Louise Pound, Ph.D., Assistant Professor of English, University of Nebraska; (11) *Henry VIII*, by Charles G. Dunlap, Litt.D., Professor of English Literature, University of Kansas; (12) *King John*, by H. M. Belden, Ph.D., Professor of English in the University of Missouri; (13) *The*

Comedy of Errors, by F. M. Padelford, Ph.D., Professor of the English Language and Literature in the University of Washington. The form is very convenient, the type good, and the get-up plain. Each volume has a frontispiece. It is an attractive series, judiciously edited.

The Granta Shakespeare. Edited by J. H. Lobban, M.A. (1s. each volume. Cambridge University Press.)

The first four volumes of this new series are (1) *The Winter's Tale*; (2) *King Henry IV, Part I*; (3) *Macbeth*; and (4) *Twelfth Night*. The text is based on the fourth and last edition of Johnson and Steevens in 1793, carefully revised and collated with later texts, and modernized in spelling and punctuation. The introductions, notes, and glossary are brief, but pointed and fresh. The form is very handy and the type and get-up agreeable. An excellent edition.

GEOGRAPHY.

World Geography. One Volume Edition. By Ralph S. Tarr, B.S., F.G.S.A., Professor of Physical Geography at Cornell University, and Frank M. McMurry, Ph.D., Professor of Elementary Education at Teachers College, Columbia University. (5s. 6d. net. Macmillan.)

About one-third of this spacious volume of some six hundred pages in double columns is devoted to fundamental notions—common things that form part of every child's environment (food, industries, climate, &c.), things that must be taught in preparation for later study (rivers, mountains, oceans, &c.), and the contrast of country and city life—not by definitions and abstract statements, but by detailed descriptions and discussions. The rest is a systematic survey of the several continents. One of the most important features is that a large number of the topics, instead of being coldly presented as so much fact to be learned, both have been approached, and also have received their full treatment, from the view point of man's interest in them. The work is certainly most thoughtful and elaborate. It is profusely illustrated with coloured maps, relief maps, city maps, climate maps, product maps, population maps, and other maps. There are some seven hundred illustrations altogether, most of them photographs of actual scenes. The volume is excellent on its own lines: but we should be inclined to make it a companion to the ordinary geography rather than a substitute.

"The New Outlook Geography."—Book Two: *The Home of Man*; Part I, *The British Isles*. By W. C. Brown, M.A., F.C.P., Head Master of the Tollington School, Muswell Hill, sometime Scholar of St. John's College, Cambridge, and P. H. Johnson, B.A., L.C.P., House Master of the Tollington School. (2s. 6d. Harrap.)

Book One was of a general character, depicting "How People Live," in the British Isles and outside the British Isles. In Book Two the British Isles are surveyed in detail as "The Home of Man," with a constant attempt to trace the relation between localities and the activities centred in or around them. The coalfields and the seaports receive special attention, as grouping the economic, commercial, and industrial geography of the islands. The method is most efficient and attractive, and the style is plain and clear. Maps, diagrams, and other illustrations are liberally furnished. A most capable and useful series.

PRACTICAL MANUALS.

"Heinemann's Science Manuals."—*Experimental Domestic Science*. By R. Henry Jones, M.Sc., F.C.S., Head of the Chemical Department, Harris Institute, Preston, &c. (2s. 6d.)

The book is intended primarily for domestic science schools and girls' schools generally, and is based on a course of lectures delivered to teachers. The danger of such manuals is lest the scientific element overpower the practical element and the scope of the treatment go far beyond the utmost reasonable needs of ordinary practice. Mr. Jones is more sensible than most writers on this highly important subject. Still, some parts of his book may well be confined to teachers, but the whole of it is good for teachers. It is practical and efficient. There are questions to each chapter and the illustrations are numerous and good.

Educational Needlecraft. By Margaret Swanson and Ann Macbeth. Instructresses at the Glasgow School of Art. (4s. 6d. Longmans.)

Miss Margaret McMillan affirms, in a thoughtful and suggestive preface, that "this book represents the first conscious and serious effort to take needlecraft from its humble place as the Cinderella of Manual Arts, and to show how it may become a means of general and even of higher education." "At every point the joint authors take the main events of growth into account, following the lines of natural development with a new and bold faith, and often in spite of tradition."

"The writers do not ask for fine materials, but simple things"; and "in the hands of the real artists the common fabrics, as well as the common duties, take on a new beauty." This is all quite true. The treatment is thoroughly sensible, and eminently instructive, practical, and suggestive. There are 233 excellent diagrams.

FIRST GLANCES.

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Giun's Standard English Classics.—The English Humorists of the Eighteenth Century (Thackeray), edited by Stark Young, M.A., Adjunct Professor of General Literature in the University of Texas. 1s. 6d.

Introduction; liberal annotation.

Lyrical Ballads (Wordsworth and Coleridge), 1798. Edited by Harold Littledale, M.A., D.Litt., Professor of English Language and Literature, University College, Cardiff. 3s. 6d. Frowde.

Macmillan's English Classics.—Burke's *Speech on Conciliation with America*. Edited by F. G. Selby, M.A. Oxon., Hon. LL.D. Bombay. 1s. 6d.

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Tacitus. Agricola. Typis novis majorem in perspicuitatem excusa. 6d. net. Kegan Paul, Trench, Trübner, & Co.

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Vergil. (1) Georgics. Edited by A. Waugh Young, M.A. Lond., and F. G. Plaistowe, M.A. Lond. and Camb., late Fellow of Queens' College, Cambridge. 4s. 6d. (2) The Georgics: a Translation. Books I and II, by F. P. Shipham, M.A. Lond. and Camb., F.C.P.; and Books III and IV, by A. A. Jowin Nesbitt, M.A. 2s. 6d. Clive (University Tutorial Series).

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MATHEMATICS.

Geometry, Elementary. By A. E. Layng, M.A., formerly Scholar of Sidney Sussex College, Cambridge, late Head Master of Stafford Grammar School. 3s.; or, in two parts, 1s. 6d. each. Teacher's edition, with Answers, 3s. 6d. Murray.

Geometry for Schools. Vols. I-IV. By W. G. Borchardt, M.A., B.Sc., formerly Scholar of St. John's College, Cambridge, Assistant Master at Cheltenham College, and the Rev. A. D. Perrott, M.A., formerly Scholar of Caius College, Cambridge, late Head Master of King Henry VIII School, Coventry. 3s. 6d. Bell.

Lie Theory of One-Parameter Groups, The, An Introduction to; with applications to the solution of Differential Equations. By Abraham Cohen, Ph.D., Associate in Mathematics, Johns Hopkins University. 5s. net. Heath.

Trigonometry, Numerical. By J. W. Mercer, M.A., Head of the Mathematical Department, Royal Naval College, Dartmouth. 2s. 6d. Cambridge University Press.

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.

17305. (N. SANKARA AIYAR, B.A.)—Prove that the self-polar circle of a triangle cuts the director circles of all in-conics of the triangle orthogonally.

Solution by Professor NANSON.

The in-conics are given tangentially by

lambda_1 z_1 + lambda_2 z_2 + lambda_3 z_3 = 0,

and hence the directors are given in point co-ordinates by

lambda_1 C_1 + lambda_2 C_2 + lambda_3 C_3 = 0,

where C is the director of z. The directors therefore have a common orthogonal circle which clearly cuts orthogonally the circles on the sides of the triangle as diameters, and is consequently the self-polar circle of the triangle.

17225. (T. STUART, M.A., D.Sc.)—Investigate the validity of the following extension of Fermat's "Last Theorem." The equation

X^lambda + Y^lambda = Z^mu

is insoluble in integers if lambda and mu are prime numbers, and

lambda >= 4, mu >= 2.

Tentative Solution by R. NORRIE, M.A.

Case 1.—When mu = lambda + 1, we have as a solution the identity

[x(x^lambda + y^lambda)]^lambda + [y(x^lambda + y^lambda)]^lambda = (x^lambda + y^lambda)^(lambda+1).

Case 2.—When mu = lambda - 1, we have as a solution the identity

[x(x^lambda + y^lambda)^(lambda-2)]^lambda + [y(x^lambda + y^lambda)^(lambda-2)]^lambda = [(x^lambda + y^lambda)^(lambda-1)]^(lambda-1).

Case 3.—When lambda is prime to mu (including the particular case where lambda and mu are primes), two integers p and q can always be found so that p*lambda - q*mu = +/- 1. Put, then, X = xi^p, Y = eta^q, Z = zeta^q, and the equation

X^lambda + Y^lambda = Z^mu (1)

becomes xi^p*lambda + eta^p*lambda = zeta^q*mu, i.e. xi^(p*lambda +/- 1) + eta^(p*lambda +/- 1) = zeta^q*mu,

which is Case 1 or Case 2 according as we have the lower or the upper sign. The given equation (1) is therefore soluble in every case, when lambda and mu are integers prime to each other.

It is, however, to be remarked that the above method of solution leaves undemonstrated the possibility of solutions in integers X, Y, Z prime to each other.

Note by the PROPOSER.

If a rational solution of the equation X^3 + Y^3 = Z^2 were required, one would surely not accept as a solution

X = x(x^2 + y^2), Y = y(x^2 + y^2), Z = (x^2 + y^2)^2.

As Legendre has shown, the complete solution is given by

X = x(x^3 - 8y^3), Y = 4y(x^3 + y^3), Z = x^6 + 20x^3y^3 - 8y^6,

where, after the removal of common factors, X, Y, Z are prime to each other. So in the problem proposed, though not explicitly stated, this was assumed. It may be noted that the identity

[x(x^lambda + y^lambda)^p]^lambda + [y(x^lambda + y^lambda)^q]^lambda = [(x^lambda + y^lambda)^q]^lambda,

where p*lambda - q*mu = -1 (which is only one of an innumerable series of similar identities) contains Mr. Norrie's three cases. This is, of course, no solution of the problem, which is one of extreme difficulty.

17250. (N. SANKARA AIYAR, B.A.)—If one conic has double contact with another, then every confocal of one has double contact with some one confocal of the other, and the four common tangents to any confocal of the first and any confocal of the second all envelope a circle.

Solution by A. M. NESBITT, M.A.

Let conic S cut axes of x and y in AC, BD; and let conic z cut axes of x and y in alpha gamma, beta delta. Further, suppose z = S + theta L^2. Then

S = kxy, z = h'xy (1, 2)

represent two conics of the S and Σ classes respectively which, if $k = k'$, have double contact on the line $L = 0$; and which, if $k \neq k'$ intersect on the conic $\theta L^2 + (k - k')xy = 0$. Hence, every conic of one class has double contact with a conic of the other class, the same line, L, being the common chord; while any conic of the one class intersects any conic of the other in four points lying on a conic that touches AC, BD at the points where the line L cuts them. Reciprocate so that AC, BD become focoids. The S set and the Σ set, S and Σ still having double contact, become two sets of confocals; whereof any one of one set has double contact with a particular one of the other set, the common tangents all emerging from the same point L; while the four common tangents to any one of the first set and any one of the second envelope a circle.

17227. (J. J. BARNIVILLE, B.A.)—(1) Resolve $x^{20} - 243x^{10} + 3^{10}$ and $x^{30} \pm 256x^{15} + 2^{15}$ each into four rational factors.

(2) Resolve $x^{20} + 5^4x^{10} + 5^5$ into the form

$$(X + 5x^2)(X^2 - 25x^2)(X^2 - 5x^6).$$

(3) Find the common factor of $x^5 - x^2 + 4$ and $x^{16} - 17x^4 + 16$; and (4) of $x^7 + 7x^2 + 4$, $x^{11} - 23x + 22$, and $x^{13} + x - 90$.

Note by the PROPOSER.

To factorize $x^{30} + 2^8x^{15} + 2^{15}$, we have

$$x^{10} - 8x^5 + 32 = (x^2 + 2x + 2)(a + b + c),$$

where $a = x^8 + 8x^2$, $b = -2x^7 - 4x^4 - 16x$, and $c = 2x^6 + 16$;

then $\Sigma(a^2 - bc) = x^{16} + 2x^{15} + 2x^{14} + 4x^{13} + \dots$

and $x^{30} + 2^8x^{15} + 2^{15} = (x^6 - 4x^3 + 8)(a^3 + b^3 + c^3 - 3abc)$.

17299. (NORMAN ALLISTON.)— Evolve the logarithm which, minus one, is identical with its natural number.

Solution by FREDK. PHILLIPS, F.C.P., B.Sc. (Lond.), F.C.S.

Let $\log_a z$ be the logarithm required. Then

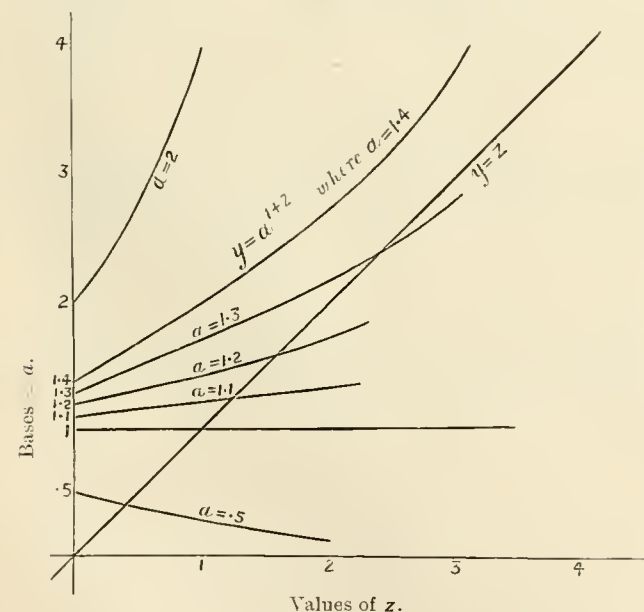
$$\log_a z = 1 + z \text{ or } a^{1+z} = z; \text{ therefore } a = z^{\frac{1}{1+z}}.$$

Therefore $\log_{z^{\frac{1}{1+z}}} z - 1 = z$.

Particular cases follow:

$$\log_{\sqrt[3]{2}} 2 - 1 = 2, \quad \log_{\sqrt[4]{3}} 3 - 1 = 3, \quad \dots$$

The limits of the base are best obtained by drawing the graphs of a^{1+z} and z .



The base can be thus shown to be between 0 and 1.32 approximately.

Other particular results read from above graphs are

$$\log_{1.1} 1.23 - 1 = 1.23, \quad \log_{1.2} 1.6 - 1 = 1.6, \quad \log_{1.3} 38 - 1 = .38.$$

Note the peculiar case $\log_1 1 - 1 = 1$, provided we place the special value of 2 on $\log_1 1$.

Negative values for base have not been considered.

It should be noted that the curves may cut $y = z$ at a second

point; thus for the curve where $a = 1.3$ the two points of intersection are $z = 2.5$ and $z = 5.5$. Thus we have

$$\log_{1.3} 2.5 - 1 = 2.5 \text{ and } \log_{1.3} 5.5 - 1 = 5.5.$$

17215. (M. T. NARANIENGAR, M.A.)—Given the circum-circle and the orthocentre of a triangle, find the locus of the in- and ex-centres.

Solution by FREDERICK PHILLIPS, F.C.P., B.Sc. (Lond.), F.C.S.

Let O be the circum-centre,
 X " orthocentre,
 N " centre of the nine-point circle,
 I " in-centre.

Let rectangular axes NX and NY be taken [I \equiv (x, y)].

Then if $OX = 2k$, $ON = k$, as N bisects OX.

Now

$$OI^2 = R^2 - 2Rr = (k-x)^2 + y^2 \dots (i),$$

$$IN^2 = (r - \frac{1}{2}R)^2 = x^2 + y^2 \dots (ii).$$

Eliminating r between (i) and (ii), we have locus of I, viz.,

$$(k-x)^2 + y^2 = a \sqrt{(x^2 + y^2)},$$

where $a = 2R$.

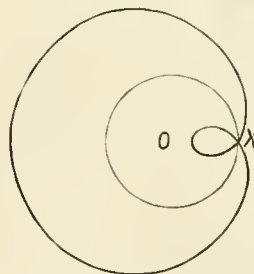
Similarly for locus of I, we have $(k-x)^2 + y^2 = a \sqrt{(x^2 + y^2)}$.

Four particular cases of this curve are given:

- (1) When orthocentre lies on circumference of circum-circle.
- (2) When orthocentre lies within circum-circle.
- (3) When orthocentre lies without circum-circle.
- (4) When orthocentre and circum-centre coincide.

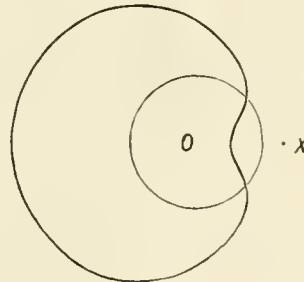
Types of $(k-x)^2 + y^2 = a \sqrt{(x^2 + y^2)}$.

$k = \frac{1}{2}a$.



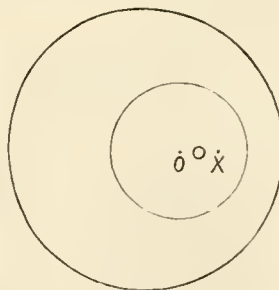
I. Radius of circle = $\frac{1}{2}a$. Part of curve inside circle is locus of in-centre; part of curve outside is locus of ex-centre.

$k > \frac{1}{2}a$.



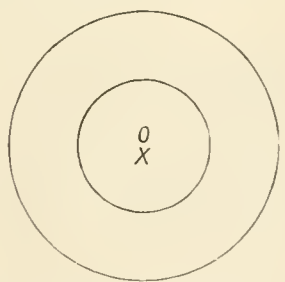
II.

$k < \frac{1}{2}a$.



III.

$k = 0$.



IV. Curves degenerate into point circle $x^2 + y^2 = 0$ and circle $x^2 + y^2 = a^2$.

10751(1). (Professor SYLVESTER.)—Let M be any symmetrical matrix, D its determinant, S the sum of its principal first minors, M' what M becomes, when any line of elements in it is scored out, Σ the sum of the squares of all the complete minors in M', D' the principal minor to M which appears in Σ , S' the sum of the principal

first minors in the matrix to S' . Prove that $\Sigma = D'S - S'D$. *Ex. gr.*, let

$$M = \begin{vmatrix} a & h & g \\ h & b & f \\ g & f & c \end{vmatrix}, \quad M' = \begin{vmatrix} a & h & g \\ h & b & f \\ g & f & c \end{vmatrix}$$

the theorem states that

$$(ab - h^2)^2 + (bc - f^2)^2 + (ca - g^2)^2 = (ab - h^2)(ab - h^2 + bc - f^2 + ca - g^2) - (a + b)(abc - af^2 - bg^2 - ch^2 + 2fgh).$$

Solution by THOMAS MUIR, LL.D.

The Question, which is now more than twenty years old, is still inaccurately presented. The statement about S' is unintelligible: the words "in the matrix to S' " ought doubtless to be changed into "of D' ." There is also an error in the example given: from the left-hand member of the equation-like statement

$$(bc - f^2)^2 + (ca - g^2)^2$$

should be deleted, and $(hf - bg)^2 + (af - gh)^2$ inserted.

The theorem intended to be enunciated is included in the following:—If Δ , δ be any n -line determinant and the complementary minor of its last element, and S , s be the sums of the primary coaxial minors of Δ , δ respectively, then

$$\begin{vmatrix} \delta & s \\ \Delta & S \end{vmatrix}$$

is equal to the product of the first $n-1$ rows of Δ by the first $n-1$ rows of the conjugate of Δ . For example, when $n = 4$, we have to show that

$$\begin{vmatrix} D_4 & |a_1b_2| + |a_1c_3| + |b_2c_3| \\ |a_1b_2c_3d_4| & A_1 + B_2 + C_3 + D_4 \end{vmatrix} = \begin{vmatrix} a_1a_2a_3a_4 & a_1b_1c_1d_1 \\ b_1b_2b_3b_4 & a_2b_2c_2d_2 \\ c_1c_2c_3c_4 & a_3b_3c_3d_3 \end{vmatrix}$$

Now the right-hand side of this is known from the multiplication theorem to be equal to

$$D_4^2 + D_3C_4 + D_2B_4 + D_1A_4,$$

and this diminished by one of the terms of the determinant on the left-hand side is $|D_3C_4| + |D_2B_4| + |D_1A_4|$,

which is equal to the other term of the said determinant on account of $|D_3C_4|$, $|D_2B_4|$, $|D_1A_4|$ being minors of $|A_1B_2C_3D_4|$.

12225. (V. RAMASWAMI AIYAR, M.A.)—Prove that the inverse of a harmonic polygon is a harmonic polygon.

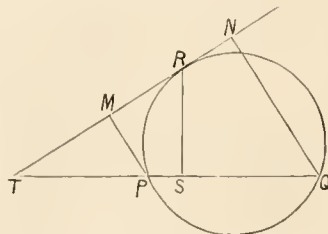
Note by Professor K. J. SANJANA, M.A.

Let K be the symmedian point of the given harmonic polygon (CASEY, § 322, *Sec. Ed.*). Take any other point K' on the diameter through K , and on KK' as diameter describe a circle: if L , L' are the limiting points of the two circles, it is seen that, when we invert from L or L' , the ratio of the perpendicular from K' on any side of the inverse figure to that side is constant. Hence the inverse is a harmonic polygon with K' as symmedian point. If we take the centre of the circum-circle of the given polygon for K' , we obviously get a regular polygon for the inverse.

9759. (W. J. GREENSTREET, M.A.)—Find the curve in which the rectangle contained by the perpendiculars let fall from two fixed points on any tangent to the curve is equal to the square of the distance of this contact point from the join of the fixed points.

Solution by HENRY RIDDELL, M.F.

It is easily shown algebraically that, excepting the line parallel to that joining the two points, only one line can be drawn through any given point such that the rectangle under perpendiculars upon it from the two points P and Q is equal to the square upon the distance of the given point from PQ .



Hence through any point only one curve can be drawn answering to the terms of the problem.

Let a circle be drawn through the two points P and Q , and any tangent TR be constructed. $TP \cdot TQ = TR^2$, hence

$$TP \cdot TQ \cdot \sin^2 T = TR^2 \cdot \sin^2 T.$$

Therefore $PM \cdot QN = RS^2$, and the curves required are the series of circles through P and Q .

17309. (A. M. NESBITT, M.A.)—If G be the centroid of a triangle ABC , and P any point, then will

$$AP^2 + BP^2 + CP^2 = 3PG^2 + \frac{1}{3}(a^2 + b^2 + c^2).$$

Solutions (I) by the PROPOSER and JAMES BLAIKIE, M.A.; (II) by B. C. WALLIS, B.Sc., F.C.P., and M. D. GOPALACHARI.

(I) For, if A_1, B_1, C_1 be mid-points of sides we have (by Apollonius)

$$\Sigma AP^2 = \Sigma PA_1^2 + \frac{1}{3}\Sigma a^2.$$

Similarly $\Sigma PA_1^2 = \Sigma PA_2^2 + \frac{1}{3}\Sigma a^2, \dots$

But when r is large A, B, C , will ultimately coincide with G ; therefore $\Sigma AP^2 = 3PG^2 + \frac{1}{3}\Sigma a^2(1 + \frac{1}{4} + \frac{1}{16} + \dots \text{ ad inf.}) = 3PG^2 + \frac{1}{3}\Sigma a^2$.

(II) $PA^2 = PG^2 + AG^2$

$$- 2PG \cdot GA \cos PGA$$

$$= PG^2 + AG^2$$

$$- 4PG \cdot GD \cos PGD$$

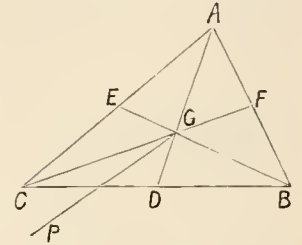
$$= PG^2 + AG^2 + 2PD^2$$

$$- 2PG^2 - 2GD^2$$

$$= PG^2 + AG^2 - 2PG^2$$

$$+ PB^2 + PG^2$$

$$- 2DB^2 - 2GD^2,$$



i.e., $PB^2 + PC^2 - PA^2$

$$= PG^2 - AG^2 + 2DB^2 + 2GD^2 = PG^2 + 2DB^2 - \frac{1}{2}AG^2$$

$$= PG^2 + \frac{1}{2}a^2 - \frac{1}{2}AG^2.$$

Similarly, $PC^2 + PA^2 - PB^2 = PG^2 + \frac{1}{2}b^2 - \frac{1}{2}BG^2$,

and $PA^2 + PB^2 - PC^2 = PG^2 + \frac{1}{2}c^2 - \frac{1}{2}CG^2$,

whence, by addition,

$$\begin{aligned} PA^2 + PB^2 + PC^2 &= 3PG^2 + \frac{1}{2}(a^2 + b^2 + c^2) - \frac{1}{2}(AG^2 + BG^2 + CG^2) \\ &= 3PG^2 + \frac{1}{2}(a^2 + b^2 + c^2) - \frac{1}{6}(a^2 + b^2 + c^2) \\ &= 3PG^2 + \frac{1}{3}(a^2 + b^2 + c^2). \end{aligned}$$

17302. (Professor R. W. GENESE, M.A.)— AP, BQ, CR are any straight lines in space; XP, XQ, XR perpendiculars to them from any point X in space. If the lengths AP, BQ, CR be taken as the co-ordinates of X , any equation of the first degree represents a plane.

Solution by A. M. NESBITT, M.A.

Let co-ordinates of A referred to any rectangular system of axes be (a_1, a_2, a_3) , and those of X (ξ, η, ζ) . Then, if (l_1, l_2, l_3) be the direction cosines of AP , the equation of the plane through X perpendicular to AP is $(x - \xi)l_1 + (y - \eta)l_2 + (z - \zeta)l_3 = 0$; and the length of AP ($= X$) will be

$$(a_1 - \xi)l_1 + (a_2 - \eta)l_2 + (a_3 - \zeta)l_3,$$

with similar expressions for Y and Z . Clearly any equation of first degree in X, Y, Z will be of first degree in ξ, η, ζ , and must therefore represent a plane.

QUESTIONS FOR SOLUTION.

17346. (A. M. NESBITT, M.A.)—There are l dice, each with m faces. A man throws them with the proviso that, so soon as the face k presents itself on any die, that die is removed and the throwing proceeds with the rest. If k has turned up on every die at or before the n -th throw, the man wins. Find his chance of success. [If $l = n = 3$ and $m = 6$, this is the game of "Yankee Grab," of which the result is about $3/40$.]

17347. (N. SANKARA AIYAR, B.A.)—A city is divided into four parts—East, South, West, and North. A man who asserts truth 5 times out of 7 says that B is in a particular quarter. If it is known that C also resides in that part, what is the chance that B really resides in the specified quarter?

17348. (Professor K. J. SANJANA, M.A.)—Prove that

$$\int_0^{\frac{1}{2}\pi} \log \sin \theta \cdot \log (\sin \theta + \sin 3\theta) d\theta = \frac{1}{2}\pi (\log 2)^2,$$

and $\int_0^{\frac{1}{2}\pi} \log \sin \theta \cdot \log (\cos \theta - \cos 3\theta) d\theta = \frac{1}{2}\pi (\log 2)^2 + \frac{1}{16}\pi^3$.

17349. (Professor J. C. SWAMINARAYAN, M.A.)—Having given

$$ax + by + cz + d = 0,$$

$$a'x + b'y + c'z + d' = 0,$$

$$ax' + \beta y' + \gamma z' + \delta = 0,$$

$$a'x' + \beta'y' + \gamma'z' + \delta' = 0,$$

express the value of the determinant

$$\begin{vmatrix} x - x' & y - y' & z - z' \\ \beta\gamma' - \beta'\gamma & \gamma\alpha' - \gamma'\alpha & \alpha\beta' - \alpha'\beta \\ bc' - b'c & ca' - c'a & ab' - a'b \end{vmatrix}$$

in a form independent of x, y, z, x', y', z' .

17350. (R. F. DAVIS, M.A.)—Exhibit $(x^2 - Nx + N)^4 + N(x^2 - N)^4$ as the product of two biquadratic factors. Utilize result to find the prime factors of $809^4 + 101$.

17351. (D. BIDDLE.)—

$$1/(a-b) - 1/(c-a) = 1/a.$$

Prove that, if a, b, c be integers, b and c are either squares or factors of a^2 at least.

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.

17353. (J. J. BARNIVILLE, B.A.)—If $\Sigma(a^2 + bc) = 0$, prove that $(\Sigma a)^7 - \Sigma a^7 = 34(abc)^2(a+b+c)^2(a+b)^3(b+c)^3(c+a)^3$.

17354. (C. E. YOUNGMAN, M.A.)—The envelope of an ellipse of given size, with its axes sliding each through a fixed point, is generally a Cartesian oval: prove that the Apollonian hyperbola through the points of contact has two foci of the oval for ends of a diameter. When the envelope is a limaçon its node lies on the ellipse, and the triangle of common tangents has a circum-circle of constant size concentric with the ellipse.

17355. (Professor E. J. NANSON.)—Trace the curves $u^2 = v$ where u, v are homogeneous quadratic functions of x, y .

17356. (The late Professor COCHEZ.)—On donne une ellipse rapportée à son centre O et à ses axes et une droite de direction fixe OR menée par O. Par un point P quelconque, pris sur le grand axe OX, on mène une parallèle à OR qui rencontre l'ellipse en M et M'. Soit Q le conjugué harmonique de P par rapport à M et M'. (1) Trouver le lieu de Q lorsque P se déplace sur le grand axe. (2) Trouver le lieu des sommets du lieu précédent lorsque la direction de OR varie. (3) Montrer que les deux lieux sont les mêmes pour toutes les coniques ayant les mêmes sommets du grand axe.

17357. (W. F. BEARD, M.A.)—ABC is a triangle, AD, BE, CF the altitudes, and P any point; a rectangular hyperbola is described with PD as diameter and its asymptotes parallel to AD, BE, CF. Prove that this and the corresponding hyperbolas for BE, CF meet in 3 points on the 9-point circle.

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.

17359. (H. D. DRURY.)—A, B, C, D are four concyclic points, A', B', C', D' are the orthocentres of the triangles BCD, CDA, DAB, ABC, respectively: show (1) that A, B, C, D will be the orthocentres of the triangles B'C'D', C'D'A', A'B'D', A'B'C'; (2) that the pedal line of A with respect to the triangle BCD coincides with the pedal line of A' with respect to B'C'D'; (3) that the four pedal lines of ABCD meet in a point O; (4) that each pedal line passes through the feet of six perpendiculars, giving us twenty-four points in all, and these twenty-four points lie on three concentric circles, having a common centre O, eight points to each circle. [Cf. Theorem 3 with Question 17196.—Ed.]

17360. (H. C. POCKLINGTON, F.R.S.)—The vertices of a convex pentagon are joined each to the next but one by lines which form another pentagon. This process is repeated with the new pentagon, and so on indefinitely. Show that the pentagons formed ultimately reduce to a point. Give a construction determining this point as one of three points, and, if possible, a criterion to decide which of the three it is.

17361. (Professor NEUBERG.)—Soient ABDE, ACFG les carrés construits extérieurement sur les côtés de l'angle droit du triangle rectangle ABC. Trouver (1) le volume engendré par l'aire BDEAGFCB tournant autour de l'hypoténuse BC, (2) la surface engendrée par le périmètre DEAGFC.

17362. (A. W. H. THOMPSON.)—Prove the following space analogue of the sine formula of a triangle:—Let a, b be two points and

γ a line in space; denote the plane containing a, γ by B, that containing b, γ by A, and the join of a, b by γ' . 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 (βa) the perpendicular distance from a on β ; (AB) denotes the angle between A, B; and $(A\beta)$ denotes the angle between A and B and

$$(\beta A) = -(\beta B).$$

17363. (R. F. DAVIS, M.A.)—The product of the cosines of the angles which two given circles subtend at an external point P is equal to the cosine of double the angle which the join of their centres subtends at the same point. Prove that the tangents from P to the first circle divide harmonically the tangents from P to the second circle. Also that the bipolar equation to the locus of P is

$$4(\rho^2 - a^2)(\rho'^2 - a'^2) + 4a^2a'^2 = (\rho^2 + \rho'^2 - d^2)^2$$

(radii a, a' join of centres = d),

or $(\rho^2 - a^2)^2 + 2C\rho^2 + 2F\rho'^2 + C = 0$,

and that this conic passes through the eight points of contact of the common tangents. Examine the simple case when the circles are equal and touch.

17364. (C. M. ROSS, B.A.)—If $\alpha = \frac{1}{3}\pi$, show that

$$\cos \alpha + \cos 3\alpha + \cos 9\alpha \quad \text{and} \quad \cos 5\alpha + \cos 7\alpha + \cos 11\alpha$$

are the roots of the equation $4x^2 - 2x = 3$.

OLD QUESTIONS AS YET UNSOLVED (IN OUR COLUMNS).

11372. (Professor MALLET, F.R.S.)—If to a plane curve of the class n which touches the line at infinity any system of $n-1$ parallel tangent lines be drawn, prove that the locus of the centre of mean position of the points of contact is, in general, a parabola.

11632. (D. BIDDLE.)—A bowl, being an oblate spheroid, of radius r and semi-pole p , has a bias of lead, one n -th the total weight, placed p/q from the centre. Being delivered with "thumb-bias," it alights on the green with its equator vertical and its velocity v , the coefficient of friction being m . Trace its course on a horizontal plane.

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.

11805. (W. J. GREENSTREET, M.A.)—Prove that the series, general term $m^n n^b$, is convergent, if a and b are each > 1 .

N.B.—An evident misprint occurs in the question as originally set.—Ed.]

11823. (Professor SCHOUTE. Suggested by Question 11807.)—Two homographic pencils with different centres rotate in the same plane. To examine the twofold infinite system of generated conics.

11914. (F. G. TAYLOR, M.A., B.Sc.)—If

$$S_r = a_r + b_r + c_r + \dots + k_r \quad \text{and} \quad P_r = |a, b| + |a, c| + \dots + |a, k|,$$

prove that $\sum_1^n (S_r)^2 \cdot \sum_1^n (a_r^2) = \left\{ \sum_1^n (a, S_r) \right\}^2 + \frac{1}{2} \sum_1^n \sum_1^n (P_r)^2$.

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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. Stamp, L. D.
(<i>Isbister Prize.</i>) | University School, Rochester. |
| 2. Jones, D. T.
(<i>Pinches Prize.</i>) | Pencader Grammar School. |
| 3. [Not awarded.] | |
| 4. [Not awarded.] | |

English Subjects.

- | | |
|-------------------|-------------------------------|
| 1. Stamp, L. D. | University School, Rochester. |
| 2. [Not awarded.] | |

Mathematics.

- | | |
|------------------|--------------------------|
| 1. Jones, D. T. | Pencader Grammar School. |
| 2. Woodhouse, A. | Grammar School, Eccles. |

Modern Foreign Languages.

- | | |
|-------------------|------------------------------------|
| 1. Clark, Miss T. | Loreto Convent, Europa, Gibraltar. |
| 2. [Not awarded.] | |

Classics.

[Not awarded.]

Natural Sciences.

[Not awarded.]

FIRST CLASS [or SENIOR]—continued.

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- | | |
|------------------|------------------------------------|
| Browett, Miss C. | The Friends' School, Mountmellick. |
|------------------|------------------------------------|

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[Not awarded.]

SECOND CLASS [or JUNIOR].

General Proficiency.

- | | |
|------------------------------------|--|
| 1. Wyatt, R. A. L. | Portsmouth Boys' Secondary School. |
| 2. Collins, S. | Portsmouth Boys' Secondary School. |
| 3. { Toole, R. W.
Turner, R. H. | St. Aloysius' College, Highgate.
Portsmouth Boys' Secondary School. |

THIRD CLASS.

General Proficiency.

- | | |
|---|--|
| 1. { Kummer, H. C.
Robin, Miss G. M. | Seaford College.
Crouch End High School, Hornsey. |
| 3. Trevorrow, J. P. | Newquay College. |
| 4. O'Byrne, Miss N. | Dominican Convent, Wicklow. |

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.)

<i>Scripture History.</i>		<i>Trigonometry.</i>		<i>Hebrew.</i>	
1. Day, Miss V. M.	The Hiatt Ladies' College, Wellington.	1. Jones, D. T.	Pencader Grammar School.	1. Hurwitz, L. I.	Argyle House, Sunderland.
2. { Browett, Miss C. Gunston, Miss D. S. Stamp, L. D.	The Friends' School, Mountmellick. Private tuition. University School, Rochester.	1. Jones, D. T.	Pencader Grammar School.	1. Moss, E. W.	Private tuition.
<i>English Language.</i>		2. Chant, W. E.	University School, Rochester.	2. Phillips, G. T.	Advanced Elementary Boys' School, Merthyr Tydfil.
1. { Gunston, Miss D. S. Jones, D. T. Stamp, L. D.	Private tuition. Pencader Grammar School. University School, Rochester.	<i>Book-keeping.</i>		<i>Magnetism and Electricity.</i>	
<i>English History.</i>		1. Howells, W. J.	Barry Commercial Academy.	<i>Chemistry.</i>	
1. Wakelfield, Miss C. E. D.	Palmer's Green High School, N.	2. { Holland, E. L. O'Shea, D. T.	St. Joseph's College, Dumfries. St. Aloysius' College, Highgate.	1. Jones, L.	Private tuition.
2. { Harris, Miss A. M. E. Macleod, S.	The Hiatt Ladies' College, Wellington. Stationers' Company's School, Hornsey.	<i>French.</i>		<i>Botany.</i>	
<i>Geography.</i>		1. Gunston, Miss D. S.	Private tuition.	1. Harris, Miss A. M. E.	The Hiatt Ladies' College, Wellington.
1. Stamp, L. D.	University School, Rochester.	2. Rillet, Miss M. E.	The Convent, Cadogan Street, Chelsea.	2. Boldero, G. W.	Bethany House School, Goudhurst.
<i>Arithmetic.</i>		<i>Spanish.</i>		<i>Geology.</i>	
1. Jones, D. T.	Pencader Grammar School.	1. Rugeroni, C. A.	Christian Brothers' College, Gibraltar.	1. Stamp, L. D.	University School, Rochester.
<i>Algebra.</i>		2. Bustinza, J.	St. Joseph's College, Dumfries.	<i>Drawing.</i>	
1. Henwood, D. O.	Mile End House, Portsmouth.	<i>Welsh.</i>		1. Smith, P. L.	Seaford College.
2. { Bolton, H. A. Jones, D. T.	Private tuition. Pencader Grammar School.	1. Jones, L.	Private tuition.	2. Gunston, Miss D. S.	Private tuition.
<i>Geometry.</i>		2. Jones, Miss E. M.	Private tuition.	<i>Shorthand.</i>	
1. Henwood, D. O.	Mile End House, Portsmouth.	<i>Latin.</i>		1. { Howells, W. J. O'Shea, D. T.	Barry Commercial Academy. St. Aloysius' College, Highgate.
2. Moss, E. W.	Private tuition.	1. Macleod, S.	Stationers' Company's School, Hornsey.	<i>Domestic Economy.</i>	
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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. al. = Algebra. b. = Botany. bk. = Book-keeping. ch. = Chemistry. d. = Drawing. da. = Domestic Economy. dt. = Dutch. e. = English. f. = French. g. = Geography. ge. = German. geo. = Geology. gm. = Geometry. gr. = Greek. h. = History. he. = Hebrew. i. = Italian. ir. = Irish. l. = Latin. lt. = Light and Heat. m. = Mechanics. ma. = Magnetism & Electricity. ms. = Mensuration. mu. = Music. p. = Political Economy. ph. = Physiology. phys. = Elementary Physics. s. = Scripture. sc. = Elementary Science. sh. = Shorthand. sp. = Spanish. tr. = Trigonometry. w. = Welsh. z. = Zoology.

The small figures 1 and 2 prefixed to names in the Second and Third Class Lists denote that the Candidates were entered for the First and Second Classes respectively.

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Inter. = Intermediate, Poly. = Polytechnic, Prep. = Preparatory, P.-T. = Pupil-Teachers, S. = School, Sec. = Secondary, Tech. = Technical, Univ. = University.

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Macleod, S.A.I. Stationers' Co.'s S., Hornsey
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O'Shea, D.T. s.bk. sh. St. Aloysius' Coll., Highgate
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Chant, W.E. s.m. University S., Rochester
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FIRST CLASS [or SENIOR].

Pass Division.

- Shanley, G.H. St. Joseph's Coll., Dumfries
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Wakefield, P.S. s.d. Newtown S., Waterford
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Gornley, A.J. St. Joseph's Coll., Dumfries
Smith, P.L. d. Seaford College
Gronin, M.A. St. Aloysius' Coll., Highgate
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Moss, E.W. al.gm.m.ma. Private tuition
Bolton, H.A. al. Private tuition
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Wildsmith, L. St. Joseph's Coll., Dumfries
Donnelly, W. St. Joseph's Coll., Dumfries
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Williams, W.J. Advanced Elem. Boys' S., Merthyr Tydfil
Shanks, A.J. Stationers' Company's S., Hornsey
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Mount, H. Yorkshire Society's S., S.E.
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Unsworth, J. St. Joseph's Coll., Dumfries
Thomas, A. Advanced Elem. Boys' S., Merthyr Tydfil
Dotto, A.L. sp. Christian Bros.' Coll., Gibraltar
Lumley, H.I. Advanced Elem. Boys' S., Merthyr Tydfil
Willmott, P.E. s. University S., Rochester

- Coyle, T. Hawkesyard Coll., Rugeley
Lewis, D. Advanced Elem. Boys' S., Merthyr Tydfil
Linahan, J. Newtown S., Waterford
Thomas, J.P. Private tuition
Downham, S.C. Stationers' Co.'s S., Hornsey
Davies, D.D. Advanced Elem. Boys' S., Merthyr Tydfil
Phillips, H.C. Private tuition
Watson, G. St. Joseph's Coll., Dumfries
Carleton, K.O.N. Bethany H., Goudhurst
Griffiths, H.J. St. George's Coll., Weybridge
Onions, D.A. Tutorial Coll., Penarth
Smith, F. bk. St. Joseph's Coll., Dumfries
Durante, B. sp. Christian Bros.' Coll., Gibraltar
Boyle, J.J. St. Joseph's Coll., Dumfries
Davies, D. Old College S., Carmarthen
Stroog, C.M. St. Aloysius' Coll., Highgate
Beverley, J.R. Yorkshire Society's S., S.E.
Fletcher, F.G. Stationers' Co.'s S., Hornsey
Milton, W.G. Private tuition
Ogden, J.H. St. Joseph's Coll., Dumfries
Ford, L.P. St. Joseph's Coll., Dumfries
Hughes, B.C. Tollington Park Coll., N.
Demain, W. Chatsworth S., Carlisle
Adams, F.G. Southall County Sec. S., Southall
James, D. Pencader Gram. S.
Laihiang, Private tuition
Marchant, C.V. Richmond Hill S., Richmond
Runtz, J.C.M. St. George's Coll., Weybridge
Gavin, L.J. St. Aloysius' Coll., Highgate
Lywood, W.D.M. Dunheved Coll., Launceston
Burgess, S.C. Bethany H., Goudhurst
Arthur, T.L. Tutorial Coll., Penarth
Cooles, R.V. al. Private tuition
Ellis, J.O. The College, Weston-s.-Mare
Riley, F.W. Tollington Park Coll., N.
Girling, F.V. Eastward Ho! Coll., Felixstowe
Lindsay, L.O. Dunheved Coll., Launceston
Usher, W. Archbishop Holgate's Gram. S., York
Baden, P. Ealing Gram. S.
Huggett, F.G. s. Fartown Gram. S., Huddersfield
Lindsay, R. Dunheved Coll., Launceston
Davies, T.H. Advanced Elem. Boys' S., Merthyr Tydfil
Kingsnorth, C.J. Dunheved Coll., Launceston
Nicholas, D.C.V. Oxford H., Holloway
Thomas, D.W. Pencader Gram. S.
Tosta, J.F. St. George's Coll., Weybridge
Johnson, E.H. Private tuition
Kornweibel, T.A.F. St. George's Coll., Weybridge
Pilgrim, A.W. Stationers' Co.'s S., Hornsey
Shapland, N.H. Hadfield H., St. Leonards-on-Sea
Kemp, J.F. St. Joseph's Coll., Dumfries
Johnson, J.W. Bethany H., Goudhurst
Harvey, S.E. Private tuition
Salt, W.G. Dunheved Coll., Launceston
Boldero, G.W.b. Bethany H., Goudhurst
Bradley, M.E. St. George's Coll., Weybridge
Jenkins, J.C. Tutorial Coll., Penarth
Emerton, L.J. Seaford College
Pickering, J.J. Friends' S., Wigton
Reardon, James St. Joseph's Coll., Dumfries
Champion, N.L. Lancaster Coll., W. Norwood
Alexander, A.M. Portsmouth Gram. S.
Davies, R.F.M. The Commercial Coll., Acton
Harris, A.M. Ealing Gram. S.

- McBeever, S. d. St. George's Coll., Weybridge
Graves, F.G. Bethany H., Goudhurst
Cunnack, G.J. Dunheved Coll., Launceston
Hammond, H.F. Seaford College
Scully, R.J. St. George's Coll., Weybridge
Lavery, W. Keefe's Civil Service Acad., Liverpool
Patterson, D.G. Bethany H., Goudhurst
Richardson, M.T. University S., Rochester
Smithson, J. Archbishop Holgate's Gram. S., York
Stoddart, J. Dunheved Coll., Launceston
Parsons, L.U. The Tutorial Chambers, Barnham
Burton, W.N. Liverpool Collegiate High S.
Preston, J. Friends' S., Wigton
Artriek, R.E. Portsmouth Gram. S.
Wilks, L.E. Tollington Park Coll., N.

SECOND CLASS [or JUNIOR].

Honours Division.

- Wyatt, R.A.L. a.al.gm.f.ch.d. Portsmouth Boys' Secondary S.
Collins, S. g.a.al.fl. Portsmouth Boys' Secondary S.
Toole, R.W. e.gm.ms.sh. St. Aloysius' Coll., Highgate
Turner, R.H. a.al.f.ch.d. Portsmouth Boys' Secondary S.
Dix, W. s.e.u.al.gm.ms.f. Argyle H., Sunderland
Quenardel, E. a.al.bk.ms.f.d. Marist Bros.' Coll., Grove Ferry
Morand, E. bk.f. Marist Bros.' Coll., Grove Ferry
Dickes, A. a.al.f.g.e. Private tuition
Kimber, L.G.E. al.f.d. Portsmouth Boys' Secondary S.
Dukes, A. a.al.f. Yorkshire Society's S., S.E.
Garly, M. a.bk.ms.f. Marist Bros.' Coll., Grove Ferry
Denison, R.E. e.a.al.ms.f.g.e.l. Manor H., Clifton, Bristol
Paillardon, P. e.f.l.ch.d. High S., Broadstairs
Verano, A. s.al.f.sp. Christian Bros.' Coll., Gibraltar
Butt, R.J. al.d. Portsmouth Boys' Secondary S.
Felder, S.J. a.al. Portsmouth Boys' Secondary S.
Holman, H.W. al. Portsmouth Boys' Secondary S.
Lonfe, M.F. s.g. St. Aloysius' Coll., Highgate
Rugeroni, C.A. al.f.sp. Christian Bros.' Coll., Gibraltar
Boussemart, E. s.bk.f. Marist Bros.' Coll., Grove Ferry
Alder, C.D. a.al.ms.d. Private tuition
Longley, L.G. al.f.sp. Steyning Gram. S.
Rampling, R.E. al.f. Private tuition
Hitchings, J.A. e.a.al.d. Portsmouth Boys' Secondary S.
Thom, E.M. a. al.ms.f. Belmont Coll., Streatham Hill
Thompson, J.E. e.al.f. St. George's Coll., Weybridge
Tucker, G.A. al.lt. Portsmouth Boys' Secondary S.
Vargas, L.de G. s. St. Aloysius' Coll., Highgate

- Carpenter, J. e.al.f. Hawkesyard Coll., Rugeley
Stark, H. f.sp. Christian Bros.' Coll., Gibraltar
White, G. al.lt. Newquay College
Laisley, J.E. al.lt. Portsmouth Boys' Secondary S.
Franjou, M. s.al.bk.f. Marist Bros.' Coll., Grove Ferry
Grundy, A.W. a.f. County Gram. S., Market Harborough
Labruhe, A. bk.f. Marist Bros.' Coll., Grove Ferry
Pitt, E. s. Newtown S., Waterford
Coates, H.B. e.al. Cundill School
Verstraete, G.E. f. St. Joseph's Acad., Kennington Rd., S.E.
Ball, J.J. St. Joseph's Coll., Dumfries
Coates, E. al.ch. Portsmouth Boys' Secondary S.
O'Connor, G. Salesian S., Farnborough
Villejean, G. bk.f. Marist Bros.' Coll., Grove Ferry
Bell, C.W. al.gm.ms. Yorkshire Society's S., S.E.
Murray, J. e.g.al. Private tuition
Stevens, C.A. Portsmouth Boys' Secondary S.
Tate, F.G.C. e.a.al.d. Steyning Gram. S.
Walther, H.W. a.al.f.g.e. Newcastle Modern S.
Whitty, H.M. St. George's Coll., Weybridge
Bernstein, J. r.a.gm.f.ch. Leeds Central High S.
Fliteroff, N. e. Kilgimol S., St. Anne's-on-the-Sea
Clark, W.F. e.g.g.r. Hawkesyard Coll., Rugeley
Best, H.N. e. Steyning Gram. S.
Cliffe, H. a.al.gm.bk.ms. Private tuition
Littledale, J.W.F. a. Steyning Gram. S.
Wignall, J. ms.phys. Christ Church Hr. Elem. S., Southport
Cooper, C.W. al.d. Brondesbury Coll., Willesden Lane, N.W.
Hill, K.E. County Gram. S., Market Harborough
Biley, E.W. Tollington Park Coll., N.
Hill, R. al. Gram. S., Dawlish
Hughes, H. a.al. Gram. S., Canook
Smith, G.E. al. University S., Rochester
Carter, G.V.N. s.al. Licensed Victuallers' S., Lambeth
Dawkins, A.E. al.ms.f. County Gram. S., Market Harborough
Murdoch, P.N. al. Newtown S., Waterford
Walker, E. a. Longwood Gram. S., Huddersfield
Peter, J. e. Park Private S., Plymouith
Cox, A. I. g. University College S., Hampstead
Protheroe, E. al. Higher Grade S., Porth
Duncan, W. al.f. Newcastle Modern S.
Wicke, A. J. al. High S., Baldslow Rd., Hastings
Levers, S.J. County Gram. S., Market Harborough
Hyam, C.E. al.f. Bourne-mouth School
Donovan, C.A.J. St. Aloysius' Coll., Highgate
Yahillevitz, S. a. Private tuition
Constance, A.C. al. Bristol Gram. S.
Linahan, A. C. al. Portsmouth Boys' Secondary S.
Johnson, J.P. al. St. Aloysius' Coll., Highgate
Murray, D.T.C. Seaford College
Thomas, D.R. al. Felsted School

SECOND CLASS [or JUNIOR] Pass Division.

Bustanza, J. sp. St. Joseph's Coll., Dumfries
Harte, J.F. St. Joseph's Coll., Dumfries
Genzel, M.H.A. Private tuition
Carter, G.D. Hutton Gram. S.
Howells, W.J. bk.sh. Barry Comm. Acad.
Ide, H.L. al. Private tuition
Russo, A. sp. Christian Bros.' Coll., Gibraltar
Thomas, H. Advanced Elem. Boys' S., Merthyr Tydfil
Scully, D.W. St. George's Coll., Weybridge
Elliot, F. al. gm. Newcastle Modern S.
Farrington, W.B. f. Private tuition
Feeley, M. al. f. Hawkesyard Coll., Rugeley
Fleming, L.P. al. St. Joseph's Acad., Kennington Rd., S.E.
O'Halloran, M.T. h. St. Joseph's Acad., Kennington Rd., S.E.
Taylor, H.C.M. St. Aloysius' Coll., Highgate
Pimenta, J. sp. Christian Bros.' Coll., Gibraltar
Temple, L. d. Bethany H., Goudhurst
de Quiros, F. bk. Marist Bros.' Coll., Grove Ferry
Giugli, A.A. St. Aloysius' Coll., Highgate
Oliver, E.C. St. George's Coll., Weybridge
Debenham, W.W. J. St. Aloysius' Coll., Highgate
Drabble, H. S. King Edward VII S., Sheffield
Leamy, D.G. Portsmouth Boys' Secondary S.
Collins, J.E. Friends' S., Wigton
Hall, W. f. Private tuition
Cummins, R.E. d. Newtown S., Waterford
Sturridge, E.A. L. f. University College S., Hampstead
Harrison, P.J. H. Southport College
Patterson, R.W. Private tuition
Woodhead, G.K. d. Private tuition
Cheua, al. Private tuition
de Faria, T. f. St. George's Coll., Weybridge
Lewis, B. ma. Advanced Elem. Boys' S., Merthyr Tydfil
Sills, A.H. al. Portsmouth Boys' Secondary S.
Chatfield, J.M. Stationers' Co.'s S., Hornsey
Lethaby-Morgan, A. f. Bristol Gram. S.
Ibarrigues, J. St. Joseph's Coll., Dumfries
Minto, R. Friends' S., Wigton
Owen, W.G. Gram. and Coll. S., Carnarvon
Wells, J.R. L. s. Auerley College
Athelstan Clark, J.C. al. Private tuition
Conrad, A.G. St. Joseph's Coll., Dumfries
Dalziel, W. Osborne High S., West Hartlepool
Lowson, W.L. al. Argyle H., Sunderland
Payne, H.A. Steyning Gram. S.
Wheeler, F.F. Kensington Coaching Coll., Nevem Sq., S.W.
Barry, L.G. Ealing Gram. S.
Burton, S. Private tuition
Goidari, J.L. c.f. Private tuition
Gormley, B. St. Joseph's Coll., Dumfries
IHowarth, R. St. Joseph's Coll., Dumfries
I Kerr, W.P. St. Joseph's Coll., Dumfries
Shaw, J.A. al. Private tuition
Smith, C. al. Argyle H., Sunderland
Tumman, L. al. Steyning Gram. S.
Dixon, C.H. al. Seaford College
Gibb, W.C. e. Private tuition
Williams, L. Advanced Elem. Boys' S., Merthyr Tydfil
Eserit, F.K. Private tuition
Kaltenbach, F.E. St. Aloysius' Coll., Highgate
Parken, E.R. c.o. al. gm. Skerry's Coll., Prudential Buildings, Plymouth
Ranken, J.S. Argyle H., Sunderland
Smith, B.F. Orient Coll., Skegness
Enoch, T.E. The College, Weston-s.-Mare
Creasy, J.H. R. f. St. Peter's Coll., Brockley
Grubb, H.W. N. al. gm. Private tuition
Williams, E.D. Advanced Elem. Boys' S., Merthyr Tydfil
Woodford, A. Steyning Gram. S.
Milton, A.V. al. Private tuition
Tobitt, I.E. Valentia H., South Norwood
Chipulina, P. sp. Christian Bros.' Coll., Gibraltar
Bennett, D.C.D. al. Dunheved Coll., Launceston
Dunlop, E.C. Modern S., Whitley Bay
IMarriott, A.E. Gram. S., Eccles
Morasso, A. Christian Bros. Coll., Gibraltar
Squire, W. Higher Grade S., Porth
Vinson, A. Private tuition
Zahringer, F.H. St. Aloysius' Coll., Highgate

Moxon, C.S. Fartown Gram. S., Huddersfield
Belsham, S.A. Bethany H., Goudhurst
Berry, R.S. d. Private tuition
Wylde, P.J. al. f. Hawkesyard Coll., Rugeley
Walters, D.A.H. Dunheved Coll., Launceston
Cavanaugh, T. St. Joseph's Coll., Dumfries
Denning, T.H. al. Private tuition
IDevlin, J. St. Joseph's Coll., Dumfries
Drury, J.B. e.f. Private tuition
Ogden, J. al. gm. Private tuition
Bath, W.J.G. University S., Rochester
Timperley, R.M. al. Crewe County S.
Carpenter, C.E. Christian Bros.' Coll., Gibraltar
Horton, J.E. Private tuition
Jones, I.W. e. Private tuition
Reed, J.W.H. Argyle H., Sunderland
Cocker, F.C. Private tuition
ILawrie, R. St. Joseph's Coll., Dumfries
Lewis, T.J. al. Tutorial Classes, Richmond Rd., Cardiff
McNelly, J.A. al. ms. Gram. S., Cowes
Ogden, F.J. J. Gram. S., Dawlish
Jennings, A.T.A. Bishopston Comm S., Bristol
Muzafar, A.K. St. Paul's S., W. Kensington
Storly, T. Friends' S., Wigton
Bloomer, A.C. Private tuition
Marsh, A.W. Eastward Ho! Coll., Felixstowe
Beeson, G.W. Eastward Ho! Coll., Felixstowe
Beevis, C.E. f. Portsmouth Coll. Gram. S.
IDutton, C.A. Hawkesyard Coll., Rugeley
Osmer, E.B. al. Private tuition
Reid, W.S. Dunheved Coll., Launceston
Chapman, J. Gram. S., Eccles
Harrison, E. s. St. Joseph's Coll., Dumfries
Pillow, E.S. Private tuition
Thomson, I.M. Private tuition
Davis, F. Advanced Elem. Boys' S., Merthyr Tydfil
Fitzsimons, T. Cawley S., Chichester
Sheppard, E.A. Private tuition
Hoade, J.R. St. George's Coll., Weybridge
Norton, H. sp. Christian Bros.' Coll., Gibraltar
Nuttall, J.H. al. gm. Private tuition
Walmsley, H. Private tuition
IZilz, R.F. f. Private tuition
Cotterell, T. al. f. Halifax Council Sec. Boys' S.
IDotto, J.L. Christian Bros.' Coll., Gibraltar
IYogott, E. Gram. S., Whitechurch
Crane, A.R. Private tuition
Hodkinson, R.J. Private tuition
Thomas, J.M. al. w. Private tuition
Brooks, A.T. Skerry's Coll., Prudential Bldgs., Plymouth
Hatcher, H.B. al. Private tuition
Keeble, J.H. Dunheved Coll., Launceston
Painton, J. al. Private tuition
Bryson, J.W. Civil Service Inst., Aberdeen
Leatherbarrow, W. f. University S., Southport
Levinstein, D. al. Ruthford Coll., Newcastle-on-T.
Lewis, J.S. St. Paul's S., W. Kensington
McKay, D. s. The High S., Swindon
Browett, A.W. Newtown S., Waterford
Clarke, H.M. Seaford College
Field, A.V. Ealing Gram. S.
Gilling, C.E. Brighton, Hove, & Sussex Gram. S.
Hazelton, W.E. Wellingborough Gram. S.
Poyner, F.J.R. Staffrd Coll., Forest Hill
Stone, A.B. The College, Weston-s.-Mare
Wood, A.E. Bethany H., Goudhurst
Aikman, J.A.S. c. Clark's Coll., Cardiff
Clarke, W.E. al. gm. f. Private tuition
Evans, R.S. New Coll., Herne Bay
Haslegrave, C.P. Private tuition
Ibate, J.B. St. Joseph's Coll., Dumfries
Rook, T. h.g. Mile End H., Portsmouth
Schilling, G.W. N. d. Eastward Ho! Coll., Felixstowe
Stacey, B.J. Private tuition
Bennett, C.H. al. Linton H., Holland Pk. Avenue, W.
IFarrell, R.J. Newtown S., Waterford
Pratt, C.E. Steyning Gram. S.
Radley, H.S. St. Aloysius' Coll., Highgate
Wilkinson, W.R. f. Coll. for the Higher Education of the Blind, Whittington
Wood, L. Gram. S., Eccles
Bray, D.A. al. al. Private tuition
ICaird, D.R. St. Dunstan's Coll., Margate
Ellison, B.D. St. Joseph's Coll., Dumfries
Eyre, B.J. St. George's Coll., Weybridge
Thomas, H. Private tuition
Trussell, E.L. Private tuition
Ward, H. Private tuition

Carter, A.E. Halifax Council Sec. Boys' S.
I Kempster, W.C. f. Newcastle Modern S.
Paey, J.G.R. Argyle H., Sunderland
Pitts, A.W. d. Private tuition
Randall, G.V. al. New Coll., Herne Bay
Smith, A.G. Bethany H., Goudhurst
Tipping, F. St. Joseph's Coll., Dumfries
Watkins, T.R. Tutorial Classes, Richmond Rd., Cardiff
Frost, E.G. Steyning Gram. S.
Woods, J.F. e. Newtown S., Waterford
Yates, A.V. G. Licensed Victuallers' S., Lambeth
Youngson, A. Private tuition
Balfour, J.K. Gram. S., Eccles
Barry, V.P. St. Joseph's Acad., Kennington Rd., S.E.
IHetherington, W. Friends' S., Wigton
Brown, F.P. al. Commercial Coll., Southport
Gill, A.A. ms. Chatsworth S., Carlisle
Main, T.E. Mile End H., Portsmouth
Melville, J.P. St. Joseph's Acad., Kennington Rd., S.E.
Gobey, L.F. New Orphan Houses, Ashley Down, Bristol
Hurst, S. al. al. Private tuition
Metcalfe, E.F. al. f. Halifax Council Sec. Boys' S.
I Porteous, H.R. Richmond Hill S., Richmond
I Taplin, W. Private tuition
Tassell, F.N. Chatsworth S., Carlisle
I Williams, J.S. Private tuition
Dawson, F.A. Eastward Ho! Coll., Felixstowe
Harris, C. Newquay College
Pinches, J.A. al. Private tuition
Vernon, G.C. Hillmartin Coll., Camden Rd., N.W.
Walt, W.H. Private tuition
IYounat, L.F. St. George's Coll., Weybridge
IChard, H.E. The College, Weston-s.-Mare
Curtis, F.T. Bishopston Comm. S., Bristol
Maxwell, H.J. Bethany H., Goudhurst
Pommier, F.G. Seaford College
Price, A.L.G. Private tuition
Shaw, F.L. Gram. S., Leigh
Baines, A. St. Joseph's Coll., Dumfries
Griffiths, W.C. Birmingham Central Sec. S.
May, A.G. Private tuition
IO'Brien, W. St. Joseph's Coll., Dumfries
IYerofort, H.V. Boys' Coll. S., Aldershot
Beale, O.V. Seaford College
Breach, C. Steyning Gram. S.
ICuthforth, L.E. The Haughton S., York
Ellis, W.E. Bethany H., Goudhurst
Flood, S. St. Joseph's Coll., Dumfries
Herbert, J. Private tuition
IHodge, T. St. Joseph's Coll., Dumfries
Hughes, G.O. Private tuition
IJohns, C.C. Clark's Coll., Cardiff
IReardon, John. St. Joseph's Coll., Dumfries
IMcIntyre, S.C. Staffrd Coll., Forest Hill
Smith, W.H. Friends' S., Wigton
West, J.V. Gram. S., Eccles
Charles, E. Peneader Gram. S.
Cody, F.B. Eastward Ho! Coll., Felixstowe
Coulthard, C.E. Private tuition
IMonaldson, H.P. Stationers' Co.'s S., Hornsey
Drabble, A. al. Private tuition
James, D.S. Higher Grade S., Porth
McOwan, H. Corner H., Godstone
Milton, W.E. al. Mt. Radford S., Exeter
Wood, R.E. Gram. S., Eccles
Condie, R. Private tuition
Harris, A. Newtown S., Waterford
Kinnell, B. Eastward Ho! Coll., Felixstowe
ISchofield, R.B. Private tuition
IStanhall, G.E. Bethany H., Goudhurst
Dewar, R.P. Skerry's Civil Service Coll., High Holborn, W.C.
Dicks, F.J. N. The Douglas S., Cheltenham
Godwin, F.H. Private tuition
Henderson, A. Friends' S., Wigton
IHilditch, J. St. Joseph's Coll., Dumfries
Northcott, C.S. Dunheved Coll., Launceston
Uglov, E.T. Dunheved Coll., Launceston
Wilson, A. Private tuition
Blacker, S.H. Private tuition
IBrookes, A.R. Clifton Coll., Blackpool
Jenkin, V.H. Private tuition
INovella, L. Christian Bros. Coll., Gibraltar
Rowley, T. f. Private tuition
Bird, G.S. Dunheved Coll., Launceston
Cranphorn, K.J. Bethany H., Goudhurst
Fearn, C.H. Private tuition
ILichtenberg, E. Tollington Park Coll., N.
Burgioe, G. d. County Gram. S., Market Harborough
Darby, W.L. Private tuition
Smith, B. St. Joseph's Coll., Dumfries
Verity, A.K. Private tuition

IBerry, R.B. Gram. S., Eccles
Salsbury, F.R. Private tuition
ISmith, N.L. St. Joseph's Coll., Dumfries
Bird, C.R. Dunheved Coll., Launceston
Capon, C.L. Hillmartin Coll., Camden Road, N.W.
Loedam, C.H. Burnley Municipal Tech. S.
Sowden, J.L. Coll. for the Higher Education of the Blind, Whittington
Taylor, A.B. Arnold H., Blackpool
Compton, H. al. Private tuition
Lywood, H.D.M. Dunheved Coll., Launceston
ISavage, L.N. Bethany H., Goudhurst
Aylyffe, R.D. King Edward VII S., Sheffield
St. Aubyn, J.F. St. George's Coll., Weybridge
Sunbul, T. al. Private tuition
Symes, J.E.L. Middle Class S., Gosport
Wacholder, A. Private tuition
Alston, L. Bethany H., Goudhurst
Bischofberger, E. ge. Staffrd Coll., Forest Hill
French, A.S. f. Private tuition
King, E.H. Private tuition
Young, C.W. Dunheved Coll., Launceston
Carpenter, A.N. Bethany H., Goudhurst
IFinch, R.P. Private tuition
Ibrahim, M. Private tuition
Payton, C.W. Private tuition
IPlunkett, J.J.A. Private tuition
Harvey, T.S. St. Joseph's Acad., Kennington Rd., S.E.
Larkin, F.W. Private tuition
McNicol, H.N. Chatsworth S., Carlisle
Short, A. Private tuition
Truscott, C.M. New Coll., Herne Bay
Whitecomb, A.H.P. Private tuition
Crooke, F.G. St. Joseph's Acad., Kennington Rd., S.E.
Cumyings, I.V. Chatsworth S., Carlisle
Roberson, A.R.G. Brighton College
Sanders, H.J. Private tuition
I Tippett, R.J. Stone's City S., Exeter
IWilliamson, C.J. Bethany H., Goudhurst
Barber, W. Private tuition
Clancy, G.L. St. George's Coll., Weybridge
Glaishy, K. Private tuition
MacDonnell, J.J.M. Private tuition
Mishad, A.M. Private tuition
Turner, J.W. Dunheved Coll., Launceston
Wiseman, E.A. Private tuition
IMartin, J.W. al. Bethany H., Goudhurst
Symons, T.R. Dunheved Coll., Launceston
Webb, H.M.T. Private tuition
Codner, C.C. Private tuition
Elliot, J.S. Ryhope Secondary S.
Miles, H. Lancaster Coll., W. Norwood
Pirie, L.W. New Coll., Herne Bay
Wells, C.P. Private tuition
Wilson, P. Private tuition
Archer, G. Private tuition
Crowe, A.V.T. 36 Stapleton Hall Rd., N.
Houghland, C.D. al. Private tuition
Hulme, F.W.P. Private tuition
Long, C.E.A. Private tuition
Norman, D.F. Bethany H., Goudhurst
Wearne, W.H. Dunheved Coll., Launceston
ICheadle, N. St. Joseph's Coll., Dumfries
Fooks, W.A. Coll. for the Higher Education of the Blind, Whittington
Matthey, C.T. Forest S., Walthamstow
Pieron, W.E. University S., Rochester
Ramsbottom, B. Private tuition
Armstrong, G.J. Willow H., Walsall
Roe, R.H. f. Private tuition
Frost, H. Private tuition
Woollett, H.W. Wellingborough Gram. S.
Banwell, G.H. Tankerton Coll., Tankerton-on-Sea
Best, F.E. Chorlton-cum-Hardy Gram. S.
Butt, L.A. Heanor Secondary S.
Harris, S.J. Sheffield School of Languages
Richardson, R. Private tuition
IHaigh, A. Longwood Gram. S., Huddersfield
Hughes, L. St. Helen's Coll., Southsea
Axon, C. Private tuition
I Short, F.W. Private tuition
I Thomas, H.I. Private tuition
I Thompson, H.F. New Coll., Herne Bay
Fairbrother, J.O. Bethany H., Goudhurst
IField, H.S. Private tuition
Gram, R.C. Private tuition
Mossman, J.E. Chatsworth S., Carlisle
Richard, R. University S., Southport
Sayer, R.E. Private tuition
Dodd, H.E. Private tuition
I Thomas, W.D. Private tuition
I Batty, J. Seorton Gram. S.
IDavies, J. Private tuition
I Pascoe, C. Private tuition
Crowe, S.T. 36 Stapleton Hall Rd., N.
Wright, I.A. Friends' S., Wigton
Small, D.L.S. Private tuition
Haigh, T. Private tuition

BOYS, 2ND CLASS, Pass- *Continued.*
 Vidler, S.M. Richmond Hill S., Richmond
 Campbell, H. Private tuition
 Hudson, H. S. Private tuition
 Whitehead, J. Private tuition
 Smith, R. Technical S., Grimby
 Verwymeren, J. Highfield, Chertsey
 Crossley, E. Private tuition
 Good, C.M. Private tuition
 Williams, D.G. Private tuition
 Mellor, G.H. Private tuition
 Groome, E.D. Clark's Prep. S., Ealing
 Bolton, H.W. Private tuition
 Upton, E.S. Private tuition

**THIRD CLASS.
Honours Division.**

Pizany, R. *al. bk. f.*
 Marist Bros.' Coll, Grove Ferry
 Garcia, N. *s. sp. d.*
 St. Joseph's Coll., Dumfries
 Joyeux, A. *al. bk. f.*
 Marist Bros.' Coll., Grove Ferry
 Bretones, J. *sp.* St. Joseph's Coll., Dumfries
 Cheney, E. *al. ms. f. d.*
 County Gram. S., Market Harborough
 Kummer, H.C. *al. gm. f.* Seaford College
 Salaverri, S. *sp.* St. Joseph's Coll., Dumfries
 Trevorrow, J. *p. h. a. al. ms.* Newquay College
 Mentienne, R.
 Marist Bros.' Coll., Grove Ferry
 Poole, F.E. *h. a. al.* Newquay College
 Hidalgo, M. *sp.* St. Joseph's Coll., Dumfries
 Bannister, T. *e. al. gm. f. l.*
 Hawkesyard Coll., Rugeley

Brown, G.F. *s. a. al. f. l.*
 County Gram. S., Market Harborough
 Griffiths, T. *h. a. al. l.* Higher Grades, Porth
 Lescabes, J.H. *f.*
 St. Aloysius' Coll., Highgate
 Steell, J.D. *e. a. al. bk. d.*
 St. Aloysius' Coll., Highgate

Drisse, P. *e. a. f.*
 St. Joseph's Acad., Kennington Rd., S.E.
 Flynn, J.L. *h. a. al. f.*
 St. Joseph's Acad., Kennington Rd., S.E.
 Wells, G.P. *gm.* Private tuition
 Ewen, H. *s. h. f.* St. Joseph's Coll., Dumfries
 Villa, F.A. *sp.* St. Joseph's Coll., Dumfries

Denison, C.H. *e. al. gm. f. g. l.*
 Manor H., Clifton, Bristol
 Sage, E. *al. gm.*
 Osborne High S., West Hartlepool
 Danverchain, P. *f. l.*
 St. Joseph's Coll., Dumfries

Denison, L.A. *e. a. al. gm. f. g. l.*
 Manor H., Clifton, Bristol
 Kendall, A.E. *e. al. gm. l.*
 Hawkesyard Coll., Rugeley
 Hainsworth, J.R. *al.* Newquay College
 O'Meara, D. *gr.* Salesian S., Farnborough
 Scrimin, V.G. *al.*
 St. Aloysius' Coll., Highgate

Dawson, F.W. *a. bk.*
 St. Aloysius' Coll., Highgate
 Stephens, R.A. *al.* Newquay College
 Benzaquen, R. *a. f. sp.*
 Christian Bros.' Coll., Gibraltar
 Greenhalgh, G. *a. al. bk.* Gram. S., Eccles
 McGirr, T.H. *e. a. al. f.*
 Hawkesyard Coll., Rugeley

Jones, E.A. *a. al. bk. f.* Gram. S., Eccles
 Tice, S.W.R. *h. a. bk. f.*
 St. Aloysius' Coll., Highgate
 Weir, A.P. *e. gm. l.* Argyle H., Sunderland
 Etherington, H.V. *al.*
 St. Aloysius' Coll., Highgate

Isola, A. *al. gm. sp.*
 Christian Bros.' Coll., Gibraltar
 Ormachea, J. St. Joseph's Coll., Dumfries
 Crome, T. *ca.* Hawkesyard Coll., Rugeley
 Jacobs, S. *hr.* Argyle H., Sunderland
 O'Malley, G.L. *s. bk.*
 St. Aloysius' Coll., Highgate

Proom, F.E. *e. al. gm.* Argyle H., Sunderland
 Clayton, J.H. *al.* Radnor S., Redhill
 Emmitt, G.J. St. Joseph's Coll., Dumfries
 Pizarro, E. *a. bk. sp. d.*
 Christian Bros.' Coll., Gibraltar
 Gray, G. *al. d.* Argyle H., Sunderland
 Prassinus, M. *al. f.* Salesian S., Farnborough
 Revis, N.C. *e. a. gm.* Argyle H., Sunderland
 Stott, W.D. *bk.* Gram. S., Eccles

Hepton, J.B. *l.* Hawkesyard Coll., Rugeley
 McMenemy, T.J. *T. al. bk.*
 St. Aloysius' Coll., Highgate
 Taylor, A.E. *u.* Higher Grade S., Porth
 Tonkinson, W.N. *y.* Argyle H., Sunderland

Gunter, C.G. *a. al.*
 St. Joseph's Acad., Kennington Rd., S.E.
 House, L.T.B. *a.*
 The College, Weston-s.-Mare
 Jaques, H.M. *bk.*
 St. Aloysius' Coll., Highgate

Leeson, H.T. *e. a. al. d.*
 County Gram. S., Market Harborough
 Lensh, F.H. St. Aloysius' Coll., Highgate
 Mould, A. St. Joseph's Coll., Dumfries
 McMenemy, J.J. *a.*
 St. Joseph's Coll., Dumfries
 Poole, L.R.W. *h.*
 Lindsifarne Coll., West Cliff-on-Sea

Swan, G.R.M. *e.*
 Belmont Coll., Streatham Hill
 Verpoten, P.L. St. Aloysius' Coll., Highgate
 Bancquart, H. *f.*
 Marist Bros.' Coll., Grove Ferry
 Grimes, V.E. *e.* Richmond H., Handsworth
 Lecourt, P. *bk. f.*
 Marist Bros.' Coll., Grove Ferry
 McQuillan, J. *u. d.* Newtown S., Waterford

Carter, C.J. *a. al. bk.*
 Stafford Coll., Forest Hill
 Kaufmann, R.S.
 St. Aloysius' Coll., Highgate
 Lambert, K.R. *d.* Taunton H., Brighton
 Wilkinson, F. *al.* Gram. S., Eccles
 Wright, T. Friends' S., Wigton

Bird, A.A.V. St. George's Coll., Weybridge
 Birkett, G. Silesian S., Farnborough
 Hill, W. Silesian S., Farnborough
 Bradley, W.C. *s. al.*
 St. Aloysius' Coll., Highgate
 Long, L.N. *u.*
 Radnor S., Redhill

Aleazar, J. St. Joseph's Coll., Dumfries
 Edwards, J. Bethany H., Goudhurst
 Gray, C.G. Bethany H., Goudhurst

**THIRD CLASS.
Pass Division.**

Baranda, A. St. Joseph's Coll., Dumfries
 Refoy, J. Salesian S., Farnborough
 Triay, J. *sp.*
 Christian Bros.' Coll., Gibraltar
 Diacono, H. St. Joseph's Coll., Dumfries
 Morton, H.K. St. George's Coll., Weybridge

Haines, S.
 Advanced Elem. Boys' S., Merthyr Tydfil
 Curr, E. St. Joseph's Coll., Dumfries
 Hillman, H.J. The College, Weston-s.-Mare
 Wood, H. Seorton Gram. S.
 Jones, W.
 Advanced Elem. Boys' S., Merthyr Tydfil

Keet, R.M. Belmont Coll., Streatham Hill
 Bird, M.E. Stafford Coll., Forest Hill
 Gray, W.C. Bethany H., Goudhurst
 Griffiths, E.D.G. Higher Grade S., Porth
 Welch, R.E. Mile End H., Portsmouth
 Thurlow, R.G. Ongar Gram. S.
 Thomas, G. Higher Grade S., Porth
 Whittaker, C.G. Newtown S., Waterford

Rogers, W. Seorton Gram. S.
 Frosal, J.S. Stafford Coll., Forest Hill
 Mitchell, R.G. Ealing Gram. S.
 Tussard, B.A. St. Aloysius' Coll., Highgate
 Dyson, J.
 Longwood Gram. S., Huddersfield

Heap, H.D. Ealing Gram. S.
 Wilms, W. St. Joseph's Coll., Dumfries
 Young, S. Bethany H., Goudhurst
 Paekham, R.I. Highfield, Chertsey
 Burchill, C.
 Lindsifarne Coll., West Cliff-on-Sea

Byrne, S. St. Joseph's Coll., Dumfries
 Cooke, S.A. Campbell H., Bristol
 Hutton, S.J. *a. al.*
 Richmond Hill S., Richmond
 Mayo, R.S. *s. h. a. bk.*
 Modern High S., Seven Kings
 Starling, S.A. *a. bk.*
 St. Aloysius' Coll., Highgate

Swan, E.V. *a.* Newcastle Modern S.
 White, C.M. *al. gm.*
 Taunton H., Brighton
 Wilson, A.J. St. Joseph's Coll., Dumfries
 Bensusan, A.
 Christian Bros.' Coll., Gibraltar
 Currie, C.H. *al.*
 St. Aloysius' Coll., Highgate

Gillman, A. *e.* Hawkesyard Coll., Rugeley
 Langley, B.F. *al.*
 St. Aloysius' Coll., Highgate
 March, R. *s. al.*
 Licensed Victuallers' S., Lambeth
 Neale, F.C. New Coll., Herne Bay
 Pinder, R. *gm. bk.* Orient Coll., Skegness
 Williams, W.J. *a. al. bk.*
 St. Aloysius' Coll., Highgate
 Hutchinson, H.G. *a.*
 St. Aloysius' Coll., Highgate
 Jenkins, E.D. *u. al.* Ongar Gram. S.

McCartney, T.H. *a.*
 St. Aloysius' Coll., Highgate
 Roberts, F. *sp.*
 Christian Bros.' Coll., Gibraltar
 Batty, R.N. *al.* Seorton Gram. S.
 Coward, H. Friends' S., Wigton
 Jackson, J. St. Joseph's Coll., Dumfries
 Jamieson, J.W. *al. d.* Seorton Gram. S.
 Mercer, C.C. *a. gm. d.*
 Newlown S., Waterford

Wallis, W.J. *al.* Seaford College
 Millman, A.G. *P.*
 Dunheved Coll., Lanconston
 Owen, W.R. Osborne High S., West Hartlepool
 Pringle, B.T.
 St. Joseph's Acad., Kennington Rd., S.E.

Agniar, J. St. Aloysius' Coll., Highgate
 Bonifacio, F.
 Christian Bros.' Coll., Gibraltar
 Gedge, E.G. *h.* St. Aloysius' Coll., Highgate
 Jones, T.J. *e.* Pencader Gram. S.
 Lamont, J. *h.* St. Joseph's Coll., Dumfries
 Lyst, E.P.
 St. Joseph's Acad., Kennington Rd., S.E.

Newman, L.C. *s. a.*
 The College, Weston-s.-Mare
 Carter, I.P. *a.* Newquay College
 Hockley, L.T. Taunton H., Brighton
 Jones, T. *r.* Pencader Gram. S.
 Mareonni, C.C. *l.*
 St. Aloysius' Coll., Highgate

Williams, A.B. *d.* Higher Grade S., Porth
 Cox, E. *al.* Christian Bros.' Coll., Gibraltar
 Herra, R.G. St. Aloysius' Coll., Highgate
 Robinson, H. Bethany H., Goudhurst
 Whelan, L.E. *al.*
 St. Aloysius' Coll., Highgate

Goodehill, S.J. *s. bk.* Grove H., Highgate
 Gradwell, G.F. *e. al.*
 St. George's Coll., Weybridge
 Huggard, C.W. *gr.* Newtown S., Waterford
 Sanderson, G.
 Farnham Gram. S., Huddersfield

Sweeting, D.C. St. John's Coll., Brixton
 Vasse, G.H. Bethany H., Goudhurst
 Walters, T.J. *d.* Higher Grade S., Porth
 Windsor, J.J.S.
 St. George's Coll., Weybridge
 Doherty, H.L. *d.*
 St. Aloysius' Coll., Highgate

Dorner, R.A. *al.* Newtown S., Waterford
 Finn, D.P. St. Joseph's Acad., Kennington Rd., S.E.
 Kingston, A.T. *d.*
 St. Aloysius' Coll., Highgate
 Reel, G.R. Newcastle Modern S.
 Thurlow, P.J.
 Eastward Ho! Coll., Felixstowe

Vigners, J.T. *al.* Newquay College
 Bennett, P.H.
 Licensed Victuallers' S., Lambeth
 Horden, A.T. *s. e. a.*
 Richmond H., Handsworth
 Kelly, L.F.
 St. Joseph's Acad., Kennington Rd., S.E.

Lewis, E.C. *d.* Richmond Hills, Richmond
 Marchant, H.N. Bethany H., Goudhurst
 Morris, C.B.
 Licensed Victuallers' S., Lambeth
 Obario, G.J. *bk.*
 St. George's Coll., Weybridge
 O'Connor, H.H.J.
 St. Joseph's Acad., Kennington Rd., S.E.

Russell, G. *al.* Newtown S., Waterford
 Sharpley, F.C. Dunheved Coll., Lanconston
 Sumner, W.H. University S., Southport
 Wray, W.S.S. *al.* Seorton Gram. S.
 Pilder, J.H. *d.* Broadgate S., Nottingham
 Hurwitz, L.I. *hc.* Argyle H., Sunderland
 Jeffrey, L.P. *h.* Friends' S., Wigton
 Jones, T.W. Pencader Gram. S.
 Maung, P.M.
 Ightham Rectory

McCorry, F.J.
 St. George's Coll., Weybridge
 O'Brien, D.J. St. Joseph's Coll., Dumfries
 Cook, A.C. *al.* Argyle H., Sunderland
 Davis, F.A. *a.*
 Licensed Victuallers' S., Lambeth
 Penney, P.W.
 Licensed Victuallers' S., Lambeth

Rodrigues, J. St. Joseph's Coll., Dumfries
 Borrow, C.E. *f.*
 Conely Gram. S., Market Harborough
 Chapman, F. New Coll., Herne Bay
 Chapman, R.F. *gm.* Newtown S., Waterford
 Laurence, E.H.
 The Douglas S., Cheltenham

Lyons, J.T. *a.* Higher Grade S., Porth
 Melluish, R.K. *e.*
 Lindsifarne Coll., West Cliff-on-Sea
 Michalsky, A.V. *e.*
 NewOrphan Houses, Ashley Down, Bristol
 Richards, C.W. *a.* Pencader Gram. S.
 Serrier, L. *f.*
 Marist Brothers' Coll., Grove Ferry

Smurthwaite, T.A. *F.*
 Brondesbury Coll., Willesden Lane, N.W.
 Walton, R. Gram. S., Eccles

Cooper, A.B. New Coll., Herne Bay
 Haggarty, J. St. Joseph's Coll., Dumfries
 Jenkins, J.H. Pencader Gram. S.
 Jenkins, W. *v.* Pencader Gram. S.
 Knoblauch, C.H.
 Lancaster Coll., W. Norwood

O'Shea, A.D. St. Aloysius' Coll., Highgate
 Owens, J.T.C. Taunton School
 Walker, F. *al. gm.* New Coll., Herne Bay
 Edwards, J.C.S. University S., Rochester
 Hill, W.G. Broadgate S., Nottingham
 Johnson, C.
 Licensed Victuallers' S., Lambeth

Morgenstern, F.W.
 St. Catherine's Coll., Richmond
 Munro, J.J.
 Hillmartin Coll., Camden Rd., N.W.
 Thomas, D.J. Higher Grade S., Porth
 Webb, H.J.
 Lindsifarne Coll., West Cliff-on-Sea

Davies, T.H. Pencader Gram. S.
 Howell, W.E. Private tuition
 Lloyd, R.O. *e.*
 Hillmartin Coll., Camden Rd., N.W.
 Mawson, A.W. Hall Gate S., Doncaster
 Ormer, F.R. Beverley S., Barnes
 Pearce, R.E. Bethany H., Goudhurst

Penberthy, W.F. Queen's Coll., Taunton
 Slaford, E.V. Grove H., Highgate
 Thomas, S.J. Pencader Gram. S.
 Bennett, W.W.
 Eastward Ho! Coll., Felixstowe

Cook, G.W. University S., Southport
 Dow, L. Friends' S., Wigton
 Heworth, E.E. *a. f.* Newcastle Modern S.
 Ormiston, W.H.
 St. Catherine's Coll., Richmond
 O'Shea, M.F. St. Aloysius' Coll., Highgate
 Tussand, G.P. St. Aloysius' Coll., Highgate

Burrows, F.A.J. Dudley H., Lee
 Harvey, R.deW. Private tuition
 Jones, G.M. Higher Grade S., Porth
 McCabe, J. St. Joseph's Coll., Dumfries
 Robb, J. *a. bk.* Taunton School
 Shuttlesworth, W. University S., Southport
 Watt, W. St. Joseph's Coll., Dumfries

Barter, C.W.
 Licensed Victuallers' S., Lambeth
 Bowen, R.R.T. Seaford College
 Cronin, T.J. St. Aloysius' Coll., Highgate
 McLachlan, A. St. Joseph's Coll., Dumfries
 Palmer, D. Argyle H., Sunderland
 Parsons, A. University S., Southport
 Pons, G. *f.* Marist Bros.' Coll., Grove Ferry
 Ryan, J. Salesian S., Farnborough
 Sherwood, A.E. Taunton H., Brighton
 Slattery, D. Salesian S., Battersea
 Turner, J. St. Joseph's Coll., Dumfries

Crabtree, H.V. *al.* Brighton House, Oldham
 Gordon, V.L. Bethany H., Goudhurst
 Harold-Barry, G. *e.*
 St. George's Coll., Weybridge
 Hill, H. *a.* Chorlton-cum-Hardy Gram. S.
 Rogers, K.D.U.
 Lindsifarne Coll., West Cliff-on-Sea

Spear, D.M. *a. bk.*
 Eastward Ho! Coll., Felixstowe
 Balding, A.S. Seaford College
 Clegg, R. Eastward Ho! Coll., Felixstowe
 Gallagher, A. St. Joseph's Coll., Dumfries
 Mark, A. Pencader Gram. S.
 McKeozie, H.H. *a.*
 Licensed Victuallers' S., Lambeth

O'Brien, D. St. George's Coll., Weybridge
 Smith, F.A. Bethany H., Goudhurst
 Stegall, F.W.M. Seorton Gram. S.
 Stewart, C. Bethany H., Goudhurst
 Winchester, C.C.
 St. Aloysius' Coll., Highgate

Blandford, G.A.E. University S., Rochester
 Donnelly, L. St. Joseph's Coll., Dumfries
 Dwyer, T. Salesian S., Battersea
 Plintoff, R. Seorton Gram. S.
 Gibson, W.E. *a.* Argyle H., Sunderland
 Holyoake, G.N. New Coll., Herne Bay
 Hyde, W.T. *al.*
 NewOrphan Houses, Ashley Down, Bristol

McMeekin, T.P. Mt. Radford S., Exeter
 Phillips, P. Steyning Gram. S.
 Simmons, L.J. *bk.*
 St. Aloysius' Coll., Highgate
 Swift, E. University S., Southport
 Tuddenham, F.G.
 Eastward Ho! Coll., Felixstowe

Vasilescu, G.E. St. Aloysius' Coll., Highgate
 Boswell, G.P. St. John's Coll., Brixton
 Bowen, W.R. Pencader Gram. S.
 Dee, W. Seaford College
 Jack, N.P.
 Lindsifarne Coll., West Cliff-on-Sea

Taylor, T.H. *f.* Coll. for the Higher Education of the Blind, Whittington
 Davies, A. Pencader Gram. S.
 Fogarty, C.J. St. Aloysius' Coll., Highgate
 Garbarino, J. *sp.*
 Christian Bros.' Coll., Gibraltar

BOYS, 3RD CLASS, Pass—Continued.
Howson, C.M.E. a. Taunton School
Kelly, R. Elm Grove S., Exmouth
Pedersen, C.P. St. Aloysius' Coll., Highgate
Rantzen, M.J. Brendesbury Coll., Willesden Lane, N.W.

Berry, M. Radnor S., Redhill
Clacher, H. St. Joseph's Coll., Dumfries
Husband, E. Scorton Gram. S.
Kent, C.H.S. Lancaster Coll., W. Norwood
Pinot de Moira, G.E.M. bk.
St. Aloysius' Coll., Highgate
Turner, G. St. Joseph's Coll., Dumfries
Wright, G.P. St. George's Coll., Weybridge
Way, J.E. Taunton School

Carter, D.R. Newquay College
Gilling, R.E. a. Scorton Gram. S.
Grosils, A.J. bk.
St. Aloysius' Coll., Highgate
Harrison, E.C. Argyle H., Sunderland
Hepworth, J.S. University S., Southport
La Chesnais, C.M.A. f. Elmfield Coll., York
Palumbo, E. d. Salesian S., Battersea
Pereira, C. St. George's Coll., Weybridge
Power, B.T. St. Aloysius' Coll., Highgate
Schoof, P.L.S. Dudley H., Lee
Walther, K.A. d. Newcastle Modern S.

Barratt, W.A. Taunton School
Gosling, R.T. St. George's Coll., Weybridge
Hodgkinson, W. University S., Southport
McOwan, J. Corner H., Godstone
Watson, S. Bethany H., Goudhurst
Young, F.E. Newcastle Modern S.

Barlow, T.V. Argyle H., Sunderland
Fox, C.J.B. a. Newcastle Modern S.
Lloyd-Jones, J.

Pentwyn S., Penrhwi-ceiber
Mifsud, O. Christian Bros. Coll., Gibraltar
Tasker, R.S. St. Aloysius' Coll., Highgate

Anglin, L.A. m. Newtown S., Waterford
Cattford, W.A.
Modern S., Stafford Rd., Wallington
Cooper, G.T. Mt. Radford S., Exeter
Fava, S.a. Christian Bros. Coll., Gibraltar
Fava, S.a. Christian Bros. Coll., Gibraltar
Mountford, H. Private tuition
Stinson, C.C. Bethany H., Goudhurst
Stubbings, H.E. a.d. Steyning Gram. S.
Thomas, A.G. Highfield, Chertsey

Browne, C.R.V.
St. Aloysius' Coll., Highgate
Chapman, J.W. Bethany H., Goudhurst
Crawford, L.W. St. John's Coll., Brixton
Danson, R.J.C. New Coll., Herne Bay
Davies, E.R.L. Grove H., Highgate
Moore, F.W. St. John's Coll., Brixton
Searle, H. Mt. Radford S., Exeter
Taylor, J. University S., Southport
Watson, L.L. Bethany H., Goudhurst
Webber, A.R. Dunheved Coll., Launceston

Brown, N.B.
Lindisfarne Coll., Westcliff-on-Sea
Hall, J. Gram. S., Eccles
Heseltun, F.S.
Osborne High S., West Hartlepool
Lewis, J.E. Newtown S., Waterford
McNicholl, R. Salesian S., Battersea
Mole, A.D. Holt H., Cheshunt
Morgan, A.J. St. Joseph's Coll., Dumfries
Morley, H. University S., Rochester
Pettitt, M. Bethany H., Goudhurst
Smales, G.A. a. New Coll., Herne Bay
Tattersall, L.W. University S., Southport

Facio, A.sp. Christian Bros. Coll., Gibraltar
Fooks, B.S. Taunton H., Brighton
Goodwin, L. Gram. S., Eccles
Strong, C.F. Newquay College
Whalley, C.F.
Fartown Gram. S., Huddersfield

Brooks, H.W. a. Dudley H., Lee
Fielding, W. Higher Grade S., Porth
Hitchcock, C.G. d.
Stafford Coll., Forest Hill
Patterson, R. Peachfield, Eltham
Rowbotham, G.R. e.
University S., Southport

Stewart, A.R. St. Joseph's Coll., Dumfries
Walton, C. Gram. S., Eccles

Ashby, S. Old College S., Carmarthen
Bentall, P.J.
Lindisfarne Coll., Westcliff-on-Sea
Goodridge, J. bk. Gram. S., Dawlish
Groves, A. Willow House, Walsall
Hocking, G.R. Newquay College
Isaac, W.E. Bethany H., Goudhurst
Laxton, A.B. New Coll., Herne Bay
Leach, A.X. New Coll., Herne Bay
McCluskey, J. St. Joseph's Coll., Dumfries
Skinner, L. Salesian S., Farnborough
Telford, J.J. Chatsworth S., Carlisle
Thomas, E.R. a. Higher Grade S., Porth
Vick, B.C. Private tuition

Costa, L.G. Stafford Coll., Forest Hill
Goodway, L.R. Richmond H., Handsworth
Noble, C.S. Holt H., Cheshunt
Stebenson, W.
Osborne High S., West Hartlepool
Vaughan, W.G.V. Stafford Coll., Forest Hill
Wilson, J. d. St. George's Coll., Weybridge

Branch, P.H.
Lindisfarne Coll., Westcliff-on-Sea
Harding, R.T.B.
The College, Weston-s.-Mare
Harrold, A. Newcastle Modern S.
Kelly, M. St. Joseph's Coll., Dumfries
May, C. Fartown Gram. S., Huddersfield
Wigmore, G. St. Joseph's Coll., Dumfries

Bidlake, D. Radnor S., Redhill
Boustred, A.W. Grove H., Highgate
Catlow, J. University S., Southport
Cave, W. Bethany H., Goudhurst
Evans, E.B. Pencader Gram. S.
Mason, S.H.
Lindisfarne Coll., Westcliff-on-Sea

Bates, V. h. Bethany H., Goudhurst
Grassan, A.W. Stafford Coll., Forest Hill
Herbert, N.S.
Lindisfarne Coll., Westcliff-on-Sea

Thorns, T.
Henfield Gram. S.
Baker, T.J. High School, Broadstairs
Bane, T. Salesian S., Battersea
Buckley, A.W. Ashland High S., Wigan
Doyle, F.K. St. George's Coll., Weybridge
Lampin, F. Chatsworth S., Carlisle
Pereira, E.H. d.
St. George's Coll., Weybridge

Wilson, D.J. Private tuition

Andrew, H.S. d.
Lindisfarne Coll., Westcliff-on-Sea
Hetherington, J.
St. Joseph's Coll., Dumfries
Prudames, C. Chatsworth S., Carlisle
Restano, J. sp.
Christian Bros. Coll., Gibraltar
Wilson, J. St. Joseph's Coll., Dumfries
Woodman, W.P.
Licensed Victuallers' S., Lambeth

Allen, T.P. Princess Gardens S., Belfast
Darfield, S. Scorton Gram. S.
Davies, R.O.L. New Coll., Herne Bay
Jackson, G.A. Private tuition
Morton, C.
Lansdowne Ladies' Inter. S., Belfast
Sherwood, F.C.
The Modern S., Streatham Common
Summers, J.D.C. Stafford Coll., Forest Hill
Thomas, G. Higher Grade S., Porth
Vaughan, J. High S., Broadstairs
Vigurs, R.C. Newquay College

Barron, S.J. St. Joseph's Coll., Dumfries
Evans, D. Higher Grade S., Porth
Moore, J. d. Park S., Wood Green
Pearson, W.G.M. Private tuition
Rust, H.T. Scorton Gram. S.
Trace, L.A. Taunton H., Brighton
Watts, H.G. St. Aloysius' Coll., Highgate

Bayer, A.G. Ongar Gram. S.
Blundell, F.B.
St. Catherine's Coll., Richmond
Cotes, V.G.S.
County Gram. S., Market Harborough
Danino, A. sp.
Christian Bros. Coll., Gibraltar
Harrold, D.R. Newquay College
Holborow, D.R.
The College, Weston-s.-Mare
Johnston, J.H. Taunton School
McClement, T. St. Joseph's Coll., Dumfries
Middle, W.E. Clarendon Coll., Tufnell Park
Winter, E.P.A. e.g.
Richmond Hill S., Richmond

Bold, J.H.W. Gram. S., Eccles
Congdon, W.S.
Dunheved Coll., Launceston
Downing, D.B. Southport College
Ivey, E.G. Taunton H., Brighton
Kelly, H. Salesian S., Battersea
Latimer, C.H. Scorton Gram. S.
Mitchell, F.G. Private tuition
Waterson, W.J.
The Modern S., Streatham Common
Wilkins, W.G.
Lindisfarne Coll., Westcliff-on-Sea
Wood, G.F.E.B.
Fartown Gram. S., Huddersfield
Worrall, S.C. Grove H., Highgate

Brownrigg, A. Salesian S., Farnborough
Chew, R. St. Joseph's Coll., Dumfries
Furneaux, C. Taunton School
Horsington, E.A.
The College, Weston-s.-Mare
Munson, A.A.H. Private tuition
Schooley, N.V. New Coll., Herne Bay
Sherlock, O.
Eastward Ho! Coll., Felixstowe
Webb, H. Bethany H., Goudhurst

Blank, W. de Craven Park Coll., Harlesden
Brown, D.E. a. University S., Rochester
Marshall, R.J.
Osborne High S., West Hartlepool
Maybee, H.J.
Buckingham Place Acad., Portsmouth
Pullen, G.F. Taunton School
Sparkes, L.G. Taunton School

Baker, J.N. a. Taunton School
Billingham, W.F.
St. Thomas's High S., Erdington
Chew, F. St. Joseph's Coll., Dumfries
Henderson, J.L. Stafford Coll., Forest Hill

McDonnell, G.W.F.
St. George's Coll., Weybridge
Melling, G.P. St. Joseph's Coll., Dumfries

Hale, J.W. Taunton School
Hopkins, R.W. University S., Rochester
Lynch, W. Salesian S., Farnborough
Notley, C.D. Bethany H., Goudhurst
Quarterman, R.E. s.
Stafford Coll., Forest Hill
Smith, J.I. Collegiate S., Colwyn Bay
Thompson, F.I.
The Modern S., Streatham Common
Walpole, W.F. Holt H., Cheshunt
Wilson, B.L. Selwyn House, Hove

Boulton, W. Private tuition
Cassell, D.E. Taunton School
Gardner, P.L. Stafford Coll., Forest Hill
Hopkins, T. Higher Grade S., Porth
Hughes, G.D. Taunton School
Kirk, D.A. St. Joseph's Coll., Dumfries
Miles, G.H. Taunton H., Brighton
Moseley, H.F. Willow House, Walsall
Pilling, H. Chorlton-cum-Hardy Gram. S.
Suter, P.N. Highfield, Chertsey
Thorns, F. Henfield Gram. S.

Andrew, S.G. Taunton School
Acheron, J. St. Joseph's Coll., Dumfries
Cole, L. St. Joseph's Coll., Dumfries
Donovan, J. Newtown S., Waterford
Heron, G.C.H. Holt H., Cheshunt
Thomas, J. Higher Grade S., Porth
Tippett, H.K. Christ's Coll., Blackheath
Westgarth, T. Friends' S., Wigton
Young, J.M. Bethany H., Goudhurst

Anderson, R.J.R.
Lindisfarne Coll., Westcliff-on-Sea
Hamilton, J. a. Private tuition
Hulme, S. Gram. S., Eccles
Innton, A.F. St. Aloysius' Coll., Highgate
Winkup, E.H. Gram. S., Eccles

Burrell, C.O.A. The Haughton S., York
Deacock, S.H. New Coll., Herne Bay
Dixon, G.L. Seaford College
Frosali, H.A.J. Stafford Coll., Forest Hill
Houghton, R.A.
Fartown Gram. S., Huddersfield
Mackay, S.M.
Herne H., Cliftonville, Margate
Moon, T.G. Scorton Gram. S.

Matthews, P. Mt. Radford S., Exeter
Rowland, L.R. Scorton Gram. S.
Symonds, F.J. Seaford College

Rennett, R.C. St. George's Coll., Weybridge
Emms, A.E. St. John's Coll., Brixton
Kirkhous, E.S. Scorton Gram. S.
Priest, L.E. St. George's Coll., Weybridge
Rock, D.I.B.
Lindisfarne Coll., Westcliff-on-Sea

Chambers, A.R.E.
Stafford Coll., Forest Hill
Hilder, H. University S., Southport
Hill, F.R. Collegiate S., Colwyn Bay
Tassell, A.R. Chatsworth S., Carlisle

Walker, D. Clark's Prep. S., Baling
Wilson, R. St. Joseph's Coll., Dumfries
Eaves, W. St. Joseph's Coll., Dumfries
Boggy, P.J. Highfield, Chertsey
Westlake, A.C. Taunton School
Metcalfe, C.H. Scorton Gram. S.

CLASS LIST—GIRLS.

(For list of abbreviations, see page 344.)

FIRST CLASS [or SENIOR].

Pass Division.

Gunston, D.S. s.e.f.d.do. Private tuition
Clark, T. f.sp.
Loreto Conv., Europa, Gibraltar
Harris, A.M.E. s.h.b.
The Hiatt Ladies' Coll., Wellington
Parry, E.
Methy Advanced S., Merthyr Tydfil
Browett, C. s.
The Friends' S., Mountmellick
Peña, I. s.p.d.
Loreto Conv., Europa, Gibraltar
Arthur, N.
Methy Advanced S., Merthyr Tydfil
Arnott, B. s.
Methy Advanced S., Merthyr Tydfil

Mayou, C.I.
The Hiatt Ladies' Coll., Wellington
Wernicke, K.M. Upper St. Leonards
Ladies' Coll., St. Leonards-on-Sea
Harrison, D.G. s.
Crouch End High S., Hornsey
Pogue, A.sp.
Loreto Conv., Europa, Gibraltar
Day, V.M. s.
The Hiatt Ladies' Coll., Wellington
Gormley, W.M.
Franciscan Conv. S., Melton Mowbray
Price, J. s. Private tuition
McCarthy, M.f. St. Joseph's S., Lincoln
Holcombe Hewlett, D.M.
Crouch End High S., Hornsey
Wakefield, C.E.D.h. Palmer's Green High S.
Williams, B.
Methy Advanced S., Merthyr Tydfil

Noonan, M. St. Mary's Conv., Bruff
Moore, G.L.
Collegiate Schools, Winchmore Hill
Thomas, G.
Methy Advanced S., Merthyr Tydfil
Thomas, W.A. do. Private tuition
Farrant, W.L. Private tuition
Poole, E.G.K. f. Royal S., Bath
Jones, E.M. w.do. Private tuition
Fitzgerald, L. do. St. Mary's Conv., Bruff
Price, E.O.
Methy Advanced S., Merthyr Tydfil
Banger, G.M.A.
The Tutorial Chambers, Brnham
Glass, J.J. Church of Scotland Mission S.,
Hasskuin, Conatantnople
Netto, L.sp. Loreto Conv., Europa, Gibraltar
Swallow, D.A. Girls' Gram. S., Levenshulme

Jones, B.
Methy Advanced S., Merthyr Tydfil
Morris, I.
Methy Advanced S., Merthyr Tydfil
Seyler, J.A. Palmer's Green High S.
Andrews, G.L. Upper St. Leonards Ladies'
Coll., St. Leonards-on-Sea
McKenna, A. St. Joseph's S., Lincoln
Whitney, E.
Methy Advanced S., Merthyr Tydfil
Cussen, E. St. Mary's Conv. S., Charleville
de la Wyche, M.R.
Girls' Gram. S., Levenshulme
Hendy, I.F. Private tuition
Taylor, E.M. Pengwern Coll., Cheltenham
Ward, D.K. do. The Haughton S., York
Perryman, L. do. Private tuition

GIRLS, 1ST CLASS, PASS—Continued.
 Kell, I. Private tuition
 Jones, L. Private tuition
 Jones, S. Private tuition
 Williams, M. Private tuition
 Davies, H. J. The County Inter. S., Tregaron
 Wilson, K. M. High S., Sidney Place, Cork
 Gould, E. A. West View S., Alstonefield, Ashbourne
 Purser, L. Private tuition
 Ashford, G. Private tuition
 Smith, E. B. Rosetta High S., Bellast
 Leverton, M. W. Private tuition

Carroll, G. f.d. St. Mary's Conv. S., Charleville
 Horne, M. S. Newtown S., Waterford
 Williams, B. Merthyr Advanced S., Merthyr Tydfil
 Wiltshire, H. T. The Hiatt Ladies' Coll., Wellington
 Smith, M. A. Eldon Coll., Croydon
 Edwards, B. Merthyr Advanced S., Merthyr Tydfil
 Fudge, M. E. Newtown S., Waterford
 Evans, O. s. Merthyr Advanced S., Merthyr Tydfil
 Clarke, M. M. The Hiatt Ladies' Coll., Wellington
 Leake, R. d. Lymnouth Coll., Leytonstone
 Bowen, L. ch. Higher Grade S., Porth
 McGann, H. f. St. Mary's Dominican Conv., Cabra
 Davies, J. M. s. e. Private tuition
 Gray, J. J. Conv. of the Holy Faith, Haddington Rd., Dublin
 Davies, H. M. Private tuition
 Dunne, E. St. Mary's Dominican Conv., Cabra
 Reidy, M. St. Mary's Conv. S., Charleville
 Wilds, J. H. W. f. Benedictine Conv. S., Dumfries
 Powell, B. Higher Grade S., Porth
 Cronin, M. St. Mary's Conv. of Mercy, Buttevant
 Mooney, A. P. Private tuition
 Quinlivan, M. do. St. Joseph's S., Lincoln
 Bricard, M. L. L. Private tuition
 Symes, E. A. M. Middle Class S., Gosport
 Schofield, D. E. Seafeld, Blackpool
 Seabourne, L. Higher Grade S., Porth
 Faulkner, G. Girls' Gram. S., Levenshulme
 Imossi, E. Loreto Conv., Europa, Gibraltar
 McQuillan, E. M. s. f. The Friends' S., Mountmellick
 Oeppen, E. Merthyr Advanced S., Merthyr Tydfil
 Barbonth, V. f. g. e. Scots Mission S., Galata, Constantinople
 Gorman, E. al. Presentation Conv., Thurles
 Lofting, H. A. Chatham H., Wimbledon
 Hees, M. A. Merthyr Advanced S., Merthyr Tydfil
 Danino, T. sp. Loreto Conv., Europa, Gibraltar
 Fletcher, M. J. Trinity H., Bexhill-on-Sea
 Thomas, R. Pencader Gram. S.
 Walsh, M. f. Sienna Conv., Drogheda
 Ashton, C. Merthyr Advanced S., Merthyr Tydfil
 Howard, E. McK. Girls' Gram. S., Levenshulme
 O'Shea, E. Conv. of the Holy Faith, Glasnevin
 Randall, K. Ancey Conv., Seaford
 Davies, A. M. Merthyr Advanced S., Merthyr Tydfil
 Vernal, C. b. Coll. S., Graigwen Rd., Pontypridd
 Morgan, G. Merthyr Advanced S., Merthyr Tydfil
 Williams, A. Private tuition
 Cassin, K. St. Mary's Dominican Conv., Cabra
 Halligan, M. Conv. of the Holy Faith, Glasnevin
 Mahoney, M. Private tuition
 O'Connell, L. St. Mary's Conv. of Mercy, Buttevant
 White, C. Benedictine Conv. S., Dumfries
 Hartegan, M. St. Mary's Conv., Bruff
 Jones, E. do. Private tuition
 Marsden, C. A. Private tuition
 Morgan, J. Merthyr Advanced S., Merthyr Tydfil
 Preston, D. Loreto Conv., Europa, Gibraltar
 Thomas, R. Private tuition
 Jeffreys, M. Conv. of Mercy, Clifford, Boston Spa
 Oates, M. F. Argyle H., Sunderland
 McEvoy, M. Sienna Conv., Drogheda
 Thurman, E. The Higher S., West Bridgford
 Scott, G. Ancey Conv., Seaford
 O'Connell, A. St. Mary's Conv., Bruff
 Williams, M. E. Private tuition
 Barnstable, A. G. The Tutorial Chambers, Burnham
 Davies, E. M. Private tuition
 Jones, M. L. The County Inter. S., Tregaron
 Stritch, A. do. St. Joseph's S., Lincoln
 Hull, E. E. Private tuition
 Potter, D. L. St. John's H., Felixstowe
 Smith, B. M. Private tuition
 Thomas, G. Gram. & Coll. S., Carnarvon

Azer, G. R. Beulah House High S., Raham
 High Rd., S.W.
 Harding, T. Private tuition
 Parkes, R. Private tuition
 Williams, L. A. E. s. Private tuition
 Allen, J. M. The Hiatt Ladies' Coll., Wellington
 Junk, H. Springfield S., Stockport
 Junk, K. Springfield S., Stockport
 Tanner, M. Merthyr Advanced S., Merthyr Tydfil
 Dean, D. M. u. al. Private tuition
 Gregory, K. Private tuition
 Tuellmann, C. J. s. Benedictine Conv. S., Dumfries
 Cahill, K. Presentation Conv., Thurles
 Morgan, B. Merthyr Advanced S., Merthyr Tydfil
 Jones, A. County Inter. S., Llangefni
 Pearson, T. I. Priory H., Alexandra Rd., N.W.
 Sorey, M. J. Private tuition
 Evans, B. al. Merthyr Advanced S., Merthyr Tydfil
 Hobson, M. F. Pengwern Coll., Cheltenham
 Evans, M. A. Merthyr Advanced S., Merthyr Tydfil
 Wraith, D. Friends' S., Wigton
 France, E. Private tuition
 Skinner, P. St. Mary's Conv., Bruff
 Batchelor, Marguerite f. Ancey Conv., Seaford
 Eitchells, D. Oriol Bank High S., Davenport
 Gaynor, D. do. St. Joseph's S., Lincoln
 Harrison, D. E. K. Wellington Coll., Hastings
 Russell, G. Benedictine Conv. S., Dumfries
 Cotter, T. St. Mary's Dominican Conv., Cabra
 Ueskins, J. Private tuition
 Service, J. Benedictine Conv. S., Dumfries
 Clark, K. M. Knock Inter. S., Belfast
 Lyle, M. K. Hopedune, Portrush
 Ward, K. H. Redcliffe H., Southsea
 Phillips, E. New Orphan Houses, Ashley Down, Bristol
 Patterson, L. A. U. Private tuition
 Wilkinson, S. Private tuition
 Dvane, E. St. Mary's Conv., Bruff
 Evans, J. Pencader Gram. S.
 Thornhill, M. f. St. Joseph's S., Lincoln
 Andrews, K. M. Stamford H., Edgbaston
 Da Silva, M. F. Endon, Moor Pk., Gt. Crosby
 Owen, M. Collegiate Schools, Winchmore Hill
 Edwards, M. G. s. Fartown Gram. S., Huddersfield
 Beck, E. V. Licensed Victuallers' S., Lambeth
 Fleck, L. F. Licensed Victuallers' S., Lambeth
 Lockerbie, J. A. Private tuition
 Shannon, S. St. Mary's Conv., Bruff
 Price, S. Higher Grade S., Porth
 Davies, L. M. Private tuition
 Dowling, M. Private tuition
 Minogue, M. St. Joseph's S., Lincoln
 Neary, J. Sienna Conv., Drogheda
 Bowers, K. J. Newtown S., Waterford
 Felton, F. E. Private tuition
 Houghton, L. A. Convent St. Maur, Weybridge
 Jones, G. I. Private tuition
 Roberts, M. Gram. & Coll. S., Carnarvon
 Davies, S. M. Private tuition
 Rowe, B. M. Private tuition

O'Connell, M. s. e. a. l. g. m. f. Conv. of the Ladies of Mary, Croydon
 Scott, V. K. m. Middleton H., West Hartlepool
 O'Meara, F. e. a. l. d. Dominican Conv., Wicklow
 Beurier, G. E. f. The Convent, Cadogan St., Chelsea
 Favard, S. L. ch. f. Monplaisir Coll., Paignton
 Kerr, A. E. s. d. The Friends' S., Mountmellick
 O'Brien, K. e. a. i. r. St. Mary's Conv. S., Charleville
 Fitzgerald, M. e. a. i. r. d. St. Mary's Conv. S., Charleville
 Jones, M. E. u. al. Merthyr Advanced S., Merthyr Tydfil
 Donnelly, E. F. s. e. g. d. "Holmcroft," Bromley
 Forbes, S. M. h. a. g. bk. Hyde H., Tollington Pk., N.
 Galpin, M. a. al. Brennal Street Wesleyan Hr. Grade S., Stockport
 Jones, L. s. al. w. Merthyr Advanced S., Merthyr Tydfil
 Thomas, M. u. Pencader Gram. S.
 Browne, W. E. W. e. g. v. The Friends' S., Mountmellick
 Michal-ky, E. P. e. a. l. d. New Orphan Houses, Ashley Down, Bristol
 Carroll, E. i. r. d. St. Mary's Conv. S., Charleville
 Jesson, G. F. M. a. al. New Orphan Houses, Ashley Down, Bristol
 Chamberlain, W. A. M. h. d. Hyde H., Tollington Pk., N.
 Bigne, M. a. f. Conv. of the Ladies of Mary, Croydon
 Butler, M. s. Conv. of the Ladies of Mary, Croydon
 Davies, G. u. al. Merthyr Advanced S., Merthyr Tydfil
 Goode, A. h. al. Merthyr Advanced S., Merthyr Tydfil
 Allier, G. h. f. Conv. of the Sisters of Nevers, Withead, Brighton
 Brereton, A. G. u. al. Conv. of the Holy Faith, Haddington Rd., Dublin
 Fend, A. S. s. f. The Convent High S., Ashford
 Forrester, V. al. Conv. of the Ladies of Mary, Croydon
 Sherlock, J. h. l. l. Conv. of the Holy Faith, Glasnevin
 Alesbury, E. E. e. g. The Friends' S., Mountmellick
 Bell, I. C. Knock Inter. S., Belfast
 Brennan, P. l. Conv. of the Holy Faith, Glasnevin
 Byles, I. e. Notre Dame High S., Clapham Comm.
 Murphy, H. Conv. of the Holy Faith, Glasnevin
 Usher-Smith, K. A. Upper Mount S., Southsea
 Babani, C. f. g. e. Scots Mission S., Galata, Constantinople
 Cavanagh, T. Notre Dame High S., Clapham Common
 Evans, E. v. Pencader Gram. S.
 McCarthy, D. M. al. Conv. of the Holy Faith, Haddington Road, Dublin
 Lloyd, M. s. g. The Hiatt Ladies' Coll., Wellington
 Salt, A. M. a. Brownlow Coll., New Southgate

SECOND CLASS [or JUNIOR].
Honours Division.

Netto, D. s. e. al. f. sp. Loreto Conv., Europa, Gibraltar
 Segalerva, R. s. e. f. sp. d. Loreto Conv., Europa, Gibraltar
 Pugh, E. s. e. Merthyr Advanced S., Merthyr Tydfil
 Jenkins, M. s. e. g. u. al. Merthyr Advanced S., Merthyr Tydfil
 Hilliard, E. F. s. e. g. m. f. The Friends' S., Mountmellick
 Moore, A. C. s. g. f. d. The Friends' S., Mountmellick
 Davies, Maggie, s. e. al. Merthyr Advanced S., Merthyr Tydfil
 Wailes, H. f. do. Dominican Conv., Wicklow
 Hornby, G. R. e. h. The Hiatt Ladies' Coll., Wellington
 Stack, J. s. e. f. Dominican Conv., Wicklow
 Lloyd, G. M. s. g. h. The Hiatt Ladies' Coll., Wellington
 Farmer, P. s. e. g. h. The Hiatt Ladies' Coll., Wellington
 O'Meara, M. s. e. al. Dominican Conv., Wicklow
 Walling, E. S. E. h. Private tuition
 Gailey, L. s. Merthyr Advanced S., Merthyr Tydfil
 Matthews, E. B. e. g. Canton Municipal Sec. S., St. Fagans
 Keneally, M. s. g. do. St. Mary's Dominican Conv., Cabra
 Lloyd, K. s. Merthyr Advanced S., Merthyr Tydfil
 Hilton, K. s. e. al. Collegiate Schools, Winchmore Hill
 Walton, D. s. e. Girls' Gram. S., Levenshulme
 O'Shea, N. e. f. St. Mary's Conv. of Mercy, Buttevant
 Gornall, D. do. Seafeld, Blackpool
 Halliday, W. M. s. The Friends' S., Mountmellick
 Meek, M. s. al. Merthyr Advanced S., Merthyr Tydfil
 Evans, G. d. m. s. Middle Class S., Gosport

Dunne, E. St. Mary's Dominican Conv., Cabra
 Reidy, M. St. Mary's Conv. S., Charleville
 Wilds, J. H. W. f. Benedictine Conv. S., Dumfries
 Powell, B. Higher Grade S., Porth
 Cronin, M. St. Mary's Conv. of Mercy, Buttevant
 Mooney, A. P. Private tuition
 Quinlivan, M. do. St. Joseph's S., Lincoln
 Bricard, M. L. L. Private tuition
 Symes, E. A. M. Middle Class S., Gosport
 Schofield, D. E. Seafeld, Blackpool
 Seabourne, L. Higher Grade S., Porth
 Faulkner, G. Girls' Gram. S., Levenshulme
 Imossi, E. Loreto Conv., Europa, Gibraltar
 McQuillan, E. M. s. f. The Friends' S., Mountmellick
 Oeppen, E. Merthyr Advanced S., Merthyr Tydfil
 Barbonth, V. f. g. e. Scots Mission S., Galata, Constantinople
 Gorman, E. al. Presentation Conv., Thurles
 Lofting, H. A. Chatham H., Wimbledon
 Hees, M. A. Merthyr Advanced S., Merthyr Tydfil
 Danino, T. sp. Loreto Conv., Europa, Gibraltar
 Fletcher, M. J. Trinity H., Bexhill-on-Sea
 Thomas, R. Pencader Gram. S.
 Walsh, M. f. Sienna Conv., Drogheda
 Ashton, C. Merthyr Advanced S., Merthyr Tydfil
 Howard, E. McK. Girls' Gram. S., Levenshulme
 O'Shea, E. Conv. of the Holy Faith, Glasnevin
 Randall, K. Ancey Conv., Seaford
 Davies, A. M. Merthyr Advanced S., Merthyr Tydfil
 Vernal, C. b. Coll. S., Graigwen Rd., Pontypridd
 Morgan, G. Merthyr Advanced S., Merthyr Tydfil
 Williams, A. Private tuition
 Cassin, K. St. Mary's Dominican Conv., Cabra
 Halligan, M. Conv. of the Holy Faith, Glasnevin
 Mahoney, M. Private tuition
 O'Connell, L. St. Mary's Conv. of Mercy, Buttevant
 White, C. Benedictine Conv. S., Dumfries
 Hartegan, M. St. Mary's Conv., Bruff
 Jones, E. do. Private tuition
 Marsden, C. A. Private tuition
 Morgan, J. Merthyr Advanced S., Merthyr Tydfil
 Preston, D. Loreto Conv., Europa, Gibraltar
 Thomas, R. Private tuition
 Jeffreys, M. Conv. of Mercy, Clifford, Boston Spa
 Oates, M. F. Argyle H., Sunderland
 McEvoy, M. Sienna Conv., Drogheda
 Thurman, E. The Higher S., West Bridgford
 Scott, G. Ancey Conv., Seaford
 O'Connell, A. St. Mary's Conv., Bruff
 Williams, M. E. Private tuition
 Barnstable, A. G. The Tutorial Chambers, Burnham
 Davies, E. M. Private tuition
 Jones, M. L. The County Inter. S., Tregaron
 Stritch, A. do. St. Joseph's S., Lincoln
 Hull, E. E. Private tuition
 Potter, D. L. St. John's H., Felixstowe
 Smith, B. M. Private tuition
 Thomas, G. Gram. & Coll. S., Carnarvon

Azer, G. R. Beulah House High S., Raham
 High Rd., S.W.
 Harding, T. Private tuition
 Parkes, R. Private tuition
 Williams, L. A. E. s. Private tuition
 Allen, J. M. The Hiatt Ladies' Coll., Wellington
 Junk, H. Springfield S., Stockport
 Junk, K. Springfield S., Stockport
 Tanner, M. Merthyr Advanced S., Merthyr Tydfil
 Dean, D. M. u. al. Private tuition
 Gregory, K. Private tuition
 Tuellmann, C. J. s. Benedictine Conv. S., Dumfries
 Cahill, K. Presentation Conv., Thurles
 Morgan, B. Merthyr Advanced S., Merthyr Tydfil
 Jones, A. County Inter. S., Llangefni
 Pearson, T. I. Priory H., Alexandra Rd., N.W.
 Sorey, M. J. Private tuition
 Evans, B. al. Merthyr Advanced S., Merthyr Tydfil
 Hobson, M. F. Pengwern Coll., Cheltenham
 Evans, M. A. Merthyr Advanced S., Merthyr Tydfil
 Wraith, D. Friends' S., Wigton
 France, E. Private tuition
 Skinner, P. St. Mary's Conv., Bruff
 Batchelor, Marguerite f. Ancey Conv., Seaford
 Eitchells, D. Oriol Bank High S., Davenport
 Gaynor, D. do. St. Joseph's S., Lincoln
 Harrison, D. E. K. Wellington Coll., Hastings
 Russell, G. Benedictine Conv. S., Dumfries
 Cotter, T. St. Mary's Dominican Conv., Cabra
 Ueskins, J. Private tuition
 Service, J. Benedictine Conv. S., Dumfries
 Clark, K. M. Knock Inter. S., Belfast
 Lyle, M. K. Hopedune, Portrush
 Ward, K. H. Redcliffe H., Southsea
 Phillips, E. New Orphan Houses, Ashley Down, Bristol
 Patterson, L. A. U. Private tuition
 Wilkinson, S. Private tuition
 Dvane, E. St. Mary's Conv., Bruff
 Evans, J. Pencader Gram. S.
 Thornhill, M. f. St. Joseph's S., Lincoln
 Andrews, K. M. Stamford H., Edgbaston
 Da Silva, M. F. Endon, Moor Pk., Gt. Crosby
 Owen, M. Collegiate Schools, Winchmore Hill
 Edwards, M. G. s. Fartown Gram. S., Huddersfield
 Beck, E. V. Licensed Victuallers' S., Lambeth
 Fleck, L. F. Licensed Victuallers' S., Lambeth
 Lockerbie, J. A. Private tuition
 Shannon, S. St. Mary's Conv., Bruff
 Price, S. Higher Grade S., Porth
 Davies, L. M. Private tuition
 Dowling, M. Private tuition
 Minogue, M. St. Joseph's S., Lincoln
 Neary, J. Sienna Conv., Drogheda
 Bowers, K. J. Newtown S., Waterford
 Felton, F. E. Private tuition
 Houghton, L. A. Convent St. Maur, Weybridge
 Jones, G. I. Private tuition
 Roberts, M. Gram. & Coll. S., Carnarvon
 Davies, S. M. Private tuition
 Rowe, B. M. Private tuition

O'Connell, M. s. e. a. l. g. m. f. Conv. of the Ladies of Mary, Croydon
 Scott, V. K. m. Middleton H., West Hartlepool
 O'Meara, F. e. a. l. d. Dominican Conv., Wicklow
 Beurier, G. E. f. The Convent, Cadogan St., Chelsea
 Favard, S. L. ch. f. Monplaisir Coll., Paignton
 Kerr, A. E. s. d. The Friends' S., Mountmellick
 O'Brien, K. e. a. i. r. St. Mary's Conv. S., Charleville
 Fitzgerald, M. e. a. i. r. d. St. Mary's Conv. S., Charleville
 Jones, M. E. u. al. Merthyr Advanced S., Merthyr Tydfil
 Donnelly, E. F. s. e. g. d. "Holmcroft," Bromley
 Forbes, S. M. h. a. g. bk. Hyde H., Tollington Pk., N.
 Galpin, M. a. al. Brennal Street Wesleyan Hr. Grade S., Stockport
 Jones, L. s. al. w. Merthyr Advanced S., Merthyr Tydfil
 Thomas, M. u. Pencader Gram. S.
 Browne, W. E. W. e. g. v. The Friends' S., Mountmellick
 Michal-ky, E. P. e. a. l. d. New Orphan Houses, Ashley Down, Bristol
 Carroll, E. i. r. d. St. Mary's Conv. S., Charleville
 Jesson, G. F. M. a. al. New Orphan Houses, Ashley Down, Bristol
 Chamberlain, W. A. M. h. d. Hyde H., Tollington Pk., N.
 Bigne, M. a. f. Conv. of the Ladies of Mary, Croydon
 Butler, M. s. Conv. of the Ladies of Mary, Croydon
 Davies, G. u. al. Merthyr Advanced S., Merthyr Tydfil
 Goode, A. h. al. Merthyr Advanced S., Merthyr Tydfil
 Allier, G. h. f. Conv. of the Sisters of Nevers, Withead, Brighton
 Brereton, A. G. u. al. Conv. of the Holy Faith, Haddington Rd., Dublin
 Fend, A. S. s. f. The Convent High S., Ashford
 Forrester, V. al. Conv. of the Ladies of Mary, Croydon
 Sherlock, J. h. l. l. Conv. of the Holy Faith, Glasnevin
 Alesbury, E. E. e. g. The Friends' S., Mountmellick
 Bell, I. C. Knock Inter. S., Belfast
 Brennan, P. l. Conv. of the Holy Faith, Glasnevin
 Byles, I. e. Notre Dame High S., Clapham Comm.
 Murphy, H. Conv. of the Holy Faith, Glasnevin
 Usher-Smith, K. A. Upper Mount S., Southsea
 Babani, C. f. g. e. Scots Mission S., Galata, Constantinople
 Cavanagh, T. Notre Dame High S., Clapham Common
 Evans, E. v. Pencader Gram. S.
 McCarthy, D. M. al. Conv. of the Holy Faith, Haddington Road, Dublin
 Lloyd, M. s. g. The Hiatt Ladies' Coll., Wellington
 Salt, A. M. a. Brownlow Coll., New Southgate

SECOND CLASS [or JUNIOR].
Pass Division.

Fossitt, O. s. e. f. The Friends' S., Mountmellick
 McGarry, M. i. r. do. St. Mary's Conv., Bruff
 Cox, D. A. s. d. do. The Higher S., West Bridgford
 Murray, N. s. Sienna Conv., Drogheda
 Brodrick, N. A. do. St. Joseph's S., Lincoln
 Ordenez, L. f. sp. Loreto Conv., Europa, Gibraltar
 Towers, K. D. A. M. County Gram. S., Market Harborough
 Ross, M. A. Cambridge H., Ballymena
 Jones, C. L. bl. Private tuition
 Evans, S. Higher Grade S., Porth
 Scowerford, M. H. s. Seafeld, Blackpool
 Gilby, C. M. f. County Gram. S., Market Harborough
 Mulvin, Q. s. St. Mary's Dominican Conv., Cabra
 Smith, E. M. d. B. entnal Street Wesleyan Hr. Grade S., Stockport
 Jones, C. Merthyr Advanced S., Merthyr Tydfil
 Winship, O. S. The Haughton S., York
 Chapman, C. A. W. c. Private tuition
 Thomas, G. al. Merthyr Advanced S., Merthyr Tydfil
 Hawkins, M. Higher Grade S., Porth
 Collins, G. Merthyr Advanced S., Merthyr Tydfil
 Ashton, G. s. Merthyr Advanced S., Merthyr Tydfil

Dunne, E. St. Mary's Dominican Conv., Cabra
 Reidy, M. St. Mary's Conv. S., Charleville
 Wilds, J. H. W. f. Benedictine Conv. S., Dumfries
 Powell, B. Higher Grade S., Porth
 Cronin, M. St. Mary's Conv. of Mercy, Buttevant
 Mooney, A. P. Private tuition
 Quinlivan, M. do. St. Joseph's S., Lincoln
 Bricard, M. L. L. Private tuition
 Symes, E. A. M. Middle Class S., Gosport
 Schofield, D. E. Seafeld, Blackpool
 Seabourne, L. Higher Grade S., Porth
 Faulkner, G. Girls' Gram. S., Levenshulme
 Imossi, E. Loreto Conv., Europa, Gibraltar
 McQuillan, E. M. s. f. The Friends' S., Mountmellick
 Oeppen, E. Merthyr Advanced S., Merthyr Tydfil
 Barbonth, V. f. g. e. Scots Mission S., Galata, Constantinople
 Gorman, E. al. Presentation Conv., Thurles
 Lofting, H. A. Chatham H., Wimbledon
 Hees, M. A. Merthyr Advanced S., Merthyr Tydfil
 Danino, T. sp. Loreto Conv., Europa, Gibraltar
 Fletcher, M. J. Trinity H., Bexhill-on-Sea
 Thomas, R. Pencader Gram. S.
 Walsh, M. f. Sienna Conv., Drogheda
 Ashton, C. Merthyr Advanced S., Merthyr Tydfil
 Howard, E. McK. Girls' Gram. S., Levenshulme
 O'Shea, E. Conv. of the Holy Faith, Glasnevin
 Randall, K. Ancey Conv., Seaford
 Davies, A. M. Merthyr Advanced S., Merthyr Tydfil
 Vernal, C. b. Coll. S., Graigwen Rd., Pontypridd
 Morgan, G. Merthyr Advanced S., Merthyr Tydfil
 Williams, A. Private tuition
 Cassin, K. St. Mary's Dominican Conv., Cabra
 Halligan, M. Conv. of the Holy Faith, Glasnevin
 Mahoney, M. Private tuition
 O'Connell, L. St. Mary's Conv. of Mercy, Buttevant
 White, C. Benedictine Conv. S., Dumfries
 Hartegan, M. St. Mary's Conv., Bruff
 Jones, E. do. Private tuition
 Marsden, C. A. Private tuition
 Morgan, J. Merthyr Advanced S., Merthyr Tydfil
 Preston, D. Loreto Conv., Europa, Gibraltar
 Thomas, R. Private tuition
 Jeffreys, M. Conv. of Mercy, Clifford, Boston Spa
 Oates, M. F. Argyle H., Sunderland
 McEvoy, M. Sienna Conv., Drogheda
 Thurman, E. The Higher S., West Bridgford
 Scott, G. Ancey Conv., Seaford
 O'Connell, A. St. Mary's Conv., Bruff
 Williams, M. E. Private tuition
 Barnstable, A. G. The Tutorial Chambers, Burnham
 Davies, E. M. Private tuition
 Jones, M. L. The County Inter. S., Tregaron
 Stritch, A. do. St. Joseph's S., Lincoln
 Hull, E. E. Private tuition
 Potter, D. L. St. John's H., Felixstowe
 Smith, B. M. Private tuition
 Thomas, G. Gram. & Coll. S., Carnarvon

Azer, G. R. Beulah House High S., Raham
 High Rd., S.W.
 Harding, T. Private tuition
 Parkes, R. Private tuition
 Williams, L. A. E. s. Private tuition
 Allen, J. M. The Hiatt Ladies' Coll., Wellington
 Junk, H. Springfield S., Stockport
 Junk, K. Springfield S., Stockport
 Tanner, M. Merthyr Advanced S., Merthyr Tydfil
 Dean, D. M. u. al. Private tuition
 Gregory, K. Private tuition
 Tuellmann, C. J. s. Benedictine Conv. S., Dumfries
 Cahill, K. Presentation Conv., Thurles
 Morgan, B. Merthyr Advanced S., Merthyr Tydfil
 Jones, A. County Inter. S., Llangefni
 Pearson, T. I. Priory H., Alexandra Rd., N.W.
 Sorey, M. J. Private tuition
 Evans, B. al. Merthyr Advanced S., Merthyr Tydfil
 Hobson, M. F. Pengwern Coll., Cheltenham
 Evans, M. A. Merthyr Advanced S., Merthyr Tydfil
 Wraith, D. Friends' S., Wigton
 France, E. Private tuition
 Skinner, P. St. Mary's Conv., Bruff
 Batchelor, Marguerite f. Ancey Conv., Seaford
 Eitchells, D. Oriol Bank High S., Davenport
 Gaynor, D. do. St. Joseph's S., Lincoln
 Harrison, D. E. K. Wellington Coll., Hastings
 Russell, G. Benedictine Conv. S., Dumfries
 Cotter, T. St. Mary's Dominican Conv., Cabra
 Ueskins, J. Private tuition
 Service, J. Benedictine Conv. S., Dumfries
 Clark, K. M. Knock Inter. S., Belfast
 Lyle, M. K. Hopedune, Portrush
 Ward, K. H. Redcliffe H., Southsea
 Phillips, E. New Orphan Houses, Ashley Down, Bristol
 Patterson, L. A. U. Private tuition
 Wilkinson, S. Private tuition
 Dvane, E. St. Mary's Conv., Bruff
 Evans, J. Pencader Gram. S.
 Thornhill, M. f. St. Joseph's S., Lincoln
 Andrews, K. M. Stamford H., Edgbaston
 Da Silva, M. F. Endon, Moor Pk., Gt. Crosby
 Owen, M. Collegiate Schools, Winchmore Hill
 Edwards, M. G. s. Fartown Gram. S., Huddersfield
 Beck, E. V. Licensed Victuallers' S., Lambeth
 Fleck, L. F. Licensed Victuallers' S., Lambeth
 Lockerbie, J. A. Private tuition
 Shannon, S. St. Mary's Conv., Bruff
 Price, S. Higher Grade S., Porth
 Davies, L. M. Private tuition
 Dowling, M. Private tuition
 Minogue, M. St. Joseph's S., Lincoln
 Neary, J. Sienna Conv., Drogheda
 Bowers, K. J. Newtown S., Waterford
 Felton, F. E. Private tuition
 Houghton, L. A. Convent St. Maur, Weybridge
 Jones, G. I. Private tuition
 Roberts, M. Gram. & Coll. S., Carnarvon
 Davies, S. M. Private tuition
 Rowe, B. M. Private tuition

O'Connell, M. s. e. a. l. g. m. f. Conv. of the Ladies of Mary, Croydon
 Scott, V. K. m. Middleton H., West Hartlepool
 O'Meara, F. e. a. l. d. Dominican Conv., Wicklow
 Beurier, G. E. f. The Convent, Cadogan St., Chelsea
 Favard, S. L. ch. f. Monplaisir Coll., Paignton
 Kerr, A. E. s. d. The Friends' S., Mountmellick
 O'Brien, K. e. a. i. r. St. Mary's Conv. S., Charleville
 Fitzgerald, M. e. a. i. r. d. St. Mary's Conv. S., Charleville
 Jones, M. E. u. al. Merthyr Advanced S., Merthyr Tydfil
 Donnelly, E. F. s. e. g. d. "Holmcroft," Bromley
 Forbes, S. M. h. a. g. bk. Hyde H., Tollington Pk., N.
 Galpin, M. a. al. Brennal Street Wesleyan Hr. Grade S., Stockport
 Jones, L. s. al. w. Merthyr Advanced S., Merthyr Tydfil
 Thomas, M. u. Pencader Gram. S.
 Browne, W. E. W. e. g. v. The Friends' S., Mountmellick
 Michal-ky, E. P. e. a. l. d. New Orphan Houses, Ashley Down, Bristol
 Carroll, E. i. r. d. St. Mary's Conv. S., Charleville
 Jesson, G. F. M. a. al. New Orphan Houses, Ashley Down, Bristol
 Chamberlain, W. A. M. h. d. Hyde H., Tollington Pk., N.
 Bigne, M. a. f. Conv. of the Ladies of Mary, Croydon
 Butler, M. s. Conv. of the Ladies of Mary, Croydon
 Davies, G. u. al. Merthyr Advanced S., Merthyr Tydfil
 Goode, A. h. al. Merthyr Advanced S., Merthyr Tydfil
 Allier, G. h. f. Conv. of the Sisters of Nevers, Withead, Brighton
 Brereton, A. G. u. al. Conv. of the Holy Faith, Haddington Rd., Dublin
 Fend, A. S. s. f. The Convent High S., Ashford
 Forrester, V. al. Conv. of the Ladies of Mary, Croydon
 Sherlock, J. h. l. l. Conv. of the Holy Faith, Glasnevin
 Alesbury, E. E. e. g. The Friends' S., Mountmellick
 Bell, I. C. Knock Inter. S., Belfast
 Brennan, P. l. Conv. of the Holy Faith, Glasnevin
 Byles, I. e. Notre Dame High S., Clapham Comm.
 Murphy, H. Conv. of the Holy Faith, Glasnevin
 Usher-Smith, K. A. Upper Mount S., Southsea
 Babani, C. f. g. e. Scots Mission S., Galata, Constantinople
 Cavanagh, T. Notre Dame High S., Clapham Common
 Evans, E. v. Pencader Gram. S.
 McCarthy, D. M. al. Conv. of the Holy Faith, Haddington Road, Dublin
 Lloyd, M. s. g. The Hiatt Ladies' Coll., Wellington
 Salt, A. M. a. Brownlow Coll., New Southgate

THIRD CLASS.
Honours Division.

Rillet, M. E. s. h. a. f. The Convent, Cadogan St., Chelsea
 Robin, G. M. al. Crouch End High S., Hornsey
 O'Byrne, N. e. h. u. al. g. m. f. Dominican Conv., Wicklow
 Ennis, L. e. u. al. g. m. f. Dominican Conv., Wicklow
 Mumford, M. I. e. o. al. Crouch End High S., Hornsey
 Pieou, P. G. G. f. The Convent, Cadogan St., Chelsea
 Canning, L. e. u. al. Dominican Conv., Wicklow
 Ponchin, M. H. I. The Convent, Cadogan St., Chelsea
 Goode, M. a. al. Merthyr Advanced S., Merthyr Tydfil

THIRD CLASS.
Pass Division.

Botting, G. M. Trinity H., Bexhill-on-Sea
 Callanan, E. e. h. l. Presentation Conv., Thurles
 Hall, E. A. Cambridge H., Ballymena
 Corbett, H. Presentation Conv., Thurles
 Barrett, S. H. Cozy Lodge, Sandymount Avenue, Dublin
 O'Connor, C. St. Mary's Dominican Conv., Cabra
 Ryan, S. Presentation Conv., Thurles
 Bell, K. M. Crouch End High S., Hornsey
 Hogan, A. f. i. r. St. Mary's Conv., Bruff
 Batchelor, Madeleine. f. Ancey Conv., Seaford
 Bradshaw, C. Presentation Conv., Thurles
 Imossi, A. sp. Loreto Conv., Europa, Gibraltar
 Jones, A. al. Merthyr Advanced S., Merthyr Tydfil

GIRLS, 3RD CLASS, PASS—Continued.
 *Steedman, N. d.
 Conv. of Mercy, Clifford, Boston Spa
 *Thomas, A. M. Higher Grade S., Porth

*Magee, C. Sienna Conv., Drogheda
 *Thompson, D. Friends' S., Wigton
 (Vanghao, O. d. do. Osborne H., Redditch

(Cussen, K. e. a. ir.
 St. Mary's Conv. S., Charleville
 Edwards, M. a.
 Merthyr Advanced S., Merthyr Tydfil
 Evans, A. a. d.
 Merthyr Advanced S., Merthyr Tydfil
 Holland, F. e. h. f.
 Dominican Conv., Wicklow
 Price, L. G. a. d.
 Merthyr Advanced S., Merthyr Tydfil
 *Reniasch, R. e. g.
 Notre Dame Conv., Woolwich

*De Branwere, A. f.
 Winchester H., St. Leonards-on-Sea
 Edwards, E. a.
 Merthyr Advanced S., Merthyr Tydfil
 Evans, M. a. d. v.
 Pencader Gram. S., Wigton
 Jones, B. D. F.
 Higheroft, Barry
 Moore, A. F. a. d.
 The Friends' S., Mountmellick
 Wortley, E. e. a.
 Conv. of the Ladies of Mary, Croydon

Dalton, M. l.
 Conv. of the Holy Faith, Glasnevin
 Frayley, N. e. a.
 St. Mary's Conv. of Mercy, Buttavent
 Schofield, B. s. h. a. v.
 Ivydene S., Blackpool
 Thompson, H.
 Beneficence Conv. S., Dumfries

Welch, M. Loreto Conv., Europa, Gibraltar

Ahern, K. J. Conv. of the Holy Faith,
 Haddington Rd., Dublin
 Boyd, E. G. a. l.
 Knock Inter. S., Belfast
 Gould, E. a.
 Merthyr Advanced S., Merthyr Tydfil
 O'Donnell, M.
 Conv. of the Holy Faith, Glasnevin
 Pickering, E. S. Friends' S., Wigton
 *Ryan, M. Presentation Conv., Thurles
 Shanahan, D.
 Conv. of the Holy Faith, Glasnevin
 Zweifel, E. f. g. e.
 Peterborough Coll., Harrow-on-the-Hill

*Gee, K. M. a. l. Canook, Hedgesford &
 West Hill Council S.
 Jackson, M. g. l.
 Lewis, A. g. l.
 Merthyr Advanced S., Merthyr Tydfil
 O'Callaghan, M. a. i. r. d.
 St. Mary's Conv., Charleville

Connelly, M. d. a. l. Dominican Conv., Wicklow
 *Fisher, M.
 Licensed Victuallers' S., Lambeth
 Gwynne, M. S. a. l.
 Merthyr Advanced S., Merthyr Tydfil
 Harrop, M. E. Springfield S., Stockport
 Holbrook, O. M. s.
 St. Ursula's S., Westbury-on-Trym
 Reynolds, J. W. Orrington H., Belfast

Boyd, G. I. Oriol Coll. S., Larne
 Fayle, L. M. R. The Friends' S., Mountmellick
 Rees, A. a. l. v. Pencader Gram. S., Porth
 *Williams, C. Higher Grade S., Porth

Beaumont, V. f.
 Conv. de la Mère de Dieu, Surbiton Hill
 *Leake, S. Lynnmouth Coll., Leytonstone
 Manning, N. B. Streatham Modern Coll.
 Oliver, E. a. l.
 Merthyr Advanced S., Merthyr Tydfil
 O'Sullivan, E. M. St. Mary's Conv., Bruff

Byrne, E. C. Conv. of the Holy Faith,
 Haddington Rd., Dublin
 *Lee, R. B. d.
 Pemberton Coll., Upper Holloway
 Scholpp, G. G. h. g. Holmercroft, Bromley

*Bolas, M. G. N. St. Mary's Coll., Barnes
 Boyd, V. H. f. Upper St. Leonards Ladies'
 Coll., St. Leonards-on-Sea
 Costelloe, B. a. n. St. Mary's Conv., Bruff
 Hill, W. G. d. Osborne H., Redditch
 Mair, Y. M. f.
 The Convent, Cadogan St., Chelsea
 Raleigh, M. e. a. St. Mary's Conv., Bruff
 Wahn-ley, L. f. Lark Hill House, Preston

*Coffey, J. J.
 St. Mary's Dominican Conv., Cabra
 Defriez, D. B.
 Licensed Victuallers' S., Lambeth
 Elvidge, G. M. Finsbury Park High S.
 *Freeman, E. M. Stamford H., Edgbaston
 Tallon, L. a. l. Dominican Conv., Wicklow

Breton, M. J. Conv. of the Holy Faith,
 Haddington Rd., Dublin
 Brooks, M. E. a.
 Clark's Prep. S., Uxbridge Rd., Ealing
 *Cooper, J. s. St. John's H., Felixstowe
 Henderson, A. Friends' S., Wigton
 Pym, H. C. Private tuition

Barzilai, E. s. f. d. London Jews' Society
 Mission S., Constantinople

Beasley, K. M. Benedictine Conv. S., Dumfries
 James, L. Pencader Gram. S., Wigton
 Kennedy, E. St. Mary's Conv., Bruff
 *Methue, I. Baijol S., Sedbergh
 *Wheatley, J. Girls' High S., Rothwell

*Beer, A.
 Conv. of the Ladies of Mary, Croydon
 Burt, D. s. Lynnmouth Coll., Leytonstone
 Chatfield, E. L. Hebe Rd. S., Shoreham
 *Costello, E.
 St. Mary's Dominican Conv., Cabra
 Hogao, B. Presentation Conv., Thurles
 O'Brien, Mary St. Mary's Conv., Bruff
 Reid, M. Sienna Conv., Drogheda
 *Vaughan, D. O. S.
 Rhiavua Coll., Hunstanton

Clarke, L. Dominican Conv., Wicklow
 Marshall, D. N. Pengwern Coll., Cheltenham
 *O'Brien, M.
 Conv. of Mercy, Clifford, Boston Spa
 Pessach, S. f. s. p. Church of Scotland
 Mission S., Hasskeni, Constantinople
 Wilson, E. L. High S., Sidney Place, Cork

*Breen, M. St. Mary's Conv., Bruff
 Condon, M. E.
 St. Mary's Conv. S., Charleville
 Humphries, E. M. e.
 NewOrphanHouses, Ashley Down, Bristol
 Leslie-Stuart, L.
 Notre Dame High S., Clapham Common
 Lewis, M. Higher Grade S., Porth
 Muhlbauer, H. f.
 Conv. of the Ladies of Mary, Croydon
 Parker, D. M. J. f. Upper Mount S., Southsea
 Taylor, M. J. Lark Hill House, Preston

Bennet, A. Presentation Conv., Thurles
 Cook, C. M. Holmercroft, Bromley
 Mackenzie, M. L.
 Clarendon Coll., Tufnell Park
 Panayotidou, Z. f. Church of Scotland
 Mission S., Hasskeni, Constantinople

Curtis, S. a. a. l.
 Merthyr Advanced S., Merthyr Tydfil
 Dotto, M. T. sp.
 Loreto Conv., Europa, Gibraltar
 Holliday, D. M. s. Holmercroft, Bromley
 Payne, A. E. H. Princess Gardens S., Belfast
 Richards, G.
 Merthyr Advanced S., Merthyr Tydfil
 Silke, D. e. a. l. Dominican Conv., Wicklow
 Smith, E. M. Osborne H., Redditch

Ewart, M. M. Victoria Coll., Belfast
 *Jenkins, A. S. Friends' S., Wigton
 Nathan, V. f. sp. Church of Scotland
 Mission S., Hasskeni, Constantinople
 Warren, G. A. e. g. Holmercroft, Bromley
 Wingate, R. O. g. Private tuition

*Benton, M.
 Chatwin H., Hurworth-on-Tees
 Gatrudge, H. M.
 Hyde H., Tollington Pk., N.
 Hosford, E. J. S. Private School, Ballinene
 Lanfranchi, R. f. French Conv., Newhaven
 Lewis, E. D. The Friends' S., Mountmellick
 *White, E. M. E. Private tuition

Agutter, M. Loreto Conv., Europa, Gibraltar
 *Benion, M. M. Chadsmoor National S., Canook
 Brown, I. M. F. M. The Friends' S., Mountmellick
 Davies, Mary a. v. Merthyr Advanced S., Merthyr Tydfil
 Drummond, E. Friends' S., Wigton
 *Geary, G.
 Conv. of Mercy, Clifford, Boston Spa
 Jones, L. M. a. l. Merthyr Advanced S., Merthyr Tydfil
 *Keeling, L. M. Private tuition
 Mansell, J. a. l.
 Merthyr Advanced S., Merthyr Tydfil
 O'Neill, L.
 Conv. of the Holy Faith, Glasnevin
 Sheahan, E.
 Notre Dame High S., Clapham Common

Bunford, C. Higher Grade S., Porth
 McMillan, M. Friends' S., Wigton
 Smith, M. L. s.
 Licensed Victuallers' S., Lambeth

Bushell, G.
 Conv. of Mercy, Clifford, Boston Spa
 Cartwright, D. Saxonholme High S.,
 Whalley Range, Manchester

Davies, L. Merthyr Advanced S., Merthyr Tydfil
 Hides, E. D. Seafield, Blackpool
 *McAlister, E.
 St. Mary's Dominican Conv., Cabra
 Nesbitt, B. E. a. Victoria Coll., Belfast
 *Ryan, M. d. St. Mary's Conv., Bruff

Finn, L. ir. St. Mary's Conv. S., Charleville
 Laurie, E. J.
 The Hiatt Ladies' Coll., Wellington
 Pike, E. L. New Orphan Houses,
 Ashley Down, Bristol

Pooock, G. V. s. Clarendon Coll., Tufnell Park
 Rayner, G. V. M. s. Fartown Gram. S., Huddersfield
 Taylor, M. L. Princess Gardens S., Belfast

*Barnwell, M.
 St. Mary's Dominican Conv., Cabra
 Hilliard, J. R. The Friends' S., Mountmellick
 Murray, M. Sienna Conv., Drogheda
 Thackray, D. R. Fartown Gram. S., Huddersfield

Freeman, G. B. Private tuition
 Holland, A.
 Conv. of Mercy, Clifford, Boston Spa
 Patterson, L. Victoria Coll., Belfast
 Pleister, E. M. s. Private tuition

*Baker, E. A. Private tuition
 Brooks, M. L. a. Pengwern Coll., Cheltenham
 Lewis, E. M. Galliwastad S., Pontypridd
 Rich, E. H. e. Western Coll., Roinford
 Smith, H.
 The Hiatt Ladies' Coll., Wellington

Brooks, G. C. Redland View S., Bristol
 Johnson, I. Friends' S., Wigton
 Smith, D. Athena H., Lewisham

Anderson, K. E. Conv. of the Holy Faith,
 Haddington Rd., Dublin
 Bell, J. Benedictine Conv. S., Dumfries
 Gait, N. E. Beauchere H., Sunbury-on-Thames
 Leveaux, E. M. d. Private tuition

Bishop, D. N. P. Hillside High S., Leigh-on-Sea
 Fall, M. E. a. Chatwin H., Hurworth-on-Tees
 Humphreys, M. St. Mary's Conv., Bruff
 McCarthy, H.
 Conv. of the Ladies of Mary, Croydon
 O'Beirne, L. St. Mary's Conv., Bruff
 O'Callaghan, E. d. St. Mary's Conv. S., Charleville
 *Sellers, M. G. Private tuition
 Smith, D. e. Milton H., Highgate

Farrell, M. Benedictine Conv. S., Dumfries
 McCormack, J. St. Mary's Conv., Bruff

Barbey, D. A. Licensed Victuallers' S., Lambeth
 Cummins, J. P. d. High S., Sidney Place, Cork
 *Gill, D. M. St. Martin's Conv., Muswell Hill
 Harris, W. Merthyr Advanced S., Merthyr Tydfil
 Lloyd, K. L. Merthyr Advanced S., Merthyr Tydfil
 *McNamara, H. St. Joseph's S., Lincoln
 O'Brien, Marion St. Mary's Conv., Bruff
 Riley, E. a. Conv. of the Ladies of Mary, Croydon

Beckwith, A. G. Crouch End High S., Hornsey
 Ellis, E. Notre Dame High S., Clapham Common
 Kerry, M. I. C. Milton H., Highgate
 Krikorian, B. G. d. Hillside Modern S., Wealdstone
 MacDonald, E. C. Friends' S., Wigton
 Mitcham, M. A. Rhiavua Coll., Hunstanton
 O'Connor, J. F. St. Mary's Dominican Conv., Cabra
 Preston, M. Conv. of the Ladies of Mary, Croydon

*Bowman, A. M. Ainstable, Armathwaite
 Eoright, A. St. Mary's Conv., Bruff
 Geary, M. M. e. St. Mary's Conv. S., Charleville
 Hogan, M. B. St. Mary's Conv., Bruff
 Johnson, E. M. Tintern H., Forest Hill
 Phillips, A. Higher Grade S., Porth
 *Roberts, L. G. Gram. & Coll. S., Carnarvon
 *Sharp, G. A. High S., Waltham Cross
 Somerville, M. e. Notre Dame High S., Clapham Common
 Williams, E. Merthyr Advanced S., Merthyr Tydfil

Breen, M.
 Conv. of the Holy Faith, Glasnevin
 Marshall, E. M. Orton Coll., Colshill
 Paxton, A. Chatwin H., Hurworth-on-Tees

Galsworthy, K. M. Chiswick Girls' S.
 *Jennings, E. Friends' S., Wigton

Benwell, A. H. S. Finsbury Park High S.
 *Blee, C. Newtown S., Waterford
 Brewster, G. Conv. of Mercy, Clifford, Boston Spa

Duke, E. St. Mary's Dominican Conv., Cabra
 *French, M. E. Stamford H., Edgbaston
 Nielsen, E. High S., Waltham Cross
 *Nolan, C. St. Mary's Conv., Bruff
 Pury, G. A. S. Southoe H., Richmond
 Rigby, M. St. Anne's Conv., Birmingham
 *Taylor, E. Meredith H., Lichfield
 Wadmore, L. High S., Waltham Cross
 Watson, D. V. a. Licensed Victuallers' S., Lambeth
 Young, M. E. Middleton H., West Hartlepool

Bennett, M. E. f. Private tuition
 Dolan, A. Sienna Conv., Drogheda
 Foley, B. St. Mary's Conv., Bruff
 *Hallworth, F.
 Chatwin H., Hurworth-on-Tees
 Kerry, N. E. C. Milton H., Highgate
 *McCarthy, A. St. Mary's Dominican Conv., Cabra
 Price, B. M. Franciscan Conv. S., Melton Mowbray
 Skinner, E. E. Private tuition
 Taylor, D. E. Chiswick Girls' S.

*Curtis, A. M. High S., Twickenham Green, S. W.
 Kendon, O. M. e. Bethany H., Goudhurst
 *McCabe, J. St. Mary's Dominican Conv., Cabra
 Nielsen, G. K. High S., Waltham Cross
 Pritchard, L. A. Caenawrill, Hay, Hereford

Clarkson, P. M. Rhiavua Coll., Hunstanton
 Copeland, E. Ladies S., Newtownards
 *Dalzell, D. I. Friends' S., Wigton
 Herskind, B. M. Middleton H., West Hartlepool
 Wood, M. Conv. of Mercy, Clifford, Boston Spa

*Barker, A. K. Meredith H., Lichfield
 Condon, J. St. Mary's Conv., Bruff
 Copen, A. M. a. Conv. of the Ladies of Mary, Croydon
 *Evans, H. Higher Grade S., Porth
 Patchett, F. L. Rhiavua Coll., Hunstanton
 Sanders, M. S. Notre Dame High S., Clapham Common
 Wingate, S. D. Private tuition

Harding, A. St. Mary's Dominican Conv., Cabra
 *Whitehead, E. L. Belmont, Stratford-on-Avon
 Youvenot, L. f. Anney Conv., Seaford

Clarey, E. St. Mary's Dominican Conv., Cabra
 *Condon, M. St. Mary's Conv., Bruff
 Moore, A. St. Mary's Dominican Conv., Cabra
 O'Brien, May St. Mary's Conv., Bruff
 Olsen, G. Lindisfarne Coll., Westcliff-on-Sea

Evans, R. A. Higher Grade S., Porth
 McAuliffe, L. St. Mary's Conv. S., Charleville
 Purrell, A. St. Mary's Conv., Bruff
 Winstanley, E. A. Seaview, Blackpool

Batchelor, L. f. Anney Conv., Seaford
 Butler, M. Presentation Conv., Thurles
 Cosgrave, K. St. Mary's Dominican Conv., Cabra
 Delarne, J. S. The Convent, Cadogan St., Chelsea
 Galsworthy, M. E. Private tuition
 Guillaume, A. Alwyne Coll., Canonbury
 Lewis, C. S. A. d. Prep. S., The County S., Llandyssul
 Merriott, H. Higher Grade S., Porth
 Rogers, L. St. Mary's Conv., Bruff
 Thomas, S. A. a. Merthyr Advanced S., Merthyr Tydfil

*Aiken, M. A. Victoria Coll., Belfast
 Davies, E. Merthyr Advanced S., Merthyr Tydfil
 Hawk us, W. d. Franciscan Conv. S., Melton Mowbray
 Lones, S. M. D. Stamford H., Edgbaston
 Morris, V. H. Gram. & Coll. S., Carnarvon
 Mortimer, S. Seafield, Blackpool
 O'Connor, B. d. St. Mary's Conv., Bruff
 Williams, N. P. Merthyr Advanced S., Merthyr Tydfil

Combe, D. M. Crouch End High S., Hornsey
 *Craig, H. D. V. High S., Waltham Cross
 Flood, M. Sienna Conv., Drogheda
 *Gray, D. E. St. Martin's Conv., Muswell Hill
 Gwilym, C. Higher Grade S., Porth
 Hallinan, E. Notre Dame High S., Clapham Common
 Howard, C. M. 76 Donerale S., Fulham
 Leonard, V. F. Loreto Conv., Youghal
 Roy, S. A. High S., Sidney Place, Cork
 Williamson, M. Friends' S., Wigton
 Wilson, A. E. M. Orrington House, Belfast

GIRLS, 3RD CLASS, PASS—Continued.	Fairfax, I.M. Clark's Prep. S., Uxbridge Rd., Ealing	Rising, V. St. Ursula's S., Westbury-on-Trym	Michaelson, A. Mansfield House Coll., Cliftonville, Margate
Burkey, E.M. Princess Gardens S., Belfast	Farrow, V.M. Hillside Modern S., Wealdstone	Whitehead, K. Yorkshire Inst. for the Deaf, Doncaster	Searle, K.M. Frederick Lodge S., Carshalton
Gibson, E.H. Lincroft, Cowthorpe, Wetherby	Ginnitty, R. St. Mary's Dominican Conv., Cabra	McAvoy, A. Knock Inter. S., Belfast	Baker, E. Higher Grade S., Perth
McCombe, E.M. Princess Gardens S., Belfast	Leslie, E.M. Orrington House, Belfast	Stewart, K.M. Benedictine Conv. S., Dumfries	Gryvan, A.M. Princess Gardens S., Belfast
Barker, F. St. Mary's Coll., Barnes	Lodge, I.V. The Convent, Cadogan St., Chelsea	Durant, G. St. Mary's Conv., Bruff	Ryan, M. St. Mary's Dominican Conv., Cabra
Burrows, B. Merthyr Advanced S., Merthyr Tydfil	Cotter, A. St. Mary's Dominican Conv., Cabra	Belcher, V.M. Clark's Prep. S., Uxbridge Rd., Ealing	Bell, A.D. Clarendon Coll., Tufnell Park
Connolly, B. Conv. of Mercy, Clifford, Boston Spa	Lewis, L.W. Newry Lodge S., St. Margaret's-on-Thames	Enoch, E.E. Higher Grade S., Perth	Reed, D.A. High S., Waltham Cross
Altman, E.M. Seaford, Blackpool	Linsay, E. St. Mary's Conv., Bruff	Howard, F.V. Private School, Balloonee	Moore, I.E. Chatwin H., Hurworth-on-Tees
Arch, L.B. Cloughton Coll., Romford	O'Brien, C. St. Mary's Conv., Bruff	Scott, K.M. Private tuition	Moore, E.A. Seaford, Blackpool
Byrne, D.M. Private tuition			Harris, C. Higher Grade S., Perth

LOWER FORMS EXAMINATION.—PASS LIST, MIDSUMMER, 1912.

BOYS.

Aguar, J. St. Aloysius' Coll., Highgate	Byrne, E.C. St. John's Coll., Brixton	Dorey, A.W. University S., Rochester	Guerrero, J. Christian Bros.' Coll., Gibraltar
Aitken, K.J. Private tuition	Callard, D.C. Lindisfarne Coll., Westcliff-on-Sea	Dotto, F. Christian Bros.' Coll., Gibraltar	Guy, F.J. Taunton H., Brighton
Allen, E.H. Endcliffe Coll., Sheffield	Callingham, J.H.M. Licensed Victuallers' S., Lambeth	Downs, F. Private S., Mechanics' Inst., Thornton	Haas, R.J. St. John's Coll., Frome
Almond, H. Salesian S., Farnborough	Carlin, F.R. St. Aloysius' Coll., Highgate	Dudeny, R.L. Taunton H., Brighton	Hamilton, J. St. Joseph's Coll., Beulah Hill, S.E.
Amiotti, R. French S., Notre Dame de France, Lisle St., W.C.	Caruichael, James Gram. S., Scorton	Durant, G. Conv. of the Ladies of Mary, Sanderstead	Hanbridge, H.D. Taunton H., Brighton
Andrews, E.A. Southern Gram. S.	Carroll, J.B.J. Sacred Heart Coll., Thurles	Durrant, F.B. University S., Rochester	Harmer, R.J.C.H. Ongar Gram. S.
Aonso, A. Christian Bros.' Coll., Gibraltar	Carruthers, W.A. Argyle H., Sunderland	Durrant, P.J. Richmond Hill S., Richmond	Harold-Barry, C.W. St. George's Coll., Weybridge
Armstrong, A.R. Margate College	Carter, R.A. Bethany H., Goudhurst	Eager, A.G. All Saints' Choir S., Clifton, Bristol	Harper, C.R. St. George's Coll., Weybridge
Atkins, W. Eastward Ho! Coll., Felixstowe	Caunter, C. St. Aloysius' Coll., Highgate	Earle, G.H.M. Richmond Hill S., Richmond	Harris, R. Licensed Victuallers' S., Lambeth
Bacon, E.A.P. St. George's Coll., Weybridge	Caunter, F. St. Aloysius' Coll., Highgate	Early, B. Salesian S., Battersea	Harrison, F.H. St. John's Coll., Brixton
Bagley, A.J.G. Novelands S., Robertsbridge	Champion, C.H. Lancaster Coll., West Norwood	Eastick, P. Margate College	Harrison, M.N. Bethany H., Goudhurst
Bagley, A.J.G. Novelands S., Robertsbridge	Chancellor, J.A.H. Richmond Hill S., Richmond	Easton, D. Taunton School	Harrison, R. Argyle H., Sunderland
Bailey, L.J. Stafford Coll., Forest Hill	Chapman, M.B. Upton Coll., Bexley Heath	Eason, E.H. Hillmartin Coll., Camden Road, N.W.	Hart, D.T. Taunton H., Brighton
Baker, H.P. St. Aloysius' Coll., Highgate	Chapman, N. St. Mary's Conv., York	Easton, E.H. Hillmartin Coll., Camden Road, N.W.	Hart, H.T. Stafford Coll., Forest Hill
Baker, P. St. Catherine's Conv., Myddelton Sq., E.C.	Chick, E.B. Richmond Hill S., Richmond	Eaton, E.H. Hillmartin Coll., Camden Road, N.W.	Hartridge, L. New Coll., Herne Bay
Balding, J.W. Seaford College	Christie, G.F. St. John's Coll., Frome	Eaton, E.H. Hillmartin Coll., Camden Road, N.W.	Harvey, G. Taunton School
Balding, R.E. Seaford College	Christian, D.L. High School, Twickenham Green, S.W.	Eatough, J. Taunton School	Haskings, H.W.B. Balham Modern S.
Barker, S.R. Clark's Modern S., Forest Gate	Christian, D.L. High School, Twickenham Green, S.W.	Elgie, C.R. Osborne High S., West Hartlepool	Hawkins, W.M.A. Lindisfarne Coll., Westcliff-on-Sea
Barnard, A.C.L. The Convent, Wokingham	Chubb, G.F. St. John's Coll., Frome	Ellison, D.C. 15 Hawthorn Rd., Moreton	Hebert, R.L. Balham Modern S.
Barriere, A.F. St. John's Coll., Frome	Chubb, G.F. St. John's Coll., Frome	Esam, C.W.W. Ongar Gram. S.	Hell, L. St. Aloysius' Coll., Highgate
Barrett, R. Ans dell S., Lytham	Chubb, G.F. St. John's Coll., Frome	Esam, C.W.W. Ongar Gram. S.	Hennessey, J. Salesian S., Farnborough
Barton, G.C.L. Cheltonia Coll., Streatham	Chubb, G.F. St. John's Coll., Frome	Esam, C.W.W. Ongar Gram. S.	Hewer, E.L. Private tuition
Bass, S.J. Orient Coll., Skegness	Chubb, G.F. St. John's Coll., Frome	Esam, C.W.W. Ongar Gram. S.	Hildreth, J. Gram. S., Scorton
Bates, C.M. St. George's Coll., Weybridge	Chubb, G.F. St. John's Coll., Frome	Esam, C.W.W. Ongar Gram. S.	Hills, F.T. University S., Rochester
Beamish, R.L. Cheltonia Coll., Streatham	Chubb, G.F. St. John's Coll., Frome	Esam, C.W.W. Ongar Gram. S.	Hoeken, E.W. Newquay College
Beardall, H.W. Orient Coll., Skegness	Chubb, G.F. St. John's Coll., Frome	Esam, C.W.W. Ongar Gram. S.	Holmes, D.F. Margate College
Beetham, J.A. Seaford College	Chubb, G.F. St. John's Coll., Frome	Esam, C.W.W. Ongar Gram. S.	Homer, P. Taunton School
Bell, C. St. Mary's Prep. Coll., Wicklow	Chubb, G.F. St. John's Coll., Frome	Esam, C.W.W. Ongar Gram. S.	Hopkinson, G.T. The Modern S., Streatham Common
Benstead, E.C. University S., Rochester	Chubb, G.F. St. John's Coll., Frome	Esam, C.W.W. Ongar Gram. S.	Hosell, E.R. Orient Coll., Skegness
Bensusan, S. Christian Bros.' Coll., Gibraltar	Chubb, G.F. St. John's Coll., Frome	Esam, C.W.W. Ongar Gram. S.	Howe, C.F. Boys' High S., Erdington
Beresford, H. Salesian S., Battersea	Chubb, G.F. St. John's Coll., Frome	Esam, C.W.W. Ongar Gram. S.	Hucklesby, R.M. New College, Herne Bay
Besley, P. Taunton School	Chubb, G.F. St. John's Coll., Frome	Esam, C.W.W. Ongar Gram. S.	Hughes, T. Taunton School
Beuchamp, G. Taunton School	Chubb, G.F. St. John's Coll., Frome	Esam, C.W.W. Ongar Gram. S.	Hunt, L. Salesian S., Battersea
Bird, H.T. Clark's Modern S., Forest Gate	Chubb, G.F. St. John's Coll., Frome	Esam, C.W.W. Ongar Gram. S.	Hussey, M. Salesian S., Farnborough
Bishop, E.A. Lindisfarne Coll., Westcliff-on-Sea	Chubb, G.F. St. John's Coll., Frome	Esam, C.W.W. Ongar Gram. S.	Huxham, A.V.L. St. Catherine's Coll., Richmond
Blackledge, J. Salesian S., Battersea	Chubb, G.F. St. John's Coll., Frome	Esam, C.W.W. Ongar Gram. S.	Hyde, L.J.H. Balham Modern S.
Blackwell, A.D. Dudley H., Lee	Chubb, G.F. St. John's Coll., Frome	Esam, C.W.W. Ongar Gram. S.	Imossi, G. Christian Bros.' Coll., Gibraltar
Bloss, H.G. Margate College	Chubb, G.F. St. John's Coll., Frome	Esam, C.W.W. Ongar Gram. S.	Imossi, J. Christian Bros.' Coll., Gibraltar
Bolger, P.A. St. Mary's Prep. Coll., Wicklow	Chubb, G.F. St. John's Coll., Frome	Esam, C.W.W. Ongar Gram. S.	Ingram, F.E. University S., Rochester
Bolger, P.R. St. Mary's Prep. Coll., Wicklow	Chubb, G.F. St. John's Coll., Frome	Esam, C.W.W. Ongar Gram. S.	Ings, J.C. The Convent, Wokingham
Bonell, V.E. Private tuition	Chubb, G.F. St. John's Coll., Frome	Esam, C.W.W. Ongar Gram. S.	Ireson, J.L. Endcliffe Coll., Sheffield
Bonwick, V.L. Clark's Modern S., Forest Gate	Chubb, G.F. St. John's Coll., Frome	Esam, C.W.W. Ongar Gram. S.	Ivens, H.D. St. Aloysius' Coll., Highgate
Booth, B.M. Taunton H., Brighton	Chubb, G.F. St. John's Coll., Frome	Esam, C.W.W. Ongar Gram. S.	Jago, R.A. St. George's Coll., Weybridge
Botherel, A. France, Lisle St., W.C.	Chubb, G.F. St. John's Coll., Frome	Esam, C.W.W. Ongar Gram. S.	Jarry, G. Taunton School
Bourn, L.E.A. Richmond Hill S., Richmond	Chubb, G.F. St. John's Coll., Frome	Esam, C.W.W. Ongar Gram. S.	Jarvis, E. Taunton School
Bowen, G. Taunton School	Chubb, G.F. St. John's Coll., Frome	Esam, C.W.W. Ongar Gram. S.	Jelford, F.S. Matley Gram. S., Plymouth
Boyer, F.F. Orient Coll., Skegness	Chubb, G.F. St. John's Coll., Frome	Esam, C.W.W. Ongar Gram. S.	Jenkins, H. Taunton School
Brannan, L. Salesian S., Battersea	Chubb, G.F. St. John's Coll., Frome	Esam, C.W.W. Ongar Gram. S.	Jennings, A.J. Ongar Gram. S.
Bray, F. Salesian S., Farnborough	Chubb, G.F. St. John's Coll., Frome	Esam, C.W.W. Ongar Gram. S.	John, R. Taunton School
Brieguir, A. St. Boniface's Coll., Plymouth	Chubb, G.F. St. John's Coll., Frome	Esam, C.W.W. Ongar Gram. S.	Johnson, J. Salesian S., Battersea
Brigall, L.E. Balham Modern S.	Chubb, G.F. St. John's Coll., Frome	Esam, C.W.W. Ongar Gram. S.	Johnson, P. St. Aloysius' Coll., Highgate
Brooks, J. Christian Bros.' Coll., Gibraltar	Chubb, G.F. St. John's Coll., Frome	Esam, C.W.W. Ongar Gram. S.	Johnstone, L. Salesian S., Farnborough
Bruce, P. St. Aloysius' Coll., Highgate	Chubb, G.F. St. John's Coll., Frome	Esam, C.W.W. Ongar Gram. S.	Johns, A. St. Mary's Prep. Coll., Wicklow
Bruyard, A. Christian Bros.' Coll., Gibraltar	Chubb, G.F. St. John's Coll., Frome	Esam, C.W.W. Ongar Gram. S.	Jones, L. Lindisfarne Coll., Westcliff-on-Sea
Bryant, H. Salesian S., Farnborough	Chubb, G.F. St. John's Coll., Frome	Esam, C.W.W. Ongar Gram. S.	Jordan, R. St. Aloysius' Coll., Highgate
Buckland, A.J.S. Streatham Gram. S.	Chubb, G.F. St. John's Coll., Frome	Esam, C.W.W. Ongar Gram. S.	Jurjans, I. Lindisfarne Coll., Westcliff-on-Sea
Burnard, J. Taunton School	Chubb, G.F. St. John's Coll., Frome	Esam, C.W.W. Ongar Gram. S.	
Burnul, R. Marist Brothers' Coll., Grove Ferry	Chubb, G.F. St. John's Coll., Frome	Esam, C.W.W. Ongar Gram. S.	

BOYS, LOWER FORMS—Continued.
 King, J.A. Ongar Gram. S.
 Kelly, M.W. Vernon H., Higher Broughton
 Kendall, C.G. St. Boniface's Coll., Plymouth
 Kennedy, P. St. Mary's Prep. Coll., Wicklow
 Kennedy, R. Clapham Gram. S.
 King, H.W. St. John's Coll., Brixton
 King, W.G. Clark's Modern S., Forest Gate
 Kingston, D. St. Aloysius' Coll., Highgate
 Lacey, E.R. Lancaster Coll., West Norwood
 Lamb, E.C. Lindisfarne Coll., Westcliff-on-Sea
 Lampitt, E.O. Lancaster Coll., West Norwood
 Landless, H.H. Blessed Sacrament R. C.
 School, Gateshead-on-Tyne
 Langham, A.M.J. Streatham Gram. S.
 Lavington, K.D. Cheltona Coll., Streatham
 Lawes, J. Salesian S., Farnborough
 Lawrenson, C.A.T. Holt H., Chesnut
 Lebeurier, A. St. Boniface's Coll., Plymouth
 Lee, C.E. Carden S., Peckham Bye, S.E.
 Lee, R.L. Seaford College
 Lefrancois, C. Marist Bros.' Coll., Grove Ferry
 Leggett, O.A.
 All Saints' Choir S., Clifton, Bristol
 Livinec, J. St. Boniface's Coll., Plymouth
 Lloyd, D. Taunton School
 Loustalot, E. Margate College
 Lucas, G.R. Richmond Hill S., Richmond
 Lunley, M.H. Balham Modern S.
 Lynn, D.C. Argyle H., Sunderland
 Machado, M.A. Margate College
 Machado-Pedrique, A.
 St. George's Coll., Weybridge
 Manrique, S. Marist Bros.' Coll., Grove Ferry
 Marshall, C. Taunton School
 Mason, G.F. Ongar Gram. S.
 Mason, H.N. St. George's Coll., Weybridge
 Maze, J. St. Boniface's Coll., Plymouth
 McAvoy, D.G.
 Lindisfarne Coll., Westcliff-on-Sea
 McConachy, J.L.
 Lindisfarne Coll., Westcliff-on-Sea
 McElhatton, T. Blessed Sacrament R. C.
 School, Gateshead-on-Tyne
 McHale, E.P. St. Aloysius' Coll., Highgate
 McLoughlin, D.
 St. Mary's Prep. Coll., Wicklow
 Meddings, B. St. Aloysius' Coll., Highgate
 Merchant, A. Taunton School
 Merifield, F.W. Boys' High S., Erdington
 Merritt, J.F.
 Licensed Victuallers' S., Lambeth
 Meyler, T.A. Blessed Sacrament R. C.
 School, Gateshead-on-Tyne
 Michell, W.S. Newquay College
 Miller, A.C. Hutton Gram. S.
 Miller, T.D. Argyle H., Sunderland
 Mills, F. Salesian S., Battersea
 Moore, A. St. Mary's Prep. Coll., Wicklow
 Moore, R. Balham Modern S.
 Morris, C.B. Ongar Gram. S.
 Moss, O. St. Aloysius' Coll., Highgate
 Moss, H. St. Aloysius' Coll., Highgate
 Moyet, B. Marist Brothers' Coll., Grove Ferry
 Munden, H.H.E.
 Licensed Victuallers' S., Lambeth

Murphy, F. St. Aloysius' Coll., Highgate
 Murray, A. St. Joseph's Coll., Beulah Hill, S.E.
 Murray, B.S. Osborne High S., West Hartlepool
 Murray, E.C. St. Aloysius' Coll., Highgate
 Narraway, H.L. Margate College
 Newbold, S.W. St. George's Coll., Weybridge
 Newton, D.S.C.
 Lindisfarne Coll., Westcliff-on-Sea
 Norden, W.A. Clark's Modern S., Forest Gate
 Norris, S. University S., Rochester
 Norton, F. Christian Bros.' Coll., Gibraltar
 O'Brien, B.J.A. Sacred Heart Coll., Thurles
 O'Brien, J.O. Blessed Sacrament R. C.
 School, Gateshead-on-Tyne
 O'Ferrall, I. The Conv. Pulteney Rd., Bath
 O'Meara, M. St. Mary's Prep. Coll., Wicklow
 O'Neill, A. St. Aloysius' Coll., Highgate
 Page, C. Craven Park Coll., Harlesden
 Page, W.E.C. The College, Weston-s.-Mare
 Paine, N.F.N. The Douglas S., Cheltenham
 Palmer, W.
 Plympton Higher Prep. S., Plymouth
 Partridge, R. Taunton School
 Passey, S. Taunton School
 Patey, T. Taunton School
 Paul, J.S.G.F. Ongar Gram. S.
 Paul, W.R. Ongar Gram. S.
 Peacock, R. Seaford College
 Peate, G.H. Vernon H., Higher Broughton
 Pegrain, J.A. Taunton H., Brighton
 Pengilly, A. Taunton School
 Penney, W.V.
 Licensed Victuallers' S., Lambeth
 Penny, R.A. Willesden Prep. S., Harlesden
 Pick, T.C.E. Gram. S., Scorton
 Pike, P.R. The Douglas S., Cheltenham
 Polgreen, W. Muntley Gram. S., Plymouth
 Polkinghorn, L. Newquay College
 Polley, G.C.
 Licensed Victuallers' S., Lambeth
 Ponce, A. Christian Bros.' Coll., Gibraltar
 Pooley, F.L. Dudley H., Lee
 Posso, H. Christian Bros.' Coll., Gibraltar
 Prassinis, E. Salesian S., Farnborough
 Prater, A.F.V. Seaford College
 Pratt, A.E.J.
 Licensed Victuallers' S., Lambeth
 Pratt, S.C.N. New College, Herne Bay
 Pumphrey, L.F. Argyle H., Sunderland
 Purves-Smith, C. Taunton School
 Quigley, W. Salesian S., Farnborough
 Quinn, L.C. Balham Modern S.
 Quitmann, E.M.J. New Coll., Herne Bay
 Raveron, F.C. St. Boniface's Coll., Plymouth
 Read, J. Taunton School
 Reader, T.J. Margate College
 Reddall, A.C.
 The Modern S., Streatham Common
 Redfern, T.H. Gram. S., Hyde
 Rees, I.T. Streatham Gram. S.
 Reeve, G. St. Joseph's Coll., Beulah Hill, S.E.
 Rentish, W.E.J. Oxford H., Holloway
 Rey, M. St. Boniface's Coll., Plymouth
 Richards, O. Taunton School

Richards, W.G. Monkham's Coll.
 and Forest H., Woodford Green
 Richardson, D.E. University S., Rochester
 Rinaldi, F. Salesian S., Battersea
 Robert, H. St. Boniface's Coll., Plymouth
 Robertson, A.
 Eastward Ho! Coll., Felixstowe
 Roche, P. Monkham's Coll.
 and Forest H., Woodford Green
 Rogers, J.W. New College, Herne Bay
 Rollason, G.E. Margate College
 Rose, B.E. Stafford Coll., Forest Hill
 Ross, D. Taunton School
 Ross, N.D. Clark's Modern S., Forest Gate
 Rowcroft, A.E. Bethany H., Goudhurst
 Ruiz, A. Christian Bros. Coll., Gibraltar
 Rumi, L. French S.,
 Notre Dame de France, Lisle St., W.C.
 Russell, C. Salesian S., Farnborough
 Russo, P. Christian Bros. Coll., Gibraltar
 Rutland, L.G. L.G.
 St. George's Coll., Weybridge
 Ryan, C.J. Sacred Heart Coll., Thurles
 Ryan, P.J. Sacred Heart Coll., Thurles
 Sanderecock, K. Newquay College
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THE EDUCATIONAL TIMES,

AND
Journal of the College of Preceptors.

Vol. LXV.] New Series, No. 617. SEPTEMBER 2, 1912.

{ Published Monthly, price, to Non-Members, 6d.; by Post, 7d. Annual Subscription, 7s.

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For Syllabus, see page 394.

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C. R. HODGSON, B.A., Secretary.
Bloomsbury Square, W.C.

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THE UNITY OF THE PROFESSION.

“PROFESSIONAL unity” is an attractive phrase, and expresses a worthy aspiration. Yet, if it is ever to be more than a phrase to cajole with, a good deal of hard thinking has yet to be done by the hopeful, and a good many facts have to be faced which are not more amenable to the magic of phrases than facts are generally found to be. We have in the newly constituted Teachers' Registration Council the first serious attempt to make a committee that shall at once represent and regulate the teaching profession; but to everyone who has followed the history of the events which have at last brought that Council to its birth it must be clear that its fundamental duty is to create the profession which it stands for, and that, unless it succeeds in fulfilling that duty not merely by the letter of the Register, but by a new and an understanding spirit of co-operation among teachers of all sorts and conditions, it will merely add a stone to that floor which is already so extravagantly paved—with good intentions.

The old Register was a fiasco not because of the wickedness nor even because of the stupidity of its contrivers—for it was neither wickedly nor stupidly contrived in the main; none the less, it was a fiasco, because it was contrived without sufficient imagination, and it could not stand against the facts. Its failure was a disaster not because of its intrinsic merits, which were inconsiderable, but partly because the failure of any honest attempt to organize education must be a disaster, partly because the manner of its failure was such as to leave a legacy of enormous difficulty to its successor. Its failure looked like the defeat of an attempt to discriminate between different kinds of teachers, and in a sense that is what it was; and yet we know that without discrimination neither organization is possible, nor even unity, nor any of the other things that we hope for. It is as futile to generalize about “the teacher” as it is to generalize about “the child”; and the problem which both teacher and child present to those who desire to organize educa-

tion depends for its solution very largely upon the understanding of this truth. At any rate, just so far as it is the mark of an intelligent scheme of education that it provides not for “the child” in the abstract, but for every child capable of profiting by it, so it is essential to an intelligent organization of the teaching profession that each several teacher shall find his or her place in it, not according to a mere abstract conception of “teachership,” but according to the actual nature of the contribution which that particular teacher can make to the whole sum of educational achievement. It is therefore, the business of those to whom unity is more than a mere symbol of a state of mind to discover first of what parts the real unity can be composed and then so to weld those parts together that every member of our profession may know and feel that, whatever his or her work may be, that work is part of the whole, giving and taking dignity by vital association with the work of every other labourer in the common field.

Analogies are often misleading: the attempt, for example, to push beyond rational limits the analogy between the teaching profession and the medical profession has led to much confused thinking; but if analogies are recognized for what they are—guide-posts valuable just so far as their particular directions will take us—they are of real service in the search for the road to truth. Thus we may learn something from the organization of industry, however different may be our associations with that word from those whose skill in turning industry to account makes them captains and millionaires, and in their own time benefactors of a sort. “Scientific Management,” according to the President of the American Society of Mechanical Engineers, who has spent thirty years in inventing it, is a new science. Its aim is the exact direction of human activity towards the production of wealth—which is not precisely an educational aim: but its principles are worth an educational man's consideration. They are four: first, that there is a best way of doing each particular piece of work, which can be discovered; second, that it is possible to choose instruments and men, and to train the men so as to do each particular piece of work in the best way; third, that the men so

trained can be induced to work in the best way (this is described as the effect of co-operation between workman and employer); fourth, that the responsibility for the whole must be distributed between the management and the workmen. The application of these four principles is said to have revolutionized industry and business, reconciled labour and capital, enormously reduced cost of production and increased wages; but, though these are not our aims, and, though there is something shocking to the imagination even in the picture of two men shovelling dirt for months under the eye of a man with a stop-watch in order to discover exactly at what shovel-load a man could move the greatest number of tons of dirt in a day, yet, *mutatis mutandis*, are not the principles worth our consideration? If we are to organize our work properly, is it not of the first importance that we should have the means of discovering whom to set to each piece of work, how that piece of work ought to be done, and how to train *and induce* the worker to do it in the best way?

It was the misfortune—perhaps the fault—of the old Teachers' Register that it concentrated attention upon the division between elementary and secondary work just when the actual division was becoming difficult to define, and when powerful interests were concerned in obliterating it. It was an additional misfortune to the cause of unity that the division presented itself as a distinction between persons and even between social classes. Unless we concentrate our attention upon the right discrimination between one kind of work and another, we cannot become an organized profession; unless we combat resolutely the tendency, to which we in England are peculiarly liable, to identify that discrimination with distinctions between persons and classes, we cannot become a united profession. It is weak to give way to that tendency; it is futile to ignore it. In England we suffer from hypertrophy of the social instinct—the result, as some tell us, of excessive national prosperity; and probably they are right. Whatever the cause of this hypertrophy, its mischievous effects are undesirable. The social instinct does its work badly, and it takes up far too much of our attention. Like an enlarged heart, it works too hard, and will not let us alone. Its function being to bring together the sympathetic, and make them willing to act in common for their common ends, it has become so sensitive to the conditions of sympathetic action that it seems to have almost abandoned that function for the complementary, but unfriendly, business of keeping apart those between whom there may be the slightest perceptible ground of antipathy. This is a disease, and it has to be fought; it may be a disease of civilization, but it is none the less true that it is destructive of civilization, and that, so far as our educational system lets it flourish, our education must fail in its main object, which is to civilize. There are enough grounds for antipathy between any two human beings—to say nothing of classes separated by deep discrepancies of convention—to prevent friendly intercourse from ever ripening, if we keep those grounds for antipathy

perpetually under the microscope, and our eye perpetually at the other end of the tube. Friendship is possible, because the imperative need for friendship drives us—all except the hopelessly critical, who have to do without it—to take a larger view of our differences; and a healthy social instinct will make social unity possible in the same way, not by denying differences, but by cultivating sympathy till the differences that seem so significant are either seen to be of no significance worth troubling about, or, by the force of a vigorous and intelligent sympathy, are actually abolished.

This is the aim—unity based at once upon effective organization and upon the cultivation of intelligent friendship; and it can be attained if we keep in mind the equal necessity for both its conditions. Organization without friendship may be effective in a sense, but it will never be a living organization; the machine may work, but it will be no more than a machine. Friendship without organization must remain a mere sentiment, incapable of dealing with the facts, and liable to degenerate into a false cordiality that deceives no one—a diplomatic pretence convenient to mask hostile thoughts that flourish the more rankly for its protection.

What, in this difficult matter, is the duty of those who stand for secondary education? Our first duty surely is to understand our own business. "Everything is what it is, and not another thing." We must make up our minds to the exact meaning of our job, not relatively as better or worse than somebody else's job, but absolutely, as something in itself worth caring for; as a definite piece of work to be done in the best way. We must believe that the best way is discoverable, and we must recognize that the process of discovery never ends, since in education, as in civilization generally, the only perfection is the perfection of progress. We must insist upon the right instruments for our piece of work, and, above all, we must give our minds to the choosing, the training, and the encouraging of the right men and women to carry it out. If anybody charges us with thinking too much of our work, and reminds us that it is but a part of the whole, we shall be neither offended nor dismayed; we shall reply that only by the perfection of the parts can the whole become glorified, and that, when once a man has determined exactly what his work is, it is impossible that he should give to it too much of his thought, too much of his energy, too much of his devotion. There is no exclusiveness in this doctrine. If we believe that our work is worthy of the best that we can give it, we believe in an equal dignity for the work of others; and certainly, unless all so believe, it is not possible that the whole should come to perfection.

Nor again, in the narrower sense, is exclusiveness implied. The old Register lay under the imputation of an attempt to perpetuate distinctions between persons; it seemed to authorize castes. The new Register starts with the presumption that every man and woman upon it is to stand upon merit, neither taking nor giving dignity by any other association than that of the whole body of

Registered teachers. The attempt to discriminate between different kinds of teachers has gone; it is now for each one to establish his or her own position, to make good at any moment his or her fitness for any particular piece of work. All that we ask is that no work shall be done without adequate instruments or by unfit persons. We must be jealous of our standard, but jealous of nothing and of nobody besides.

We have a great opportunity. For the first time in the history of English education the teaching profession has been challenged by the State to become a self-conscious unity, to recognize that, for all the variety of occupations and interests and qualifications that it includes, its duty and its dignity are essentially one. Even as in the history of every great nation there comes a moment when particular interests, aspirations, and jealousies are absorbed in the general loyalty to the common weal, and the nation becomes conscious of itself, so in our own province of the national life it is not too much to hope that by wise counsel and persistent goodwill a condition of true unity may be reached which will enable English education to take its right place as the highest factor in English greatness and English civilization.

R. F. CHOLMELEY.

NOTES.

SIR ROBERT MORANT, invited by the Central News to make a statement with regard to the rumour that he had been offered the Vice-Chancellorship of Sheffield University, replied that he found it best as a Civil Servant never to answer press questions and always to ignore press rumours, whether true or untrue. The Sheffield correspondent of the *Times* is officially informed that no appointment will be made for some months. We may take it that the refusal of the appointment lies with Sir Robert, and it is likely that he may accept it. The strain of the work he has done during the last eight or nine months has been continuous, and a less anxious and responsible post may be welcome. Sir Robert would undoubtedly make an excellent Vice-Chancellor. He is a man of wide sympathies, an able administrator, and an untiring worker. If he were free from the restrictions of the Civil Service, he would be able to develop the powers of speaking and writing of which he has already given proof.

A RECENT report published by the department of Public Instruction in France tells us that during the last ten years the number of pupils in French secondary schools who take Latin in preference to a modern language is steadily increasing. The percentage of classical scholars has risen from 42 to 53. In England, too, there are signs of a reaction against the contempt into which the classics seemed to be falling. We have grown tired

of the cry for a practical education and tired of the sneers at utilitarian or bread-and-butter subjects. All subjects may be utilitarian if they are studied for utilitarian, and for no other, purposes. Latin to the teacher of Latin is as utilitarian as chemistry to the chemist; and either subject may be arid if studied merely for the sake of earning a living. The claims of classical teachers were well voiced the other day by Prof. Gilbert Murray, who said that what they attempted to do was to enable their pupils to enrich their whole life, to train their mind and imagination, and to give them, not a special knowledge useful for special purposes, but a general basis of knowledge which was relevant to high human endeavour.

SPEAKING at Cambridge, Prof. Moulton, of the University of Chicago, also dealt with the disrepute into which the classics had shown signs of falling. His advice to the classicists is that they should enlarge their purview. Literature, he maintained, cannot be divided into water-tight compartments. All literature is one. The classical students—and, indeed, there are many such—who hold that Plato said the last word on the philosophy of life cut themselves off from the main current of literature. If classics are replaced by modern languages, or by the sciences, the same narrowness results. The study of world literature must, according to Prof. Moulton, be added to the classics, so that they may regain their ancient supremacy. The study of the classics, to quote Prof. Murray again, is not a system of instruction, but a system of education. There is a danger that in our desire to give instruction, which is essential, we may neglect education, which is something very different from instruction. The humanities are now taken to include all study of great literatures, read for their educational value and not merely for the knowledge that may be derived from them.

A VERY large number of friends will feel the loss of Mr. Garrod, who has been for many years the Secretary of the Teachers' Guild. We give some details of his career in the "Summary of the Month." A correspondent writes: "His work deserves notice. His life was a noble one. A man of means and of many literary and other interests, he chose to devote his whole life and energy to the great cause of the unification of the scholastic profession and the improvement of teaching methods. His faith in his mission never wavered; amid many discouragements his patience never failed, nor did his energy relax. For upwards of twenty-five years he, more than any one else, was the Teachers' Guild: he spoke for its views in all parts of the country, and his addresses were, I know, an inspiration to many teachers toiling in a dull routine. Yet he was so modest, so retiring, that we probably have no idea of the power he was or the influence for good that he exercised."

The late Herbert Baring Garrod.

Prof. Gilbert Murray on Classical Education.

DR. PRITCHARD'S article in our last number has aroused a good deal of interest. Correspondents who have written to us agree that the subject must be raised. The only open questions are: where is the information to be found, and who is to give it? Books are numerous, though we cannot, in these columns, advertise titles. One correspondent writes: "I am glad that the subject of instruction of the young in sexual hygiene has come to the front. But Dr. Pritchard is surely mistaken in thinking that doctors are the best teachers. They ought to be, but I have never yet met with one qualified in that respect. . . It is time something was done in the way of teaching those who have children." We agree that parents are the best teachers; but they must take pains to acquire the necessary information and they must overcome the feeling of awkwardness. The instruction, we are convinced, should be positive, not negative, and given from time to time as naturally as instruction in the multiplication table or in polite manners.

IN saying, in the foregoing "Note," that the teaching should be positive, and not negative, we mean that each child has a right to as complete a knowledge as possible of its own sexual functions, just as it has a right to know the processes by which food is converted into energy. The instruction should not consist of a series of "don'ts"—don't do this and don't do that for fear of certain vague evils. That is not what is wanted. As Dr. Moll says, "the sexual enlightenment of young persons renders indispensable the possession of precise knowledge of the sexuality of the child, and such knowledge is no less necessary to all instruction of youth, especially to those to whom the physical life of children is a matter of concern." And again: "The best of all educators for the child should be its own mother. A mother who seriously devotes herself to the care of her child need have no anxiety." We fully endorse this, and hope the time will soon come when all mothers will be able and willing to impart this instruction.

IN his article on "Esprit de Corps" in our August number, Mr. A. C. Benson charges our secondary education with a narrowness of outlook, and he suggests that time should be found for more definite teaching in regard to the larger world that lies outside the school. A correspondent writes to us to point out that Mr. Benson is avowedly dealing with boys' schools only. In these it is no doubt often true that a boy's horizon is bounded by his school life. He looks no farther forward than to his cricket colours or to his University scholarship. It is, perhaps, true also that masters are so afraid of falling into priggishness that they hide their enthusiasms and their wider knowledge, and act and speak as if life ended at the age of twenty-three. We agree with our correspondent that in girls' schools more definite teaching is

given with regard to life outside the school. Girls are taught that they have a duty to others. The duty of social service is learnt, and wider interests are encouraged.

WE are very glad to learn that the Secondary, Technical, and University Teachers' Insurance Society is successfully formed. Some thousands of members have already joined. We may remind our readers that the College of Preceptors is one of the Associated Bodies responsible for the Society. It is especially important to point out that membership of one of the associated bodies is not necessary in order to become a member of the Insurance Society, and also that all teachers (other than those in public elementary schools) are eligible, whether they teach in schools, in families, or take individual pupils. Governesses in particular are advised to apply for information about the Society. There are two obvious reasons why all teachers should join this Society. One is that teachers' lives are, on the whole, "good," and that it is an advantage to belong to a Society limited to teachers. The other reason is the feeling of solidarity that makes teachers wishful to support one another. The more members, the stronger the Society. The address of the Secretary is 35 John Street, Bedford Row, W.C.

MR. SELBY-BIGGE, with several other officers of the Board of Education, was present at the Conference on Folk Dancing organized by the governors of the Shakespeare Memorial Theatre at Stratford-on-Avon. We welcome every effort to bring brightness and joyousness into the lives of children. Dancing is a most natural expression of joy, and, if the expression of an emotion be denied, it may happen that the emotion ceases to be felt. The special value of the folk dances lies in the natural simplicity and spontaneity of the movements. The drawing-room dances that until lately were the only dances learnt in schools are either too formal for children or else express emotions beyond their ken and so appear to be artificial. Spontaneity need not exclude accuracy of movement. The spirit of the dance, so far as school life is concerned, is greatly enhanced when the movements are performed by a number of children simultaneously.

IN the summer holidays the August number may be overlooked, and so we call the attention of our readers to certain useful matters which were included in the last issue.

IN addition to the two articles already spoken of in these Notes, there was an interesting account of the Dalcroze method of teaching rhythmic gymnastics. It will be remembered that Mr. Dalcroze proposes to come to England in November, and the dates of his lecture-demonstrations were given in "Current Events." An important article on the history of the College of Preceptors should prove useful for reference. Dr. Sadler's monograph on "The

The Mother as Instructor.

Social Service.

The Teachers' Insurance Society.

Dancing.

Our August Number.

Leaving Examination in Prussia," which we reprinted, is necessary in order to understand the report of the Consultative Committee. The list of the members of the Registration Council should be kept. Mr. Tidswell explained the working of the Teachers' Insurance Society. We also gave the provisional program of the Education Section of the British Association, which meets in a few days.

SUMMARY OF THE MONTH.

THE Teachers' Guild and the educational world generally have lost a sound friend by the death of Mr. Herbert Baring Garrod. The death occurred at 72 Compayne Gardens, West Hampstead, on July 30. Mr. Garrod was in his sixty-fourth year. Some appreciation of his work is given in the Notes. Mr. Garrod was the elder surviving son of the late Sir Alfred Baring Garrod, M.D. He was elected to a Postmastership at Merton College, Oxford, and gained the Newdigate Prize. He became a member of the Inner Temple and was called to the Bar in 1874. Soon afterwards he became Secretary of the Teachers' Guild, which post he held until recently.

As an interesting example of the adage that there is nothing new under the sun, we quote from the *Manchester Guardian* the following letter:—

Sir,—I see in your issue of Thursday an account of a method of teaching children which is known as the Montessori method. It may interest you to know that we have for three years employed this method in our special schools at Sandlebridge. Dr. Fernald, of Waverley, Mass., has used the method for years, and we have somewhat elaborated his schemes, a very perfect set of models and form boards having been made for us by our generous manual instructor. We were interested to hear an expert in education who visited our schools, and especially our "sense-room," exclaim that here was the Montessori method.

We have not attempted to christen our method, but a description of it was printed in Dr. Lapage's book on feeble-minded children, together with a photograph of the models and form-boards used. I believe that the credit for this common-sense way of reaching children's perceptions is due to Dr. Fernald. He believes in the special education of the senses. We certainly find the training of smell, sight, touch, hearing, and taste a valuable addition to our lessons, and one which our children very much enjoy.—Yours, &c.,
Chandolin, August 10.

MARY DENDY.

THE text has been published of a Bill to amend the Elementary School Teachers (Superannuation) Act, 1898. It was ordered to be brought in by Mr. Pease (President of the Board of Education), and its object is to double the rate of 10s. for each year of recorded service at which superannuation allowances are calculated, and to increase by 50 per cent. the rate of £1 for men and 13s. 4d. for women at which disablement allowances are calculated in respect of each year of service after the first ten years. The Bill proposes to increase from £3. 10s. to £3. 12s. the annual contribution of men to the deferred annuity fund, and to provide both in the case of men and women that there shall be no future increase or decrease. The Bill has passed through all its stages and becomes operative at once.

THE School of Sociology and Social Economics, which has for nine years carried on the work of training those who wish to take part in the various forms of social and philanthropic effort, is about to be merged in the London School of Economics and Political Science, one of the schools of the University of London. The new course will begin at the commencement of October. Intending students should apply for particulars to the Secretary of the London School of Economics and Political Science, Clare Market, Kingsway, London, W.C. A Committee to give advice as to the best methods of training has been appointed, constituted as follows:—Prof. Hobhouse, Mr. C. S. Loch, Mr. Frank Morris, Miss Eleanor Powell, Mrs. Reeves, Mr. Lees-Smith, Prof.

Urwick, Prof. Sidney Webb, and the Director of the London School of Economics and Political Science.

THE Governors of the London School of Economics and Political Science (University of London) are enabled by a donor who prefers to remain anonymous to offer a prize of £100 for the best essay or monograph submitted by July 31, 1913, on one of the following subjects:—

1. An analysis, quantitative and qualitative, of the annual consumption of wealth in the United Kingdom, showing in what the total product of commodities and services actually consists, and how and by whom it is "consumed," and, as far as concerns any parts of it, with what unsatisfactory or positively deleterious results.

2. The actual working and ascertained results of the Old Age Pensions Act, with suggestions for its improvement.

3. A survey of any village or small town in Great Britain accompanied by an estimate of its characteristic advantages and its limitations, with suggestions for improvements (a) from within, (b) from without.

4. A new Factory Bill, which should, without adopting any new principle, by appropriate technical clauses in Parliamentary form, extend and make applicable to every section of employed persons in the United Kingdom all the various protective provisions now applicable only to particular sections in the existing Factory, Workshops, Truck, Shop Hours, Railway and Mines Regulation, Trade Boards, Merchant Shipping, and similar Acts; with a view to securing by law to every worker such a national minimum of education, sanitation and safety, leisure and rest, and subsistence as is already prescribed by law for some workers.

5. Whether—and, if so, in what manner and to what extent—the best economic use of land in Great Britain, urban or rural, is prevented by (a) considerations of sport or pleasure, (b) restrictive covenants in leases or other conditions of tenancy; (c) life interests, trusts, and other forms of limited ownership; and (d) the system of assessment and rating, and other methods of taxation.

6. Whether—and, if so, under what circumstances and to what extent—the agricultural industry, as it is or as it might be carried on in Great Britain, could afford higher wages to those engaged in it.

If suitable monographs or essays are submitted, five, or possibly more, additional prizes will be given, value £5 each. The competition will be open to all, without restriction of age, sex, nationality, residence, educational qualifications, or connexion with any University or other institution. Inquiries addressed to the Secretary of the London School of Economics and Political Science, Clare Market, Kingsway, London, must enclose a stamped and directed envelope.

THE London County Council has issued a pamphlet ("Handbook of Classes for Teachers") setting out the arrangements made for the session 1912-13 in connexion with the various lectures and classes established by the Council for the further education of teachers. These lectures, which are free upon payment of a registration fee of one shilling, to all teachers actually engaged in teaching in the county of London, irrespective of the institutions in which they are employed, offer a wide choice of subjects, and are designed to appeal to the many and varied interests of the teaching profession. They must be of great value on the one hand to the teacher who desires to specialize in one particular form of education, and, on the other, to the teacher who wishes to keep abreast of the times and improve his general culture by learning from men of high academic standing and distinction who are recognized experts in their own particular subjects. Apart from purely pedagogical subjects, there are lectures on "The National Picture Collections," by Prof. Selwyn Image, Slade Professor of Fine Arts in the University of Oxford; "The Application of Art to Industry," by Mr. Beckwith Spencer, of the Royal College of Art; "The Greek Drama," by Prof. Gilbert Murray, Regius Professor of Greek in the University of Oxford; "Needlecraft," by Miss Margaret Swanson, of the Glasgow School of Art; "Westminster Abbey," by Mr. Francis Bond; "Historical Buildings in the City of London," by Mr. Charles Welch, lately Librarian of the Guildhall; "Animals at the Zoological Gardens" (under the direction of the Zoological Society). Comprehensive courses of lectures on modern languages, economic and social history have also been arranged. Among these may be mentioned lectures on "The British System of Local Government," by Mr. H. B. Lees-Smith, M.P.; "Laws affecting Children and Young Persons,"

by Mr. Arthur Page; "The Household Economics of the Hard-working Poor in London," by Mrs. Pember Reeves.

ESSAYS on the subject of "The Educational Advantages of Simplified Spelling" are invited by the Committee of the Simplified Spelling Society. A prize of fifteen guineas will be awarded to the writer of the best essay in each of the following classes: (1) teachers in schools (men), (2) ditto (women), (3) non-teachers. On the recommendation of the judges an additional prize of five guineas may be awarded in each class. The competition is open to all British subjects and to foreign members of the Society. There is no entrance fee.

(a) Essays to be written in English, and to be not more than five thousand words in length; spelling optional. (b) It is understood that the subject of the essay may be taken in its widest sense, and that no special scheme of simplification need be advocated. (c) Essays to be posted so as to be delivered to the Secretary of the S.S.S., 44 Great Russell Street, London, W.C., on or before October 1, 1912; the envelopes to be clearly marked "Essay Competition." Competitors residing outside Europe must post their essays so as to reach the Secretary on or before November 1, 1912.

MR. F. J. MELVILLE, President of the Junior Philatelic Society, writes to inform us that the Junior Philatelic Society is organizing an important International Stamp Exhibition, to be held at the Royal Horticultural Hall during the week October 14 to 19, 1912, and that he would be very pleased to send complimentary tickets to any masters who care to bring or send scholars interested in the subject of stamp collecting. "The educational value of stamp collecting," says Mr. Melville, "is a matter of general knowledge, but, as the hobby is carried on by schoolboys, they do not reap the proper advantage and educational value which it should afford if pursued on methodical systems. I venture to think that it would be to the advantage of those scholars who can visit the Exhibition to have the opportunity of seeing some of the most important collections of stamps in the world, and to see the manner in which they are arranged by the leading students of this subject." Teachers desiring free tickets should write to 14 Sudbourne Road, Brixton, S.W.

WE reprint, from the *Manchester Guardian* of August 21, the following useful "note" for the history lesson:—

The work of excavating the Roman city of Uriconium, on a bend of the Severn about six miles from Shrewsbury, is now making considerable progress. The streets to-day are four to six feet below the fields, and the only buildings above ground are fragments of the baths and a mass of masonry that marks the southern boundary of the hall of the great basilica. The total area within the walls was 170 acres, and the work of going carefully over all this is expected to take a good many summers. Diagonal trenches have been run out wherever a wall has been discovered, and a beginning has been made adjoining a modern road, which has been found to be a diverted road from Watling street, which ran through the city. The surface of the original road has been unearthed, and facing it the fronts of several houses have been laid bare. Four wells in perfect condition have been unearthed at various points. All were full to the top of Roman roofing tiles and pieces of painted wall plaster, many of handsome design, and in one well a large quantity of gold leaf was also found. This well has its original surrounding slabs and trough in position, without a fracture. Between seventy and eighty gold coins have been dug out, dating from the first century to the close of the fourth. Other things brought to light are silver and copper coins, brooches, small implements of iron, and quantities of pottery, particularly of the Samian ware. Quantities of oyster shells of great size are coming to light, as well as large wine jars and plates, all bearing the makers' names. A furnace unearthed shows the flues and remains of the charred wood. The work is only beginning, and it is anticipated that the finds will become increasingly valuable as it progresses.

THE COLLEGE OF PRECEPTORS.

EXAMINATION OF FOREIGN TEACHERS FOR CERTIFICATES OF PROFICIENCY IN ENGLISH.

THE following candidate was successful at the Examination held in July 1912:—

Pass Division.

Viller, Miss J. L. Y.

HAVING A GOOD TIME.

A SPEECH-DAY ADDRESS TO PARENTS.

SOME of us, remembering the severities and restraints of our childhood, are determined that the children of this generation shall have more freedom and liberty, more brightness and happiness, in their lives than fell to our own lot. It is no unusual thing for a mother, when she brings her little girl to school, to say: "I don't attach much importance to the lessons; I want my child to have a good time." This is as it should be. In this generation we are all, more or less consciously, seeking for happiness. As far as the children of the privileged classes are concerned, we seem to have gained the goal. No one can look at the children in this school and doubt that they are happy. Indeed, if some of our upright and rigid grandmothers were to come back and watch the children here, they might say that they were being spoilt; so completely have our ideas changed as to how children should be brought up. Many sayings remain to us, such as "Children should be seen and not heard"; "Shut the door after you, and do as you are bid"; and so on, which indicate the repressive attitude of our grandfathers towards children. The words "obedience" and "duty" were ever on the lips of the elders. If a thing was unpleasant, it was held to be right. We have travelled far since those days and, I am convinced, we have travelled on the right road. Deliberate repression of instinctive desires; deliberate efforts to break the will; deliberate infliction of mortification and pain: these are no longer held to be panaceas, either by parents or by teachers.

We all agree that children should have a good time; and we are all convinced that children are not necessarily spoilt because they are happy. Happiness is the goal we aim at, whether we are parents or teachers. But happiness is an elusive thing. It eludes the seeker as completely as the needle in the hay-stack. We can lay out no highway, with distinct sign-posts and say: here is the road to happiness. All we know about happiness is that he who deliberately seeks it fails to find it. It is a truth as old as the hills, though from time to time it may seem to be obscured, that "whosoever will save his life shall lose it." An indulged child, a spoilt child, is not really happy. This we know from experience. We know that the power to do just what one likes at the moment, the power to give way to every passing whim or emotion, brings neither satisfaction nor happiness. If I may venture on a diagnosis of the happiness of the children here, I would say that they are happy because they lead a purposeful life in which all their natural instincts have full play under careful guidance and control. There is a purpose in all they do; and that purpose is not the deliberate desire to be happy. That purpose is, though the children are quite unconscious of it, to express themselves, to lead their own lives, to be what they feel within themselves they can be.

Life has three sides—the physical, the intellectual, and the spiritual. We are all born into this world with an instinctive desire for self-expression. We want to do and to think and to feel. Sometimes education is spoken of as if it concerned the second of these three activities alone. But an education consisting of book-learning only is but a truncated affair. The schoolmaster who deals with the minds of his pupils and neglects their bodies and their souls is doing a part of his work, but not the whole. To-day we have recognized this truth, so far as concerns the first of these three sides, by admitting into school life organized games, physical exercises, and hand and eye work, as part of the school curriculum. The things of the soul are less tangible: but they cannot be, and are not, overlooked. Education consists in opportunities for self-expression along these three lines. Guidance there must be; but we have ceased to believe that education means pouring information into an empty vessel. Each child is an individual with an individual's longings and powers and instincts. Education means growth. The teacher can do what the gardener can do. He can make

the conditions as favourable as possible for growth, and he can supply the suitable nutriment. That the muscles may grow and do their work we supply material food; and that the mind may grow and do its work we supply books and thoughts. For the growth of the soul in spiritual life, it is no less necessary to supply the proper conditions and the needed nutriment. But neither teacher nor parent can do more for children than a gardener can do for his plants.

It often happens that parents think that because they know their children intimately they can do more than the gardener for his plants, more even than the teacher. But it is not really so. Teachers are those who have given their full energies to the education of children. Day by day they are studying, and learning to understand, child life in a way that is impossible to parents whose experience is limited to one group of children. Sometimes parents are unwilling to admit this, and divergencies of opinion arise between teachers and parents. There is an old saying, that "he who pays the piper calls the tune." Sometimes this is used in reference to education. The saying is, indeed, quite true if it is used correctly. He who pays the piper chooses the tune; but he does not tell the piper how to play. He who builds a house gives instructions to the architect; but he does not offer to teach the architect the laws of geometry. He who wants a good dinner gives his orders to the *chef*; but he does not attempt to instruct the *chef* in culinary principles.

No, we must trust the expert. The power of the purse gives us the power of choice; but when we have chosen we must abide by our choice and trust to the piper's skill to play the tune we have asked for. In no school of which I have knowledge is that trust and confidence on a firmer foundation than it is here. For the proper growth of the children on the physical, the intellectual, and the spiritual sides, we want carefully selected conditions and wisely chosen nourishment. These we have in this school. The children are happy not because they seek happiness, but because they are growing in the purposeful expression of their individual selves under the best possible conditions of skilled and thoughtful guidance, and loving, understanding control.

REGULATIONS FOR SECONDARY SCHOOLS.

THE Board of Education have issued the following Circular:—

1. As already announced in Circular 796, Article 38 of the Regulations for Secondary Schools will be withdrawn as from July 31, 1912. The Board are now able to communicate for the information of School Authorities the provisions which it is proposed to substitute permanently for those of Article 38, and which will be introduced in due course into the Regulations for 1913-14.

2. (a) It is proposed to pay an additional grant of £1 a head on pupils between fifteen and eighteen years of age in all schools eligible for grant under Article 36 (b) and offering 25 per cent. of free places under Article 20. It is hoped that this grant will strengthen the hands of School Authorities in their efforts to increase the length of school life, which still continues to be far from satisfactory, and will at the same time afford assistance to those schools which are in fact doing something substantial for the education of intending teachers. (b) In the case of small schools it is proposed in lieu of the above grant to raise to £300 the fixed grant of £250 now payable at the discretion of the Board under Article 40. Some special increment in the grant to small schools has appeared to the Board to be desirable, on the grounds that such schools are relatively more expensive to maintain, and that a fixed increment is fairer in their case than one based on the necessarily small number of pupils between the ages of fifteen and eighteen.

3. In order to mitigate any temporary inconvenience which may be caused to School Authorities by the withdrawal of Article 38 in its present form, the Board have decided, pending the introduction of the new permanent

provisions as from August 1, 1913, to provide during 1912-13 for a special "Commutation Grant" to all schools which may receive for the current year, or which have received in certain previous years, a grant under Article 38.

4. For the year beginning August 1, 1912, Article 38 will accordingly be amended to read as follows:—"38. Provided that they satisfy the Regulations in other respects and offer at least 25 per cent. of free places under Article 20, (a) Schools which received grant under Article 38 of the Regulations for Secondary Schools in respect of the School Year 1911-12 will receive in respect of the School Year 1912-13 a special commuted grant which will be equal in amount (i) to one-fourth of the total grants received by the school under the Article in respect of the four School Years 1908-12, if the school was on the Grant List in each of those years; or (ii) to one-third of the total grants received, if the school was first placed on the Grant List in 1909-10; or (iii) to one-half of the total grants received, if the school was first placed on the Grant List in 1910-11; or (iv) to the actual amount received, if the school was first placed on the Grant List in 1911-12. (b) Schools which failed to receive grant under Article 38 in respect of the School Year 1911-12, but which received it in each of the three School Years 1908-11, will similarly receive a commuted grant, which will be equal in amount to one-fourth of the total grants received by the school under the Article during those years. (c) Schools which failed to receive the grant in respect of the School Year 1911-12, and, through not having been placed on the Grant List until either 1909-10 or 1910-11, also failed to satisfy the conditions of subsection (b), may nevertheless receive a commuted grant at the discretion of the Board, provided that they received a grant under Article 38 for the two School Years 1909-11 if first placed on the Grant List in 1909-10, or for one year if so placed in 1910-11."

5. The Board have under consideration the question whether further measures can be framed for assisting the provision of teachers for public elementary schools.

The Board have also issued the following additional Circular:—

I.—REGULATIONS FOR SECONDARY SCHOOLS IN ENGLAND FOR THE SCHOOL YEAR 1912-13.

1. Subject to the alteration in Article 38 already announced in Circular 803, the Board of Education have decided to continue for the ensuing educational year their Regulations for Secondary Schools in England.

2. Schools which have been receiving grant under Article 41 or under Article 42 will, where no express notice to the contrary has been given, continue to receive grant on the same terms for the year 1912-13, if they continue to satisfy the Regulations in other respects.

II.—REGULATIONS FOR THE PRELIMINARY EDUCATION OF ELEMENTARY-SCHOOL TEACHERS IN ENGLAND.

The Board of Education are giving their careful consideration to the practical problems arising out of the decrease in the number of persons intending to become teachers in public elementary schools, but for the present they propose to continue in force the existing regulations for the preliminary education of elementary-school teachers in England subject to the following modifications which will take effect as from August 1, 1912:

1. In Articles 3 (a) and 31 (c) the words "and must (except in the case of a candidate whose parent or guardian has declared a conscientious objection to the vaccination of his child) have been vaccinated" are cancelled.

2. Article 24 (as distinct from Article 24*) is cancelled, as there are now no recognized pupil-teachers whose periods of recognition began earlier than August 1, 1908.

3. Article 32 (c) is modified so as to read: "A person who has been a bursar will not, as a rule, be recognized by the Board as an uncertificated teacher even if he is above the age of eighteen, and has passed an examination qualifying him for recognition as an uncertificated teacher, unless he has either been for at least a year in a training college or been employed for a year as a student-teacher."

4. Article 33 (c) is modified so as to read: "The bursar must have either (i) entered a training college and signed the training college undertaking, or (ii) entered a training school of domestic subjects and signed the declaration required in that case, or (iii) completed a year of satisfactory service as a student-teacher in a public elementary school."

5. As already intimated in Circular 772, Appendixes A and B to the Regulations are out of date. For the Board's current requirements on the matters dealt with in Appendix A and in Appendix B respectively, reference should be made to the Regulations for the Training of Teachers for Elementary Schools, 1912, which will be issued shortly, and to the Syllabus of the Preliminary Examination for the Certificate, 1913, which has already been issued as a separate pamphlet and can be supplied on application to the Board.

CLEAR SPEECH AND CLEAN SPELLING.

By Prof. WALTER RIPPMANN,

Chief Inspector of Schools for the University of London, Hon.
Treasurer of the Simplified Spelling Society.

To those interested in the movement for securing clear speech and clean spelling the widespread ignorance which tends to check progress on many sides is at once a source of amazement and a spur to further unremitting effort. Is any civilized nation as ignorant as ours of the sounds employed in living speech? Has any other the same ill founded reverence for chaotic spelling? People who are otherwise quite educated find it a matter of the greatest difficulty to utter separately the sounds of which a word is composed; and this does not prevent them from laying down the law about the pronunciation of this or that word with great confidence. Indistinct utterance and unpleasant intonation are far more common than they should be.

Most teachers of English who try to correct the pronunciation of their pupils have to rely on imitation. They have not made a study of the speech of their pupils. They have a vague sense that their speech is right and their pupil's speech wrong; but to give any clear account of the difference between the two is altogether beyond them. This neglect of the spoken language goes back to the first years of school life, when bad habits are formed which it becomes very difficult to eradicate. The present spelling is taught with all its redundancies and inconsistencies; occasionally it is pointed out that the presence of a redundant letter gives some suggestion of kindred words. The *b* in *doubt* is connected with *dubious*, or the *gh* in *daughter* with the German *Tochter*. The idea is imparted that wherever the spelling is irregular there is some etymological justification for it.

Now, in the first place this is not true. A great deal of our bad spelling is simply due to faulty attempts that were made to represent sounds with an inadequate alphabet, or to the misguided efforts of the half-learned to make English words more like Latin words. In the second place, there is a confusion here as to the purpose of the written language.

We write in order to communicate our thoughts. We speak for the same purpose; writing is a substitute for speech—and a substitute not altogether adequate. If we hear a poem well read we derive more pleasure from it than when we read it, because the spoken language has a wealth of meaning in the intonation which the written language does not represent. When we read, the signs on the paper suggest the spoken language, and from this point of view they are the more satisfactory the better they represent the spoken language—*i.e.*, the more regularly the signs used correspond to the sounds uttered. The perfect instrument is one that contains no superfluous parts, and that is as simple as is consistent with efficiency.

Language spoken or written is an instrument which we use constantly. It also can be made a subject of study.

We use a sewing machine; we can also take it to pieces to see "how the wheels go round." We use a horse for riding or for the drawing of carts; we can also study its anatomy or trace its development from a more primitive type. The use of language as an instrument is quite a different thing from the study of its history. Millions use it as an instrument who have not the time or the inclination or the requisite knowledge of other languages to study its history.

Now as an instrument the written form of the language is very bad. The redundancies are, to the man in the street, more obvious than the inconsistencies; both are trying to the learner, and entail a great expenditure of educationally worthless effort. Instead of simply learning the sounds and the equivalent signs, the child has to memorize the groups of signs that represent whole words: it has to remember *head beside bed, speak beside speech, word beside heard* and *absurd, inflexion beside detection, know beside no*, and hundreds upon hundreds of similar difficulties. The result is that there is no clear connexion in the child's mind between sounds and signs; the confusion being rendered still worse by the misleading names of many letters.

The spelling is not more satisfactory for purposes of study. It gives a picture of the pronunciation not of the present day, but of the sixteenth century—if of any period at all. A century from now teachers will be warning their pupils not to be misled by the spelling of the early twentieth century into believing that, for instance, the people who wrote *k* and *gh* in *knight* actually pronounced those signs. The spelling of early English was relatively good—it enables the student to ascertain the pronunciation of the language. It was not burdened, like ours, by useless letters: it did not represent the same vowel sound or diphthong in a dozen different ways, and it did not suggest wrong derivations like our spelling of *sovereign* (unconnected with *reign*) or *rhyme* (not derived from the Greek) or obscure the derivation like our spelling of *sprightly* (connected with *sprite*).

If our spelling is manifestly defective, why are we so attached to it? It is entirely a matter of habit. We see common words in writing, and especially in print, more often than any objects of our daily life. In consequence, we have grown very much accustomed to them, so they have become intimately associated with the idea they represent. The rose by any other name would smell as sweet; but to our eye *rose* is more attractive than *roez*. Some words have a pleasing look, and others repel, simply because they are associated with pleasant or unpleasant ideas. To change the look of a word is to break these associations; and, therefore, a truly simplified spelling which entails numerous changes is not attractive to the present generation. Habits—even bad habits—are dear to us.

But the coming generation would not feel as we do. Taught the rational spelling from childhood, their eyes would grow accustomed to the new forms of the words, and these would become closely connected with the ideas they represent, and would be invested with the same value that we give to the words in the present spelling. In this respect there would be no loss; and in other respects there would be great gain.

The teaching of reading would be bound up with the teaching of the spoken language. The training of the ear and the vocal organs would precede the training of the eye and hand. The use of the written language as an instrument would be acquired in a natural way, and far more quickly and surely than at present. The time saved could be devoted to other subjects that call for further attention in the short school life of the vast majority of those who learn English as their mother tongue. In our schools this would mean greater efficiency—and we cannot afford to neglect any means of keeping abreast of other nations in the advance towards a higher degree of civilization.

This is where the gain would be greatest; but the advantages of a simplified spelling would extend beyond our shores. It would render the task of learning English far easier and more attractive to the millions of our fellow-subjects in Canada, in India, in South Africa. A sound know-

ledge of English is the strongest bond of union in an Empire of such vast extent as ours.

Our gain would be even more far-reaching; nothing but the spelling prevents English from becoming the recognized language of intercourse between nations. As such it would be of great practical value; and it would easily outstrip any artificial language—for those who had learnt it for practical ends would at the same time find in it the key to a rich literature, to which no artificial language can offer anything even remotely comparable. Our writers would have an appeal to a far greater number of readers; the speaker of English would command an audience in any part of the civilized world.

Clear Speech and Clean Spelling: try to realize what it means; do not be ashamed to reconsider your opinion on the subject of Spelling Reform. Say, if you like, "I am too old to make this change," but do not account this to yourself for virtue. You may be excused for not surrendering a deeply ingrained habit; but you cannot be excused for shirking a problem of such vast importance, or of depriving the coming generations of the opportunity to acquire, in a rational way, an instrument well fitted for the purpose of communicating thought.

Such an instrument is offered to your consideration by the Simplified Spelling Society in the scheme which it has prepared. It is not put forward as something perfect and final. In some details it can undoubtedly be improved; but this much can be claimed for it: it requires no new characters or diacritics, it is very simple to learn, and its adoption would mean an enormous advance. You may have full particulars concerning the scheme on application to the Secretary, at 44 Great Russell Street, W.C.

CURRENT EVENTS.

THE address of the Secondary, Technical, and University Teachers' Insurance Society is 35 John Street, Bedford Row, W.C.

* * *

THE British Association meets at Dundee on September 4.

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THE International Congress of Mathematicians met at Cambridge during the last week of August.

* * *

THE Birmingham Education Committee have decided to allow the Navy League to form branches in the secondary schools under the jurisdiction of the Committee, subject to the concurrence of the head master.

* * *

THE current number of *History* contains some valuable articles that should prove useful to the teacher of history.

* * *

MR. JOHN HALL, of St. Leonards-on-Sea, has left the reversion of £40,000 to the University of Manchester.

* * *

THE Memorial Scholarship Fund for Giggleswick School, which has been raised in celebration of the four hundredth anniversary of the foundation, has now been

made up to the sum of £3,000 by a donation of £250 from Mr. J. W. Coulthurst.

* * *

THE lectures arranged last year by the London County Council, and given by Dr. Christine Murrell, on "The Physiology of Adolescent Girls," will be repeated this year. The lectures are open to all women engaged in teaching in the County of London.

* * *

IT has been decided to hold a Summer School of Geography in Yorkshire in August, 1913. The school is being promoted by the Universities of Durham, Leeds, and Sheffield, in co-operation with the County and County Borough Committees of Yorkshire.

* * *

THE volume of "Suggestions," published under the control of Sir Robert Morant, was at the time declared to be tentative in character. The Board of Education are now revising it, and are publishing it in sections. Instalments 3 and 4, on Arithmetic and English, have just reached us. Although these "Suggestions" are written for public elementary schools, they contain sound matter which may well prove useful to any teacher.

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WE have received from the Board of Education the complete Special Reports on the Teaching of Mathematics in two volumes.

* * *

THE Regulations for the Training of Teachers for Elementary Schools, in force from August 1912, are now available, price 6d.

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THE Chief Woman Inspector of the Board of Education has issued a report on the teaching of domestic subjects in elementary schools, price 2d.

* * *

MESSRS. W. HEFFER & SONS, of Cambridge, announce the issue of "Biblical History for Schools: New Testament," by F. J. Foakes-Jackson, with the collaboration of F. T. Dean Smith.

* * *

MESSRS. RIVINGTONS announce some new issues in "Massard's French Readers," and also a volume entitled "Leading Figures in European History," by R. P. Duun Pattison.

* * *

MISS MARGARET J. BENSON has been appointed by the Senate a "Professor in the University of London."

* * *

THE Second International Moral Education Congress was held at the Hague during the last week of August.

* * *

THE forthcoming International Kinematograph Exhi-

bition and Conference, to be held in February of next year, will include educational and scientific sections, showing the latest devices at schools and the ultra-microscope at work. A strong advisory committee of head masters and head mistresses of secondary schools has been formed, including Mr. Lyttelton of Eton and Miss Douglas of the Godolphin School.

* * *

THE first volume of evidence given before the Royal Commission on the Civil Service has been issued.

* * *

WE understand that less than half of the teachers registered in Column B have applied for the return of their guineas.

THE FUTURE OF NÄÄS.

SINCE Otto Salomon died in 1907 three different attempts have been made to provide a successor. The fourth attempt is all the more likely to be successful because in the meantime the State in Sweden has intervened by the promise of a yearly grant, amounting for the present year to more than £2,000, which is to be devoted to the repair and upkeep of the Castle, the farm buildings, and the Seminary buildings, including the laying down of water-pipes and the installation of the electric light.

Last year, the governing body, finding themselves in need of some outside help, took Privy Councillor P. E. Lindström, who was Minister for Church and Education in the late Cabinet, into their counsels; and they have now induced him to become the provisional Head of the Institution for one year at least, with the opportunity of becoming permanent Head if he sees his way to accept the post. The Director's salary is fixed at 8,800 kronor, and suitable provision is made for a retiring pension. The first course, for which there are two hundred applications, began on June 10. At this course Prof. Axel Herrlin is giving the lectures, in which duty he is to be replaced by Dr. Rurik Holm, Inspector of Elementary Schools (who is not new to the work), at the usual course in August.

The delicate question of the Director's relation to his governing body remains as it was. Whilst some maintain he cannot do Salomon's work unless he has Salomon's freedom, and others hold that a strong and capable Director will make his own position, it seems to be generally felt that a revision of the whole question may be necessary in the near future.

Still further changes may be expected at Nääs. For rather more than half the year the buildings there have been entirely unused; and in the impending reorganization and extension of continuation school work in Sweden, it is hoped, if we may judge from a speech of Minister Berg in the Gothenburg *Handels-Tidning*, that Nääs may become a centre for the additional training of teachers that may become necessary. "In the reorganization of our continuation schools," says Minister Berg, "which must shortly take place and whose aim will be to bring the instruction into close relation with the practical tasks the pupils are engaged in out of school, the State can make very good use of an institution like Nääs, which is so admirably adapted for arranging shorter courses of training in every practical subject. Such a use would be in closest agreement with the object of the institution, which is, according to the founder's original deed, to provide continued training for teachers of both sexes who have already entered the profession, and so to promote education in general and especially the use of pedagogic Sloyd as one of its instruments."

J. S. T.

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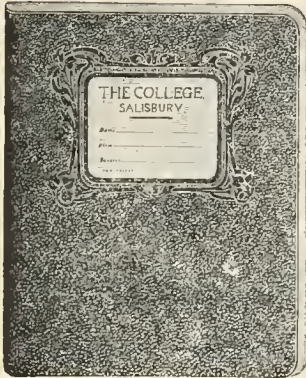
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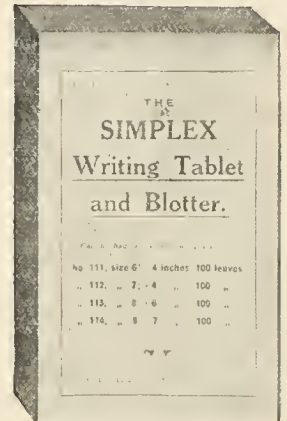
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How much of our uncertainty as to the aim of our education is the result of fear? Fear on the part of some that, if they quite definitely state what they intend to be the result of education, something quite different may be arrived at. The true Briton hates to show his hand too soon in case this should happen—he would almost rather be considered a shrewd, hard-headed knave than a fool. Fear on the part of the idealist lest the practical man should accuse him of want of knowledge of the world and its practical needs; fear on the part of the man of business lest English youngsters should learn anything which might make them dreamers or sentimentalists instead of skilled mechanics or clever diplomatists able to compete with Germany! So we go on, year after year, carefully declining to define the end of our education. A little weight is put on the side of the idealist this year, to be readjusted with more technical work the next; a little extra allowance for the humanities or what goes for them in the elementary schools one year, which, after careful explaining and excusing to satisfy the critics, is changed to more handwork the next. How good and conscientious and well meaning we all are! No wonder there is much congratulation and applause at intervals over the marvellous results achieved!

How steady our progress is! Of course it is; a river does not flow backwards. We, being afloat on the river of time, must needs go on; but how would it be supposing we went not only with the current, but by the direction of a pilot? Yet human nature does indeed deserve congratulation that, even when the blind lead the blind, they actually arrive somewhere! For there are many half-way houses to which

parents and teachers do definitely wish to lead the children: sometimes they understand each other and agree; sometimes they do not. Parents, in one class of life, quite definitely want their boys and girls to become wage-earners as soon as possible. In another class, they want them always to have a good time and to be easily familiar with the customs and habits of gentlemen. Teachers, on the other hand, would like generally that their children should so intellectually shine that they will reflect credit on their school, either in the eyes of Inspectors or at scholarship examinations. Can any of these aims really be considered ultimate? Might it not be worth while to go a little deeper and consider again what the creature is, and what destiny we are trying to mould him for, before we spend all this time and energy?

Surely, whatever type of a philosopher we may be, when we really face the question we must acknowledge there are two definite sides to human life for which all human beings should be prepared. First, no one has a right to enjoy life, to succeed to an inheritance of the thought and labour of the past and to the contributions of their fellows in the present, without giving something in return. Civilization—theoretically—forbids man to starve. Civilized communities now make themselves responsible—more or less—both for the physical and intellectual life of their children. Surely each child must be brought up fit to contribute his or her quota in return? But it is seldom put in this way to the boy or girl. How can they best make money? is the form in which it is put to them. That is, how can they best secure for themselves a large share of the general inheritance? What work is best paid? What profession most quickly promises success? For which do the boy's talents seem most promising so that he can in the end have a steady and generous income? These are the questions asked by parents. Whereas, the important thing is that the boy should justify his existence, find out in what way he can make the best return for the share he has in the general good resulting from the past and present work of his fellows. It is to this end that much of his educative work must be directed. The same thing, you say? Not at all. In the one case, you are educating one who is to be fitted to *take* all he can, whose success and skill is to be judged by the amount of these takings and the size of the house or houses he is able to live in. In the other, you are educating one who is to seek to *give* generously and whole-heartedly all that he can to the service of humanity and in return have a fair share, as do all his fellows, in the common wealth produced by the labour of all. Can it be that there are still some who consider that certain rare and aristocratic souls sufficiently enrich life by their mere existence and so do not need to contribute anything else? Can it be that there are still some who consider that some men must toil long hours all the year round with scanty leisure before they have contributed anything equal to what others can yield in a few gracious and easy hours with long intervals of rest between? If this is so, is it not a grave indictment against our present system of education? Is it the kind of education that rational beings can be proud of?

The world needs a certain number of farmers, builders, carpenters, clothiers, cooks, sailors, wits, doctors, prophets, &c.: is our education helping to produce them or only helping to produce money-grubbers? Do we ever ask what *are* we trying to produce? Is it chiefly luck when we do achieve someone really good at one of these vocations?

At any rate, for the continuance of the race, we do require, and do produce year by year in some kind of a way, parents. How many girls have been taught the duties and responsibilities of motherhood and have been helped towards the skill needed to really make a home? How many boys acquire the faintest notion of what a father's fair share is in the keeping of that home? And yet we call ourselves a practical people! Until we face the fact that we must educate for *use*, not for someone's profit or any mere show, we bear not the slightest semblance to a practical people. The community needs certain plain, useful workers who understand

what they are doing and have the skill necessary for it. Is our education producing them?

But there is something else. There have been poets—there are religious teachers among us still—who say that man is not merely animal, however skilled and educated, but an immortal soul with an immortal destiny. Is education to have no part in preparing him for that? What consummate folly! We educate for the anteroom in which a mere fraction of existence is to be spent, and we leave the poor trembler untaught and ignorant of all that belongs to the larger life. Is it because, after all, we have ceased to listen to our religious teachers and to believe the creeds which the churchgoers say? We listen somewhat impatiently when they insist on what they call religious teaching in the schools. Few parents inquire as to its methods and its significance. But, even allowing for those who consider the present so certain and all-important, the future so hazy and distant, that they deprecate the religious teaching which deals with the future, there is a side present now in every human creature which demands nutriment. That in us which thrills to the music heard by ear or seen by eye, that in us which reaches out beyond the limits of our present life towards an ideal loveliness which somehow we are able to conceive, asserts its right to live. We, who pride ourselves on feeding the bodies of school children and include the development of the physical faculties as part of our education, have no right to say that the soul of the humblest and poorest little child shall go without food. Yet the majority of children learn to hear unmoved the crystallized expression of the most sublime and stupendous hypotheses ever conceived by philosopher or poet. So long as the religious teaching for the poor is concerned chiefly with their duty to their betters, that of the rich with the responsibilities of Empire and thankfulness that they are not as other men are, the practical man will not object; and it is well, he says, that parents should demand for it a place in the syllabus. But is this religious teaching? Have we now the religious teaching which is born of a great faith and which carries with it a great art and a great literature? Or do we merely simulate it and teach what we believe our fathers considered to be the true faith? Does this teaching enlarge and open the eye of the soul till, undimmed and unafraid, it can gaze at the beatific vision and realize the eternal rush of man's soul to the God soul; ever, through the ages, approaching in nearness yet with a nearness ever to be attained. How many turn superciliously or fearfully away from the possibility of such religious teaching as being something too dangerously near hysterical emotionalism? Yet, is any religion less than this worthy of the name? Can we have a religion without passion, without poetry, without an insistent demand for some expression in the life of the people? Do we dare to put this as the aim of the present-day education side by side with the demand that man shall be educated so as to fit him to play his practical part in a fair and equitable state of society? If we dare to put these two forward as the true aims of the education we give, then we can begin to ask ourselves how far our present methods will lead us towards the fulfilment of these aims.

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Doubts are constantly expressed as to whether teaching can be taught. It is held by many that teaching is a natural art and that the teacher is born, not made; that the natural genius will be quenched by rules and methods, while the man or woman without an instinct or aptitude for the work can be at best but a well adjusted machine. In opposition to this view it is urged that teaching is a science, that the ignorant are sure to blunder, and that the pupils must be protected from the inevitable mistakes of the uninstructed teacher; and that those who have an intuitive gift for the art of teaching will lose nothing and gain much from a wisely planned course of training.

No one will deny that the first essential is that the teacher should have received a liberal education in an excellent school, followed by a University course, including, if possible, the special study of some subject for an honours degree. The association with University professors, with other students, and University life generally, is invaluable for the general culture indispensable to the teacher of real distinction. The range of knowledge should be wide and the interests many. But more is required. University culture will not teach child psychology, or how to handle a class, how to organize a school, how to draw up a syllabus, distribute time, develop a dull child, keep a class together, and deal with the ethical questions which continually arise. For all this training is essential.

Yet, in adding a period of training to a University course, it must be remembered that we are prolonging professional preparation, and the cost entailed is a serious question. For this reason it is impossible to allow more than a year to post-graduate training, but I contend that this is the minimum that should be demanded and given, and that it can be used both as a test and as a training. Not the least of the services rendered by such a year should be the disappearance of many a failure from the ranks of the teaching profession. Training mercifully expels most of those who realize their own incapacity in time to adopt another career. It tests the natural gifts which it cannot create. It discovers whether the teacher has sympathy, perception, grasp of character, initiative, humour, imagination, lucidity, while it develops the scientific side, the power of co-ordination, analysis, method.

It is of the first importance that any system of training should be elastic. The effect of rapid changes in social conditions, which affect succeeding generations of children so that the needs of one age differ from those of a preceding period, must be taken into consideration, and in education as in all else there is a perpetual action and reaction observable—the swing of the pendulum backwards and forwards. For instance, five-and-twenty years ago in the girls' schools of England there was an effort to awaken interest, and the cry was that lessons were dull. It was impressed upon teachers that their first duty was to be interesting, and they have learnt their lesson so well that now the burden and heat of the day falls almost exclusively upon the teacher. We are learning now that in over-emphasizing a much-needed reform we are in danger of weakening the fibre of the children, and that they lack the power of grappling with difficulties because so few are presented to them.

Or, again, we may find that we have gone too far in giving liberty to the individual, and that it will lie with a succeeding generation to institute restrictions. If we are going to meet the practical needs of the day in our systems of education, I believe that a revision of our training syllabus and problems is necessary every ten to fifteen years, for the dangers and difficulties that beset one generation are not those that beset the next. We must constantly inquire whether we are varying our training to suit our national development and social evolution. There must always be a stable minimum, but the remainder may and should be an optional and variable quantity, capable of adjustment to the needs of the time, so that individuality can always have a comparatively free field.

The course should also, in my opinion, be modified according to the previous career of the individual student. Such parts of the syllabus as may already have been covered in a University career should be omitted, leaving more time to be

spent on those subjects which are new. For example, students who have read mental and moral science for their degree course need give but little time to psychology and ethics while being trained.

The view of training which obtains nowadays is that it should be mainly suggestive, not stifle originality, but give scope to the individual to work out in her own way those principles of education on which authorities are agreed, and which are true for all time. Such principles are simple and fundamental, and only the application of them varies according to the individual and the age. It is, indeed, imperative that training should escape rigidity and any tendency to crystallization. We want to vitalize our teaching, not to sterilize it. Everything must be done to preserve flexibility and individuality. Rules should not be imposed on the teacher, but she should be directed to the sources of inspiration, helped to discover the secrets of success and failure both from the history of the past and from the experience of her contemporaries.

We may now pass on to the second part of my subject, viz., the arrangement of the course of study as at present designed for our Secondary Training Colleges, and see if it fulfils these conditions. One can hardly look at the Regulations for the Teachers' Diploma of the Cambridge or London University without being appalled at the extent of the ground that has to be covered in a year. The main sections comprise the history, the practice and the principles or theory of education, the subdivisions of which show a really vast area, yet on minute inspection it is difficult to determine which part of the prescribed course should be omitted.

Some question has been raised as to the usefulness of the study of the history of education, but on this point I need only refer you to the excellent vindication of the subject by Prof. Welton, of the University of Leeds, at the annual meeting of the Teachers' Training Association, 1912. The value of psychology as a basis for the principles of education needs no support. Of late years the theory of education has become less dogmatic, and perhaps invites adverse criticism less than method and school management, for with regard to the latter we have to face the danger of rubbing off the bloom from the young and vigorous enthusiast.

It is essential that the lecturers on method and the critics of the students should be free from prejudice and should be appreciative rather than dogmatic. Otherwise, the critic may be so preoccupied with hard-and-fast rules as to the way a teacher should stand, should arrest attention, should cover a certain amount of ground, that she fails to detect some subtle excellence in the teaching which atones for a multitude of sins in other directions. As Prof. Bradley has pointed out in his lectures on Shakespeare, it is of the first importance to free the mind of preconceived notions, to lay it open to receive perfectly new impressions, and to be honest in saying if these impressions do not agree with the usual critical theories. Perhaps the chief danger lies in the formal criticism lesson, when staff and students discuss the lesson with scientific thoroughness, and it requires some courage to suggest that to say little would be more profitable. These formal criticism lessons are not held in some colleges on this account, and great care is taken that the students shall not be subjected to promiscuous or unwise criticism.

If, therefore, it seems impossible to forgo the study of any of the subjects comprehended in the Regulations—and there is a general feeling that the overcrowded curriculum can lead only to confusion and congestion—we may well ask what "semblance of resource avails us."

I venture to submit a possible modification of the existing course, and do so with the knowledge that the question of recognizing variant types of training is under consideration.

I would suggest that it may be advisable to avoid mental indigestion by dividing the examination somewhat on the lines of the B.A. and M.A. degrees, by a specified period of time, giving a certificate after the first examination for an elementary knowledge in certain branches of the subject which it is essential the novice should have studied before beginning to teach, and at a later stage awarding a diploma on the results of a thesis or examination in the more philosophical and theoretical part of the work.

There are some subjects which the young teacher fresh from college must be taught before it is safe to entrust her with a

class, but there are others which she can deal with intelligently only when she has had an opportunity of applying the theoretical knowledge which she has acquired and has had the time for that mature reflection which is so essential, but quite impossible, during her year of training.

I believe it will be generally agreed by those engaged in training teachers that at present the curriculum can be considered only a counsel of perfection, for a process of selection must be adopted by the student and as that selection is not recognized by the examiner and he assumes a knowledge of the whole, her success in examination depends upon a lucky chance.

I am not inclined to support any modification of the existing course of training which gives undue importance to mere University distinction, and minimizes the value of sound and systematic theoretical and practical instruction. The graduate is only too much inclined to rest upon her laurels and underestimate the need of training, and a head-mistress, already overburdened with work, may be expected to criticize but not to train her staff.

DRAWINGS BY CHILDREN.

IN the days of our youth we copied freehand, immaculate drawings of flowers and shells, and details of Greek ornaments. With advancing years came the honour of animal drawing from copies made by a master, studies of yachts that sailed only on paper, sketches of lines that represented trees. But we only copied. The flowers were not there, nor the shells; the animals were without movement; and they made no sound; our timid lines were copied from lines and not discovered experimentally from the beautiful, mysterious works of Nature.

To-day all this is changed, and our children reap the benefit of their parents' painful experience. That is perhaps the only thing that has made the experience worth while. In the old days the only real happiness was thin drawing paper. Then you could put the hateful, impossible acanthus underneath, mark out your points—perhaps even sketch in an outline—and so obtain some passable resemblance to the printed original. 'Tis a good thing those days are done. Our children would probably revolt against such old-fashioned methods, and our children's children fill the art room with the strains of the "Marschallaise."

They say—they have always said—the art of our times is decadent; people no longer take the pains to draw; they do not learn the value of form. Let them say. And, having said, and having pronounced in no unmeasured terms against impressionism, post-impressionism, cubism, and futurism, let them visit the child's Burlington House and form a new estimate of the healthful growth of art amongst the children.

But perhaps it is hardly fair to use that august title "Burlington House"—hardly fair, I mean, to the exhibition organized by the long-suffering teachers. For the real Burlington House rejects with magnificent wave of the hand. The Children's Academy includes—with equal magnificence—a contribution from every child in the school, the only stipulation being that there must be never a finger mark. Truly a remarkable shibboleth, the critics cry! But why should not it be so? To draw means—if it means anything—to make manifest something observed; and there is no reason why every child should not acquire, up to a point, the faculty of showing graphically the thing observed.

That is why we dispense with copy books and formalism, and take unto ourselves leaves of bread, Chinese lanterns, bananas, coal, blackboard and easel, shawls, caps, and hats. Or we draw each other's legs and arms, make studies

of the backs of our friends—permissible backbiting this process might be called—and go out into leafy glades and try to put down what we see. Worthy generation of teachers! Soon we shall consider you not beneath the high level demanded of you as instructors of the nation's children.

It was in the large hall of one of our suburban secondary schools that my eyes were opened. Tired of one-man shows and galleries, and expecting acute boredom from wandering aimlessly amongst feeble, childish efforts, it was a happy surprise to find so much good work. And it was work, too, the freshness and vigour of which gave promise for a future; not necessarily a future of genius, but one of trained observation and the faculty to record in intelligible form what the eye of understanding has beheld. Genius there certainly was in many a child's work, but the most satisfactory impression was that made by the general evidence of power and spontaneity which are a joy to artist and beholder.

The school stands close beside open ground on which grow trees, and from the art room windows many studies of trunk and branch and foliage have been made. How much better than drawing from paper representations! There are long corridors in the school, with doors open and shut, and glimpses of staircases and intersecting passages. How much better worth attempting than the old cubes and truncated cones of our early days! The abstract is anathema to the child mind. We have learned enough psychology to know that now. Out under the trees grow bluebells, campions, primroses, and celandines. How much greater the value of brushwork which shows us these, than fiddling with geometrical patterns which baby fingers can never, never grasp! And there is the chance of snapshot drawing. It's good fun to jump a fallen tree and know that you will see afterwards the attempts of your companions to catch the movement of your spring.

And now a word about the ages of the children who do these things. It used to be thought impossible for a young child to draw from Nature, and well I remember the difficulty of gaining permission to attempt the representation of a hut in a field. "You can't do it," I was told. As a matter of fact the statement proved almost literally true. Many a house had I copied from print, but it puzzled me almost to the verge of despair to find that only two sides of my hut could be shown on the sketching block. I walked round to the back to see if another point of view would help! But our children are not taught that there are impossibilities, and they know of none. Modern education is accused sometimes of making the path to knowledge too easy. On the whole the accusation is misplaced. It seems to our old-fashioned ideas too easy, because in our days difficulties were invented that we might learn the doubtful moral satisfaction of overcoming them.

But the ages—from eight to seventeen. And the power of the youngest was a development of which any teacher might well be proud. There was a water-colour sketch of a glade in the wood far more truthful than the average pot-boiler of the picture shop. It would be idle to pretend that the brushwork had the firmness which an older hand would give, but the truth was there. And this is only one example of more than a thousand.

Ruskin said, "Interpretation, never imitation." If only we could learn as quickly as our children learn! And Herbert Spencer: "By trying to interest us in their discoveries of the sensible properties of things, and by their endeavours to draw, they (the children) solicit from us just that kind of culture which they most need."

That is really what it comes to. If we are to teach successfully we must humble ourselves to the extent of letting our children show us the way. When they want our help they ask for it. It is a good deal if we can rise to the occasion. So long as there is happy spontaneity of purpose children are learning. When there is unhappy flagging of purpose they are only being taught. In the days of our youth we were taught drawing. Our children learn to draw. There is all the difference in the world.

JOHN HENDERSON.

THE EARL OF SELBORNE ON THE RESPONSIBILITY OF DEMOCRACY.

A CORRESPONDENT sends the following account of Lord Selborne's address to the Imperial Conference of Teachers' Associations:—

Lord Selborne said that it has sometimes been raised against the League of Empire as a reproach that the idea of Empire has been too emphatically forced on children's minds. It is a great mistake to wave the flag too much in their sight, but it is certainly a still greater one not to show it to them at all. For they are the voters of the future. No task is so difficult as that which our English democracy has to fulfil, and no one knows whether it can bear what is put upon it. The problems of the democracies of the ancient world were simplicity itself compared with those which the modern world democracies have to solve. Responsibility is the key-note of the democracies of the modern world, and herein lies the supreme opportunity of the teacher—to train up the democracy of an Empire fit morally and able intellectually to carry the burden.

How may the idea of responsibility be grafted through history in the minds of the young during the course of teaching? I would never try to teach history as a lesson, to begin with, but rather make use indirectly of its atmosphere, surrounding the children on every side. I would leave direct lessons till later on in school life. The normal school life of the future voter does not admit of unlimited time. How shall we use it to the best advantage for history? If we go back to origins, the child only gets to the first Pyramid when he leaves school. The normal child classifies all environment in two ways: lessons and life in general. I want history to belong to life in general, not to lessons, which are outside his life. How is this to be done? By trying to show how infinitely complex is modern life. We can imagine in the Wars of the Roses many *individuals* not affected by them, but every English child has been touched by the great coal strike, for to-day the nation is one body, not a single family was unaffected. How many children saw wood burnt instead of coal for the first time?

The next step would be to show that *nations* can never be isolated in the world any more. I was in South Africa thirty years ago during the Boer famine; there was a financial deficit in Cape Colony, and fresh taxation was imposed. Why? Because of the financial crisis in America, which necessitated the temporary closing down of the African diamond fields. For America was the great purchaser of diamonds and could buy no longer; hence every family suffered in South Africa.

Thus, the child will learn what support one nation may be to another. He will be shown how the lands overseas have passed through the years of natural infancy; as young they sat under the shelter of the old mother-land. But the acorn becomes the oak, and the young tree grows in stature and in its turn should give shelter to the old tree from the blast. It is incumbent, as it gets stronger, that it should do so by better unity and better combination. Then the teacher can show the meaning of all this—how the Empire presents a unique opportunity for the exercise of that responsibility which is more important than material strength—the responsibility of democracy to the ancient civilizations of India and to the far older civilizations of Africa and elsewhere, to nations that will never have a chance unless democracy has this priceless, pure, uncorrupt, just, and unselfish rule.

Then, from the nation to which the child belongs, it should pass from the world modern to the world ancient. Our first point of contact with the French and Dutch under our own Government is with the former in Canada and the latter in South Africa, and we have now the chance of proving them to be part of the British Empire—an opportunity which could not be afforded by any other means. It will not be difficult to avoid the cardinal heresy of colonial teaching—that they belong to a *new* country. The only newness is the connexion between the races now inhabiting it and the land. They are but branches of a tree which throws its roots deep down into the loam of European history.

CORRESPONDENCE.

"TOO OLD AT FORTY."

To the Editor of "The Educational Times."

DEAR SIR,—I was much interested to read in the "Notes" of this month's *Educational Times* the opinion of "An Experienced Teacher" as to the prospects of those teachers who are over forty years of age, and I am glad of the opportunity to support her statements by my own experience.

For twenty years I have been teaching, first as governess in private schools; then, on account of my father's failing health, I remained at home for some seven or eight years, coaching backward or delicate

boys for the Head Master of the grammar school, and taking private pupils. When my father died, nearly seven years ago, by the influence of the Head Master of the grammar school I obtained the post of assistant mistress in the County Secondary School, where I remained over four years, teaching chiefly the senior classes. As I was not a formally trained teacher, the Inspector did not wholly approve of some of my methods, though my pupils made good progress and passed their examinations most satisfactorily in my subjects; so I decided to remove that objection, resigned my post in July, and went to Cherwell Hall, Oxford, in October of 1910. There I proved myself one of the best teachers of my year. I gained my Cambridge Teachers' Certificate in Class II, and was specially mentioned by the examiner, Mr. Oscar Browning, for the charm and excellence of the practical lesson I gave before him. I left the college in June 1911, aged thirty-nine, feeling convinced, as were also the principal and tutors, that I should easily get a first-rate post. Yet, with all this experience and training, supported by most enthusiastic testimonials from the Head Master of the grammar school, the Head Master of the County School, the Principal of Cherwell Hall, the parents of various pupils, and with the best of references, I have been utterly unable to obtain a post.

From June 1911 till last March I made applications without number, week after week. I honestly stated my age, but emphasized the fact that I was still youthful of mind and body, able to take part in games, and enter vigorously into the social life of a school. I had the Senior Cambridge Local Certificate, the A.C.P. diploma with double honours, and others for music and drawing. (I have never tried to graduate because of my invincible loathing and incapacity for mathematics; but the Oxford tutors did not see, with the experience I had and their earnest recommendations, why I should not gain as brilliant a post as any youthful B.A. or M.A.)

I applied for posts as head or assistant in training colleges, high schools, grammar schools, private schools, and county schools, yet I got no post, nor was I even asked to go to any one for an interview.

I began to ask myself what was the good of all I had done, of all my years of experience in teaching and training children, of the successes I had had with them, of the expensive training to which I had sacrificed my post and my little nest-egg so that I might be more competent still to fill a good position in my profession.

I heard of my fellow students gaining good posts with ease, and with three exceptions, the eldest of whom was some five years younger than myself, they were all young—nineteen to twenty-three years of age—mostly graduates with no experience but what they gained in their eight weeks in the College Practising School under the watchful eyes of tutors and mistresses. One of these young girls, who could not control Form III by herself (I speak from personal knowledge), was actually given the post of Lecturer on the Principles and Methods of Education in a training college, where her students must have had five times as much experience in teaching as herself!

At last, convinced that my age, forty last December, was against me, I gave up all hope of obtaining a post. I have sacrificed my home, where my family have lived for over sixty years, and am now accepted as partner in a small private boarding and day school, where I humbly trust I may at last be able to make a modest living. But my heart has been bitter within me many and many a time during these last twelve months of enforced and undeserved idleness when I thought of all I could do, and wanted to do, if principals or committees would only give me the chance.—Yours faithfully,

A TEACHER WHO IS FORTY.

THE EDUCATION OF THE ADULT ILLITERATE IN GREAT BRITAIN.

To the Editor of "The Educational Times."

SIR,—One of the pressing problems connected with education at the present day is the comparatively large number of the general population who are illiterate—*i.e.* they are unable to read or write. Possibly it does not concern the College, but inasmuch as its members are scattered all over the country, I hope that perhaps directly or indirectly they may in some way contribute to a solution of the problem.

The following seem to be the various aspects of the question:—
(i) From the standpoint of educational science. Methods of education, based upon the assumption that a real and definite theory of education exists, have enormously advanced within recent years. A Froebel has left the impress of his mark upon his age. But how much of his work seems to be in vain, when in rural districts, and no doubt to a large extent in the towns, men and women are to be found who do not possess the means whereby ideas can be exchanged. (ii) From the standpoint of economic science. We are beginning to grow accustomed to the idea of a science of industry, and yet somehow or other we fail to see that social unrest, the progress of strikes, and class misunderstanding must inevitably arise when a section of the population is without the means of improving and strengthening their mental outlook. (iii)

From the standpoint of the individual. Does not psychology become almost impotent and unreal when all mental processes are thus stifled and hindered in their development?

I would suggest that members of the College should consider these facts.—Yours faithfully,

W. M. M. SELLWOOD.

AGENCY FEES.

To the Editor of "The Educational Times."

SIR,—At a time when many assistant mistresses are changing schools, I should like to draw attention to the unnecessary payment hundreds of them are obliged to make on accepting a new appointment—I mean the payment of the agents' commission of 4 or 5 per cent. of their year's (not term's) salary. Although the benefit to head and assistant is mutual, the whole burden of the charges falls on the assistant, the poorer of the two contracting parties, and the amount she has to disburse is often as much as £1 or £5; whereas a few shillings expended by the head or the school committee on an advertisement in an educational paper, and a little more trouble in sorting the replies to it, are all that is really needed. Teachers in elementary schools never dream of employing a middleman in such cases, and there seems to be no good reason why secondary and high-school mistresses should do so. But the assistant who desires employment is quite powerless to resist the injustice as long as the head or committee continues to apply to an agency instead of advertising the vacant post either openly or under cover of an office number.—Yours faithfully,

E. JACKSON.

[Our correspondent appears to overlook the Joint Agency for Women Teachers, which is supported by the College of Preceptors among other bodies.—ED.]

REVIEWS.

THE AGE OF DRYDEN.

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. VIII, *The Age of Dryden.* (9s. net. Cambridge University Press.)

The name of Dryden is in the first sentence of the volume and in the last, and it dominates the whole: indeed "Dryden not only dominates his own age, but throws his shadow over the next." Throughout the period under treatment he is the most conspicuous personality, and the leader of most literary movements of importance. Yet it has to be added, or rather repeated, that "Dryden, of all great English writers, and, more especially, of all great English poets, was the least original, the least capable of inspiring his generation with new ideas, of discovering for it new sources of emotion, even of producing new artistic forms." Dr. A. W. Ward describes very fully, with incidental balanced criticism, the great literary qualities and the great literary achievements of Dryden. "His originality was essentially originality of treatment," no doubt; but his enormous intellectual power and incessant industry placed a distinctive mark on most kinds of contemporary literary production. "The debt of later English prose to Dryden is inestimable; " "his plays, taken as a whole, form the most notable chapter in English dramatic literature after the doors of the theatres had been once more flung open at the Restoration"; "in his non-dramatic verse, he left scarcely any kind of poetry unattempted, except the epic proper" (which he eagerly wished to attempt); "he essayed, with marked success, a less adventurous flight in narrative poetry, and, in didactic, he created what may be termed a new form of its satirical division—political satire (with a literary sub-section) in verse, in which, by means of his incomparable gallery of characters, he excelled all that sought to rival him on his own ground"; "his lyrics, in their varied excellence, complete the roll of his poetic achievements." The next important section of the volume deals with the Restoration Drama in three chapters, by different writers, one of them an American (Prof. Schelling, of the University of Pennsylvania), who is well known as a devoted student of this subject. Prof. Schelling handles carefully the Spanish and French influences on the drama of the

period, and especially on comedy. Mr. Charles Whibley sketches with sure and brilliant touch Congreve and Vanbrugh, Farquhar and Shadwell, D'Urfey and Colley Cibber. And Mr. Bartholomew, of Cambridge University Library, completes the section with a well considered review of the lesser tragic dramatists. He thinks the French influence on English tragedy at this time has been exaggerated, and says that, "such as it was, it affected rather the outward form than the inward spirit"—a judgment that seems to come very near the mark. Mr. Whibley also touches off, with congenial spirit and lightness, the interesting series of the Court Poets. The chapter on Samuel Butler, examining "Hudibras," its treatment, models, literary relations, and purpose, is a model of critical exposition, by Mr. W. F. Smith, Fellow of St. John's. Another Fellow of St. John's, Mr. C. W. Previt -Orton, deals ably with the Political and Ecclesiastical Satire of the period, pointing out the features of English life—political, social, and literary—that specially favoured the development of satiric literature, and concluding with a low opinion of the satires, whether in verse or in prose, as literary productions. The prosody of the seventeenth century is discussed by Prof. Saintsbury with characteristic lucidity and decision. Then there are the Memoir and Letter Writers, the Philosophers, and the Divines, the men of Law and of Science. A separate chapter is devoted to Locke, by Prof. Sorley. An excellent account of the Essay and the beginning of modern English prose, by Mr. Tilley, who has dealt very fully in a separate work with French influence on English literature, closes a meritorious and interesting volume.

HUNGARIAN HISTORY.

Hungary in the Eighteenth Century. By Henry Marczali. With an Introductory Essay on the Earlier History of Hungary by Harold W. V. Temperley, M.A., Fellow of Peterhouse, Cambridge. (7s. 6d. net. Cambridge University Press.)

Mr. Temperley furnishes a broad sketch of the more striking facts in the history of Hungary from the advent of the Magyars at the end of the ninth century down to the Peace of Szatm r (1711), when Prof. Marczali's work begins. He has performed a very difficult task with great judgment and has placed readers in an advantageous position for understanding the history of Hungary in the eighteenth century as set forth by Prof. Marczali in its principal aspects—economic, social, and administrative. Prof. Marczali's essay is an historical monograph of distinctive ability, "based on the labour of ten years among the official records at Vienna and Budapest and in many private archives"; and the translation has been admirably made by the author's colleague, Dr. Arthur B. Yolland, Extraordinary Professor in the University of Budapest. The work deals primarily with the history of Hungary under Joseph II—"the one Habsburg never crowned King of Hungary, that gifted and hapless ruler whose wonderful energy and enthusiasm could not save him from becoming one of the most tragic failures of history." Prof. Marczali treats first the economic conditions. There were, indeed, two economic systems, different in character and in stage of development: (1) the industrial and manufacturing system of the north-west, which was gradually disorganized and depressed, partly by a decrease of the ore gained, partly by the competition of the Austrian provinces fostered by the Government, and (2) the agricultural system of the southern and central districts, which, on the other hand, continuously developed in importance. The economic treatment of Hungary by Austria is compared (and contrasted) with England's treatment of her colonies. The social system is expounded in the longest, and in some ways the most interesting, chapter of the book. The magnates held possession of their estates and of the chief military and civil offices not only through their descent and the services rendered by their ancestors, but by reason of their own superior culture and ability and their discharge of their relative duties. Their eventual declension is curiously connected with the failure of the industrial system of the north-west, on which they mostly depended for the financial resources demanded by high life in Vienna. A greater

interest lies in the gentry. The county was the unit and the motive force of the Hungary of the time, and the power of the county was exercised by its landed gentry: "The county is responsible for the administration of all political and judicial matters within its own territory." Some depreciative adjectives might be justly enough applied to the gentry; but, after all, "what other *Hungarian* element could have replaced them in the administration?" The serfs were still illiterate, and the bourgeoisie were even worse administrators than the gentry. The remaining chapters—on the Church and on the government of the State—offer many points of interest, especially for comparative students. The work is an excellent example of modern historical method, and it brings within the reach of English readers materials that are not available for them elsewhere.

A Treatise on Plane Trigonometry. Third Edition. By E. W. Hobson, Sc.D., LL.D., F.R.S. (12s. Cambridge University Press.)

Dr. Hobson's treatise has become a leading textbook on the subject. In its third edition readers will find more than a simple reprint of the preceding issue. In this respect the new volume differs in character from the second edition, where a few very slight additions constituted the sole alterations from the original form. In the present case the text has been revised very thoroughly, and considerably enlarged. The opening chapter, for example, presents a fresh and interesting feature; for, having defined arithmetically the measure of the length of an arc of a circle and the measure of the area of any circular sector, the author develops along the lines selected the theory of such magnitudes. Again, the transcendental nature of the numbers which mathematicians have agreed to denote by the symbols e and π has been demonstrated by the writer in the present volume. Further, the new edition contains an interesting proof that the celebrated problem of squaring the circle by Euclidean geometry does not admit of a solution by these methods. Thus far we have spoken only of respects in which the new edition is enlarged. It is, however, equally important to allude to the analytical treatment of the subject as bearing on the valuable work of revision that the author has undertaken. The analytical investigations have been considered anew, and as a consequence the text has to a great extent been rewritten.

Scripture Teaching in Secondary Schools. Papers read at a Conference held in Cambridge, April 1912. Edited by N. P. Wood, M.A., B.D., with a preface by F. C. Burkitt, M.A., F.B.A. (Cambridge University Press.)

This little book should be in the hands of every secondary-school teacher who gives Biblical instruction. The problem of teaching the Bible to the young, and dealing wisely with the results of modern scholarship and thought, is one which largely concerns every teacher. To teach what will not have to be unlearned later, and to do this without causing unsettlement, requires delicate handling. It was a good thought for these masters to meet together in conference and to give to their colleagues the result of their deliberations. The Conference was presided over by Mr. Cradock Watson, Head Master of the Merchant Taylors School, Crosby. In his opening address Mr. Watson emphasized the importance of making the Bible an interesting book, of dwelling upon its spiritual unity, and of teaching it with sincerity and earnestness. Prof. Swete contributed a paper on the teaching of the New Testament, pleading that boys should learn something of its sources, and that attention should be concentrated on the person and work of Jesus Christ. Dr. Foakes Jackson made an earnest plea for teaching the Old Testament, notwithstanding its difficulties. The papers of the Head Master of Bradfield and of Prof. Kennett are full of sound practical advice, while Bishop Kempthorn spoke of "The Schoolmaster's Opportunity." Other papers give suggestions for courses and syllabuses. Prof. Burkitt contributes an interesting and valuable preface. It is not possible to say more in a short notice; but our advice to every secondary-school teacher is to get this little book and read it.

Lord Rayleigh's Collected Papers.

We have received the fifth volume of the "Scientific Papers of Lord Rayleigh," recently issued by the Cambridge University Press. Additional interest is to be obtained from the fact that the distinguished author is also Chancellor of the University. In a short notice it would be difficult to do full justice to this important work. The University Press are doing excellent work in collecting and publishing the works of our eminent scientists in a form which is easily accessible, though probably the class of readers that would acquire them, relatively cheap as they are, cannot be large. The papers in this volume extend over the range of years from 1902 to 1910, and are devoted chiefly to Acoustics and Theory of Gases. Of special interest is the general theory of forced vibrations and resonance, and important results are published of the relative effectiveness of

resonators of different forms and subject to different degrees of freedom. To the curious inquirer, the problem of the Whispering Gallery of St. Paul's will prove interesting; sonorous vibrations have a tendency to cling to a concave surface, and the analysis by the help of Bessel's functions sufficiently demonstrates that aerial vibrations in the neighbourhood of the reflecting wall are exceedingly pronounced. Another important paper is that on the Dynamical Theory of Gratings, originally published in the Proceedings of the Royal Society: the results, however, obtained in reference to optical reflexion from frilled surfaces are of a negative order. Practically all the papers show that the mathematics are, as it were, a tool in the master hand to illustrate a physical principle; the author never allows himself to become a slave to formulæ and equations, but explains them as they occur with reference to physical phenomena. We need only refer to a few more papers, such as those on "Colours of Sea and Sky," "Sensitiveness of the Ear to Pitch," "Perception of Sound Direction," "Shadows," "Combustion of Propellants in Guns," &c. All these are of practical interest, and should attract the student who is fearful of overmuch mathematics, for in all these cases not too much is required of him; yet many fruitful suggestions for future research are to be found. The Collected Works will worthily take their place with those of Adams, Cayley, Stokes, and others who have made Cambridge famous.

GENERAL NOTICES.

CLASSICS.

Latin and Greek in American Education. With Symposia on the Value of Humanistic Studies. Edited by Francis W. Kelsey. (1 dol. 50 c. Macmillan.)

The papers that form this goodly volume have been published separately at various times, as we have occasionally indicated, during the past five or six years in the *School Review* or the *Educational Review*. Nearly all of them were prepared for meetings of the Michigan Classical Conference, which is a section of the Michigan Schoolmasters' Club. There are four general introductory chapters—on "The Present Position of Latin and Greek," "The Value of Latin and Greek as Educational Instruments," "Latin and Greek in our Courses of Study" (all three by Prof. Kelsey), and "The Nature of Culture Studies" (by Prof. R. M. Wenley). Then come the Symposia, each including from three to six papers, discussing the value of a preparatory training in classics for (1) Medicine, (2) Engineering, (3) Law, (4) Theology, (5) Practical Affairs, (6) Education, and (7) Formal Discipline. There is, naturally, a good deal of repetition, not a little one-sidedness, and much difference of grasp; but probably no sound argument is omitted or inadequately presented and enforced. One would have liked to see the opposing views formally ranged and squarely criticized instead of being dealt with incidentally and fragmentarily. The variety of views and experience is very interesting.

Classic Myth and Legend. By A. R. Hope Moncrieff. (7s. 6d. net. Gresham Publishing Company.)

In this handsome volume, Mr. Moncrieff reproduces, on a comprehensive plan, the more important myths and legends of Ancient Greece, with illustrative quotations from famous poetic translations and an appendix of poetical renderings by celebrated poets. The selection adequately covers the whole field, and the occasional grossness of the original versions is toned away in respect for the boys and maidens that will delight in the vivid narratives. The presentation is admirable. There is no better story-teller than Mr. Moncrieff at his best. A long introduction deals with (1) the growth of myth, (2) theogony and cosmogony, (3) the Pantheon, and (4) demigods and heroes—an instructive and suggestive survey for more thoughtful readers. There are eight plates in colour and forty in monochrome, beautifully reproduced from famous paintings and statuary. A very charming volume splendidly illustrated.

HISTORY.

Bede's Ecclesiastical History of England. A Revised Translation, with Introduction, Life, and Notes, by A. M. Sellar, late Vice-Principal of Lady Margaret Hall, Oxford. (5s. Bell.)

The translation is a very thorough revision of the rendering by Dr. Giles (1842), itself a revision of the rendering of Stevens (1723); it is based on Mr. Plummer's text. It reads well and it will be a safe guide to readers that wish to know the facts; but it has less of the old-world charm of the original than Gidley's more literal and cumbersome version (1870). The introduction tells of the manuscripts and the editions and the translations and summarizes the history. The notes are very usefully explanatory; they have had to be almost entirely rewritten in the light of later research. There is a full

index and a good map. Miss Sellar has brought the work up to date with patient care and competent ability.

The Making of Western Europe: being an Attempt to Trace the Fortunes of the Children of the Roman Empire. By C. R. L. Fletcher, formerly Fellow of All Souls and Magdalen Colleges, Oxford. Vol. I, *The Dark Ages, 300-1000 A.D.* (7s. 6d. net. Murray.)

Mr. Fletcher confines himself wholly to Western Europe and to the fortunes of the children of the Roman Empire, excluding, however, the fortunes of one child of some importance—Britain. He has already given attention to Britain, not altogether satisfactorily. But, when his ultra-patriotism is excluded with Britain, he becomes a much better historian, without losing any of his natural piquancy of presentation and expression. The reader will do well to treat his modesty over his "authorities" as a manifestation of his irrepressible humour: he is, indeed, very well acquainted with such authorities as exist, and he weighs them up without illusions. From the disintegration of the Roman Empire and the infancy of the Church, he proceeds to narrate the victory of the Church, the barbarian invasions and the rise of the new nations, the impact of Islam on Christendom, the growth and consolidation of the Frankish power in the hands of Charles the Great, the process of decentralization, and the development of feudalism—a valuable and engrossingly interesting narrative, usefully assisted by summaries and tables prefixed to each chapter. There are three very convenient maps. We shall look forward with hopeful expectation to Mr. Fletcher's second volume.

The New Europe, 1789-1889. With Short Notes, Bibliographies, Biographies, Diagrams, and Maps. By Reginald W. Jeffery, M.A., Brasenose College, Oxford. (8s. 6d. net. Constable.)

The volume offers a perspicuous and well balanced narrative of the principal events in the history of European countries during the century following the outbreak of the French Revolution. The judgments passed on the great characters and on the policies pursued seem soundly based on the historic facts. The student is furnished with trustworthy guidance in detailed study by careful bibliographies appended to each chapter. The diagrams (ten), genealogical tables (fourteen), and maps (fourteen), as well as the tables of contemporary events and other lists, and the brief biographies of important persons (in foot-notes), are extremely convenient for students and for careful general readers.

Ireland from the Union to Catholic Emancipation: a Study of Social, Economic, and Administrative Conditions, 1800-1829. By D. A. Chart, M.A. (6s. net. Dent.)

In this volume Mr. Chart makes a substantial contribution to our knowledge of Irish life during the first three decades of last century. He outlines very briefly the political conditions of the time, and then devotes his attention to trade, commerce, and manufactures; finance, taxation, and currency; agriculture and land tenure; religion and education; the public service; law and order; the military system; the seafaring life; internal communications, public health, and so forth. The work is not a casual compilation—the materials have been drawn largely from the archives, with supplements from printed official papers, Parliamentary reports, and the rather scanty literature available. In fact, it is a work of laborious original research into the varied conditions of Irish life. Indirectly it indicates the roots of many of the difficulties that still exercise statesmen and politicians. There are eleven interesting illustrations.

SHAKESPEARE.

"The Pitt Press Shakespeare for Schools." Edited by A. W. Verity, M.A., sometime Scholar of Trinity College, Cambridge. (1) *Hamlet*; (2) *Coriolanus*. (1s. 6d. each. Cambridge University Press.)

These volumes are mainly abbreviations of Mr. Verity's larger editions of 1904 and 1905 respectively. The introductions, notes, glossary, and appendixes (longer notes, or sources, and hints on metre) are generously full and of the first quality. The type and the get-up are excellent.

PHILOSOPHY.

"The World's Epoch Makers." Edited by Oliphant Smeaton.—*Kant and his Philosophical Revolution.* By R. M. Wenley, D.Phil., D.Sc., Litt.D., LL.D., Professor of Philosophy in the University of Michigan. (3s. Edinburgh: T. & T. Clark.)

This is one of the very ablest of the numerous volumes of a distinctly able series. Whatever the difficulties of condensation imposed by the narrow limits of space, they are conceded from the general reader by the author's grasp of his subject and by the freshness and verve of his style. Part I describes the political and intellectual conditions of Kant's Germany and the immediate environment of home, school, and University. Part II traces Kant's development—the period of scientific eclecticism and the period of hesitation. "Chastened by the passage of years, done with the outworn ideas of a previous age, Kant found himself unable to rest longer in the belief that logical ratiocination, mathematical formulae, or physical hypotheses based on the evidence of the senses would suffice to

account for the entire sweep of human experience." Part III describes "the Philosophical Revolution." "Examination of human modes of transcendental (synthetic) apprehension is substituted for surmise about non-human, transcendent existence." Dr. Wenley, while showing the cogency of the cry "Back to Kant," rightly maintains that the imperative course is "Forward from Kant." The general reader will be deeply interested in the admirable depiction of the personal aspects of Kant's career in its slow development, and in the vigorous delineation of the broad sweep of Kant's thought.

SOCIAL QUESTIONS.

Essays in Fallacy. By Andrew Macphail. (6s. net. Longmans.)

There are four essays, "addressed immediately to the woman, the professor, and the theologian." Those addressed to the woman consist of observations on the American woman and on the psychology of the Suffragette, and there seems to be but slender reason why "the woman" need trouble herself about the one or about the other. The essay addressed to "the professor"—why not "the teacher"?—is concerned with the fallacy "that the information which a child acquires must have in itself some utility apart from the educational value which lies in its acquirement." The theological fallacy is fundamental. The matter appears to be a mixture of knowledge and absence of knowledge, reason and unreason, shrewdness and perversity. Still, it is not original or alone in such qualities, and so must be reckoned with. The style is piquantly clever and the essays are well worth reading—with critical reserves.

MENTAL SCIENCE.

An Introductory Psychology, with some Educational Applications. By Melbourne Stuart Read, Ph.D. Cornell, Professor of Psychology and Education in Colgate University. (4s. 6d. Ginn.)

Prof. Read presents, in a very simple and interesting way, the main features of the science of psychology. He has no occasion to seek originality—he takes the common materials of the psychologists, selects the more important points of the structure and functions of the mind, places emphasis on such matters as are likely to be most serviceable to the student, and aims at clear presentation. We see no advantage, but, on the contrary, much disadvantage, in regarding conation as "a unique compound" of cognition and affection (feeling); and the same must be said when it is stated that "the term 'sensation' is preferable to 'cognition' when used to describe the element of knowledge." The reader must be prepared for some terms that are not common in British textbooks. Still, the volume forms a good general introduction, indicating agreeably the meaning, scope, and method of psychological science, with explanation of the physiological basis, reference to the experimental developments, and comparatively liberal treatment of the applications in the practice of education.

ART.

Modelling and Sculpture: a Full Account of the various Methods and Processes employed in these Arts. By Albert Toft, Hon. A.R.C.A., M.S.B.S. (6s. net. Seeley.)

This is the third volume of "The New Art Library," edited by M. H. Spielmann, F.S.A., and P. G. Konody. Mr. Toft does not undertake to make a man an artist, but he freely communicates from a great experience directions and suggestions that will enable the student to go the right way to work, avoiding many unnecessary errors and surmounting many difficulties. He describes systematically the methods of the various processes, and then presents a selection of thirty-six masterpieces with brief and pointed comment. Though Mr. Toft disclaims literary art, his directness and earnestness amply make up for the supposed deficiency. The work is profusely illustrated with photographs and drawings; besides the frontispiece, there are 118 illustrations and diagrams, the illustrations being mostly full-page. A thoroughly practical work, artistically produced.

Wild Flowers as they Grow. Photographed in colour direct from Nature by H. Essenligh Corke, F.R.P.S., with descriptive text by G. Clarke Nuttall, B.Sc. Series I, II, and III. (5s. net each. Cassell.)

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(Continued on page 384.)

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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.

17228. (A. M. NESBITT, M.A.)—Required, a neat solution of

$$\begin{aligned} ax + (a-b)y + (a-c)z &= a^2 + (b-c)^2, \\ (b-a)x + by + (b-c)z &= b^2 + (c-a)^2, \\ (c-a)x + (c-b)y + cz &= c^2 + (a-b)^2. \end{aligned}$$

Additional Solution by A. L. ATKIN, B.A.

Putting $2s = a + b + c$, the equation formed by adding together the three given equations may be written

$$(s-a)x + (s-b)y + (s-c)z = \frac{1}{2} \Sigma [a^2 + (b-c)^2] = \frac{1}{2} \Sigma 2[(s-b)^2 + (s-c)^2] = 2 \Sigma (s-a)^2$$

or

$$(s-a)[x-2(s-a)] + (s-b)[y-2(s-b)] + (s-c)[z-2(s-c)] = 0,$$

and this suggests putting $x-2(s-a) = x'$, &c., in which case the first of the given equations may be written

$$\begin{aligned} ax' + (a-b)y' + (a-c)z' &= 2[(s-b)^2 + (s-c)^2] - 2a(s-a) - 2(a-b)(s-b) - 2(a-c)(s-c) \\ &= 2[(s-b)^2 + (s-c)^2] - 2a(s-a + s-b + s-c) + 2b(s-b) + 2c(s-c) \\ &= 2s(s-b) + 2s(s-c) - 2as = 0. \end{aligned}$$

Thus the given equations may be written

$$\begin{aligned} ax' + (a-b)y' + (a-c)z' &= 0, \\ (b-a)x' + by' + (b-c)z' &= 0, \\ (c-a)x' + (c-b)y' + cz' &= 0. \end{aligned}$$

Therefore

$$\begin{vmatrix} a & a-b & a-c \\ b-a & b & b-c \\ c-a & c-b & c \end{vmatrix} = 0,$$

in which case the equations are not independent,

or $x' = 0, y' = 0, z' = 0,$

i.e., $x = b + c - a, y = c + a - b, z = a + b - c.$

17253. (C. E. McVICKER, M.A.)—A circle touches the sides of a triangle ABC at L, M, N, and the nine-point circle at F. Prove that the images of F in the sides of LMN have the same centroid as L, M, N, and are collinear with the centres of both circles ABC, LMN.

Solution by R. F. DAVIS, M.A.; and others.

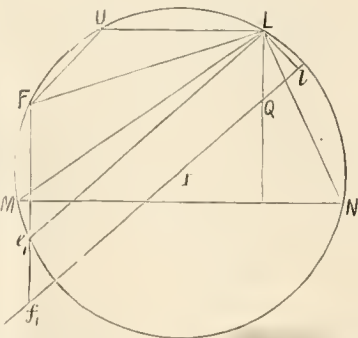
Let I be the in-centre of ABC (circum-centre of LMN); Q the orthocentre of LMN; LU a chord of the in-circle parallel to MN, upon which a triangle LFU is described directly similar to the triangle ILQ. Then F will lie on the circumference of the in-circle and will be its point of contact with the nine-point circle of ABC. [See the writer's question No. 12250, *Reprint*, Vol. LXI, 1894, p. 75.]

This leads immediately to the fact that the Simson line of F is parallel to IQ; or, in other words, the directrix of the parabola focus F touching the sides of LMN coincides with IQ.

If f_1, f_2, f_3 are the images of F in the sides of LMN, they all lie on the directrix IQ.

If Ff_1 meets the circle in e_1, Le_1 (which is parallel to the Simson line) is also parallel to IQ.

Thus Le_1f_1Q is a parallelogram; and $Qf_1 = Le_1 = 2IQ$, where Ll is perpendicular to IQ.



The distance of the centroid of f_1, f_2, f_3 from $Q = \frac{1}{3} \Sigma Qf_1 = -\frac{2}{3} \Sigma IQ = -2$ (distance from I of the centroid of LMN). These two centroids therefore coincide. That IQ passes through O the circum-centre of ABC is well known.

13584. (Rev. W. ALLEN WHITWORTH, M.A.)—A die of p faces is thrown repeatedly until the number of aces turned up is to the number of not-aces as $1:p-1$. Show that the chance of this happening at the np -th throw and not before is

$$\frac{(np-2)! (p-1)^{np-n}}{n! (np-n-1)! p^{np-1}}$$

Solution by Professor W. H. HUDSON, M.A.

Take rectangular axes OX, OY. Let unit step along or parallel to OX denote the throwing of an ace, along or parallel to OY of a not-ace.

Let the co-ordinates of D be $n, np-n$. Then the routes from O to D by steps parallel to the axes represent all possible sequences of throws till the number of not-aces thrown is $p-1$ times the number of aces.

The chance of any particular sequence is $(p-1)^{np-n}/p^n$.

Let the co-ordinates of A be $1, 0$; of B, $n-1, np-n$; of E, $r, rp-r$, where r may have any integral value from 1 to $n-1$.

First consider routes from A to B. Let E be the first place where a route crosses OD. The number of routes from A to E is C_{r-1}^{p-1} , from E to B $C_{n-r-1}^{p-n-r-1}$, and from A to B C_{n-2}^{np-2} .

Therefore $\Sigma C_{r-1}^{p-1} C_{n-r-1}^{p-n-r-1} = C_{n-2}^{np-2}$.

Now the number of routes from O to E is $C_r^{pr} = pC_{r-1}^{pr-1}$, and from E to D is $C_{n-r}^{p-n-r} = pC_{n-r-1}^{p-n-r-1}$; therefore the number of routes from O to D, crossing or meeting the diagonal before D, is

$$p^2 \Sigma (C_{r-1}^{p-1} C_{n-r-1}^{p-n-r-1}) = p^2 C_{n-2}^{np-2};$$

therefore the number of routes from O to D that do not meet the diagonal before D is $C_n^{np} - p^2 C_{n-2}^{np-2}$. This reduces to

$$[(np-2)! p] / [n! (np-n-1)!];$$

therefore the chance that one of the corresponding sequences of throws occurs is

$$\frac{(np-2)! (p-1)^{np-n}}{n! (np-n-1)! p^{np-1}}.$$

17314 (and 17297 with which it is identical). (Lt.-Col. ALLAN CUNNINGHAM, R.E.)—Let

$$N_1 = t_1^4 - 2t_1^2, \quad N_2 = t_1^2 - 2t_1^4, \quad N_3 = 2t_3^4 - t_3^2, \quad N_4 = 2t_4^2 - t_4^4.$$

Show how to find numbers N expressible in two, three, or four ways in some one of the above forms. Show that some of those numbers are also algebraically expressible in one or more ways in a second of those forms. Find the algebraic expressions, and give numerical examples.

Solution by the PROPOSER.

These two are practically the same problems, so one solution suffices. Every Quartan $N = (x^4 + y^4)$ is (algebraically) expressible in two ways in the form N_4 , viz.,

$$N = 2(x^2 - xy + y^2)^2 - (x-y)^4 = 2(x^2 + xy + y^2)^2 - (x+y)^4,$$

and is also (algebraically) expressible in the two quadratic forms

$$\begin{aligned} N &= e_1^2 - 2f_1^2 - (x^2 + y^2)^2 - 2(xy)^2 \\ &= 2f_1^2 - e_1^2 = 2(x^2 - xy + y^2)^2 - (x^2 - 2xy + y^2)^2, \end{aligned}$$

so that N will be also (algebraically) expressible in one of the forms N_1, N_2, N_3 when one of $e_1, f_1, f_1 = \square$. Thus $N = N_1$ when $x^2 + y^2 = t_1^2, N = N_2$ when $xy = u_2^2, N = N_3$ when $x^2 - xy + y^2 = u_3^2$. Each of these conditions is easily satisfied, so that three infinite series of Quartans (N) are thus formed such that

$N =$ one of N_1, N_2, N_3 in one way, and $= N_4$ in two ways.

Ex.—The smallest numbers (N) satisfying the above are

$$\begin{aligned} N &= 3^4 + 4^4 = 337 = 5^4 - 2 \cdot 12^2 = [2 \cdot 13^2 - 1^4 = 2 \cdot 37^2 - 7^4], \\ N &= 1^4 + 4^4 = 257 = 17^2 - 2 \cdot 2^4 = [2 \cdot 13^2 - 3^4 = 2 \cdot 21^2 - 5^4], \\ N &= 3^4 + 8^4 = 4177 = 2 \cdot 7^4 - 25^2 = [2 \cdot 49^2 - 5^4 = 2 \cdot 97^2 - 11^4]. \end{aligned}$$

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Further, from above, N is expressible in the two infinite series

$$N = e_1^2 - 2f_1^2 = e_2^2 - 2f_2^2 = \dots = e_r^2 - 2f_r^2,$$

$$N = 2f_1'^2 - e_1'^2 = 2f_2'^2 - e_2'^2 = \dots = 2f_r'^2 - e_r'^2,$$

and, the terms e_r, f_r, e_r', f_r' are easily expressible for several small values of $(r = 2, 3, 4, \dots)$, (algebraically) as linear functions of $(e_1, f_1), (e_1', f_1')$, and therefore also as linear functions of x^2, xy, y^2 . Hence N will be (algebraically) further expressible in one of the forms N_1, N_2, N_3, N_4 if the condition that one of $e_r, f_r, e_r', f_r' = 0$ can be satisfied. And this requires the solution of a Diophantine quadratic in x, y in each case. These Diophantines do not appear to be easy, and probably some of them are impossible.

A specially interesting case is given by the Dimorph Quartan $N = x^4 + y^4 = x'^4 + y'^4$. Every such Quartan is seen—by what precedes—to be (algebraically) expressible in four ways in the form N_4 .

Ex.—A table of Dimorph Quartans is given in the present writer's paper on "Diophantine, &c., Factorization of Quartans," in *Messenger of Mathematics*, Vol. 38, 1908, p. 86. The lowest known such number is $N = 134^4 + 133^4 = 59^4 + 158^4$, which gives (algebraically) the four forms N_4 , viz.,

$$N = 2.17823^2 - 1^4 = 2.19123^2 - 99^4 = 2.37767^2 - 217^4 \\ = 2.53467^2 - 267^4. \quad [\text{Rest in Reprint.}]$$

17141. (C. E. YOUNGMAN, M.A.)—In a circle (O) let AB and PQ be parallel chords, such that PQ is one side of the maximum rectangle in the segment APQB; M the mid-point of AO; $\angle O'AO = \theta$; and O' the image of O in PQ. Show that $MO' = MA'$, and that the squares on the sides of APQ are in arithmetical progression.

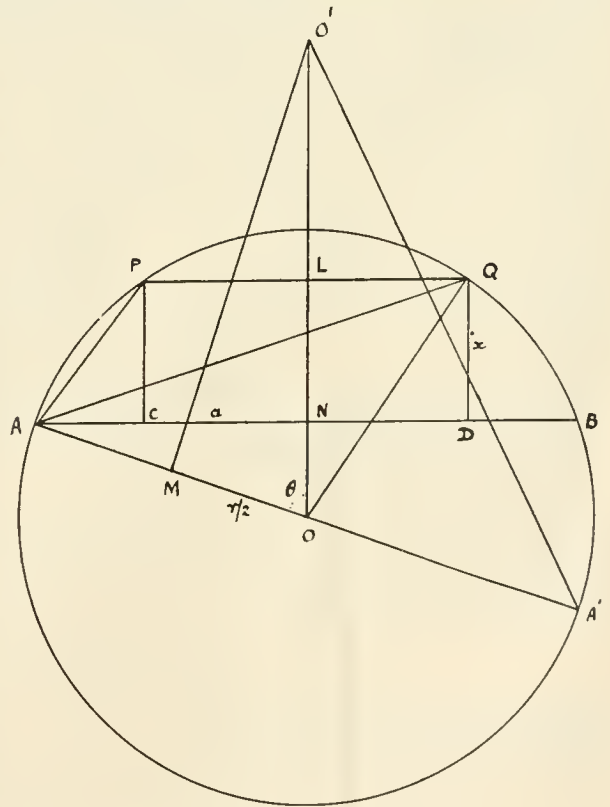
Solution by C. M. ROSS, B.A.

Let r be the radius of the circle, d the distance of AB from O, $2a$ the length of AB, and x the other side of the maximum rectangle inscribed in the segment APQB. L and N are the mid-points of AB and PQ. Join OQ.

$$LQ^2 = r^2 - (d+x)^2, \quad \text{i.e.,} \quad LQ = [r^2 - (d+x)^2]^{\frac{1}{2}}.$$

The area of the rectangle PCQD = $2x[r^2 - (d+x)^2]^{\frac{1}{2}} = u$ (suppose).

Now $du/dx = 2[r^2 - (d+x)^2]^{\frac{1}{2}} - 2x(d+x)/[r^2 - (d+x)^2]^{\frac{1}{2}} = 0$ for a



maximum or a minimum. The equation becomes

$$2x^2 + 3dx + d^2 = r^2 \dots \dots \dots (1),$$

which clearly gives maximum values. It may be written

$$2x^2 + 3dx = a^2 \dots\dots\dots (2),$$

since $a^2 = r^2 - d^2 \dots\dots\dots (3).$

Again, $O'M^2 = OM^2 + OO'^2 - 2OM \cdot OO' \cos \theta$ ($\theta = \angle AOO'$), therefore $O'M^2 = \frac{1}{4}r^2 + 4(d+x)^2 - 2 \cdot \frac{1}{2}r \cdot 2(d+x)(d/r) = \frac{1}{4}r^2 + 2(2x^2 + 3dx + d^2) = \frac{1}{4}r^2 + 2r^2$

by (1), i.e., $O'M = \frac{3}{2}r$, but $A'M = r + \frac{1}{2}r$, therefore $MO' = MA'$.

Again,

$$AP^2 = x^2 + AC^2 = x^2 + \{(r^2 - d^2)^{\frac{1}{2}} - [r^2 - (d+x)^2]^{\frac{1}{2}}\}^2 = 2x^2 + a^2 + dx - 2a \sqrt{[r(d+x)]}$$

by (3), and $PQ^2 = 4x(d+x)$ and $AQ^2 = a^2 + 2x^2 + dx + 2a \sqrt{[r(d+x)]}$. Hence

$$AP^2 + AQ^2 = 4x^2 + 2a^2 + 2dx = 2(2x^2 + a^2 + dx) = 2(2x^2 + 2a^2 + 3dx + d^2) = 8x(x+d) = 2PQ^2,$$

therefore AP^2, PQ^2, AQ^2 are in arithmetical progression.

17308. (D. M. Y. SOMMERVILLE, M.A., D.Se.)— $AB'CA'BC'$ is a regular hexagon inscribed in a circle, and P is any point on the circle. PA' cuts BC in X, PB' cuts CA in Y, and PC' cuts AB in Z; prove that X, Y, Z are collinear. Show also that if three parallel lines be drawn through A', B', C' cutting BC, CA, AB, respectively, in L, M, N, then L, M, N are collinear.

Solutions (I) by W. N. BAILEY;

(II) by Prof. J. C. SWAMINARAYAN, M.A.

(I) (a) Let O be the centre of the circumscribing circle. Consider the hexagon

$PA'ABCC'$.

By Pascal's Theorem, meets of (PA', BC) , (AA', CC') , $(AB, C'P)$ are collinear.

Therefore X, O, and Z are collinear.

Similarly O, Y, and Z are collinear.

Therefore X, Y, Z, O are collinear.

(b) Let $B'M, A'L, C'N$ be the given parallels, meeting AC, BC, AB at M, L, N.

Draw AX parallel to these, meeting $B'C', BC$ at L', X . Let BC, $C'N$ meet $B'M, BC$ at R, R'.

Triangles $A'LB, AL'B'$ are congruent.

Therefore

$$BL = B'L', \quad LC = L'C'.$$

Triangles $RCB', R'BC'$ are congruent.

Therefore

$$RC = R'B = -BR'.$$

Therefore

$$\frac{AM}{MC} \cdot \frac{CL}{LB} \cdot \frac{BN}{NA} = \frac{XR}{RC} \cdot \frac{CL}{LB} \cdot \frac{BR'}{R'X} = -\frac{XR}{R'X} \cdot \frac{CL}{LB} = -\frac{L'B'}{C'L} \cdot \frac{CL}{LB} = -1.$$

Therefore, by Menelaus' Theorem, L, M, and N are collinear.

(II) Take the equilateral triangle ABC as the triangle of reference. The co-ordinates of A', B', C' are $(-\frac{1}{2}, 1, 1)$, $(1, -\frac{1}{2}, 1)$, and $(1, 1, -\frac{1}{2})$.

The line joining any point P with A' will cut BC in a point whose co-ordinates will be given by

$$\begin{vmatrix} 0, & y & z \\ -\frac{1}{2}, & 1 & 1 \\ \alpha, & \beta & \gamma \end{vmatrix},$$

$$y(\alpha + \frac{1}{2}\gamma) = z(\alpha + \frac{1}{2}\beta);$$

therefore the three points of intersection are

$$(0, \alpha + \frac{1}{2}\beta, \alpha + \frac{1}{2}\gamma), (\beta + \frac{1}{2}\alpha, 0, \beta + \frac{1}{2}\gamma), \text{ and } (\gamma + \frac{1}{2}\alpha, \gamma + \frac{1}{2}\beta, 0).$$

∴ Then the three points are collinear if

$$\begin{vmatrix} 0, & \alpha + \frac{1}{2}\beta, & \alpha + \frac{1}{2}\gamma \\ \beta + \frac{1}{2}\alpha, & 0, & \beta + \frac{1}{2}\gamma \\ \gamma + \frac{1}{2}\alpha, & \gamma + \frac{1}{2}\beta, & 0 \end{vmatrix} = 0,$$

that is, if $(\alpha + \frac{1}{2}\beta)(\beta + \frac{1}{2}\gamma)(\gamma + \frac{1}{2}\alpha) + (\alpha + \frac{1}{2}\gamma)(\beta + \frac{1}{2}\alpha)(\gamma + \frac{1}{2}\beta) = 0$;

that is, if $2 \times \frac{9}{8} \alpha \beta \gamma + \frac{3}{4} \Sigma \beta \gamma (\beta + \gamma) = 0$,

if $3\alpha\beta\gamma + \Sigma \beta\gamma(\beta + \gamma) = 0$,

if $(\alpha + \beta + \gamma)(\beta\gamma + \gamma\alpha + \alpha\beta) = 0$,

which is possible if P lies on the circum-circle or on the line at infinity.

When P lies on the circum-circle, X, Y, Z are the points of intersection of (PA', BC) , (PB', CA) , (PC', AB) . In this case

$$\beta\gamma + \alpha\gamma + \alpha\beta = 0.$$

Therefore X, Y, Z are collinear.

When P lies on the line at infinity, $\alpha + \beta + \gamma = 0$, and PA', PB', PC' are parallel to one another, whence follows the latter portion of the theorem.

The PROPOSER gives the following alternative proof of the first part of the Question:—

Since A' is the mid-point of the arc BC,

$$BX : CX = BP : CP.$$

Similarly

$$CY : AY = CP : AP,$$

$$AZ : BZ = AP : BP.$$

Therefore $BX/CX \cdot CY/AY \cdot AZ/BZ = 1$.

The triangle ABC need not be equilateral, so long as A', B', C' are the middle points of the arcs.

Note.—The given problem is a particular case of the generalization to non-Euclidean geometry of the theorem of the pedal line of the triangle. If the absolute is the circle of radius $\frac{1}{2}\sqrt{2}$ times that of the circum-circle and concentric with it, A', B', C' are the poles of the sides of the triangle and PA' is perpendicular to BC, &c., wherever P may be. The locus of P, in order that the feet of the altitudes may be collinear, consists of the circum-circle and the polar of its centre.

On Mersenne's Numbers.

Note by Lt.-Col. ALLAN CUNNINGHAM, R.E.

Out of the fifteen Mersenne's numbers enumerated by D. Biddle (in *Educational Times* of July 1st, 1912, p. 302) as awaiting verification, one has recently been found composite by the writer, viz., $2^{73} - 1 \equiv 0$ and 730753.

Also, all possible divisors of the remaining fourteen have been tried by the writer up to 800,000.

10768. (Professor CURTIS.)—Show that the chord of curvature of any point on an equilateral hyperbola passes through the centre of the curve.

Note by Prof. K. J. SANJANA, M.A.

Let the tangent at the point P meet the axis in Q and an asymptote in T. Draw $PR = PQ$ to meet the axis; then, because

$$\angle PRQ = \angle PQX,$$

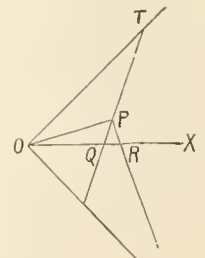
PR is the direction of the chord of curvature.

$$\text{If } \angle PTO = \alpha, \quad \angle TOP = \alpha;$$

$$\angle OPQ = 2\alpha, \quad \angle PRQ = \angle PQR = \frac{1}{2}\pi + \alpha;$$

$$\text{hence } \angle Q'PR = \frac{1}{2}\pi - 2\alpha \text{ and } \angle OPR = \frac{1}{2}\pi.$$

Thus the chord of curvature is at right angles to OP, and consequently cannot pass through the centre. If the chord and the tangent at P were equally inclined to an asymptote the chord would pass through the centre.



QUESTIONS FOR SOLUTION.

17365. (Professor J. C. SWAMINARAYAN, M.A.)—If

$$(m-1)(b-1) = a,$$

the complete primitive of the differential equation

$$y - mx \frac{dy}{dx} + ky^a \left(\frac{dy}{dx}\right)^b$$

is $y^{1/a+b-1}[(b-1)cx + kb^b(b-1)(a+b-1)]^b$.

Again, if $(m-1)b = am$, the complete primitive of the equation

$$y = mx \frac{dy}{dx} + kx^a \left(\frac{dy}{dx}\right)^b$$

is $x^{1/(b-a)}[cb[(b-a)]^{1-b}/m,$

c denoting an arbitrary constant.

17366. (C. M. ROSS, B.A.)—Prove that

$$\begin{vmatrix} 1 & 1 & 1 & \dots & 1 \\ \frac{\partial}{\partial u_1} & \frac{\partial}{\partial u_2} & \frac{\partial}{\partial u_3} & \dots & \frac{\partial}{\partial u_n} \\ \frac{\partial^2}{\partial u_1^2} & \frac{\partial^2}{\partial u_2^2} & \frac{\partial^2}{\partial u_3^2} & \dots & \frac{\partial^2}{\partial u_n^2} \\ \dots & \dots & \dots & \dots & \dots \\ \frac{\partial^{n-1}}{\partial u_1^{n-1}} & \frac{\partial^{n-1}}{\partial u_2^{n-1}} & \frac{\partial^{n-1}}{\partial u_3^{n-1}} & \dots & \frac{\partial^{n-1}}{\partial u_n^{n-1}} \end{vmatrix} = \{1! 2! 3! \dots n!\} u^{n-1}.$$

17367. (R. F. DAVIS, M.A.)—A £5 bag of silver contains fifty coins in half-crowns, florins, shillings, and sixpences (one at least of each sort). Find the greatest possible number of sixpences; and also of shillings, florins, and half-crowns.

17368. (N. SANKARA AIYAR, B.A.)—Show that

$$m(m^2 + m + 8)(m^2 + 3m + 2)(4m^2 + 5m + 19)$$

is always divisible 840, and show that when m is of the form $4m + 2$ it is divisible by 1680.

17369. (J. J. BARNVILLE, 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 $A^2 + 7B^2$.

17370. (D. BIDDLE.)—Prove that $\sum_{n=2}^x 1/(n^2 - 1) = \frac{3}{4}$.

17371. (Professor E. J. NANSON.)—If, with the notation of Grassmann, $A = (bc)$, $A' = (b'c')$, ..., prove that

$$(AA'. BB'. CC') = (abc)(a'b'c')(aa'. bb'. cc'),$$

and state the geometrical meaning of the formula.

17372. (C. E. YOUNGMAN, M.A.)—Points P, Q, R on Maclaurin's trisectrix are so placed that the node is their orthocentre; show that their circum-circle touches the asymptote and the tangent at the vertex, and cuts the curve again at the Neuberg point of PQR.

17373. (A. M. NESBITT, M.A.)—Two circles SPR, SQR, through the cusp of a cardioide touch the curve at P and Q and cut in R. Prove that the tangent at R to the first passes through Q, and the tangent at R to the second passes through P.

17374. (Professor J. C. SWAMINARAYAN, M.A.)—Show that the straight line which intersects the three given straight lines

$$(x-a)/l = (y-b)/m = z/1,$$

$$x/1 = y/\tan \alpha = (z-k)/0,$$

$$x/1 = y/(-\tan \alpha) = (z+k)/0,$$

traces out the quadric surface

$$k \tan \alpha \cdot x^2 - k \cot \alpha \cdot y^2 + z^2 (bl - am) + yz (a + km \cot \alpha) - zx (b + kl \tan \alpha) - ky (a + km \cot \alpha) \tan \alpha + ky (b + kl \tan \alpha) \cot \alpha = k^2 (bl - am).$$

17375. (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.

17376. (Professor NEUBERG.)—On projette un point variable M d'une hyperbole équilatère en N sur la bissectrice de l'angle xOM, O étant le centre et Oz une asymptote. Trouver l'aire d'un secteur décrit par le rayon vecteur ON.

17377. (W. N. BAILEY.)—TP is a fixed tangent to a parabola whose focus is S, and TQ is a variable tangent. TR is drawn so that TQ, TS, TR, TP form a harmonic pencil. RM is drawn parallel to TQ, and equidistant from S, meeting the line through S perpendicular to TS in M, and SL is drawn perpendicular to TQ to meet TR in L. If LM meets TQ in K, show that LM envelopes a conic with focus S, and that K and R subtend a right angle at S.

17378. (E. G. HOGG, M.A.)—Prove that the equation in tripolar co-ordinates $a\sqrt{(X-p)^2} + b\sqrt{(Y-p)^2} + c\sqrt{(Z-p)^2} = 0$ represents two circles of radii $R+p$, $R-p$, concentric with the circum-circle of the triangle of reference.

17379. (H. D. DRURY.)—D is a given point in the base BC of a triangle ABC; it is required to find a point P in AD, so that, when PE is drawn parallel to AC meeting the base in E, the triangle BPE may be of given area.

(Continued on page 394.)

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17380. (NORMAN ALLISTON).—Given an isosceles triangle, determine the elements of a second isosceles triangle, incongruent to the first, yet having the same area and perimeter.

17381. [(i) W. F. BEARD, M.A. (ii) Communicated by R. F. DAVIS, M.A.]—(i) ABC is a triangle, and X a Simson line; prove that the parts of X intercepted by any two sides and by the corresponding altitudes are each equal to the projection of the third side upon X. (ii) If the altitudes from A, B, C meet X at K_1, K_2, K_3 , then the projections of AK_1, BK_2, CK_3 on X are equal.

17382. (Professor K. J. SANJANA, M.A.)—If ω is the Brocard angle of a triangle ABC, prove that

$$\begin{aligned} & \sin A (\sin^2 B / \sin^2 C) \sin (A - \omega) \sin^2 (C - \omega) \\ & \quad + \sin B (\sin^2 C / \sin^2 A) \sin (B - \omega) \sin^2 (A - \omega) \\ & \quad + \sin C (\sin^2 A / \sin^2 B) \sin (C - \omega) \sin^2 (B - \omega) \\ = & \sin A (\sin^2 C / \sin^2 B) \sin (A - \omega) \sin^2 (B - \omega) \\ & \quad + \sin B (\sin^2 A / \sin^2 C) \sin (B - \omega) \sin^2 (C - \omega) \\ & \quad + \sin C (\sin^2 B / \sin^2 A) \sin (C - \omega) \sin^2 (A - \omega) \\ = & \sin \omega \{ \sin A \sin (B - \omega) \sin (C - \omega) + \sin B \sin (C - \omega) \sin (A - \omega) \\ & \quad + \sin C \sin (A - \omega) \sin (B - \omega) \}. \end{aligned}$$

OLD QUESTIONS AS YET UNSOLVED (IN OUR COLUMNS).

11938. (Professor BROCARD).—Un disque elliptique se déplace en restant toujours tangente à une droite fixe OX en un point donné O. Quel est le lieu géométrique du centre de courbure de l'ellipse en un point où la courbe est rencontrée par la normale fixe OY.

11978. (Rev. T. C. SIMMONS, M.A.)—A line is divided at two random points; prove that the chance that no part exceeds n times any other part ($n > 1$)

$$= \frac{(n-1)(4n^3 + 12n^2 + 6n + 2)}{(n+2)^2(2n+1)^2}.$$

11984. (H. FORTEY).—If

$$\{x \log(1+x)\}^n = 1 + a_1x + a_2x^2 + a_3x^3 + \dots,$$

prove that $a_{2r+1} = 0$, when $n = 2r$ or $2r+1$.

12185. (Professor SCHOUTE).—Prove that the orthogonal projections of the 600-hedroid (hexakosiohedroid) of four-dimensional space in the direction of a cell-diagonal is a body limited by twenty equilateral triangles and twelve regular pentagons (combination of ikosahedron and dodekahedron in equilibrium).

12218. (Professor SYLVESTER).—If $S(p)$ is the sum of the logarithms of the prime numbers not exceeding p , and $N(p)$ their number, prove that, e being the Napierian base, when p is indefinitely great,

$$N(p) < \frac{e S(p)}{2 \log p}.$$

12792. (Professor MATZ).—Prove that the average area of a triangle formed by three perpendiculars drawn from the sides of the triangle (a, b, c) is $A = (a^2 + b^2 + c^2) 48\Delta$.

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II. (Oct. 3.) *Time-tables*.—Length of whole school-day; relation between class work and preparation work; arrangement of the major divisions of the day; theory of fatigue and its application to (a) rest intervals, (b) sequence of studies, (c) length of study periods at different stages and for different subjects, (d) relation between physical exertion and mental effort; form in which time-tables should be drawn up: rigidity and elasticity; esoteric and exoteric time-tables.

III. (Oct. 10.) *Discipline*.—Varying meaning of term; special sense of *control*; basis of discipline; "nature of things"; authority; place of consciousness in the maintaining of discipline; "personality"; fabled power of the eye; cause and effect; different ideals of class discipline; "talking" in class; relation between discipline and class work; possibility of teaching on the control maintained by another; the "discipline master."

IV. (Oct. 17.) *Relation between Home and School*.—Principle of *in loco parentis*; theory of the "Foster Parent" and the "Elder Brother"; unreasonable attitude of many teachers towards parents; *Flachsman als Erzieher*; relation between social rank of parents and their attitude to the teacher; methods of securing co-operation between home and school; American examples; special difficulties of different classes of teachers; conflicting influences of fathers and mothers; home work and home help; school reports and their manipulation.

V. (Oct. 24.) *Types of Troublesome Pupils*.—Meaning of the terms "average pupil" and "type"; advantages of classification by types; dangers of such classifications; temperament and possibility of modifying it; method of superimposing class lists of different "years"; correction of character: the ideal pupil as standard; deflection from the standard in two directions according as we consider intellect or conduct; manipulation of characters as actually found in school; specification of types and suggestions for their treatment.

VI. (Oct. 31.) *The Newer Methods*.—Quickened consciences of earnest teachers; danger of falling behind the times; nature of theory; its inevitableness; relation of theory to experience; practical dangers of lack of theory and of excess of theory; the doctrinaire and the empiric; the pedagogic type of mind; means of keeping in touch with new developments; sunny side of freaks and fads; canons of criticism; examples from actual experience.

VII. (Nov. 7.) *General Methods*.—The place in *practical* school work of the various general methods, such as the Dialectic, the Socratic, the Heuristic, the Concentric; the principle of the correlation of studies; dangers of the rigid application of any of the general methods; examples of excess of the various methods; need for the modification of each to suit the needs of special subjects; dangers of friction among teachers in applying general methods; need for subordination of individual preferences in favour of general good of school; need for concerted action in the matter of general methods.

VIII. (Nov. 14.) *Art of Illustration*.—Illustration is best test of a teacher's power; need for continual reading and observation to maintain freshness; stock illustrations and their place; danger of neglect of verbal illustration as compared with real and graphic illustrations; analogy and exemplification fundamental forms of verbal illustration; various degrees of *reality* of illustrations—actual objects, models, pictures, diagrams; point of view in illustration; appeal to the preferred sense; dangers of illustration; sources from which illustrative material may be obtained.

IX. (Nov. 21.) *The Key Subject of the Curriculum*.—The *mother tongue* occupies a unique place in the curriculum; always receives recognition in examinations other than those in languages; in social life it again receives special recognition; relation between knowledge and expression; vocabulary and construction; important point is *use* of language, not its analysis; composition best taught by the development of "purpose"; place of imitation and precept in training in the mother tongue; danger of over-emphasis of form as compared with matter.

X. (Nov. 28.) *Note-making and note-taking*.—Importance of "notes" in the newer forms of school inspection; teacher's notes take two forms—(a) *teaching notes* and (b) *notes of lessons*; the real value of teacher's notes; relation between teacher's notes and the pupil's reproduction of them; time when notes should be made by pupil; taking note *versus* taking notes; pupil's notes as his textbook; the relation of note-taking to the newer ways of teaching history and mathematics; relation of teacher's authority to the textbook and the notebook.

XI. (Dec. 5.) *Examinations and how to prepare for them*.—Determining power of the examiner; external examinations and how to make the best of them without damage to the pupil; the "personal equation"; the use of old examination papers; preparation of "set books"; use of "the index" in revision; the teacher as examiner; how to prepare an examination paper; allocation of marks; alternative questions; advice to pupils about to sit for an examination; the marking of answers; numerical *versus* literal marks; how to secure uniformity of standard.

XII. (Dec. 12.) *Under the King and Over Us*.—A study in superiors; teacher's relation to the various powers that be; need for the teacher to study adult psychology; the characteristics of the official as such; the invariable third; official questions and answers; the official mind and how to approach it; an instructive bit of law; the official art of compromise; manipulation of conflicting official regulations; the fundamental agreement; the authorities as the teacher's allies; the whole question reviewed from the point of view of the teacher as himself an official.

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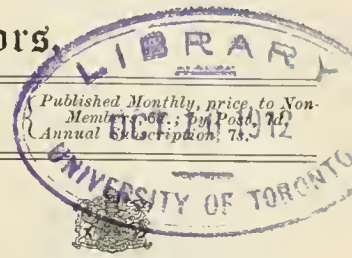
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The Educational Times.

THE TEACHING OF ENGLISH.

THERE is a growing dissatisfaction, which finds expression in many quarters, with the work of the schools in teaching the mother tongue. Examiners' reports, in particular, frequently refer to the slipshod and slovenly English, or to the lack of the power of expression. The "Suggestions for the Teaching of English," recently issued by the Board of Education, are intended primarily for the use of teachers in public elementary schools; but they may be read with profit by all teachers of all school subjects. In two ways, speaking quite generally, the material in the elementary schools differs from that in what are usually known as secondary schools: the age of the children and the literary atmosphere of the home. In the secondary schools the majority of the children are above the age of ten years, and we assume a certain standard of literary education in the home. Except on these two points the problem is similar in each group of schools.

The first point made in the "Suggestions" is the importance of the matter. "Whatever be the sphere in which the child's after life is to be spent, the power to express his thoughts and feelings clearly and appropriately in words, and to understand and appreciate the thoughts and feelings of others so expressed, will be of vital importance to him." The time given to lessons in the English language bears but a small proportion to the whole school week, and it is quite evident that if good results are to be secured, responsibility must rest upon every teacher in every lesson. It is no uncommon thing to hear a teacher scold a pupil: "Why can't you write decent English? Don't you learn it in your composition lessons?" The responsibility cannot be shirked in this way. All through the week the pupil is using his language as a means of expression; all through the week he is fixing his modes of expression for good or for ill. Every member of the staff must co-operate. This is the first necessity.

Further co-operation must take place in reference to

the use of textbooks. It is of little use for the teacher of English to provide good models, and to insist upon a suitable style for the scanty period of the English lessons, if for the rest of the week the pupils are dealing with textbooks loosely constructed and badly written. The choice of textbooks in all subjects is a matter of primary importance.

The first thing the pupil needs to learn is the power of expression, the command of language, and the sense of the right word. The foundation is laid in oral practice. All children have an instinctive desire to express their thoughts in words. They need opportunity, vocabulary, and experience. The teacher is sometimes a repressive rather than an encouraging influence. The frequent corrections, the knowledge that cold criticism is coming, the severe pruning that the answer will receive; all these act like douches of water on a struggling flame. It is the formality of the classroom coupled with the all-pervading sense of criticism and repression that checks the development of free expression. These points are well dealt with in the "Suggestions." The answers of the children should be natural, and at the same time they should be continuous and should gradually develop into long and reasoned statements. The history lesson affords special opportunities for this. And when the time comes for written composition, the teacher needs to remember that the pupil wants practice rather than correction. Many faults disappear of themselves: corrections are often unavailing, and merely occupy the time of the teacher to his disadvantage. With the question of spelling the "Suggestions" deal lightly, merely warning the teacher against waste of time in formal teaching, but making no allusion to a possible reform.

But not only is freedom of expression in conversation often left undeveloped in school life; clear articulation and enunciation are equally neglected. Clearness of utterance is of first-rate importance. It can be attained partly by practice and imitation; but definite exercises are also needed. Music is not taught by ear alone. Distinct speech needs proper training by the use of suitable exercises. The "Suggestions" shy at "phonetics," though the word is once used with an adjectival force.

Simple exercises in the use of the organs of speech are necessary, if not for all children, at least for those who lack acuteness of ear. "The essential quality which should be secured in reading aloud by young children is not expressiveness but clearness of utterance."

Next to clearness of utterance comes the sense of style, or the choice of the fitting word to express the desired meaning. If the child is properly trained "he will not be limited to half-a-dozen adjectives with which to express a hundred sensations, and later on he will not be driven, through sheer lack of other resources, to rely upon slang; or even swearing, as his sole expression of emphasis." We might add to the words of the "Suggestions" that we have quoted: "and in that case conversation would cease to be so wearisome." For it is mainly the lack of vocabulary, and the want of power to describe an incident, a thought, or an emotion in fitting words, that makes ordinary conversation a sheer weariness to listen to. Let us quote the "Suggestions" once more: "We are all prone to relapse into vague, slovenly, or confused forms of expression, both in talking and in writing, and to use rapid and conventional phrases which have neither force nor precision." Many other points are raised with which we have no space to deal here. We must be content to add that the "Suggestions" are well worth careful study.

NOTES.

THE relative value of home life as compared with school life is being much canvassed in the newspapers. For this is what the discussion of day schools and boarding schools really means. The question, generally, resolves itself into an inquiry whether the restrictions of home are preferable to the liberties of school. In a boarding school the pupils form a republic; within certain well defined limits they make their own laws and regulations; they live mainly among their equals in age and thought. Certain very definite advantages follow. On the other hand, certain definite disadvantages may result, as the advocates of day schools are not slow to point out. We express no opinion. Few people are able to organize the home life so as to give to the children the liberty and freedom they enjoy at school. But an interesting development is taking place. If it is established that life at a boarding school has undoubted advantages, pressure will be brought to add boarding hostels to county and municipal schools. If these are not made self-supporting, the nation will have to pay much higher taxes for education.

JUST now the newspapers are finding much "copy" in criticisms of the public schools. One of the charges brought against the boys is that of snobbishness. For this the masters are blamed—mainly, it appears, because they (or some of them) are classical scholars. Now it is not clear that classical masters are themselves snobs. So far as we have

seen, this statement has not been put forward. Yet they are accused of making the boys snobbish. A boy spends about nine months a year for four years at a public school. It is not likely that his whole character and outlook upon life will be altered in that period. If he comes to school a snob, a snob he may remain, though he may have the malady less acutely on leaving than he had on entrance. It is often assumed, in the face of all experience, that a boy of fourteen is a piece of plastic clay, and is turned out a finished product at the age of eighteen. School life is only one influence out of many, and the character is largely formed before school life begins. Again, the accusation of snobbishness is not always justified. Sometimes the natural self-assertiveness of high-spirited youth, a quality that mellows with experience, is mistaken for that vice.

THE news that the French Government had ordered the suppression of the Associations of Teachers in France was received in this country with some surprise. To suppress by a stroke of the pen Associations said to number 100,000 members seems sufficiently high-handed. In France, among the members of the Government, the surprise seems to be that some of the Unions have declined to dissolve when called upon to do so. Consequently the disobedient teachers will be called upon to appear before the Courts. The sum total of the offence of the Unions seems to be that at a recent conference they supported the anti-military policy of the Confédération Générale du Travail. There seems to be no doubt that according to the French law the Unions of Teachers are illegal and can legally be suppressed. We hope wiser counsels will prevail. Not only are the Teachers' Unions of immense value in themselves, as promoting corporate feeling and a high standard of public duty; but, if the Unions are suppressed, the teachers, lacking a suitable channel for self-expression, will be rendered discontented and uneasy.

A CORRESPONDENT writes: From the room in which I am sitting I see a line of chestnut trees along a public road. The road is made with flints, some of them loose. For some time residents in the road have been pestered with armies of small boys throwing stones (at the trees, but into the gardens) in order to dislodge the chestnuts. There has been blame of the police and talk of prosecution of the young marauders. To-day a couple of men, sent by the District Council and armed with long poles, have been beating the trees, surrounded by a joyous crowd pouncing on the nuts as they fell. Such a simple remedy for the nuisance deserves recognition as a stroke of genius. True, the moralist may say that the children have been robbed of an opportunity of learning self-control and respect for property. But these children have plenty of other opportunities of practising self-denial. The chestnuts were of no use to any one so long as they hung upon the trees; now they are fulfilling their appointed destiny of providing

*Day Schools
or Boarding
Schools?*

*The Influence
of School Life.*

*Teachers'
Unions
in France.*

Discipline.

material for the game of "konkers." Would that school offences could more often be met in this reasonable spirit!

THE Board of Education, as the Department responsible for the control of the Victoria and Albert Museum, have published, and intend annually to publish, a review of the principal acquisitions to the museum during the year. This is an excellent idea, and it suggests to us the value of an annual review of the secondary schools that come within the Board's purview. The present Annual Report deals largely with statistics, and it is doubtful if any one reads it for the sake of spiritual refreshment or inspiration. An annual review of the work done in the secondary schools would tell us of the progress of the year, inform us of new methods tried with success, and stimulate us to further effort by recounting the best that had been done. Vaguely we know that some schools are better than others; it would be helpful to know how and why they are better. An enormous amount of valuable knowledge must be gathered every year by the Board's Inspectors. Much of this could, we believe, be wisely printed and circulated.

SPEAKING the other day at Oxford, the Head Master of Repton quoted his father, Dr. Temple, who said to a masters' meeting at Rugby, "You may take it as a sound principle that the boys are always right, the masters sometimes right, but the parents never right." The story is often told as if it were a merely humorous exaggeration; but of course, it is a re-statement of the old philosophy of the Psalmist. "For the formation of guiding ideals," said Mr. Temple, "we must be subservient to the best impulses in the still fresh and generous natures of the boys and girls themselves." The clear vision of the child in matters of justice and right is likely to become obscured as the years go on. We teachers are sometimes too much inclined to wish to turn our boys and girls as soon as possible into men and women, but the longer the child-like purity of vision can be maintained the better both for the child and for those who wisely allow themselves to be influenced and guided by the child.

THE United States Bureau of Education has lost no time in issuing for free distribution a bulletin dealing with the Montessori method. The publication seeks to make an impartial study of the new system, pointing out the principles and methods which differentiate it from other systems. We understand that our own Board of Education sent the late Chief Inspector, Mr. Holmes, on a mission to Rome to report upon the Children's Houses. We hope the report will soon be issued, and that it will be distributed free, like other publications of the Board. If it is included in a volume of "Special Inquiries," it will unfortunately have only a small circulation. There is no doubt that Mme Montessori has much to say to this generation of

teachers that will prove very helpful. Probably our readers are familiar with her book, which has been translated into English. But we want some authoritative statement of the really valuable part of the system as a corrective to the somewhat exaggerated articles that are appearing in all quarters. Neither schools nor teachers will become ideal in a day.

SINCE Mr. Sadler gave up his professorship at Manchester in order to become Vice-Chancellor of the University of Leeds, Prof. Findlay has been left temporarily in sole charge of the Education Department of the University of Manchester. He is now to be relieved by the appointment of a second Professor of Education, Mr. H. Bompas Smith, at present Head Master of King Edward VII's School, Lytham. Dr. Findlay will relinquish the general direction of the department in order to devote more time to teaching and investigation in connexion with the Fielden School. Mr. Bompas Smith, who will begin his duties after Christmas, takes the title of Professor of Education and Director of the Department of Education. Mr. Edward Quine, who at present holds an appointment under the Liverpool Education Committee, has been appointed Assistant Lecturer and Demonstrator in the Department of Education. He will also teach physical exercises to the men students of the department.

WE said in the September number that only about half the teachers registered in Column B of the defunct Register had applied for the return of their guineas. This announcement has brought to light the fact that many teachers were not aware that they could get back the fee they had paid. It is, we suppose, too late now. The Board of Education announced that they would receive applications for the return of the guinea up to August 31. We do not know whether or not the claims of belated applicants will be considered. It was stated months ago, on undoubted authority, that to refrain from asking for the guinea would benefit neither the individual nor the new Registration Council. Column B and the old Register have ceased to exist. Historically, it is interesting to be able to say that one was registered on Column B, but the statement can have no actual value when once the new Register has been formed. The Treasury undertook to repay the fees out of national funds; the money not claimed returns to the national exchequer.

IN some quarters a good deal of capital is made out of the evidence given before the Commission to Inquire into Civil Service Appointments in reference to alleged jobbery in making such appointments. One witness denied in the strongest terms possible any suspicion of jobbery in his department, and added that, whatever was done, they would always be accused of jobbery. There is much truth in both statements. We do not believe that there is jobbery. In making appoint-

*New Professor
of Education
at Manchester.*

*"Out of the
Mouth
of Babes."*

*The Returned
Guineas.*

*Dr. Montessori
and Teachers.*

*Alleged
Jobbery.*

ments to the Board of Education, the greatest care is exercised in order to get the best men. But personal knowledge must count for much in the decision as to who is the best man. If a man wants a garden boy and finds half-a-dozen village lads able and willing to take the place, he is not accused of jobbery because he gives the post to the son of his trusted coachman who asks for it. The disappointed applicants see no injustice. A manufacturer will give the preference in his works to the relatives of men he has known, and no one questions the justice. It must be evident that the son of a Departmental Secretary, if he is capable, will get a post in preference to other men who may be equally capable. But the important point is that, if he is not capable, he will not get a post.

SUMMARY OF THE MONTH.

FOLLOWING somewhat on the lines that have been successfully tried at the Universities of Glasgow, Birmingham, and Liverpool the University of Leeds is endeavouring to meet the needs of the growing number of students who desire systematic instruction in the study of social problems and of social administration. The course will not be merely academic. Each student studying for the diploma will be required to give three days in the week to practical work under experienced supervision. The diploma, which is open to men and women, is designed to be of service to those who desire to become effective social workers, whether in a paid or a voluntary capacity. The course will offer training to those who are preparing themselves for administrative posts in connexion with the Public Health and Education Authorities, the Labour Exchanges, the National Insurance Commission, Charity Organization Societies, and other work of this character. The lecturers include the Vice-Chancellor (Mr. M. E. Sadler) and Prof. Gillespie.

THE Trade Union Congress has passed unanimously some very trenchant resolutions on the subject of education. To many of our readers these claims may seem Utopian, but, although the resolutions will not be carried out either to-day or to-morrow, they undoubtedly show the direction in which educational administration is moving. The first resolution demands "a national system of education under full public control, free from the primary school to the University." The second, "the adequate maintenance of school children." The third, scientific physical education with annual medical inspection. On the subject of secondary education an extension of maintenance scholarships is claimed that will make it possible for every child to remain at school until the age of sixteen. Further resolutions condemned the Government for refusing to appoint a Commission to inquire into educational endowments in public schools and Universities. Increased Exchequer grants are demanded, "having regard to the necessarily increasing cost of education due mainly to the demands which organized labour is now making on behalf of the children.

THE Education Authority of Bradford have found for some time past that certain of the holders of junior scholarships at the municipal secondary schools suffered from want of sufficient food. Free meals were therefore provided. But the Act gives no power to provide free meals for children attending secondary schools, and in consequence the auditor has surcharged the amount spent in providing these meals. The Committee believe that it is just as necessary to feed necessitous children in the secondary schools as in the primary schools. It is said that many of the scholarship holders are children of very poor parents who are making a most praiseworthy effort to enable the children to have the benefit of a continued education, instead of sending them to work at the first opportunity. An attempt will be made to get round the

Act by paying for these meals out of the trading profits of the municipality instead of out of the rates. It is certainly a waste of time and money, and it is cruel and injurious to the children to attempt to give them an advanced intellectual education if they are insufficiently nourished.

THE Walsall Education Authority have recently dealt with a protest against the action of one of their members. The case is one of considerable interest to schools. It appears that, after an examination had been held for scholarships from elementary to secondary schools, and the award of the examiners was being expected, a member of the Education Committee visited a school and examined three girls who were candidates for scholarships. It is stated that he "cross-examined as to the questions they were asked and the answers they gave at the oral examination, queried as to the personnel of the Committee, and asked who put specific questions. Then they were told that the examination was haphazard and prejudiced." The member in question had received no authority from the Committee and was therefore in no sense acting for the Committee. His action was warmly condemned as tending to throw discredit on the examiners and to arouse suspicion and jealousy among the candidates and their parents. It is, indeed, monstrous that an individual member of an Education Committee should, without any instructions, arrogate to himself the right to enter a school and question the children about their examination.

A POLICE COURT magistrate has decided in favour of the right of the London County Council to exclude a pupil from a higher-grade school. The pupil in question was a boy who had been transferred from a public elementary school to a higher-grade school. Here the boy was punished for some misdemeanour. His parents, not approving of the punishment, withdrew the boy from the school, but sent him back again a fortnight later. The Head Master considered the boy's work to be unsatisfactory, and, with the approval of the Council, ordered the boy back to the ordinary elementary school. The parents objected, and appealed both to the managers and to the Board of Education, both of which bodies upheld the action of the Head Master. The parents declined to send the boy to an ordinary school, and the Council prosecuted them for neglect in failing to send the boy to school. The magistrate, Mr. Baggallay, upheld the action of the authorities in excluding the boy from the higher-grade school, and said he must be sent to the ordinary elementary school.

THE new elementary school for boys at Chiswick contains three classrooms for sixty boys and five for forty-eight. This is a practical step towards reducing the size of classes. There is also a large covered playground at the level of the first floor—i.e. above the ground floor—in which open-air lessons can be given. All the rooms have a clock, which, together with the central turret clock, are worked by the master clock in the Head Master's study. In the playground are three drinking fountains. In addition to the ordinary windows, extra ventilation is provided for every classroom, four opening direct into the external air and four discharging through a ventilating turret. Fan-lights are affixed to the classroom doors, and at all times cross ventilation is possible. The total cost of the building is expected to amount to about £12 per school place.

PROF. ADAMS, interviewed by the *Pall Mall Gazette* on the subject of the bad English written by examination candidates, ascribed the causes to the following factors: (1) insufficient time given to the practice of English in the schools; (2) the impossibility, under present conditions, of adequate correction and criticism by teachers; (3) the nature of the ordinary reading material that comes into the hands of the pupils. Science textbooks, for instance, do not as a rule form suitable models for imitation. "I am not quite so hopeless with regard to the future," said Prof. Adams, "since I find that teachers in secondary schools are more alive than ever before to the importance of teaching English as such. No doubt we are far behind the French in the teaching of the mother

language, but it has always been against the spirit of our people to adopt the extremely formal though thoroughly satisfactory methods of the French. The defects in our present system of teaching English result from the fact that we merely supply practice in the art, and not enough of that."

MR. H. HOLMAN, in an article on the Montessori method in *Manual Training*, sums up the system as follows:

Surely it is not too much to say that the Montessori method is fundamentally based upon a manual training (sense training) conception of education. Never since the days of Seguin have we had this view so clearly and completely set forth as by Dr. Montessori. Work (muscle life) is the mother of development; and early education, according to the Montessori method, proceeds through muscular education to Nature study (agricultural labour and the culture of plants and animals), and thence through manual labour (the potter's art and building) to the special education of the senses, and so to intellectual education. That is to say, manual training is the foundation of all true education.

MISS RICHARDSON, of Westfield College, London, presided at the opening session of the Conference on the Christian Education of Women in the East, held at Magdalen College, Oxford. Explaining the purpose of the conference, Miss Richardson said that it was the culmination of an effort to bring the crisis in the East as it was affecting Eastern girls and women before the staffs of some of the leading girls' schools in England. They wished to ask University women in England, in the midst of all their own comparative difficulties, to study the present conditions of Eastern women, and to realize the critical nature of the extraordinary changes affecting themselves, unparalleled in their rapidity and in the opportunity they offered to the Christian Church to be ready to take some share in the responsibility which most certainly lay upon England and the English race to help the East in its hour of need. It was not too much to say that in a few years' time throughout the whole world new types of civilization would come into being. Were Western science, Western competition, Western materialism and wisdom to be the only ingredients they sent to colour and characterize the Eastern world that was to be, to move the civilization of countries which in time to come might be the strongest and most influential in the world? All those things were flowing into the modern East, and with them the vilest literature that Paris could provide and the most vicious agnosticism from Japan. There were two main arguments for some kind of action. The first was the moral responsibility of England as a nation, and the second was in view of the fact that what we made of these great Eastern people they would in time to come make of us. They appealed for help for missionary work, because mission workers had been the pioneers of education in the modern sense of the term, and they found that the missionary was the truest educator, because he aimed at training the whole character and personality of his pupils.

An address on "Educational Ideals in the Modern World" was delivered by the Rev. W. Temple, Head Master of Repton, at the concluding public session of the same conference. The aim of education, he said, was to enable men and women to understand the world they lived in, and assist or resist the tendencies of their time in the light of standards or ideals resting on the widest possible foundation of knowledge and experience. The world of to-day was a world in turmoil, and no education was worth the name which did not leave people with at least a general conception of the main elements in that turmoil. There had been two main tendencies in the education of the last hundred years, tendencies which they might distinguish provisionally as the traditional and the liberal. The merit of the traditional type was that it recognized the experience of the great epochs. The merit of the liberal type was that it gave knowledge of the contemporary world. The trouble about the traditional type was its tendency to lose touch with the realities of a changing world; the trouble about the liberal type was its tendency to produce self-seekers, who might be very efficient but were not likely to be self-sacrificing. And the trouble about both was that the average well-to-do home valued the vices and disliked the

virtues of both types. It liked the aristocratic tone of the traditional type and the pushfulness of the liberal type. For the formation of guiding ideals, the thing with which they had to co-operate was not the wishes of the parents but the best impulses in the still fresh and generous natures of the boys and girls themselves.

ROLLESTON GRAMMAR SCHOOL, founded by Bishop Sherbourne in the fifteenth century, has been put up to auction by order of the Board of Education. The school, which has been superseded by a modern building, has been a bone of contention between the squire, Sir Oswald Mosley, and the rector, Canon Tyrwhitt. The latter claimed the school for Church purposes, and the baronet, as a set-off, laid claim to Mosley aisle in the church, and was successful in an appeal to the Lichfield Ecclesiastical Court. The Parish Council then claimed the school, and agreed to hand it over to Sir Oswald in exchange for land to extend the burial ground, but the Board of Education stepped in and ordered its sale. There was great public interest in the proceedings. The rector and squire bid against each other, but eventually Canon Tyrwhitt became the purchaser at £100, amid much cheering and some booing by rival adherents.

THE London correspondent of the *Manchester Guardian* hears that the rooms that the Prince of Wales is to occupy in Magdalen when he goes up to Oxford in October are a set in the north-east corner of the beautiful cloister quadrangle. They used to be a don's rooms, and are therefore more extensive than the ordinary sets of rooms. They will give the Prince most charming outlooks—on one side the best views of cloisters, the chapel, and hall, with Magdalen Tower rising behind them and the Founder's Tower to the left; on the other side the tall, stately new buildings (new in the sense that they only date from 1739) and the shaven lawns that divide them from the cloisters. In almost every way the plans for the Prince's Oxford time seem to have been made as sensible and as little remotely royal as possible. Not only will he live in College instead of in a house outside, as King Edward had to do, but he is not to dine at high table among the dons; he will dine at one of the undergraduates' tables.

FROM the same source as the paragraph above we take the following story, which, if not true, is at least happily conceived:

Here is a story from a college in Oxford which is not to have the Prince of Wales on its books. In the senior common room a distinguished visitor inquired of a member of this Royal foundation what he thought of the choice of Magdalen for the Prince. "Excellent!" was the reply. "excellent! In these days, of all days, it is necessary for the future King to be acquainted with all ranks of his subjects. Here he'd only meet the kind of men he'll mix with in after life. But at Magdalen he'll see all classes—all classes!" It is charming to find Oxford a prey to the weaknesses of common humanity.

MR. GEORGE HERBERT GROSVENOR, of New College, Oxford, and Mr. Ralph Evers, a master at Haileybury College, were drowned last month while bathing off the coast of Cornwall.

DROSFIELD GRAMMAR SCHOOL was founded in 1579. According to the *Sheffield Daily Telegraph*, one of the founder's rules ran as follows: "I do constitute and ordain that the schoolmaster and usher do give such correction to their scholars as shall be meet and fit, but in no wise that they strike any scholar upon the head or the cheek with their fist, or the palm of their hand, or any other thing; and that they do not curse or revile their scholars; that the scholars be corrected for swearing with the rod, and Latin scholars for speaking English with a ferula; that monitors be appointed to prevent their rudeness, irreverence, or indecent behaviour in the streets, the church, or their public sports."

MISS ALICE FLEMING, M.A., Vice-Head Mistress of Milham Ford School, has been appointed Head Mistress of the Brighouse Girls' Secondary School, Leeds; Miss J. S. H. McCabe, of the Cheltenham Ladies' College, has been appointed to the vacancy at Milham Ford.

THE VALUE OF EXPERIMENTAL WORK IN AERONAUTICS.

Now that the importance of aeronautics is beginning to be fully realized, it is interesting to consider the means whereby so much important pioneer work has been accomplished, and also to review the steps that are being taken to render a knowledge of a subject which is so full of difficulty more complete, by putting the information discovered in such a form that it appeals not only to the mathematician but also to the engineer.

It has long been realized that a sound knowledge of a science subject can only be attained by the addition of practical or laboratory work to the mathematical or theoretical knowledge of the subject, and when one considers the complex nature of the variable medium with which one has to deal in aeronautics—*i.e.* the air—it is not to be wondered at that theory and practice do not always agree. To find to what extent they differ a considerable amount of time and money is being expended in the aeronautical laboratories that are being or have been equipped in this country and abroad. Such laboratories are mostly beyond the possibility of ordinary educational institutions, because, although some of the work is of a comparatively simple qualitative nature and only requires simple forms of apparatus, yet the more important portion can only be investigated by the use of apparatus of a complex and expensive form if results of any practical value are to be obtained. As a direct result the number of such laboratories is small, and the work is entrusted to a comparatively small number of experimenters who are devoting the major part of their time to the work.

It is to these experimenters that the practical man has to turn before he can gain a clear insight into those phenomena with which the subject abounds, phenomena which can only be explained by means of experimental data. A quantity of extremely valuable results are being gradually accumulated, and by the aid of experimental research many of those principles that form the basis of the science have been put upon a more secure foundation; although there is yet much to be done before it will be possible to build an aeroplane as surely as it is possible to construct an engine, which can be so designed and constructed that it will perform without modification those functions for which it is built.

In a word, the object of the experimenter is to render the work of the designer and builder more certain, thus making successful flight less of a matter of chance.

It is the object of this note to review briefly what is being done in the laboratories to assist the commercial side of the industry. The points to which experimentees are giving much of their attention are the following:—(1) the determination of the correct form for planes; (2) the determination of the resistance and corresponding lifting capacity of planes at different speeds; (3) the manner in which the pressures are distributed over the surface of the plane; (4) the design of propellers and motive power; (5) the testing of materials used in construction of aeroplanes, &c.; (6) the variations that occur in wind pressure and wind velocity.

An enormous amount of power is used up in overcoming what is termed the "drift" or head resistance of a body in flight, and also in overcoming the frictional effect of the passage of the air current over the surfaces, which tends to retard their movement. It is found that for a plane to offer a minimum resistance it should be of such a form that the air currents on encountering it are not broken up so that energy is wasted in the formation of eddy currents.

With the object in view of settling what suitable shapes are possible, planes have been immersed in a current of water, which by an ingenious arrangement is made visible by introducing coloured bands or filaments of water into the clear stream. The less these filaments are distorted or broken up the better the form of the plane. The same type

of experiment can be carried out using a current of air rendered visible by thin filaments of smoke.

From fundamental experiments such as these the correct shape or profile for the wing of an aeroplane has been evolved, and the same principles apply to the fish-like outline that is adopted for the gas-bag or envelope of dirigibles. It may be mentioned, however, that additional information has been collected by a close observation of the movements of birds and fishes in their respective elements.

The most important work, and that to which probably most attention is being given, is with reference to the pressures exerted on a plane when it moves through the air. It is not practically easy to test a plane under this condition, and the usual method adopted by experimenters is to keep the plane stationary and to allow a current of air to flow on to it, an experiment that is carried out in a piece of apparatus termed a wind tunnel. A volume could be written on the work done in this way, and an examination of the results obtained would show the difficulties experienced in obtaining data that are at all reliable. It is, in fact, only within the past few years that anything like accuracy has been arrived at, and this has only been made possible by observing the most rigid precautions. The least tendency for the air current, which has to be produced artificially, to eddy affects the result, and it is found that it is only possible to test with accuracy a plane a few inches square in a current of air as many feet square. By the use of a very delicate balance, the pressure exerted on the plane, both in the direction of the air current and at right angles to it, can be measured, thus giving the resistance or "drift" and the lifting capacity or "lift." The tendency in modern practice is to increase the dimensions of the wind tunnel in order that larger planes or surfaces may be tested, thus bringing the experimental work into closer agreement with the practical side of the subject.

Another point of considerable importance when dealing with planes is the position of the point through which the resultant pressure can be assumed to act. It is found that this point, termed the "centre of pressure," does not coincide with the geometrical centre of the area of the plane, except in the case when the plane is placed at right angles to the direction of the air current, a position of no practical importance. For an inclined plane or surface the centre of pressure comes somewhere between the geometrical centre and the forward edge, and since for an aeroplane to be in correct balance the line of action of the weight must coincide with the centre of pressure, its correct position must be ascertained and consequently a considerable amount of work has been done to settle with as much precision as possible its position for the various forms of plane used in actual construction.

The next item to be considered is the propelling power. Obviously the whole efficiency of the machine depends on the efficiency of its propelling apparatus, and the correct design of the propeller has given rise to much discussion and much mathematics. Unfortunately from the mathematical standpoint, theory cannot be relied upon to give results which prove satisfactory when applied to practice, and in consequence propellers are usually designed from rules that are more or less empirical, and the propeller is tested afterwards to see how nearly it comes up to the required standard. In shipbuilding yards it is not an uncommon experience to have to try two or three propellers before the one is obtained that gives the best result, and the same applies to a large extent in aeronautical practice. To enable the test of a propeller to be carried out under conditions that approximate as closely as possible to those under which it works in actual flight, an apparatus termed a whirling table is adopted. This consists essentially of a long horizontal arm rotating about a vertical axis, the propeller being mounted at the extreme end of this arm and being driven by an electric motor. The thrust developed can be measured, and also the power absorbed, with a fair amount of accuracy. A large whirling table constructed at the Barrow works of Messrs. Vickers, Sons, & Maxim

has an arm which is 110 feet long. Full-size propellers can be tested giving a thrust up to as much as 500 lb. The fundamental purpose of this apparatus was for the testing of the propellers for a dirigible that the firm were building, but it is also available for commercial tests of propellers generally. For a firm to build such an elaborate and expensive piece of apparatus is a conclusive proof of the value that is placed upon experimental work and also serves as an example of the progressive way in which aeronautics is being pushed forward.

Much could be said about the tests that are applied to the various materials used in construction, but space does not permit, and in conclusion it will be simply necessary to mention the work that is being done to bring the petrol motor into a state of efficiency. To be of any use for aeronautical purposes the motor must be possessed of two main factors—first, it must be absolutely reliable; second, it must be comparatively light in proportion to the horse power that it has to develop. Cutting down weight generally means a reduction in strength; and, to determine exactly how far such a process may be carried without affecting the reliability, exhaustive tests are carried out in which the motor is subjected to those conditions, and consequently those strains, to which it would be subjected under the least favourable conditions of flight.

Summing up, it may be briefly stated that nothing in aeronautics must be left to chance, and the main efforts of experimenters are directed to the problem of determining and settling those conditions of flight for which a minimum of power has to be exerted. It must be remembered that the motor forms a considerable proportion of the total weight, and since its power is utilized in helping to sustain the machine in flight as well as overcoming the resistance to flight, a diminution in weight will mean less expenditure of energy and a corresponding increase in efficiency. Weight for weight, the power necessary for flight is considerably in excess of that which is necessary for the other forms of locomotion, and although the ordinary mechanical principles make it impossible to, say, reduce the power to as low a value as that required to propel an automobile of equal weight, yet it should be possible to reach some happy condition when the resistance met with is a minimum and the power developed for a given weight is a maximum.

Then, but not till then, will that ideal flight of which Mr. Rudyard Kipling and Mr. H. G. Wells have so much to say become actually possible.

R. O. BOSWALL, B.Sc.

CURRENT EVENTS.

THE Bradford Corporation have decided to confer the freedom of the city on the Rev. W. H. Keeling, Head Master of the Bradford Grammar School, on the occasion of the two hundred and fiftieth anniversary of the granting of a Charter to the school by King Charles II.

MR. A. E. ZIMMERN, who was recently appointed an Inspector of the Board of Education for the Tutorial Classes of the Workers' Educational Association, has now entered upon his duties. Mr. Zimmern went from Winchester College to New College, Oxford, where he became Fellow and Tutor. He was Lecturer at Ruskin College in 1908. He was intimately associated with the formation of the Workers' Educational Association and was joint Honorary Secretary. Subsequently he was Lecturer at the London School of Economics. He is the author of "The Greek Commonwealth" and other books.

THE LORD LIEUTENANT of Berkshire, Mr. J. H. Benyou, has given £5,000 towards the new buildings fund of University College, Reading, in view of the proposed establishment of a University at Reading. Dr. Hurry has promised to provide the College with a gymnasium.

THE DEAN OF LINCOLN, Dr. T. C. Fry, has offered to the Workers' Educational Association a scholarship in order to defray the expenses of one of their members for a course of study at a University.

MR. LEONARD HILL, President of the Physiological Section of the British Association, again, this year, drew attention to the value of the open window.

THE prize of twenty guineas established by the British Empire League in memory of its first President, the late Duke of Devonshire, for the best essay on an imperial subject, has been awarded to R. R. Sedgwick, of Westminster School.

THE Oxford University Press announce a new book by Prof. Gilbert Murray, "Four Stages of Greek Religion."

THE next meeting of the Teachers' Registration Council is fixed for October 4.

THE Sheffield and District Teachers' Association have passed a resolution "protesting against alterations in the statutes and regulations of the University of London which would close it to external students or diminish the opportunities now afforded for obtaining an external degree."

THE London Teachers' Association have arranged a course of lectures on Educational Handwork. The third lecture will be delivered on October 5, at the Institute of Journalists. Mr. W. Fortune Fowler is the lecturer.

THE REV. W. M. M. SELLWOOD writes in continuation of his letter, published in our September number, to suggest that members of the College of Preceptors should undertake an inquiry into the number of adult illiterates in their neighbourhood.

"SCHOOLMASTERS appear to accept any kind of bad writing for formal work, to say nothing of the abominable scribble of 'lines' handed up to them. The average boy or girl now takes little or no pains to form the letters. In other words, they do not write at all. Few parents or teachers appear to take any notice of this."—From a letter in the *Times* signed "M.D., LL.D."

THE LORD MAYOR of Manchester, in the course of a speech in the Town Hall last month, said that it would be necessary in the future to devote as much attention to Spanish as to any other language, because that was the language spoken in almost the whole of South America.

A SCHOOLMASTER, who had been in the service of the Watford Education Authority for twenty-five years, received in July last his salary for two months (as is usual). During August he died. The County Council have instructed the managers to recover from the widow the sum representing the salary from the date of death to the end of the holidays.

THERE are about 110 new boys at Eton this half. There are two new masters—Mr. H. C. Pryor, who takes the place of Mr. W. D. C. L. Purves, the Scottish International Rugby player, and Mr. Gladstone, who takes the place of Mr. W. D. P. Hills.

THE Middlesex Education Committee have decided to offer eight holiday exhibitions enabling teachers in secondary schools to study languages in either France or Germany. The value of the exhibition is £2 a week and travelling expenses.

THE Letchworth Garden City has been the scene of many summer schools, but none proved more successful or more practical than that organized by Miss Theodora Johnson, of Clifton, for the National League for Physical Education and Improvement. The students came from all parts of England, and from Egypt, Canada, and France as well, while the Garden City itself contributed over 2,500 entrances for the open lectures in the fortnight. Lectures were given by General Sir Nevil Macready and Mr. A. J. Martin on "The Fight for Health"; by the Rev. Mabel MacCoy Irwin on "The Proper Sex Instruction of Children," "The Ethics of Marriage," and "Adolescence"; and by Mr. E. E. Hayward on "The Housing of the Working Woman"; while Miss Johnson gave a course on "Physiology and Hygiene." Two hours a day were also devoted to the practice of Swedish exercises and country dances, under Miss Whiteley's able tuition, as the result of which, combined perhaps with their unique surroundings at "The Cloisters," which Miss Lawrence had kindly placed at the disposal of the League, all the students looked considerably stronger and healthier at the end of their fortnight, and expressed themselves as delighted with the novel experience. And this in spite of the most adverse weather conditions which prevailed during the whole time.

BIBLIOGRAPHY AS A SUBJECT FOR SCHOOL TEACHING.*

By HENRY R. TEDDER,
Secretary and Librarian, The Athenæum, Pall Mall.

WHAT is education? We are told that it is a training of the young for adult life; that it is to prepare men and women to take their places in the world. Yet we hear complaints on all sides from business people and practical men of affairs that youths come to them from school full of useless information imperfectly assimilated and without the faculty of putting their acquired knowledge to useful effect.

What is the fault? Is it that too many subjects are taught in schools and few effectually? Is it that methods are wrong? To neither of these questions am I capable of giving an adequate reply, nor indeed am I prepared to support the wholesale and perhaps unjust accusation suggested above. I merely wish to carry a little further certain suggestions submitted at a Conference of Library and Educational Authorities convened by the Library Association at Birmingham in May 1906, and to present a side of educational development which I think deserves consideration.

A distinguished writer on educational theories, Prof. James Welton ("Encyclopædia Britannica," Vol. VIII, 1910), says: "It is in these latter times that the actual work of education is apt to lose touch with the culture of the community; for schools and Universities, which are the ordinary channels through which adult culture reaches the young, are naturally conservative and bound by tradition. They are slow to leave the old paths which have hitherto led to the desired goal, and to enter on new and untried ways." It is said by another authority that "we inherit two distinct educational traditions, the scholastic tradition of the grammar school and the apprenticeship tradition of the workshop" (Sir H. L. Smith in "Studies in Secondary Education," 1892, page 2). In both of these traditions education has been identified with instruction, with the acquisition of learning or of skill. Long ago Pestalozzi said that "words cannot give us a knowledge of things; they are only useful for giving expression to what we have in our minds." He accordingly wished "to connect study with manual labour, the school with the workshop."

My contention is that the public library, with its rich store of the best modern literature in all departments, is the intellectual workshop with which every one should be familiar as early as possible. Young children are taught from books often of a poor literary quality, with the frequent result that at the earliest age they loathe the very sight of books, which represent to them only the learning by rote of a dreary mass of uninteresting details. Herbart considered that the aim of instruction was the establishment of a many-sided interest in the mind of the learner. This many-sided interest cannot be induced by getting by heart the dry details of textbooks. In many schools there is a system of Nature study, which is a praiseworthy attempt to stimulate interest by showing children the very objects they read about in textbooks. This method is not, of course, entirely new, as in principle it was adopted at Dotheboys Hall. Cannot it be applied to books and literature? I am well aware of the progress made in recent educational methods to interest the young in the subjects they are taught, but I wish the practice of using books to be brought home to them. If, on the one hand, learning is too bookish, on the other hand, it is not bookish enough, inasmuch as it does not teach children to use books as keys to the locks to knowledge.

As I have mentioned, the Library Association has already under consideration the relations between public education and public libraries. At the joint conference at Birmingham I had the honour to submit the following resolution: "That, as the public library should be recognized as forming part of the national educational machinery, it is desirable that children from an early age should become accustomed to the use of collections of books in special children's libraries, and that advanced students should be able to obtain in public libraries the principal books recommended by various teaching bodies." The resolution contained three closely related propositions of

a wide-reaching character, which summed up a vast mass of recommendations which had been addressed to the Library Association from all parts of the United Kingdom.

The first proposition, that the public library should form part of the national educational machinery, was one to which great importance was attached. Complaints are sometimes formulated that public libraries are little better than places for the circulation of cheap fiction, but all librarians desire to see their readers peruse the best literature, and do their best to induce them to turn from the exclusive perusal of fiction to the shelves devoted to history, science, and philosophy. Librarians and Library Committees are always ready to help the work of University Extension Centres. Some librarians act as local secretaries. Some libraries lend rooms. Many libraries help the National Home-Reading Union. In many places public lectures form a regular feature of the yearly work. These lectures are generally of a popular character, but some deal with technical, scientific, or literary subjects. They all aim at directing attention to the books in the libraries. Special book exhibitions are frequently held. In many other ways serious reading is encouraged.

The second proposition, that children from an early age should become accustomed to the use of collections of books in special children's libraries, is equally important. Since the passing of the Education Act of 1902, Library Authorities throughout the country have shown great activity in the formation of school libraries, and in many cases the Local Education Committee provides the funds and the Library Authority undertakes the administration.

The third and last proposition was a natural corollary of what went before. Students should expect to find in well equipped public libraries the technical works and standard books recommended by their teachers and lecturers. The resolution crystallized the united opinion of the many librarians and educationists who had favoured the Library Association with their views. It suggested no radical innovation, and indeed in some shape or other the proposals are in actual operation in most lending libraries.

What is Bibliography? There is still some difference of opinion as to what meaning is really conveyed by the term. The subject is a vast one, comprising: (1) the preparation of books, (2) the distribution of books, (3) the acquisition of books, and (4) the description of books, including cataloguing, every kind of general and special bibliography, classification, and incidentally the use of books in libraries. There are some who distinguish between "material" and "intellectual" bibliography, and discriminate between the outside and the inside of books; but in my judgment no book can be satisfactorily dealt with in its physical aspect without investigating its literary origin. There is, of course, a reasonable limit to what is required. We do not want a detailed appraisal of all books, nor yet elaborate classifications of human knowledge, but something more than accurate transcripts of title-pages and gossip about old books is essential in modern bibliography. It is the sole clue to the ever increasing labyrinth of books. No one would expect to include all these departments in the curriculum even of advanced education, but since bibliography is concerned with all books its methods can be applied to the most modest productions of the printing press and a knowledge of how to use books can be exemplified in the smallest collection. Bibliography is in no sense theoretical; it is essentially a practical study. It cannot be taught apart from books. It is only by handling books that you can get to know them. By the handling of books I mean something more than mere physical contact. There is a visual as well as a tactile handling. Bibliography includes not only the art of describing books, but the art of using books, and it is this side which I contend should form part of public instruction at every age.

Children's libraries now form part of most public libraries, and to many of them, both in England and in America, children are taken in class form by their teachers. I want to go a step further. I do not consider it the duty of a librarian to teach anyone how to use books, any more than it is his duty to teach the rudiments of reading and writing; that is the office of the teacher. I suggest that every school should possess a small model library as part of its equipment, with books of reference, and these libraries should be so graded that step by step the learner would become familiar in the

* A paper read at the Liverpool meeting of the Library Association, September 3, 1912 (abridged by the author).

course of his educational career with books of wider range. The early use of books is an educational requisite quite apart from the mere practice of reading. Children should be trained in the habit of using books as well as reading books, in order that when they arrive at riper years they may resort to the library as to a familiar home. They should be called upon to take an interest in the administration of the school library, and it should become an instinctive habit to have recourse to books when wanting to find facts. Most children never have an opportunity of knowing what real books are. At school they only see school books, at home they only see cheap novels in paper covers or more pretentious rubbish in calf. They never catch a glimpse of the great and living world of books, and never enter the many fields of mental enjoyment extending beyond the class of prose fiction. Existing school libraries do not supply the want. The style of literature they contain is frequently very poor and generally limited to story-books. As a rule, the children can only get a volume at a time, chosen by themselves at haphazard. Either there is no catalogue at all or its place is supplied by a feeble list of names, and they are not allowed to handle books except under strict supervision. Books for children should be rather above than on a level with their average standard of intelligence.

My proposal is that the teacher, having at his disposition a representative collection of books properly arranged and catalogued, will allow his pupils to handle specimens of the very books they have read about, and will show them how to follow up questions perhaps only casually referred to in their textbooks. The young scholar would have catalogue methods explained to him, how to refer to encyclopaedias and dictionaries, the reasons for shelf classification and shelf marking, how historical text-books are compiled from larger works and what are some of the printed materials of history, how geography is based upon books of travel, how to use concordances, indexes, and atlases—to mention only a very few subjects for library-talks. This is the real art of practical bibliography. The study of historical sources now forms part of University teaching, but the study might profitably commence at a much lower age in connexion with the use of books of reference and bibliographical authorities. If the young people of this country were trained in the use of books and libraries from the earliest age, they would come as adults to the public library fitted in every way to obtain the advantages prepared for them at so great a cost of money and so great an expenditure of labour and skill. We talk much of the necessity of training librarians, we fit up libraries with every appliance, with all sorts of useful devices and every kind of index and catalogue, in order to facilitate the use of the library to readers, but it is the experience of every librarian that the grossest ignorance of books and of the most elementary library methods is common among even well educated men and women. Many grown-up people never seem to realize the difference between an author and a subject catalogue. The ordinary technicalities of a catalogue, the use of books of reference, the art of hunting up new subjects of inquiry through special bibliographies, seems to some persons knowledge of almost a superhuman character.

As books increase in number, as libraries multiply, as their contents become better arranged and more accessible, so it is evident that all men, whether busied in commercial pursuits or professional undertakings, whether they are scholars or merely seeking for relaxation, will rely less and less upon their private stores and more upon public libraries. As knowledge extends, as science develops and becomes more systematized, as technology grows in endless multiplicity of material interests, so must the literature of all these subjects accumulate to an extent far beyond the means of private individuals. Hence the public library will become more and more a necessity in the struggle for existence. To the question "What knowledge is of most worth?"—to which Herbert Spencer replied with emphatic iteration: "Science" and again "Science"—the reply must now be given: "The knowledge of most worth is that of bibliography, which is the knowledge of the use of books and of libraries."

MR. FRED CHARLES has been appointed Head Master of the Day School of the City of London College.

THE RELATION OF THE L.C.C. TO HIGHER EDUCATION IN LONDON.

By "L. L. U."

WITH the adoption by the County Council of the recommendations contained in a report issued by the Education Committee at the beginning of July, a question of vital and supreme importance has been brought to the notice of all those who have to deal with higher education in London. The report referred to deals in the main with finance, but should the recommendations adopted ever become fully established, there is little doubt but that in the future a system of control of much wider reaching influence may eventually be thrust upon those institutions concerned.

The question under discussion may be concisely put by the following sentence: Is it to the interest of educational institutions that the system of control should be handed over, if not entirely, at least in great part, to the County Council, to be administered by its officials? It is the intention of this article to argue decisively in the negative, and a few facts relating to the report and the methods adopted by the Council will be briefly discussed.

The very conditions under which the recommendations were adopted cannot but call forth a certain amount of adverse criticism. The report was presented to the Council at the last meeting before the vacation. The agenda paper was naturally a crowded one, and therefore all contentious matter was deferred until late in the evening. It was, as a matter of fact, midnight when the debate was opened on the educational question. A very vigorous opposition was met with; amendments were moved and carried against the committee; but, as might have been expected under such circumstances, these amendments hardly touched the gist of the complaints made by the institutions concerned. Everyone will agree that an important educational measure, affecting the whole area of London, should be amply debated before final adoption; but under such disadvantageous conditions the possibility of such a debate being inadequate is more than likely.

To understand fully the origin of the present crisis in educational administration, it will be necessary to go back to the year 1910, when, after considerable negotiations, the Council made an agreement whereby the payment of a block grant to the Polytechnics was to be made in lieu of annual payments, this grant being based on estimates to be supplied by the respective governing bodies of the institutions concerned, and to be made triennially, commencing with the financial year 1911-12. Instead of these assessments being settled within a reasonable period, the amounts decided upon were only made known at the commencement of last July, when they were then found to fall short by as much, in some cases, as 14 per cent. of the amount asked for. The extreme gravity of the case becomes apparent when it is considered that the expenditure having been based upon the estimate given to the Council in the preceding July, some of the institutions are now faced with financial difficulties.

The estimates made were fully in accordance with the actual expenditure, and in the case of at least one institution the difference between estimated and actual expenditure is only a matter of about $1\frac{1}{2}$ per cent. To emphasize the undue—it might almost be said to be unfair—pressure brought to bear financially by the Council on the Polytechnics in order to bring them forcibly into line, it may be mentioned that out of the four instalments due from the Council for the year 1911-12 only three have been paid, the fourth being held back by the Council's officers. Since the financial year ends on July 31, and the money was in most cases spent before that date, or even before the first publication of the report, it is evident that it is only those institutions which have a sufficiency of reserve funds that can tide over the deficiency that is bound to occur. Can anything be more detrimental to the interests of education than this open attempt to break the back of the present system of control by means of organized financial pressure brought to bear directly? The ultimate intentions may be praiseworthy, but by the too severe application of pressure of this sort it is possible for even good intentions to defeat their ends. It may be argued that to bring the control directly under the administration of

one central office would tend to facilitate the progress of educational development, and doubtless under circumstances other than those existing it might be considered a step in the right direction; but, taking into account the fact that the educational requirements of such a widely spread area as London are of so diverse a nature, it is difficult to realize how a single central board could effectively deal with the many problems that are constantly found cropping up—problems which have to be dealt with in special ways according to the circumstances of each individual case. The existing governing bodies have been appointed in the past with the express idea of obtaining the best possible opinion as to the educational needs of the district that falls within their scope of administration. Would the expert advice of these governing bodies be taken into account in the future? It seems a matter for doubt, for the details of the report under consideration were actually decided without sufficient reference to the governing bodies concerned, and the decisions were arrived at without the full knowledge of the working details actually in the possession of those bodies.

This condition of affairs shows not only a complete lack of sympathy and courtesy towards the governing bodies, but also renders the decisions detrimental to sound educational administration. By their acceptance of the report the governing bodies will in part be relegating functions that they hold by statute, and it is an open question whether such a proceeding would be a strictly legal one.

Two paragraphs in the report are worth the trouble of comparison. In one the committee state that they do not undertake to maintain the institutions, and that the grant in aid is solely within the discretion of the committee; while in the other it is stated that the grants recommended are sufficient for each institution working within the limits contemplated by the Council and following out the program proposed by the governing body, so that there may be no excess of expenditure over income. The two statements are in a great measure irreconcilable, and the obvious question is, if the Council do not undertake to maintain, by what exclusive right do they claim the power to settle limits?

The attitude of the Council is tending strongly towards bureaucracy and absolute officialdom.

The polytechnics are by no means an isolated case in this drastic move. A system that has proved by past and bitter experience to be anything but a complete success in the case of secondary education is hardly likely to prove anything but inimical to the interests of technical education. The Council naturally, and rightly, claim a certain responsibility; but there is no valid reason why the limitations imposed should be so stringent. By consultation with the various governing bodies it should not be difficult to arrive at a reasonable arrangement. With conditions remaining as at present the educational future is anything but satisfactory, and if the new proposals are to be efficiently counteracted it can only be effected by the concerted action of those whose influence and experience render them largely responsible for the progress of higher education in London.

That the polytechnics are taking action may be inferred from the fact that within a week of the publication of the report a meeting representative of the governing bodies was held, and resolutions passed condemning the policy of the Council, and at the same time seriously considering the action of refusing the grants offered. If influential action is to be taken it must be taken now, and it is to be hoped that the near future will see matters put upon a secure basis, free from unfavourable criticism and disagreeable discord.

A NEW method of ascertaining whether icebergs are in the vicinity of a vessel is about to be tested by the inventor, Dr. M. Coplans, of Leeds University, who is a passenger on board the "Royal Edward" for Montreal. On arrival in America Dr. Coplans will proceed to the ice-zone in a United States cruiser, and will there carry out the experiments. The apparatus designed by Dr. Coplans, in association with Mr. French, of the Electrical Department of Leeds University is intended to record variations in the electrical conductivity of sea-water, the theory on which it is based being that the presence of icebergs, however small, sensibly influences this conductivity over a wide area.

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CLASS LISTS

OF CANDIDATES WHO HAVE PASSED THE CERTIFICATE EXAMINATION OF THE COLLEGE OF PRECEPTORS.—MIDSUMMER, 1912.

LIST OF SUCCESSFUL CANDIDATES AT COLONIAL & 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. | *e.* = English. | *g.* = Geography. | *h.* = History.
al. = Algebra. | *do.* = Domestic Economy. | *f.* = French. | *gm.* = Geometry. | *s.* = Scripture.

The small figures ¹ and ² 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.]

PRIZE.

TAYLOR JONES PRIZE FOR SCRIPTURE HISTORY—C. I. Rodrigues, St. Joseph's Intermediate School, Georgetown, British Guiana.

BOYS.

FIRST CLASS [or Senior].

Pass Division.

Rodrigues, C.I. *s.h.*
 St. Joseph's Inter. S., Georgetown, B. Guiana
 Cole, G.M. *e.* Queen's Coll., Nassau, Bahamas
 Curry, O.H. Queen's Coll., Nassau, Bahamas
 Fung-Ke-Fung, M. Private tuition
 Lynch, G.N. Private tuition
 Thompson, C.S. Queen's Coll., Nassau, Bahamas
 Johnson, J.S. Queen's Coll., Nassau, Bahamas
 King, J.H.
 R.C. Boys' S., New Amsterdam, Berbice, B. Guiana

SECOND CLASS [or Junior].

Honours Division.

Rathnam, A. *s.* Norris Coll., Rangoon
 Gunaratna, F. *gf.* Eton Coll., Colombo
 Winslow, C.N. *al.* Eton Coll., Colombo

SECOND CLASS [or Junior].

Pass Division.

Adamson, J.A. *al.* Private tuition
 Curry, A.R. *a.al.* Queen's Coll., Nassau, Bahamas
 Thong, S. Norris Coll., Rangoon
 Misso, L.A. Eton Coll., Colombo
 E.Hün, *s.* Norris Coll., Rangoon
 Ferdinando, D.C.G. Eton Coll., Colombo
 Moonisinghe, S.K. Eton Coll., Colombo
 de Mel, D. Eton Coll., Colombo
 Subramaniam, P. Eton Coll., Colombo
 Candappa, C.A. *a.al.* Eton Coll., Colombo
 Amoury, E.J. Queen's Coll., Nassau, Bahamas

FIRST CLASS [or Senior].

Pass Division.

De Freitas, B. *do.*
 St. Joseph's Inter. S., Georgetown, B. Guiana

SECOND CLASS [or Junior].

Pass Division.

Ijuta, E.L.
 Conv. of Mercy, St. Joseph's S., Charlestown, B. Guiana
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First Class [or Senior].

Pass Division.

Evans, J. A.	Gillett, H. E.	MacDonnell, A. G.
Genzel, M. H. A. ge.	Islip, H. T. e.ch.	Willoughby, A. J. e.g.a.

Second Class [or Junior].

Honours Division.

Cowley, A. B. e.al.f.gr.	Lodge, J. e.a.al.	Vickers, O. e.
Deacon, E. F. e.h.g.a.	Taylor, G. C.	Ware, S. A. T. e.a.
Evans, T. G. f.	Thomas, D. R.	Wilson, S. e.f.
Gillett, E. F.		

Pass Division.

Baldwin, J. A.	Herbert, J.	Northeott, C. S.
Bartle, A. F.	Horton, J. E.	Painton, J.
Baxter, C.	Ibrahim, M.	Potter, S.
Beck, G. H.	Jeffery, L. J.	Reed, J. W. H.
Bell, R. G.	Jones, Miss A. D.	Regan, F. W.
Bentley, J. R. f.	Jones, J. T.	Robinson, O. F. W.
Brooke-Thorne, H. V.	Jones, R. H.	Saunders, R. J.
Browning, M. P. a.	Knowles, C. R.	Scollick, D. A.
Cockburn, W.	Kruse, H. F. C. e.a.	Smith, G. F.
Collings, B. S.	Larkin, F. W.	Soutter, M. J. K.
Crane, A. R. e.	Llewellyn, W. b.	Stacey, B. J.
Doughty, L. A.	Lloyd, F. B.	Sutherland, J.
Fletcher, Miss K. F.	Lywood, H. D. M.	Taylor, A. B.
Goddard, J. L. f.	MacDonnell, J. J.	Taylor, S. E.
Green, C. A.	Macklin, C. H.	Walklet, F.
Grimmer, Miss M. I. A.	Mason, T. W. a.f.	Walmsley, H. e.
Harris, C. St. J.	May, A. G.	Witcomb, A. H. P.
Hatcher, H. B.	Muzafar Ali Khan	Youngson, A.

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.	f. = French.
al. = Algebra.	g. = Geography.
b. = Botany.	ge. = German.
ch. = Chemistry.	gr. = Greek.
e. = English.	h. = History.

SIXTY YEARS AGO.

SIXTY years ago to-day—i.e., on October 1, 1852—was published the first number of Vol. VI of *The Educational Times*. (The first number of Vol. I was published exactly five years earlier—October 1847. At first the sub-title was "A Monthly Stamped Journal of Education, Science, and Literature." The word "stamped" was omitted after October 1851. The present sub-title, "Journal of the College of Preceptors," was adopted in April 1861.)

Some extracts from the number of sixty years ago will prove of interest as indicating the march of events. An advertisement offers to dispose of "a Genteel Boys' Day School in a Populous Neighbourhood within half-an-hour's walk of the Royal Exchange." No need to-day to point out that the neighbourhood of the Royal Exchange is populous.

The Hamiltonian System of Languages is largely advertised, and the *Westminster Review* is quoted as saying: "This system is one of the most useful and important discoveries of the age. A pupil can acquire more in five or six weeks on this system than in two years on the old." The system was applied to classical as well as to modern languages. Truly there is nothing new! Every few years the "old" is discredited by the "new."

The leading article contains a weighty plea for the appointment of Lord Derby to succeed the Duke of Wellington as Chancellor of the University of Oxford. There were many possible claimants, and the prescience or influence of the editor may, perhaps, be gauged by the fact that Lord Derby was appointed eleven days after the appearance of the article.

A notice in the paper states that three thousand copies were printed, "and it is not at all improbable that a larger number may be demanded, as extraordinary exertions are being made to introduce it into all scholastic circles and to render it in every way worthy of being referred to in every quarter as THE ORGAN OF EDUCATION." "Several reviews are in type, but are unavoidably deferred till next month owing to the pressure on our advertising columns."

The last extract we shall make is itself a quotation from the *Athenaeum*, but the contrast it affords with our present-day views of an Inspector and his qualifications is so complete that we cannot refrain:

A Mr. — has just been appointed Inspector of Government schools at a salary of £500 a year. This is precisely one of those appointments which, as we have pointed out again and again, literary men are the best fitted to fill, while they form the legitimate means by which Governments can extend their patronage to literary men. We are willing, therefore, to hope, in the absence of any knowledge on the subject, that Mr. — belongs to the class for whom benefices and duties like the above are most evidently appropriate; but so seldom do we find the right man selected to fill up vacancies of the kind, that we have always the fear of a job or a political motive before our eyes.

The Educational Times gives no information about Mr. —'s position in literature, nor does it in this number suggest that a schoolmaster would make a worthy Inspector.

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He began by quoting the words of a former occupant of his Presidential chair (Sir Philip Magnus) as an expression of the prevailing opinion:

If we take science to mean, as commonly understood, organized knowledge, and if we are able to test the claim of any body of facts and principles to be regarded as science by the ability to predict, which the knowledge of these facts and principles confers, can we say that there exists an organized and orderly arrangement of educational truth or that we can logically, by any causative sequence, connect training and character either in the individual or in the nation? . . . It is very doubtful whether we can say that educational science is yet sufficiently advanced to satisfy these tests.

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It is not that the books lack originality. Each writer has his new point of view or his new interpretation of certain phenomena; yet each either baldly states or tacitly takes for granted a great body of truth that is held to be generally accepted. This body of recognized truth is gradually increasing as the result of collective thinking and the corrections involved in active criticism. Already critics are beginning to find fault with any writer who produces a book—not avowedly a textbook—that professes to deal with the whole range of education. He is reminded that what is now wanted is a special development along certain definite lines. The general principles of education are held to be established and accepted.

Thus, the first requirement demanded of a science is already accomplished, and the second is not far off:

By and by [the profession] will realize the fact that it has at its disposal material that will enable it to prophesy and thus fulfil the second condition imposed upon all who lay claim to scientific knowledge.

These facts lead to a statement of the present position of education:

No claim is here made that education has yet justified her demand to be recognized as a fully developed science; but it may be fairly maintained that she has at least entered upon the stage of scientific method—she is seeking to free herself from mere empiricism.

THE METHOD OF ADVANCE.

Education may go beyond empiricism in two ways. The first consists of inventing general principles and then fitting in all the observed facts—a process which is "natural and

pleasant." This method has been used even by those whose names are great in the evolution of educational theory.

But there is also the much more rational method of dealing with observed results so as to discover the underlying principles:

Obviously this at once introduces the experimental method, since no satisfactory progress can be made by mere passive observation. This is the stage we have now reached in educational theory. We are passing from an appeal to experience to an appeal to experiment. . . . The method of experiment is really a system of tentative prophecy under rigidly determined conditions. We become prophets by prophesying. From all the knowledge at our disposal we calculate that a certain process will give a certain result. We apply the process, and then, if the result is not what we expected, we examine all the conditions, seek out the cause of our error, and proceed to another tentative prophecy. By and by we acquire the power of prophesying with confidence within certain recognized limits, and within those limits we may claim to proceed scientifically.

THE NEED OF A STANDARD.

Before we can evaluate our results we need a recognized standard, otherwise there will be no agreement. The standards hitherto adopted have been largely subjective, and consequently contradictory:

Certain educational processes are gone through; certain results follow in the lives of the educands. The causal relations involved are arranged by the individual observer to suit his own views. According to some the Battle of Waterloo was won on the playing-fields of Eton; according to others the Battle of Colenso was lost there. We have need of some standard that is independent of private opinion.

THE POSSIBILITY OF AN OBJECTIVE STANDARD.

An objective standard is not so impossible as might at first appear. In the study of physics an objective standard has been devised because certain conditions of sensations have been found to be constant, such as wave lengths and the laws of refraction and of reflection. But the individual observer cannot be eliminated. His sense organs and his experiences are important factors. Thus it is that a science like optics is in one sense self-contained and has a definite objective standard, whereas in another sense it depends for its data on individual experiences and has a subjective standard.

Even in pure mathematics human limitations are potent factors in the treatment of the data. Linear perspective, exact science as it is, is nothing more than a conventionalized method of treating the results of individual experience. Perspective is a mode in which the subjective is made uniform by applying an objective standard.

Astronomy is an exact science, yet the subjective side of it appears in the problem of the "personal equation." The disturbing subjective elements have to be eliminated by quantitative methods:

It is by similar methods that we must seek to establish an objective standard in education. The difficulty in this subject is very great. . . . The subject-matter is human nature, which is so complex and involves such volatile elements that it is almost impossible to reduce its working to fixed laws. The same difficulty obviously applies to psychology. . . . The line of least resistance in seeking for an objective standard in psychology is to fall back upon a physiological basis.

Education is inclined to use psychology just as the latter uses physiology. Indeed, education has captured psychology. The latter is receiving an amount of attention now that it never would have done but for its connexion with pedagogy:

But, after all, a teacher is not a mere psychologist; education is more than applied psychology. If education is to rank as a science it cannot be in virtue of its use of another study that itself has an insecure foothold among the sciences. It must establish for itself an objective standard.

STANDARDS ALREADY DEvised.

The old systems of individual examination under the English and Scotch Codes of elementary education unexpectedly evolved an objective standard—not, indeed, to determine the intelligence of the pupils, but to indicate the communication of certain minimum amounts of information. And in actual practice the tables did win acceptance as a test of intelligence. A standard of comparison among the scholars of elementary schools came to be recognized all over the country. The standard was an objective one, because each grade came to

have a meaning of its own, and the phrase "a Standard III boy" acquired a definite meaning apart from any school or locality.

Binet and his colleagues have been trying to achieve the same result by means of carefully devised tests of intelligence. But these cannot be regarded as satisfactory either in themselves or in their application, and such elementary teachers as have examined them rather view them as the reissue of an old scheme which has already done great harm.

THE URGENT NEED FOR A STANDARD.

Nothing better illustrates the groping of education after a scientific basis than the present demand for some means of determining which children are "defective" and which merely dull. So imperative is the need for an objective standard here that it must be satisfied at any price, with the result that the decision is being more and more left to the doctors instead of to the teachers. The cause is not difficult to find. Physiology has already an objective standard, and the doctors are evidently expected to get their results by physical examination. No other explanation is admissible, since they are not only not superior to teachers in their knowledge of the mental reactions of the child, but obviously inferior.

This competition for power between the two professions is proof of the non-existence of such an objective standard. Much investigation is still needed; yet the problem is recognized and also the need of a careful solution. It is distinctly an educational problem, and the doctor who acquires the power of dealing with questions of intelligence thereby becomes an educationist. This, however, does not destroy the claim of education to rank as a nascent science with its own special needs and methods. Education is entitled to use the results of both psychology and physiology without giving up any of its claims.

DEVELOPMENT OF QUANTITATIVE METHODS.

Quantitative methods of dealing with educational problems are now largely used:

The general tendency of quantitative methods is to eliminate the subjective element. Even in the case of marking examination papers experience shows that the use of numerical marks tends to objectify results and to get rid of some at least of the difficulty involved in the personal equation of the examiners. Marking by general impression of a whole paper is much less free from subjective variation. Every individual number set down as a mark implies a fresh exercise of the critical power, and when there are many questions there is a compensating principle at work, inasmuch as each impression is recorded as it is made, and the addition of the marks produces a balancing in which the latest impression has not the determining influence it too frequently has when a paper is marked as a whole. If an examination includes many subjects, many examiners, and a great body of examinees, the subjective element in the marking is, to a large extent, eliminated, and we can deal with the results in accordance with what is practically an objective standard.

The formulæ of Prof. Karl Pearson and of Prof. Spearman now enable us to correlate quantitative data, and, if the results are reliable, we have the key to many problems hitherto regarded as controversial. Thus, the problem of "formal training" might now be solved by taking quantitative results of the progress made by pupils in several subjects. In such a case an objective standard seems to have been reached.

HOW SUCH METHODS ARE USUALLY VIEWED.

Results thus obtained are often regarded with some suspicion. Once the formulæ have been established by mathematical proof, they must be accepted as irrefutable on that side; but their application seems so mechanical and inhuman that many are unwilling to use them:

Some people are doubtful whether, in dealing with human beings, it is desirable, even if it were possible, to have an objective standard that eliminates humanity from all human problems. It has to be pointed out to such critics that all human problems must begin with the individual and end with the individual. All the intermediate process may be carried on in the pure objectivity of quantity without dehumanizing the application of its results. This will be kept in view when we deal with the average.

Two errors must be guarded against in applying the formulæ. They may be applied to too small a number of cases, and the subjective element may cause error in preparing the data. But a large enough number of cases will bring about the elimination of subjective variation:

It must never be forgotten that the Pearson and other formulæ are merely means of dealing with material already acquired. It is only to this extent that they supply an objective standard. Many of the recognized sciences are in no better case.

THE PROGRESS OF A SCIENCE OF EDUCATION.

Education as a science will progress by the proper use of the experimental method. Questions must be limited to one point. Control tests must be applied and interfering influences guarded against. Results of one investigator must be confirmed by others working under different general conditions, though with the detailed conditions exactly repeated.

Although we already have a large collection of recognized facts, and these facts are being carefully organized, there is still urgent need for new knowledge:

There are hundreds of definite practical questions that are being asked by teachers every day, and, unfortunately, answered according to individual experience, if not, indeed, according to individual caprice. Some few questions about the memory are now definitely answered, and practical educators have the benefit of these results of experiments; but there are scores of points with regard to memory on which there is still doubt, and yet these are points on which the practical educator must adopt a definite line in his daily work. He cannot postpone his decision—he must do one thing or another, and in the meantime he has no standard.

The Educational Science Section of the British Association is doing much to increase our present knowledge, and this year has prepared a report on more distinctively pedagogic matters:

There could be no more useful subject of inquiry suggested than an investigation into the questions that are most urgently demanding answers at this time among the practical educators of the country. To discover and classify these, and then to correlate them with the various investigations that are being made throughout the world, would be to render a very practical service to the study of education. The truths thus acquired and recorded could be fitted in to the mass already at our disposal, and the result would be a great strengthening of that objective standard that is so essential to the independent progress of our study.

Other human sciences—politics, economics, sociology, eugenics—are also largely statistical. The principles which they base upon averages are of very general application, though they do not allow prophesying in individual cases. An educator cannot prophesy in the case of the individual boy except in general terms, but he is in no worse case than a medical man called in to a patient.

THE VALUE OF AN AVERAGE.

The teacher is often told that the average is a mere abstraction and that his concern is with the living child. But this is to confound two distinct things. The value of an average is that it is a standard by which individuals may be compared. The minor Jones may be different from the average third-form boy, but the teacher will be helped by his knowledge of the average in dealing with individual cases. A master may often be required to regard his pupils as separate individuals; but it is also imperative that he should at times view them as a whole—as a psychological unit.

MODERN DEVELOPMENT.

Psychology formerly studied only the mature human individual; now it is concerned with the individual at his various stages of growth, and the movement known as child study is the outcome of such a development. Still more recent is the growth of collective psychology, which studies the individual in his relation with his fellows. McDougall has already given a scientific basis for the latter:

The material he has supplied is waiting to be worked up from the educational side. His statement of the relation between the instincts and the emotions and his manipulation of Mr. Shand's theory of the sentiments provide tempting material for the establishment of an objective standard in connexion with the training of the individual character and the interaction of individual characters in groups.

THE POSITION OF THE PRACTICAL EDUCATOR.

The establishment of an objective standard will still demand intelligent initiative from practical educators:

Herein consists, in fact, the dignity of the educator's office. He must be master of the organized knowledge that education has acquired, and must have the power of making the appropriate application of that knowledge to every case as it arises. To assist

him in avoiding error he is entitled to look for an objective standard at the hands of those who make education their special study; but for the use of that standard he must himself accept the full responsibility.

The address is the most careful statement we have had in recent years on the question of a science of education. Although Prof. Adams shows himself to be in the van of educational progress and reform, there is no evidence of incautious procedure. Indeed, if the address is open to criticism, it would be on the ground that too little attention was paid in it to the work of Binet and to Binet's followers. For many years very careful investigations have been conducted on the experimental evaluation of intelligence, and much progress has been made, to which English psychologists have contributed something. Prof. Adams's comparison of this work with the old individual examination system under the Board of Education is more novel than justifiable; for while the latter only examined the *result* of mental work, Binet and his followers have tended more and more to examine mental *processes*, apart from mere results. This constitutes an important difference between the two things.

But this is only a small part of an excellent whole. The address should do much to show the importance of the scientific study of education—a study still strangely neglected by those who control the different parts of our educational system.

A STRENUOUS WEEK.

The record of the eighty-second meeting of the British Association, which was held at Dundee in September, is one of ceaseless activity. From the first evening, when Prof. Schäfer gave his Presidential Address to a brilliant gathering in the Kinnaird Hall, to the concluding meeting a week later, we had a crowded program before us. There were nearly 2,500 members in attendance, gathered from the four quarters of the earth, and the Dundonians were evidently amazed both at our numbers and vitality. To attend a civic reception, visit several local places of interest, rush through a local manufactory, make a day's excursion to one of the many attractive centres offered, visit a few of the half score garden parties, hear the evening discourses, attend the Association ball, and hear eminent scientists supporting the Suffragette movement—these were things that demanded no little energy, even from the younger members. Yet these were only the accretions; there were twelve separate sections sitting in daily session in different parts of the town, where the serious work of the Association was performed. And the Educational Science Section had still further claims upon its time in the invitation to attend the Laying of the Foundation Stone of the new Dundee Training College, and in the visits paid to several local schools.

But no written description can reproduce the enjoyment of it all—that is largely bound up with the intellectual atmosphere of the meetings themselves. It is for this reason that the Educational Section deserves a larger gathering than it has yet attracted. Teachers, perhaps of all people, are overdone with conferences, but the British Association is unique in offering a scientific study of Education wholly free from partisan faith and particular interests, and, therefore, should become the most valuable meeting of educators during the whole year.

THE EDUCATIONAL SCIENCE SECTION.

The Section's work opened with the presidential address of Prof. John Adams, which is summarized above. Subsequent meetings may be divided into two classes: those where a report was presented which embodied the conclusions of some representative committee appointed to investigate a special problem, and those where papers were read by distinguished educationists on some problem of teaching or of organization.

COMMITTEE REPORTS.

It would be difficult to overestimate the permanent value of some of the four reports that were presented, or to conceive better evidence of the usefulness and value of the work that the Section is doing continuously. The first report, presented by Mr. G. F. Daniell, was on the "Influence of School Books upon Eyesight," and embodied the work of "oculists, school

medical officers, directors of education, teachers, publishers, printers, and type-founders." The report affirmed that a portion of the visual defect among school children is preventable by greater care in the selection of school books. It recommended, therefore, the establishment of a standard of book production, and gave an appendix showing examples of the size of type suitable for school children of different ages. An excellent discussion followed, in which Miss Burstall (Manchester), Mr. C. H. Bothamley (Somerset C.C.), Prof. Gregory (London), Mr. W. D. Eggar (Eton), and Dr. Kimmins (L.C.C.) took part. All agreed that the report was the most useful publication we have had on the question in England, and thought its recommendations practicable, though the extra expense might be a serious difficulty in some districts.

A second valuable report, though of less general interest, was on "The Curricula and Educational Organization of Industrial and Poor Law Schools." This inquiry had been limited to schools that are outside the inspection of the Board of Education, and also to Homes and Institutions where children are reared. The details showed a mingling of humour and pathos which usually goes with such places: the "technical training" of the boys at one school consisted of wood-chopping! Another school, "interested in science teaching," asked the Committee (one feels the disappointment which followed the gleam of hope) where it could "obtain lantern slides." The report concluded with the suggestion that strong representation should be made to the proper authorities that steps should be taken to include these places under official inspection, and Dr. Kimmins added that he thought immediate results would be obtained through the action of the proper authorities.

A report was also presented by the Committee appointed to inquire into "The Methods and Results of Research into the Mental and Physical Factors involved in Education." Two problems had been investigated, and Dr. Shrubbsall spoke on the first—namely, the methods of examining children who are alleged by teachers to be mentally deficient. He emphasized the need for an alliance of medicine, pedagogy, and psychology in dealing with so complex a problem. The report acknowledged the value of the psychological "tests" of intelligence already devised, but admitted that a stage of finality has not yet been reached. Nothing can be satisfactory short of a systematic examination at properly equipped central institutions. Much more information is expected soon, as the result of present research. The second part of this report dealt with the psychological factors involved in learning to read and write, and the summaries contained in it were elaborated and extended at one of the meetings.

The remaining report was concerned with "The Overlapping between Secondary Education and that of Universities and other places of Higher Education," and reviewed separately the problem as it affects different types of schools. The general conclusion was that, while a small amount of overlapping exists, there is unanimous agreement of opinion among all who have been questioned that this is desirable. Many were of opinion that it encouraged boys to take an honours degree and prevented mental overstrain in girls. The report suggested that, as in the majority of secondary schools few of the students will proceed to the Universities, the curriculum should be designed for the many and not for the few. The Committee also recommended that scholars should not enter the University before the age of seventeen, and that in all cases the Matriculation Examination should be passed before entrance.

The four reports, as will be seen, contain many valuable facts and important conclusions. They are obtainable, together with the President's address and abstracts of the papers read, from the Offices of the British Association, Burlington House, W., for 9d.

PAPERS AND DISCUSSIONS.

Three papers were read on "The Problem of Vocational Education in Schools." Mr. Peck (Edinburgh) described the work of the Edinburgh School Board, which made careful and full provision for the evening education of the seventeen thousand children between the ages of twelve and eighteen in that city, and of which vocational education was an essential part. But only twelve thousand children had been reached,

and he favoured the application of compulsory powers, not merely to ensure attendance, but also to ensure that a complete course of instruction should be taken, of which vocational training would be a part.

Mr. Holland (Northamptonshire) followed with a strong plea for direct vocational instruction for elementary-school children, especially between the ages of fourteen and sixteen. He claimed for vocationalism the support of psychology, and illustrated its need by reference to the boot trade. Whereas, formerly, a man learnt how to make a whole boot, he now learnt only one ninety-fifth part of the process, since there were so many separate operations required. Hence it was essential for the intelligence and interest of the worker that he should have knowledge of the whole of his craft.

Miss Faithfull (Cheltenham) confessed that she was "lukewarm, if not antagonistic," to vocationalism. She made a strong plea for a liberal education, and pointed out the difficulties of knowing what vocation a boy or girl would prefer, and the changes which such choice would continually undergo.

Further contributions were made by Prof. Moore (Yale), Miss Burstall, Mr. Watt (Dundee), Dr. Morgan (Edinburgh), Mr. Reid (Birmingham), Prof. Culverwell (Dublin), and Dr. Kimmins. Unfortunately, there was so much addition of detail, and so little search for broad principles, that it is hard to disentangle the knot. Some of the speeches were far from being "scientific": they were strongly partisan. On the whole, there was overwhelming agreement of opinion in favour of vocational training, but the problem ought to have been treated separately for elementary schools and for secondary schools. Miss Faithfull's paper showed clearly the need for this.

Prof. Moore's contribution was in a delightful vein of humility, mingled with confident buoyancy. The general education of the American schools, he asserted, had never really touched the scholars. It became meaningless and tedious to them. He strongly advocated vocational training, but not in evening schools for children under the age of seventeen, since such schools are "only good for those who know how to save themselves during the day." He divided occupations into "energizing" and "enervating," and said that the national problem was to vitalize the enervated workpeople. Vocationalism would do something to stop the enervation.

Miss Burstall said that after twelve years of experimenting she was a firm believer in vocational training, though a narrow conception of it would be fatal. Dr. Kimmins ended with a vigorous attack on the so-called "formal training" and "mental discipline" theories, and said it was absurd to argue that there was no culture value to be found in vocational studies.

MATHEMATICS.

The discussion on "The Present Position of Mathematical Teaching" was opened by papers from Dr. T. P. Nunn, Dr. P. Pinkerton, Dr. W. P. Milne, and Mr. W. D. Eggar. Dr. Nunn spoke on the reform of teaching trigonometry, which, he said, was still too much hidebound by the old logical ideas. Yet by devising apparatus, and by presenting the subject-matter in the guise of realistic problems, the teacher could produce a new attitude to trigonometry, and pupils could begin the subject at an earlier period than was often done at present. Dr. Nunn exhibited some of the cheap apparatus he had devised. Dr. Pinkerton claimed that a genuine appreciation of mathematics is not more rare than a genuine appreciation of literature, and the modern methods were destined to make the study more real and more closely linked with the interests of the scholar. Dr. Milne spoke of the teaching of mathematics to scholarship boys, and said that the papers set by the Universities were now demanding a wider and wider knowledge from the competitors. Unfortunately, teachers have not the time to keep up with mathematical research and with modern developments of teaching method, and he thought some provision might be made for those teachers of scholarship boys in keeping them abreast of modern movements. Mr. Eggar raised the question of the position of mathematics in schools to-day, and quoted from several letters to show that there is a strong feeling which declares it to be very unsatisfactory. He referred to the question of sequence in geometry,

and thought some recognized standard reference was absolutely necessary, both for scholars and examiners.

The subsequent discussion turned very largely on the question whether the reform methods of teaching mathematics have proved advantageous or not. The speakers were: Prof. S. P. Thompson, Miss Burstall, Miss Frodsham (Cardiff), Principal Griffiths, Mr. G. F. Daniell, and Miss B. Foxley. There were many points of disagreement, and the debate lost force by being too discontinuous, though some very valuable contributions were made. Prof. Thompson said that he found a decreased ability among boys to follow a train of reasoning, though in other ways there have been decided improvements. The new methods were right in that they began with the concrete, for teachers must build on facts and not on words. What was urgently needed was a book which would be sufficiently excellent to be adopted generally, just as Euclid was once adopted because his presentation of the subject-matter was the best at the time.

Miss Burstall urged that mathematics should not be compulsory for girls, as there were many girls of average ability who found the study too difficult, and their interests did not run along such lines as could easily be brought into touch with the teaching of the subject. Miss Frodsham thought mathematics should be compulsory for girls, provided the new methods of teaching were used, which she thought were calculated to remove many of the difficulties Miss Burstall had mentioned. Mr. Daniell, replying to Prof. Thompson, said that a chain of argument was used as much in chemistry, geography, and perhaps history, as it was in geometry. His own opinion was that boys had a better idea of sequence than ever, for they could now produce more original reasoning and relied less on mechanical memorizing. Miss Foxley thought there was urgent need of the psychologist's help to tell us how mathematical interests develop in children, so that the subject-matter could be introduced to the pupil at the most favourable time.

READING AND WRITING.

One session was devoted to "The Psychological Factors involved in Learning to Read and Write." Mr. F. Smith read a paper giving the results of many investigations made in different countries into the reading of adults, and emphasized the importance of quick reading, the rôle of motor habits in eye movement, and the function of inner speech. Mr. B. Dumville read a paper on "The Teaching of Reading in the Early Stages," with special reference to the "Look and Say" method. He argued that this method followed the dictates of psychology, and the results of experiments show that children make better progress when using it. As it lays great emphasis on meaning from the beginning it helps on the love of literature. Miss Foxley's contribution went to show that children, no matter how they are taught, always learn the meaning of a new and strange word in the same manner—that is, not by any method of word analysis, but by finding a clue to its meaning in the context. Hence the "Look and Say" method is superior to any phonic method.

Dr. W. Brown read a paper on "The Psychology of Writing," in which he argued that writing should not be begun by young children, as their fingers had little motor power and they had not sufficient control over the impulses of their body. Copy-book writing should not be encouraged, as it involved too much visual appeal, whereas tactile and motor sensations were more important aids. Dr. Rusk analysed the movements involved in handwriting, and advocated the tilting of the paper, in order that wrist movement should be avoided. Experiments were incomplete, but went to show that the hand and arm movement should be used to form upward and downward strokes, and that the rounded elements should be executed by the finger movements. In the discussion which followed, Sir James Donaldson, Principal of St. Andrews University, referred in humorous terms to the problem of spelling, and suggested that spelling should not be regarded as a valuable exercise at all. Everybody should be allowed to spell as he liked, as did our ancestors.

Dr. C. S. Myers (Cambridge), commenting on the papers read, said that it would be a mistake to confine the teaching of reading to one method alone. The "Look and Say" method might be excellent for beginners, but as the mind developed and individual differences emerged, he thought

greater effect would be got by variation. The "Look and Say" method seemed to be a very laborious procedure for the later stages of reading. Prof. Green (Sheffield) said the great problem of reading was to make it full of meaning from the first, and this was the stronghold of the "Look and Say" method.

LEAVING CERTIFICATES.

Two papers were read on "School Leaving Certificates," with special reference to the Scotch schools. Mr. Strong urged that different types of leaving certificates should be granted, which should give the right of entry to a University, and should also be related to the needs of the various professions and of commerce. The teacher's opinion should be the main factor governing the issue of such certificates.

Mr. MacGillivray explained the system of leaving certificates in Scotch schools, and showed that it was organized in relation to the whole school system of the country.

In the discussion, Miss Burstall said that the Head Mistresses' Association had frequently declared against the examination of girls under sixteen, and Miss Foxley said the danger to be guarded against was the "spoon feeding" of backward children, in order to get them up to the desired standard. Sir George Fordham pleaded that any standard that was adopted should be decentralized.

SCHOLARSHIPS.

Among the shorter papers, which dealt with separate problems, was one by Prof. Marcus Hartog, who made a plea for the supplementing of small scholarships. Although there was no lack in the number of scholarships, the amount of each, with few exceptions, was wholly inadequate to the student's needs, with the result that he lived a cramped life, which diminished the value and amount of his work. There should be a fund established from which principals and professors might get aid for their most needy students.

Principal Griffiths thought there could be no fitter subject of inquiry than one into the present working of our scholarship system.

A paper which attracted a large audience, and received much attention from the Scotch Press, was the one read by Principal Sir James Donaldson on the Scottish Education Department. The paper opened with a succession of humorous paradoxes designed to show that the organization of the department was extremely faulty. It was an aristocratic system, he said, and the arbitrary power in the hands of the officials resulted in ceaseless changes, and there was everlasting uncertainty in the schools. He advised the appointment of a Minister of Education, responsible both to the country and to Parliament, with a consultative committee in touch with national needs, and assisted by the experience of every class of teachers.

It will be seen that the amount of work accomplished in the four sessions was extremely great. Some of the discussions suffered through being left unfinished and with slightly confused issues unsettled; but the President, always punctual and precise, kept rigidly to the times printed on the official program: had he done otherwise many papers would have been crowded out altogether.

The proceedings of the Section were brought to a close by a vote of thanks to the President and to the Recorder.

DR. ROUSE is indefatigable. He has been lecturing on the colloquial method of teaching Latin at the Columbia University. According to the *New York Evening Post*, the lectures and demonstrations were a great success, and we are told that "for forty minutes every morning fifteen children of twelve years each or thereabouts and a jolly little Englishman with a twinkling eye and a Henry IV beard conversed in Latin about anything from cheese to prudence." Dr. Rouse also gave a series of demonstrations at the Bangor Summer School.

THE Universities of Leeds, Sheffield, and Durham are co-operating with the chief County and Borough Authorities of Yorkshire in arrangements for a Yorkshire Summer School of Geography in August 1913. It is proposed that centres shall be formed in the Whitby district, at or near Settle, and in the industrial districts of the West Riding. Field work and practical instruction will be an important feature of the school.

THE COLLEGE OF PRECEPTORS.

MEETING OF THE COUNCIL.

A MEETING of the Council was held at the College, Bloomsbury Square, on September 21. Present: Mr. E. A. Butler, Vice-President, in the chair; Prof. Adams, Prof. Adamson, Dr. Armitage Smith, Mr. Bain, Mr. Barlet, Rev. J. B. Blomfield, Mr. Brown, Mr. Charles, Mr. Cholmeley, Miss Dawes, Mr. Eagles, Mr. Holland, Rev. R. Lee, Mr. Morgan, Mr. Pendlebury, Rev. C. J. Smith, Mr. Storr, Prof. Foster Watson, and Mr. Wilson.

The Secretary reported that the Summer Examination of Teachers for the College Diplomas had been held on August 26 to 31 in London and at 22 provincial and colonial centres. The number of entries was 274.

The Professional Preliminary Examination was held on September 3 to 5 in London and at 12 provincial centres. The number of entries was 222.

The Examinations conducted by the College on behalf of the Newfoundland Council of Higher Education were held in the third week in June, and had been attended by 3,528 candidates.

The Diploma of Licentiate was granted to Mr. W. J. Herlihy, and that of Associate to Mr. E. E. Wilson, who had satisfied the prescribed conditions.

On the recommendation of the Finance Committee, an agreement regulating the sale of *The Educational Times*, the "Calendar," and the several books of papers set at the College Examinations, and the collection of advertisements for the same, was approved; tenders for decorative repairs to the College building were accepted; and a grant of £10 was made from the Benevolent Fund of the College.

Mr. J. W. Longsdon, M.A. Oxon, 6 Claremont Gardens, Surbiton, was elected a member of the Council.

The following persons were elected members of the College:—

- Rev. J. A. Nairn, Litt.D., B.D. Camb., Merchant Taylors School, E.C.
 Mr. G. A. Roff, L.C.P., Roseville, St. Margarets-on-Thames.
 Mr. G. W. Roome, B.Sc. Lond., L.C.P., 215 Pealter Lane, Brincliffe, Sheffield.
 Miss I. M. B. Williams, La Martinière Girls' High School, Lucknow.

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

- By W. B. CLIVE.—London Matriculation Directory, June 1912; Alleroff and Penn's Caesar's Gallic War, Books IV and V; Allen's Scott's Marmion; Edmunds's Junior English Composition; Fry's Junior Geography, Senior Geography, and the British Isles with Outlines of Physical Geography; Goggin and Fielden's Shakespeare's Macbeth; Goggin and Watt's Milton's Comus; Jude and Satterly's Junior Magnetism and Electricity; Marichal and Gardner's New Junior French Reader; Penn's Caesar's British Campaigns; Richards's Vergil's Aeneid VIII; Weekes and Fielden's Shakespeare's As You Like It; Moffatt's Science German Course; Walmesley's Junior Course of English Grammar; Fry's Geography of Asia.
 By A. & C. BLACK.—Newbigin's Man and his Conquest of Nature; Reynolds's Regional Geography (The World); Frazer's English History from Original Sources, 1066-1216; Black's Sentinel Readers, Books IV and V.
 By BLACKIE & SON.—Life of Lord Herbert of Chisbury; Holland's Mémoires de Saint-Simon; Monteverde's New Spanish Reader; Tomes's Blackie's Experimental Arithmetics (Teacher's Guide to Book VI); Winbolt's Historical Lyrics and Ballads, Book II; Draper's A Course of Physics; Westaway's Scientific Method; Gosse's Romance of Natural History; Battle of the Nile; Dyson's Thiers' Austerlitz; Fry's Rossetti's Goblin Market; Schopp and Treves' Topffer's Le Lac de Gers.
 By W. & A. K. JOHNSTON.—School Atlas of Ancient History.
 By LONGMANS & CO.—Rusk's Introduction to Experimental Education.
 By MACMILLAN CO.—Stepmann's Primary German Course; Nesfield's Modern English Grammar; Wallis's First Book of General Geography; Fowler's Hawthorne's Tanglewood Tales, Part I; Cavenagh's Peacock's Maid Marian; Gandy's A Persian Hero.
 By METHUEN & CO.—Thole's Second Year Course of Organic Chemistry; Pope's Modern Research in Organic Chemistry; Birkhead's Stories from American History.
 By MILLS & BOON.—Gilbert's Shakespeare's As You Like It; Stainer's Graphs; Wetherill's New Preliminary Geography.
 By J. MURRAY.—Desnoyers' Un Homme à la Mer; Hawthorne's Le Toucher d'Or; Kitchener's English Composition; Le Sage's Gil Blas chez les Brigands; Morgan's English Grammar; O'Grady's Matter, Form, and Style.
 By the OXFORD UNIVERSITY PRESS.—Oxford Plain Texts (Clough's Poems, and Macaulay's Essay on Bunyan); Oxford Junior French Series (Aventures du Capitaine Pamplille, Le Château des Merveilles, and Cosette); Craik's Swift's The Battle of the Books; Gordon's Plays of Shakespeare (As You Like It, Coriolanus, Hamlet, Midsummer Night's Dream, and The Tempest); Metcalf's Austen's Pride and Prejudice; Percival's Milton's L'Allegro and Il Penseroso; Preston's Contes de Voltaire; Sonnenschein's New French Grammar; Taylor's Introduction to Geometry; Tozer's Byron's Child Harold, Canto III; Whiskard's Goldsmith's Deserted Village, and Ruskin's Sesame and Lilies; Clement-Jones's Introduction to Algebraical Geometry; Thomas's Norse Tales; Sonnenschein's New Latin Grammar; Banks's Graduated Passages for Reproduction; Hamilton's Greek Legends; Wragge's Selections from

- Malory: Lowe's Selections from Ovid; Newbolt's Shakespeare's Richard II.; Oxford Outline Maps.
 Calendar of the Glasgow University.
 Calendar of the University of Cape of Good Hope.
 Calendar of the London School of Economics.
 Calendar of the Birkbeck College.
 Calendar of the University of Manitoba.
 Calendar of the University of Bristol.
 Calendar of the Edinburgh University.
 University College, London—Catalogue of Periodicals.

CORRESPONDENCE.

PROVIDENT SOCIETIES.

To the Editor of "The Educational Times."

DEAR SIR,—For the next few weeks the secondary teacher will be an important person in the insurance world. He will be an asset to any Friendly Society fortunate enough to catch him. All insurance societies base their prosperity—in fact, the very possibility of their existence—on the proportion of healthy members they possess. It is a self-evident fact that, as benefits must come out of premiums, the more premiums paid in by healthy people who get no return, the more benefits will be available for those who are unfortunate enough to want them. Now, a secondary teacher is a peculiarly healthy individual. All available figures prove it, and the fact is borne out by personal experience. Therefore, in the "head-hunting" now so keen amongst insurance societies, the secondary teacher is a valuable prize.

It remains for him to choose his Society, and his choice obviously should be the Secondary, Technical, and University Teachers' Insurance Society from both a personal and professional point of view. No Society can be more prosperous than a Society of thoroughly healthy people. If no one was ever ill the funds would go on quietly accumulating with the curious facility that compound interest affords. If only a few members are ill, the Society will be prosperous, and will be able, at intervals, to increase its payments to the less fortunate of its members, when the actuary declares that such a policy is financially sound.

The further necessary condition for success is business management on economical lines. Here the temptation is at once to say "A big society for me, where management expenses can be pooled among a large number." But if one looks at the facts, one sees that an insurance society is not the same thing as a wholesale grocer's business, and cannot be run on the same lines: a large amount of personal work is necessary, which in the case of a moderate sized Society is done voluntarily and without payment. A large Friendly Society divides up into lodges, habitations, or branches, so as to secure some personal touch with the members.

A Society of secondary teachers, most of whom do, and all of whom ought to, belong to Secondary Associations, has this machinery ready to hand, and has a membership to whom the idea of collective work is not a new one. Therefore, in our particular case, we can hope for as successful a career as the larger societies, as economical a management, and a far more healthy membership.

As regards the management of the finances: the actual investments will be in the hands of the trustees, while the methods of book-keeping, and indeed the class of investment, is laid down so strictly by the Insurance Commissioners that the process is almost automatic, and the possibility of miscalculation reduced to practically zero. We personally believe that the Secondary, Technical, and University Teachers' Insurance Society will be the best and most prosperous Society under the Insurance Act, the very aristocrat of Friendly Societies in the United Kingdom, for the reasons given above. We want more members, healthy, duly qualified members. At present we have over four thousand applications received and filed. Real membership begins when the first insurance card is received by the Society, duly stamped. It is the business of the insured person to get his card fully stamped and sent in on October 14. Even if the salary has not been paid for the Christmas term, the employer must fill up the card by that date. Send the card to 35 John Street, Bedford Row, W.C.

If you have not sent in an application for membership, ask

for one, fill it in, and send it with a birth certificate. Even if you expect to go out of insurance shortly, join us so that we shall get your reserve value for the Society. And, of your kindness, don't leave everything to the last moment. Remember that the Society will be *your* Society, that much of the work is being done voluntarily, that five hundred letters a day for ten days are easier to manage than one thousand letters a day for five days. Join as soon as possible: see that your friends do so; and be prepared to do your share in making the Society the success it is going to be. We are, &c.

GERALD T. HANKIN, Chairman.
ERNEST TIDSWELL, Hon. Sec.

CLEAN SPELLING.

To the Editor of "The Educational Times."

MONSIEUR LE RÉDACTEUR EN CHEF,—Le 2 septembre, M. le professeur Walter Rippmann critiquait avec grande raison l'orthographe actuelle.

I.—"As an instrument, the written form of the language is very bad. . . Its redundancies and its inconsistencies are trying to the learner and entail a great expenditure of educationally worthless effort."

II.—"We have grown very much accustomed to them."

III.—"Rational spelling would change the look of words; but the use of the written language as an instrument would be acquired in a natural way and far more quickly and surely than at present. . . It would render the task of learning English far easier and more attractive to the millions of our fellow-subjects in Canada, in India, in South Africa."

IV.—"A sound knowledge of English is the strongest bond of union in an empire of such vast extent as the British Empire."

V.—"Nothing but the spelling prevents English from becoming the recognized language of intercourse between nations. English would outstrip any artificial language. . ."

S'adressant personnellement aux lecteurs du *Educational Times*, M. le professeur Walter Rippmann leur dit: "Do not be ashamed to reconsider your opinion on the subject of *Spelling Reform*."

"You may be excused for not surrendering a deeply ingrained habit; but you cannot be excused for shirking a problem of such vast importance, or of depriving the coming generations of the opportunity to acquire, in a rational way, an instrument well fitted for the purpose of communicating thought."

VI.—"Such an instrument is offered by the *Simplified Spelling Society*. . . It requires no new characters or diacritics; it is very simple to learn, and its adoption would mean an enormous advance."

A part les déclarations IV et V, qui sont très discutables, et la déclaration VI qui ne saurait être admise que sous bénéfice d'inventaire, la thèse de M. le professeur Walter Rippmann est inattaquable.

J'ai souligné les mots *Spelling Reform* et *Simplified Spelling* afin de formuler une objection. Je ne veux pas savoir si l'on peut bien qualifier de *simplified* une écriture qui fait remplacer *utility, post* et *pieut*, par *utiliti, poest* et *pieut*! L'orthographe actuelle de ces mots me paraît, quoi qu'on dise, plus simple que la forme dite *simplified*. Je ne me vois pas bien m'astreignant chaque jour à ajouter une lettre au mot *unified* et à de nombreux autres mots — tout cela pour l'amour de la phonétique! A parler franc, je préférerais même *I O U* à *I ove you*.

Je ne veux pas savoir non plus si le simple fait de n'employer aucun caractère alphabétique nouveau amènerait les maîtres imprimeurs à accepter d'enthousiasme une réforme orthographique et à l'imposer au public qui ne la réclame pas.

Mon objection pour le moment est celle-ci: M. le professeur Walter Rippmann propose au corps enseignant de réformer ou de simplifier l'orthographe. Or, quelle est la mission du corps enseignant? — C'est d'enseigner la langue telle qu'elle s'écrit à l'époque actuelle. Le corps enseignant n'est pas chargé de perfectionner. Si on lui permettait de se livrer à des perfectionnements, demain nous aurions une réforme de la grammaire elle-même; après-demain, on trouverait les lettres romaines trop compliquées, et on les remplacerait avantageusement en Angleterre par les lettres de la Phonographie Pitman et en France par celles de l'alphabet Aimé-Paris.

M. le professeur Walter Rippmann me permettra de lui

faire observer qu'il nous propose — à nous, professeurs — d'agir *ultra vires*. C'est l'objection que je désirais formuler. Veuillez agréer, Monsieur le rédacteur en chef, l'expression de ma parfaite considération.

J. MARTIN DE SAINT-OURS, M.C.P.

EXAMINATIONS IN MODERN LANGUAGES.

To the Editor of "The Educational Times."

DEAR SIR,—As a teacher of modern languages may I use your journal as a means of expressing the dilemma in which the present-day modern language teacher finds himself? The methods of teaching modern languages have changed, the more useful and practical Direct Method being now recognized. The testing of this teaching, however, has not changed, and the examinations are conducted on the same bases as obtained twenty years ago. This fact is a great hindrance to the true success of the Direct Method. May I suggest the following scheme for the reform of modern language examinations?—

A.—Two-thirds of the candidates' time, oral examination: one-third, free composition.

B.—Candidates may be examined in groups of ten, only the language examined being employed.

1. *Preliminary*.—Simple questions on objects in room, in the garden, &c.

2. *Intermediate*.—Reproduction of simple story, short description of town or village; also more advanced questions, dictation.

3. *Advanced*.—Contents given of an extract read, description of some event in history, dictation.

The conducting of the examinations in accordance with the principles of the Direct Method would render the work of the modern language teacher more exacting, it is true; but his scope would be unlimited, while the benefits accruing to the pupils would be of inestimable and lasting value.

OPTIMIST.

AGENCY FEES.

To the Editor of "The Educational Times."

SIR,—In my letter on Agency Fees in the September number of your paper I did not, as you conclude in your foot-note, overlook the Joint Agency for Women Teachers, which, although quite the best-managed agency I know of, *does* charge a commission, though a smaller one—3 per cent., I think—to assistants. I believe it also makes a small charge to heads of schools. The words "No registration fees" in the advertisement merely mean that the booking fee of half-a-crown is not charged to members of the Associations mentioned. But even these advantages leave the balance heavily in favour of the head, as an assistant gains nothing whatever from obtaining a post through an agency rather than from an advertisement, and loses the amount of the agent's commission.

If head mistresses and Committees are convinced that an agency can select an assistant for them better than they can do it for themselves, surely it would be more just if heads and Committees paid the commission instead of making the assistant pay for work done for them.—Yours faithfully,

E. JACKSON.

REVIEWS.

Introduction to Experimental Education. By Robert R. Rusk, Ph.D. (4s. 6d. net. Longmans.)

Here is a book that deserves a cordial welcome from everyone who has a real interest in education. It deals with a subject that has now been recognized outside these islands as of fundamental importance, and has developed quite a formidable literature of its own. Unfortunately this literature has not hitherto been available to any but the experts. A large part of it has not been translated into English, and what originally appeared in our own language has to be sought mainly in the pages of technical magazines that are quite inaccessible to the ordinary reader. Dr. Rusk tells us that his book "is based on E. Meumann's 'Vorlesungen zur Einführung in die experimentelle Pädagogik'"; but anyone who knows the lectures will recognize at once that the present volume is far from being a mere reproduction of Meumann. One has only to glance through the references in the foot-notes to see how much fresh matter has been introduced. A noteworthy feature is the skill with which the whole subject is presented so as to meet the somewhat special needs of English-speaking readers. The author is indeed in a peculiarly favourable position for the work he has under-

taken, since he has had a complete course in three different Universities—Glasgow, Cambridge, Jena—and holds a degree from each.

The book, which runs to three hundred pages, begins with a chapter on "The Standpoint of Experimental Education," followed by one on its methods. The third chapter deals with "The General Development of the Child"—physical and mental. Then the development of the special mental powers of the child is treated in five chapters, under the heads of "Attention," "Sense-Perception," "Apperception," "Memory," "Association and Imagination." After a chapter on "The Aesthetic and Ethical Development of the Child," the author goes on to deal with Individual Differences and the Doctrine of Endowment. Next comes the Mental Work of the Child, and Mental Hygiene. The whole concludes with three valuable chapters on the Psychology and Pedagogy of Instrumental subjects, under the headings of "Reading," "Handwriting and Orthography," "Arithmetic."

It will be seen that a considerable part of the book is taken up with what may be called experimental psychology, such as we find set forth in Dr. C. S. Myers's books and elsewhere. But the reader will find that, while the experimental psychologists are heavily drawn upon, their material is always used with such a direct application to educational process as to give it a new and special value to the educator. While it is true that there is not much that is fresh in the purely psychological parts, it will be found that many of the chapters present points of view that are quite unfamiliar to the ordinary reader. The first two chapters, for example, give an excellent statement of the newer standpoint.

The chapter on "Individual Differences" will be welcomed alike by the psychologist and by the rather pragmatical type of teacher who has hitherto regarded psychology with unconcealed distrust. Here will be found a *modus vivendi* that will enable the old enemies to tolerate each other. The doctrine of endowment again makes it possible for the supporters and the opponents of formal training to adopt a point of view that recognizes all that is true in the old dogma. There is little that is new in the chapter on "Mental Hygiene." English readers are now tolerably familiar with the researches on fatigue—indeed they are a little tired of the subject. But in the chapter on "The Mental Work of the Child" Dr. Rusk deals with a matter of first-rate importance to the practical teacher—a matter that has been treated in no fewer than four separate books under the title of "How to Study," and that yet needs just the exposition that is here given. No teacher, however "practical," can fail to appreciate the value of the subject-matter of this chapter. But it is probable that the ordinary teacher will derive most satisfaction from the last three chapters that deal with the three R's. Here, at least, there is no lack of practical hints that can be applied every day and all day in the classroom. Few teachers will be found to have anything but praise for what has come to be known as experimental Didactic, and suspicious readers will probably find in these three chapters enough to justify the purchase of the book.

To less suspicious readers a word of warning may not be amiss on the other side. We must not expect too much from experimental education at its present stage. Even such a cautious writer as Dr. Rusk sometimes becomes unduly optimistic as when he says: "When by adequate analysis of the work of the child in the various school subjects we are able to discover the cause of weakness in a given subject, and to apply appropriate remedial training, there will be no excuse for any child remaining backward." There is much virtue in that "When"; but, after all, more good will be done in school by those who adopt this attitude than by those who content themselves with pointing out the insuperable difficulties in the way of progress. On the other hand, a very likely criticism of Dr. Rusk's work is that it so often leaves important points undecided. Meumann says that attention is of the two kinds, concentrated and distributed; Freeman denies this—and we are left waiting. We have, however, all the more confidence in our author's opinion when he is able to give a definite solution to some problem. We are inclined to trust a man who is not afraid to tell us that he cannot answer certain questions that are put to him. In Dr. Rusk's own words, "Experimental Education must be content with raising these questions."

The book is full of these unanswered questions, and its author has deserved well of his profession for bringing them forward. It is true that many of the questions are regarded by veteran teachers as carrying their answers with them. Experience has answered them long ago. It is just here that the value of the book makes itself manifest. If it does nothing else than bring into prominence the distinction between experience and experiment in teaching, it will have justified its appearance. But it has done much more. It has brought the results of world research to the doors of the intelligent, open-minded teacher. There is no longer any excuse for ignorance of what has been done and is being done towards the perfecting of the teacher's work. Those who keep the door shut must take the consequences.

PITT AND NAPOLEON.

Pitt and Napoleon: Essays and Letters. By J. Holland Rose, Litt.D., Reader in Modern History, University of Cambridge. (10s. 6d. net. Bell.)

This volume is a useful supplement to Dr. Rose's *Lives of Pitt and Napoleon*. It consists of eleven Essays, nine of which are new, and ten series of Letters, fresh and important, illustrative of the career of Pitt; the Essays occupying rather the larger share of the space. The Essays—they are not all, properly speaking, essays—discuss or illustrate selected points of importance at greater length than was possible in the *Lives*. The conclusions are not different in substance, but they are supported by ampler evidence; and there is more opportunity for pointing out mistakes of various other writers on the complicated and difficult subjects. The opening essay analyses and estimates "The Oratory of Pitt." Dr. Rose concludes that "the most perfect example of the union of grace and force, of stately rhetoric and convincing argument fused in the white heat of patriotism, is to be found in the speeches of Pitt the Younger." We have on a former occasion acknowledged our inability to follow Dr. Rose in his glorification of Pitt as an orator; we are ready to admit his effectiveness as a speaker, though we do not think that the causes of this effectiveness have been adequately explored and explained. In the Fitzwilliam affair, Dr. Rose is right in condemning both the weak and dilatory procedure of Pitt and the nerveless conduct and vindictive spirit of Fitzwilliam. "The Quiberon Disaster" is fully reviewed. The episode is deplorable throughout, except for the conduct of the English fleet. Dr. Rose successfully exonerates Pitt from the somewhat absurd charge of premeditated perfidy, as well as from other censures—not the most serious that might have been passed—pressed against him by the reckless ignorance and vicious spite of partisan malice. The essay on "British Rule in Corsica" is another example of preposterous muddle in an untenable position. Starved British officers with peppery tempers, quarrelling furiously and honestly with each other, were little likely to manage sympathetically, or even intelligently, such an undisciplined people as the Corsicans, or to handle hopefully such a difficult potentate as Paoli. The survey of Pitt's (and other) proposals for "Relief of the Poor" is concise and lucid, and a liberal judgment of such measures at that period seems only fair. "Some New Letters of Pitt," interesting, indeed, but not advancing our knowledge materially, we should have expected to find among the Letters, not among the Essays. "Did Napoleon intend to invade England?" and "Napoleon's Conception of the Battle of Waterloo" are excellent and cogent papers. The more essential part of Major Vivian's account of his interview with Napoleon in Elba is usefully reprinted, with notes. The Correspondence of Part II will be very convenient for reference and helpful to students. With a very little additional care, Dr. Rose's style might have been sensibly improved.

THE EARLIER HISTORY OF WALES.

A History of Wales from the Earliest Times to the Edwardian Conquest. By John Edward Lloyd, M.A., Professor of History in the University College of Wales, Bangor. In two volumes. (21s. net. Longmans.)

It is always a most difficult task to explore the earliest conditions of a country, to sift the facts from the mass of tradition, and to restrain the tendency to fill gaps and to

explain obscure points by conjecture. The difficulty is not less in the case of Wales than in the case of any other country. Prof. Lloyd, however, has approached his task with a very clear conception of the problems and of the methods of attack, as well as of the dangers besetting his path. He has put aside preconceived opinions and theories, and questioned the available materials for the answers that constitute his conclusions. His object is "to map out, in this difficult region of study, what is already known and established, and thus to define more clearly the limits of that *terra incognita* which still awaits discovery." He glances at the prehistoric epochs, and when the historic dawn appears he settles down to a systematic examination of the evidences at every step—the Roman occupation, the Brythonic conquest, the age of the Saints, the struggle of the Cymry and the English, the determination of the Welsh Border, the age of the Sea-Rovers, with an account of the tribal divisions and the early institutions of the people. So far the first volume. The second volume opens with the Norman Conquest, narrates the long and brilliant career of Owain and the virile and triumphant energy of Lord Rhys, and closes dramatically with the glories (and the downfall) of Llywelyn the Great. The social conditions, the developments in religion, art, and literature, all the important aspects of the national life, are described with untiring care. Prof. Lloyd displays extraordinary industry in examining the authorities, remarkable judgment in forming his independent conclusions, and steady caution in adventuring upon speculation and hypothesis. His style is well formed, fluent, and various—a pleasure to read, however knotty or complicated the subject. There are ample bibliographical and genealogical tables, a full index, and an excellent map of medieval Wales. The volumes constitute one of the weightiest works of the modern historical school.

CAMBRIDGE MODERN HISTORY ATLAS.

The Cambridge Modern History Atlas. Edited by A. W. Ward, Litt.D., P.B.A., G. W. Prothero, Litt.D., F.B.A., Stanley Leathes, M.A., C.B., assisted by E. A. Benians, M.A. (25s. net. Cambridge University Press.)

This volume is a necessary companion to the History, and may, of course, serve as a companion to any other narrative of modern history. The general idea is to present a series of maps of Europe and of the different countries of Europe, as well as of other parts of the world associated with the progress of European history, so as to show how the Europe of the fifteenth century has been transformed into the Europe of the present day. There are 141 maps, the majority of them coloured. They are designed to illustrate political divisions, territorial changes, wars by land and sea, the growth of states, the course of religious changes, and the history of colonial expansion. They are arranged, as far as possible, in the order of the narrative of "The Cambridge Modern History"; and the editors have endeavoured to insert all the place names that occur in the History. The laborious and responsible task of constructing and revising the maps has fallen upon Mr. Benians, who has also written an Introduction tracing the course of the territorial changes, and explaining the purpose of each map. There are full indexes, both to the introduction and to the maps. The maps are beautifully produced, and the whole work is most praiseworthy. We know of nothing to compare with it for the purposes of the serious student of modern history.

GENERAL NOTICES.

SCIENCE.

Elementary Principles of Alternating-Current Dynamo Design. By A. G. Ellis, A.C.G.I., A.M.I.E.E., A.Am.I.E.E. (12s. net. Blackie.)

Mr. Ellis tells us that "there are a large number of generalities in design which become a kind of instinct to the practised designer." It is upon such broad general principles, and upon constants obtained from a large amount of data culled from modern practice, that he endeavours, in this substantial treatise, to develop a practical system

of design of alternating-current generators. The two main results required of the designer of dynamo-electric machinery—economy in material and the proportioning of iron and copper with regard to conditions of specification—may be reached satisfactorily in many different ways; it is Mr. Ellis's aim to obtain a general view of the problem with reference to all its important factors. "Emphasis has been laid on the general influence of the various principal factors, such as rated speed, output, frequency, and voltage on the proportioning of the machine as a whole, and on the detailed calculation of the various parts." A very interesting and useful chapter furnishes the complete data of sixteen current generators referred to in the design schedules appended to several preceding chapters, as well as drawings of several of these machines. The treatment is very careful and most able. There are some fifty tables and 145 figures, many of the latter extensive and complicated.

MATHEMATICS.

- (1) *First-Year Mathematics for Secondary Schools*; (2) *Second-Year Mathematics for Secondary Schools*; (3) *Teacher's Manual for First-Year Mathematics.* By George William Myers and others. (Chicago, Illinois: University of Chicago Press. England: Cambridge University Press. 4s., 6s., and 3s. 6d. net respectively.)

These three volumes may well be considered together, since they are parts of one general scheme, the underlying principles of which are useful and valuable. The young student is to be taught on sufficiently broad and suggestive lines to reason for himself, and to realize the "why" and the "wherefore" of what he is doing. Further, he is to be taught each subject in its relation to others, and not as an isolated branch of study. The method of combined teaching with regard to material has been welcomed, not in America alone, but in a number of English, French, and German schools. As we learn from the titles of the works quoted above, the course included is designed to constitute the mathematics necessary for the first two years of study in one of the University or other High Schools of America. In the volume assigned for the first year algebra is predominant, whilst it is nevertheless made to grow to a great extent out of the principles of arithmetic, and is connected with geometry in such a manner that the course is a first training in the last-named subject also. The guidance which the "Teacher's Manual" affords is full of the wisdom based on experience acquired in the classroom by the authors of the work, for we learn that the course has been in actual use, and that it has been subjected both to criticism and revision. Nevertheless, much that is laid down is not by any means new to the better class of teachers; these have long learnt to work *with* their pupils, to draw out from these the truths they are anxious to make them appreciate; and doubtless many have long realized the value of sending one or other of the pupils to the blackboard, whilst imposing on the remainder of the class the responsibility of checking the accuracy of the work as it proceeds. Many, too, are never tired of demanding an intelligent explanation of statements and processes. It may, however, be regarded as axiomatic that the teaching world still possesses in its midst a sufficiently large contingent of those who take up educational work for a livelihood, and without having the gift of imparting—a gift absolutely distinct from competent scholarship; in any case, it includes many very young teachers, and for these the insight into the best method of giving a particular lesson must necessarily be of great value, and often come as an inspiration. The style in which the work has been brought out is not altogether a happy one. There is a certain sense of strain involved in a comparative study of the text of the "Teacher's Manual" and the corresponding portion of the class textbook. It will be objected naturally that only a limited part of each requires to be undertaken at any given time. This, however, only lessens, and does not do away with, a disadvantage which could have been obviated easily by a judicious use of variety of type and other conceivable devices. It appears likely that the second-year course will ultimately have its "Teacher's Manual" also. In the second-year course the part that algebra plays becomes secondary, the study of the science making, nevertheless, some steady advance, and the knowledge previously gained being prevented from rusting. Geometry becomes the leading subject of investigation. The principles of congruence, of proportion, and of similarity are treated in succession, and one is glad to find that the consideration of incommensurable quantities is not ignored. The pupil also learns something of the elements of trigonometry, and it is certain that a thorough familiarity with the contents of this, as well as of the first-year course, will lay a firm foundation for further mathematical study. The diagrams, of which the reader will find a large number, are clear, but there is a want of finish in their reproduction which is disappointing, more especially when the marked excellence of the diagrams in many American textbooks is borne in mind.

The Calculus for Beginners. By J. W. Mercer, M.A. (6s. Cambridge University Press.)

An excellent introductory course on the subject, and one the value

of which has been tested by practical application extending over some years. The fundamental ideas on which the infinitesimal calculus rests present considerable difficulty to the young student. A textbook such as the present one is well adapted to supply a sound basis of instruction, for it aims at first teaching a small number of broad, general principles very gradually and by inductive methods, and wisely defers the study of many and complex processes and details until ample time and opportunity have been afforded to the beginner to become thoroughly imbued with the meaning of a limit, and with what is essentially involved in differentiation and integration. The work seeks first of all to satisfy the requirements of the prospective engineer and student of physical science, but there will probably be none who, after a careful consideration of the volume, will fail to be impressed by the general utility of the training which the suggested course of study is capable of offering.

Commercial Arithmetic. Parts I and II. By S. Ashworth, B.A. Lond., and G. F. Ashworth, B.A. Lond. (Part I, limp cloth, 9d.; Part II, limp cloth, 8d.; complete, without answers, full cloth, 1s. 4d.; with answers, full cloth, 1s. 6d. Nisbet.)

The little volumes belong to Messrs. Nisbet & Co.'s series of commercial and technical textbooks. The course laid down by the authors in the subject considered is a useful one, whilst the method of instruction is based on the valuable principle that processes learnt intelligently are more readily assimilated and more surely retained in the memory than rules obeyed mechanically. The authors write primarily for students in the classes of technical schools and for the higher standards of the elementary school; their work, however, is also intended to meet the requirements of the commercial side of a secondary school. As a rule, the explanations are good and simple; in some instances they are not sufficiently clear on a first reading.

HISTORY.

English History Illustrated from Original Sources, 1066-1216. By N. L. Frazer, M.A., Head Master of Batley Grammar School. (2s. 6d. Blackie—Historical Series.)

This volume fills the gap that has long been left in the second period of the series, which now runs without a break (we think) from the earliest times down to 1715. Mr. Frazer now has to his credit four of the eight volumes, so that he has brought much experience—and much needed experience—to the compilation of this new volume. He has had to rely very largely upon the chroniclers, and the chroniclers are not to be used without discrimination; but Mr. Frazer shows, both by his extracts and by his review of the chief authorities, that he can handle them with judgment. The period is of the first importance: its outstanding characteristic is the establishment of a strong central government, with proper safeguards against tyranny, the centralizing tendency of Norman rule being confirmed and established in the great reign of Henry II. and Church and State being put in their proper places and kept there. The contemporary views set forth in the extracts give a fresh and vivid impression to the cold facts of the ordinary history books, and the actual words of the important documents—the Anglo-Saxon Chronicle, Domesday Book, Henry I's Charter of Liberties, the troubles of Anselm and Becket, the Constitutions of Clarendon, Magna Charta, and so forth—produce the sense of actual contact with the moving realities. The illustrations are abundant and excellent.

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The Ancient World: a Historical Sketch. By Clement Du Pontet, M.A., Assistant Master at Harrow School. (4s. 6d. Edward Arnold.)

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instructive and agreeable narrative—fresh, vivid, and effective. The newer discoveries in Babylonia and Assyria, in Egypt and Crete, he sets forth in their bearings on more western countries. The influence of Greece upon Roman institutions, and especially in the sphere of law (pages 167, 199, 301), is quite extravagantly over-rated; but this is a rare lapse. The work, though based on well known facts, may almost be said to be original, so fresh and penetrating are the collocation and the interpretation of the events. It is a signally valuable book for readers of history, whether in or out of school. There are three serviceable maps.

A History of European Nations, from the Earliest Records to the beginning of the Twentieth Century. By Angelo S. Rappoport. (7s. 6d. net. Greening, 91 St. Martin's Lane, W.C.)

Mr. Rappoport attempts too much: he bites off a great deal more than he can chew. The necessity of selection and condensation is painfully severe, and the author furnishes little assistance to the reader that wants to know the inner meaning of the historical movements. The contrast with Mr. Du Pontet's work is sufficiently startling. It is a mechanical compilation. Nor is it free from strange inaccuracies. Such blunders as "Gelon" (King of Syracuse) and "Maxius" Coriolanus (in successive lines, page 47), and "Vandemash" (Wandewash, page 262), are no doubt typographical. But William the Conqueror was not "mortally wounded at the taking of Nantes," though he was incalculably hurt somehow at the taking of Mantes; Edward I did not "conquer," though he overran Scotland, and to say that Wallace and Bruce defended Scotland with more courage than success is to show a remarkable misconception of the action of Bruce. Warren Hastings, we are surprised to learn, "in order to procure money for the [East India] company, availed himself of any means, however shameful"—and this on the authority of Villemain! Did Trafalgar really cause Napoleon "to give up his idea of effecting a landing in Egypt," or in England either? The revolt of the Sepoys, we are told, was "stimulated by the oppressions of the India Company and the preaching of the Brahmans," and "England understood that she could no longer leave in the hands of a body of financiers an empire," &c.—though the whole business had been absolutely in the hands of the Government for many years before. It is simply amazing to read that "the *Corpus Juris Civilis* and the Pandects, the Justinian Code, is not free from the principles of Imperial despotism, and the maxim, 'Quod principi placuit legis habet vigorem' is well developed in it." The book is not to be recommended to serious students, but it may be more or less useful to casual general readers.

A History of England. By A. J. Williams, M.A., and E. A. Walker, B.A. (3s. 6d. Melrose.)

This up-to-date and scholarly volume deals with English history from the earliest times to the present day. With a severe regard both to perspective and to the needs of students preparing for the higher examinations, the authors have not hesitated to traverse quickly the more barren periods of our history, particularly "the history which is merely a record of bad government." Special attention has been given to the developments in the Constitution, to colonial history, and to the influence of foreign history. The plan of the book is sound, but more space should have been reserved for the Victorian era. Surely the nineteenth century is sufficiently important to be represented by something more than a jumble of names in our textbooks. The facts generally have been investigated with much painstaking. Here and there, however, statements appear to be too general (*e.g.* Shirley's case, 1604); but, in the main, the critical estimates are very reliable. Pevensey, too, is not in *Suffolk*. For lucidity, freshness of treatment, and sound scholarship, this manual ranks easily among the best of its kind.

"Peeps at History."—*India.* By T. H. Manners Howe. (1s. 6d. net. Black.)

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ENGLISH LITERATURE.

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(Continued on page 430.)

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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.

13584. (REV. W. ALLEN WHITWORTH, M.A.)—A die of p faces is thrown repeatedly until the number of aces turned up is to the number of not-aces as $1:p-1$. Show that the chance of this happening at the np -th throw and not before is

$$\frac{(np-2)! (p-1)^{np-n}}{n! (np-n-1)! p^{np-1}}$$

Professor HUDSON, having detected his mistake, wished to withdraw his solution of Prebendary WHITWORTH'S Question (see *Educational Times*, September, 1912). Unfortunately his message arrived too late.

17314 (and 17297 with which it is identical). (LT.-COL. ALLAN CUNNINGHAM, R.E.)—Let

$$N_1 = t_1^4 - 2u_1^2, \quad N_2 = t_2^2 - 2u_2^4, \quad N_3 = 2u_3^4 - t_3^2, \quad N_4 = 2u_4^2 - t_4^4.$$

Show how to find numbers N expressible in two, three, or four ways in some one of the above forms. Show that some of those numbers are also algebraically expressible in one or more ways in a second of those forms. Find the algebraic expressions, and give numerical examples.

Addition to Solution by the PROPOSER.

In the solution of Question 17226 (*v. Reprint*, New Series, Vol. XXII, p. 107) a number of formulæ were given for numbers N (algebraically) expressible in two of the forms N_1, N_2, N_3, N_4 .

One of these formulæ (Case v) will now be shown to yield numbers N always (algebraically) expressible in three of these forms, viz., either (N_1, N_2, N_3) or (N_2, N_3, N_4) .

Every number Q of form $Q = x^2 - 2y^2$ gives Q^1 expressible (algebraically) in an infinite series of same form. Let the r -th form of this series be $\tau_r^2 - 2\nu_r^2 = Q^1$. Each such form (τ_r, ν_r) of Q^1 gives a number N at once (algebraically) expressible in two of the forms, viz., either (N_1, N_3) or (N_2, N_4) , as shown under Question 17226; thus $N = N_1 = Q^1 - 2\nu_r^2 = \dots = 2Q^1 - \tau_r^2 = N_3, \dots$ [when $r = 1$],

$$N = \dots N_2 = \tau_r^2 - 2Q^1 = \dots = 2\nu_r^2 - Q^1 = N_4 \text{ [when } r > 1].$$

To find the 3rd form of N (viz., N_2 when $r = 1$, or N_3 when $r > 1$), note the property of the above Pellian equation.

When $r = 1$, then $\tau_1 + Q^2 = \square$,

When $r > 1$, then $\tau_r - Q^2 = \square$ (with r even); $\tau_r + Q^2 = \square$ (with r odd).

And when $r = 1$, take $t_2 = \tau_1 + 2Q^2$, $u_2 = \sqrt{(\tau_1 + Q^2)}$, $[Q > 1]$;

when $r > 1$, take $t_3 = \tau_r + 2Q^2$, $u_3 = \sqrt{(\tau_r + Q^2)}$.

These will be found to give

$$r = 1; \text{ then } t_2^2 - 2u_2^4 = N_2 = \text{the above } N = N_1 = N_2 \text{ [} Q > 1 \text{];}$$

$$r > 1; \text{ then } 2u_3^4 - t_3^2 = N_3 = \text{the above } N = N_2 = N_4.$$

Thus, every form (τ_r, ν_r) of Q^1 yields a number N (algebraically) expressible in three of the forms (N_1, N_2, N_3, N_4) .

Note that if (τ_r, ν_r) be the r -th form of the series $\tau_r^2 - 2\nu_r^2 = -Q^1$; thus every number N formed as above is $N = \tau_r \cdot \tau_{r+1}$, so that they are all composite, except that

$$Q = 1 \text{ gives } Q^1 = 1; (\tau_1, \nu_1) = (3, 2); (\tau'_1, \nu'_1) = 1, (\tau'_2, \nu'_2) = (7, 5).$$

$$N = 1 \cdot 7 = 3^2 - 2 \cdot 1^4 = 2 \cdot 2^4 - 5^2 = 2 \cdot 2^2 - 1^4 \text{ (a prime).}$$

Note that this is also exceptional in that $r = 1$ gives $N = N_2 = N_3 = N_4$ (instead of $N = N_1 = N_2 = N_3$ as happens with $Q > 1$).

Note that when $Q = 1$, and r odd, then all $N = 16n + 7$; also, when $Q > 1$, and r odd and > 1 , then all $N = 16n + 7$; hence, in all these cases (of r odd), $N = N_1$ is impossible (see the solution of Question 17204). Also when $Q > 1$, and $r = 1$, then $N = 16n + 9$; hence in all such cases $N = N_4$ is impossible (see the solution of Question 17204). Thus, in all cases of r odd, the above N are expressible in only three of the four forms.

But, when r is even, then the above $N = 16n - 1$ always, so may

(Continued on page 436.)

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perhaps be expressible in all the four forms (see the solution of Question 17204). Only one instance is at present known.

Q = 1 gives Q⁴ = 1⁴; (τ₂, v₂) = (17, 12); (τ₂' = 7), (τ₃' = 41);
 N = 7.41 = 287 = 5⁴ - 2.13² = 17² - 2.1⁴ = 2.4⁴ - 15² = 2.12² - 1⁴.
 [Rest in Reprint.]

17309. (A. M. NESBITT, M.A.)—If G be the centroid of a triangle ABC, and P any point, then will
 $AP^2 + BP^2 + CP^2 = 3PG^2 + \frac{1}{3}(a^2 + b^2 + c^2).$

Additional and rather more general Solution by W. GALLATLY, M.A.

This may be generalized as follows:—
 If (lmn) are the barycentric coordinates of a point Q, or if Q be the mass-centre of masses l at A, m at B, n at C, then, by the well known statical formula,

$l.AP^2 + m.BP^2 + n.CP^2 = l.AQ^2 + m.BQ^2 + n.CQ^2 + (l + m + n)PQ^2.$
 Hence, when P is the circum-centre O,

$l.R^2 + m.R^2 + n.R^2 = l.AQ^2 + m.BQ^2 + n.CQ^2 + (l + m + n)OQ^2;$
 therefore $l.AP^2 + m.BP^2 + n.CP^2 = (l + m + n)(PQ^2 + R^2 - OQ^2).$

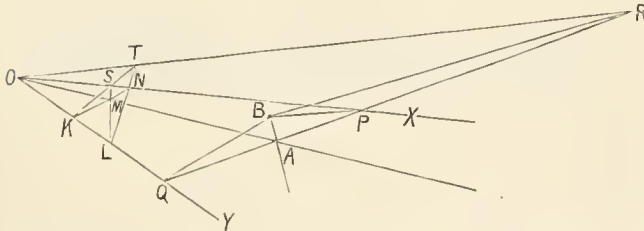
For G, l = m = n: so that

$AP^2 + BP^2 + CP^2 = 3.PG^2 + 3(\text{power of G for circle ABC})$
 $= 3.PG^2 + \frac{1}{3}(a^2 + b^2 + c^2).$

17235. (R. F. DAVIS, M.A.)—Let OX, OY be given straight lines, and A, B given points. Find a geometrical construction for a line PAQ cutting OX, OY in P, Q respectively in such a manner that PA, AQ subtend equal angles at B.

Solutions (I) by F. W. F. WAITT; (II) by Major C. H. CHEPMELL.

(I) Given two straight lines OX, OY fixed and A and B two fixed points. Required, to draw a line PAQ cutting OX, OY in P and Q such that ∠ABP = ∠ABQ.



Construction.—Join OA. Draw OR making O (YAXR) a harmonic pencil. Join AB. Draw BR perpendicular to AB to cut OR at R. Join RA and produce it, cutting OX in P and OY in Q. Then PAQ is the required line.

Proof.—Since O (RXAY) is a harmonic pencil, RPAQ is a harmonic range; therefore B (RPAQ) is a harmonic pencil.

But BR is perpendicular to BA; therefore ∠QBA = ∠ABP; therefore PAQ satisfies the conditions.

To construct the fourth ray of the pencil O (YAXR) geometrically, take two points K and L on OY, and join them to any point M on OA, letting KM cut OX in N and LM cut OX in S. Join KS and LN to cut at T. Then OT is the required ray.

This follows from the fact that LNSKTO is a complete quadrangle. Therefore OL, OM, ON, OT form a harmonic pencil.

(II) Join AB, and draw CBD perpendicular to AB and cutting OY and OX in C and D.

Call AB = a, CB = n, BD = m, ∠ODB = θ, ∠OCD = φ. Lay off BE (= a cot θ - a cot φ).

Draw EF perpendicular to CD, so that EF² = a(m + n). Lay off DG (= BD) and CH (= BC). Join HF, FG; and draw FJ perpendicular to FG, and FK perpendicular to FH, cutting CD in J and K.

Draw perpendiculars to CD, viz., RQ and SP, cutting OY and OX in Q and P and equal to EJ and EK respectively.

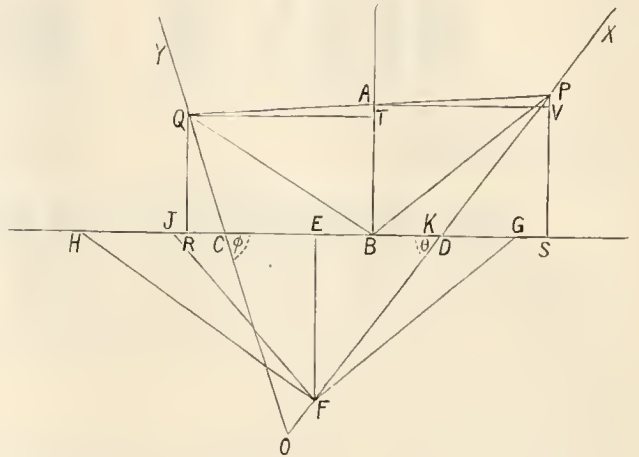
Join QA and PA. Then QAP is the line required.

Proof.—Join BQ, BP; and from Q draw QT perpendicular to AB, and from A draw AV perpendicular to PS.

By construction,

$\frac{a}{RQ} = \frac{2m + a(\cot \theta - \cot \phi)}{m + n}, \quad \frac{a}{PS} = \frac{2n - a(\cot \theta - \cot \phi)}{m + n},$

$\frac{a}{RQ} + \frac{a}{PS} = 2 \dots \dots \dots (1).$



Also

$\frac{an}{RQ} = \frac{2mn + an(\cot \theta - \cot \phi)}{m + n}, \quad \frac{am}{PS} = \frac{2mn - am(\cot \theta - \cot \phi)}{m + n}$
 $\frac{n}{RQ} - \frac{m}{PS} = \cot \theta - \cot \phi, \quad \frac{1}{RQ}(n + RQ \cdot \cot \theta) = \frac{1}{PS}(m + PS \cot \theta),$
 $\frac{PS}{RQ} = \frac{m + PS \cdot \cot \theta}{n + RQ \cdot \cot \theta} = \frac{BS}{BR} \dots \dots \dots (2).$

Therefore ∠QBR = ∠PBS and ∠QBA = ∠ABP.

Also, by (1), $\frac{a}{RQ} + \frac{a}{PS} = 2.$

$RQ(PS - a) = PS(a - RQ), \quad RQ \cdot PV = PS \cdot AT,$

$\frac{PV}{AT} = \frac{PS}{RQ} = [\text{by (2)}] \frac{BS}{BR}, \quad \text{or } \frac{AV}{QT}$

and therefore QAP is a straight line through A.

Note.—In the figure, as drawn, F falls on OX and K on D. These coincidences are accidental.

17316. (F. G. W. BROWN, B.Sc., L.C.P.)—Solve simultaneously the equations:

$xy + zw = a, \quad xz + wy = b, \quad yz + xw = c, \quad x^2 + y^2 - w^2 - z^2 = d.$

Test the solution when a = 71, b = 61, c = 59, d = 79.

Solution by T. STUART, M.A., D.Sc., and C. W. ADAMS.

Letting (x, y, z, w) = [$\frac{1}{2}(\lambda + \mu)$, $\frac{1}{2}(\nu + \rho)$, $\frac{1}{2}(\nu - \rho)$, $\frac{1}{2}(\lambda - \mu)$], we have

$\lambda\nu = a + b, \quad \mu\rho = a - b, \quad \lambda\mu + \nu\rho = d, \quad \lambda^2 - \mu^2 + \nu^2 - \rho^2 = 4c,$

and therefore λμ and νρ are the roots of the quadratic

$\theta^2 - d \cdot \theta + a^2 - b^2 = 0.$

Denoting these roots by α and β, we have, if λμ = α,

$\mu = \alpha/\lambda, \quad \nu = (a + b)/\lambda, \quad \rho = [(a - b)\lambda]/\alpha,$

and, substituting in the last equation, we have

$\lambda^4 [a^2 - (a - b)^2] - 4ca^2 \cdot \lambda^2 + a^2 [(a + b)^2 - a^2] = 0.$

Hence $\lambda = \pm a \sqrt{\{ [2c \pm \sqrt{\Delta}] / [a^2 - (a - b)^2] \}},$

$\mu = \pm a \sqrt{\{ [2c \mp \sqrt{\Delta}] / [(a + b)^2 - a^2] \}},$

$\nu = \pm \beta \sqrt{\{ [2c \mp \sqrt{\Delta}] / [\beta^2 - (a - b)^2] \}},$

$\rho = \pm \beta \sqrt{\{ [2c \pm \sqrt{\Delta}] / [(a + b)^2 - \beta^2] \}},$

where Δ = d² + 4c² - 4a², and all upper or all lower signs under the radical being taken together.

The solutions of the original system of equations at once follow, and we see that, neglecting mere changes of sign and the interchange of x with y and z with w, there are only two distinct solutions obtainable.

With the given values of the constants a = 55 or 24, and substituting in the solution found, we get

(λ, μ, ν, ρ) = ±(11, 5, 12, 2)

or $\pm \left(\frac{11}{3} \sqrt{\frac{119}{13}}, \frac{15}{119} \sqrt{\frac{13}{119}}, \frac{36}{119} \sqrt{\frac{13}{119}}, \frac{2}{3} \sqrt{\frac{119}{13}} \right)$

for a = 55, and

= ±(12, 2, 11, 5)

or $\pm \left(36\sqrt{\frac{13}{119}}, \frac{2}{3}\sqrt{\frac{119}{13}}, \frac{11}{3}\sqrt{\frac{119}{13}}, 15\sqrt{\frac{13}{119}} \right)$

for $a = 24$.

Hence $(x, y, z, w) = \pm(8, 7, 5, 3)$

or $\pm \left(3\sqrt{1547}, 3\sqrt{1547}, 3\sqrt{1547}, 3\sqrt{1547} \right)$,

or the same equations with x, y and z, w interchanged.

These values obviously satisfy the equations proposed.

The PROPOSER and Mr. W. N. BAILEY discuss the question thus:—

Square (1) and (2) and subtract

$$x^2z^2 + w^2y^2 - x^2y^2 - z^2w^2 = b^2 - a^2;$$

therefore $x^2 - w^2 = (b^2 - a^2)/(z^2 - y^2)$.

Substitute in (1) and put $z^2 - y^2 = p$, then

$$p^2 + pd - (b^2 - a^2) = 0,$$

giving $p = \frac{1}{2} \{ -d \pm \sqrt{d^2 + 4(b^2 - a^2)} \}$.

Similarly, if $g = x^2 - z^2$, $g = \frac{1}{2} \{ d \pm \sqrt{d^2 - 4(a^2 - c^2)} \}$.

Again, from (1) and (4),

$$(x + y)^2 - (w - z)^2 = d - 2a \dots\dots\dots (5),$$

and from (2) and (3), $(x - y)(w - z) = b - c$;

therefore $w - z = (b - c)/(x - y)$.

Substitute in (5), therefore

$$(x^2 - y^2)^2 - (b - c)^2 = (x - y)^2(d + 2a).$$

But $x^2 - y^2 = z^2 - y^2 + x^2 - z^2 = p + g$;

therefore $(x - y)^2(d + 2a) = (p + g)^2 - (b - c)^2$;

therefore $x - y = \sqrt{\frac{[(p + g + b - c)(p + g - b + c)]}{d + 2a}}$.

Also $x + y = \frac{x^2 - y^2}{x - y} = (p + g) \sqrt{\frac{d + 2a}{[(p + g + b - c)(p + g - b + c)]}}$;

therefore $x = \frac{(p + g + b - c)(p + g - b + c) + (p + g)(d + 2a)}{2\sqrt{[(d + 2a)(p + g + b - c)(p + g - b + c)]}}$;

hence y and z may be found from g and p , and thence w from (1).

When $a = 71, b = 61, c = 59, d = 79, p$ becomes -55 or -24 , and g becomes 40 or 39 , whence $x = \pm 8$ or $\pm 7, y = \pm 7$ or $\pm 8; z = \pm 5$ or $\pm 3; w = \pm 3$ or ± 5 .

(These equations resulted from a problem on the cyclic quadrilateral, for a discussion of which see my note in *The Mathematical Gazette* for January, 1912.)

17138. (R. F. DAVIS, M.A.)—From a given external point O two secants OPP', OQQ' are drawn to a given circle. If PQ is constant, prove that the envelope of P'Q' is a conic.

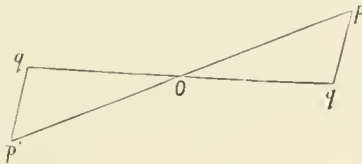
Solution by PHILIP T. STEPHENSON, B.A.

(I) PQ touches a circle.

Project the given circle into a conic having the projection of O for centre.

Using small letters for the new figure, pq touches a conic, and therefore, from symmetry, $p'q'$ touches a conic;

therefore P'Q' touches a conic.



Note by the PROPOSER.

The envelope of P'Q' is the reciprocal polar with respect to O (constant of reciprocation OP.OP') of the locus of the extremity of the circum-diameter through O of the triangle OPQ, which is a conic, as the locus of the circum-centre of triangle OPQ is a conic.

17210. (Professor NEUBERG.)—On considère deux courbes Δ, Δ' rapportées aux mêmes axes Ox, Oy. Une parallèle à Oy rencontre Ox en P, Δ en M, Δ' en M'. Les tangentes en M et M' rencontrent Ox en Q et Q'. Trouver la relation qui doit exister entre les ordonnées PM, PM' pour que l'on ait constamment

$$m/PQ + n/PM' = k;$$

m, n, k étant des constantes.

Solution by W. F. BEARD, M.A., and others.

Let the two curves be $y = f(x), y = \phi(x) \dots\dots\dots (i)$.

Let $PM = y_1, PM' = y_2$.

Therefore $PQ = (y_1/f(x)), PQ' = (y_2/\phi(x))$;

Therefore from the given equation $[mf'(x)/f(x)] + [n\phi'(x)/\phi(x)] = k$, the value of x being the same in each fraction.

Integrating, $m \log f(x) + n \log \phi(x) = C + kx$; therefore $y_1^m y_2^n = Dc^k$. If x is eliminated between this and one of the equations (i), we obtain the necessary relation between y_1 and y_2 .

17253. (C. E. McVICKER, M.A.)—A circle touches the sides of a triangle ABC at L, M, N, and the nine-point circle at F. Prove that the images of F in the sides of LMN have the same centroid as L, M, N, and are collinear with the centres of both circles ABC, LMN.

Additional Solution by C. E. YOUNGMAN, M.A.

Take d, e, f the images of any point Pon the circle LMN, and g their centroid; all four being collinear with H the orthocentre of LMN. Then, in vectors, if G be the centroid of LMN, both

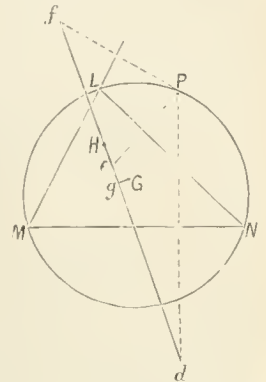
$$(Le + Mf + Nd) \text{ and } (Lf + Md + Ne)$$

are equal to $3Gg$; therefore

$$(Le + Lf) + (Mf + Md) + (Nd + Ne) = 6Gg.$$

But here each pair of equal vectors = something perpendicular to def ; therefore g is the projection of G on def . Thus the locus of g is the circle on GH as diameter; and there is therefore a point F whose images have their centroid at G. The line of them, GH, passes, of course, through O, the circum-centre of LMN, and through the nine-point centre; and consequently through the centre of circle ABC also, because this circle is the inverse for (O) of the nine-point circle.

By reciprocation for (O), since the parabola with focus F and directrix OH touches the sides of LMN, the rectangular hyperbola through ABCO has centre F; therefore F lies on the nine-point circle of ABC.



17172. (J. J. BARNIVILLE, B.A.)—(1) Prove that

$$a^5 + b^5 + c^5 - 5abc(a^2 - bc) = (a + b + c)[(\Sigma a^2 - \frac{1}{2}\Sigma bc)^2 - \frac{3}{4}(ab - bc + ca)^2];$$

(2) reduce $(x^{14} - 13x^7 + 27)/(x^2 + x + 2)$ to the form

$$A^2 + 7B^2 = C^2 + 7D^2.$$

Solution by the PROPOSER.

(1) This may be deduced from the identities

$$(a^3 - 1)(a - 1) = (a^2 + \frac{1}{2}a + 1)^2 - \frac{3}{4}a^2,$$

and

$$(b^3 - 1)(b - 1) = (b^2 + \frac{1}{2}b + 1)^2 - \frac{3}{4}b^2,$$

by supposing a and β to be roots of the equation

$$cx^2 + ax + b = 0.$$

$$(2) \frac{1}{4} (2x^6 - x^5 - 3x^4 + 5x^3 + x^2 - 11x + 9)^2$$

$$+ \frac{7}{4} (x^5 - x^4 - x^3 + 3x^2 - x - 5)^2$$

$$= \frac{1}{4} (2x^6 - x^5 - 3x^4 - 2x^3 - 6x^2 - 4x + 16)^2 + \frac{7}{4} (x^5 + x^4 - 2x^2 - 4x)^2$$

$$= x^{12} - x^{11} - x^{10} + 3x^9 - x^8 - 5x^7 + 7x^6 - 10x^5$$

$$- 4x^4 + 24x^3 - 16x^2 - 32x + 64.$$

E.g., $79^2 + 7.13^2 = 2^8 + 7.2^{10}$, and $107^2 + 7.31^2 = 2^{14} + 7.2^8$.

Note.—If a and b be roots of $x^2 + x + 2 = 0$, then

$$x^{14} - 13x^7 + 27 = (x^7 - a^7)(x^7 - b^7)$$

$$= (x - a)(x - b)(x^3 - a^2x^2 + a^2bx - a^3)(x^3 - b^2x^2 + ab^2x - b^3)$$

$$\times (x^3 - abx^2 + a^2x - a^3)(x^3 - abx^2 + b^3x - b^3)$$

$$= (x^2 + x + 2)(x^6 + 3x^5 + 2x^4 - x^3 + 4x^2 + 12x + 8)$$

$$\times (x^6 - 4x^5 + 9x^4 - 15x^3 + 18x^2 - 16x + 8).$$

Similarly

$$x^{22} + 67x^{11} + 3^{11}$$

$$= (x^2 + x + 3)(x^{10} + 5x^9 + 14x^8 + 26x^7 + \dots)(x^{10} - 6x^9 + 14x^8 - 7x^7 - \dots).$$

Mr. W. F. BEARD, M.A., solves the first part as follows:—

It is easy to prove that

$$a^5 + b^5 + c^5 + 5abc(bc + ca + ab)$$

$$= \Sigma a [\Sigma a^4 - \Sigma a^3(b + c) + \Sigma b^2c^2 + 2abc\Sigma a]$$

$$= \Sigma a [(\Sigma a^2 - \frac{1}{2}\Sigma bc)^2 - \frac{3}{4}\Sigma b^2c^2 + \frac{5}{2}abc\Sigma a],$$

also

$$5abc(a^2 + ab + ac) = \Sigma a.5a^2bc.$$

Subtract these results. Therefore

$$\Sigma a^5 - 5abc(a^2 - bc)$$

$$= \Sigma a [(\Sigma a^2 - \frac{1}{2}\Sigma bc)^2 - \frac{3}{4}\{\Sigma b^2c^2 - 2abc(b + c) + 2a^2bc\}]$$

$$= \Sigma a [(\Sigma a^2 - \frac{1}{2}\Sigma bc)^2 - \frac{3}{4}(ca + ab - bc)^2].$$

QUESTIONS FOR SOLUTION.

17383. (Professor J. C. SWAMINARAYAN, M.A.)— ξ is a function of n independent variables $x_1, x_2, x_3, \dots, x_n$, defined by

$$\phi \{S^{1/n}(\xi - x_1), S^{1/n}(\xi - x_2), \dots, S^{1/n}(\xi - x_n)\} = 0,$$

where ϕ is an arbitrary function, and

$$S = \xi + x_1 + x_2 + \dots + x_n.$$

Show that

$$(S - x_1) \partial \xi / \partial x_1 + (S - x_2) \partial \xi / \partial x_2 + \dots + (S - x_n) \partial \xi / \partial x_n = S - \xi.$$

17384. (Communicated by C. M. ROSS, B.A.)—Prove

$$\iint x^n dx dy = \frac{C^{2n} \sqrt{\pi}}{(AC - B^2)^{1/2(n+1)}} \frac{\Gamma(\frac{1}{2}(n+1))}{\Gamma(\frac{1}{2}(2n+2))},$$

where the integral is taken for all the elements of the ellipse

$$Ax^2 + 2Bxy + Cy^2 = 1. \quad [\text{Tripos, Pt. I, 1899.}]$$

17385. (Professor E. J. NANSON.)—The eliminant of

$$px^2 + qx + r = p'x^2 + q'x + r' = p''x^2 + q''x + r''$$

is

$$(rp)'^2 = (pq)(qr),$$

where

$$(pq) = \begin{vmatrix} p & q & 1 \\ p' & q' & 1 \\ p'' & q'' & 1 \end{vmatrix}.$$

17386. (B. A. SWINDEN.)—If s_r denote the series

$$1/1^r + 1/2^r + 1/3^r + 1/4^r + \dots \text{ ad inf.},$$

prove

$$\begin{aligned} \log 2 &= \frac{1}{4} \{s_2 + \frac{1}{2}s_3 + 1/2^2 \cdot s_4 + \dots + 1/2^r \cdot s_{r+2} + \dots\} \\ &= \frac{1}{2} \{1 + \frac{1}{2}(s_2 - 1) + 1/2^2 \cdot (s_3 - 1) + \dots + 1/2^r \cdot (s_{r+1} - 1) + \dots\} \\ &= \frac{2}{3} + 1/2^3 \cdot (s_3 - 1) + 1/2^5 \cdot (s_5 - 1) + \dots + 1/2^{2r+1} \cdot (s_{2r+1} - 1) + \dots \\ &= 2 \{ \frac{1}{2}(s_2 - 1) + \frac{1}{4}(s_4 - 1) + \frac{1}{8}(s_6 - 1) + \dots + 1/2^r \cdot (s_{2r} - 1) + \dots \}. \end{aligned}$$

17387. (A. M. NESBITT, M.A.)—Prove that, if n be positive

$$(n-1)^{n+1} \geq n^n,$$

according as $n \leq$ a certain quantity between 3 and 4; and find that certain quantity.

17388. (Professor K. J. SANJANA, M.A.)—A candidate goes up for an examination in which there are six papers, each carrying m marks. Prove (1) that the number of ways in which he can score $3m-1$ or $3m+1$ marks is

$$\frac{1}{2} 5^m (m+1)(m+2)(11m^2 + 22m + 7);$$

and (2) that the greatest number of ways in which any marks could be obtained is when $3m$ marks are secured.

17389. (J. J. BARNIVILLE, B.A.)—Resolve $x^{12} + 2^6$ into four, $x^{18} + 3^9$ into five, and $x^{30} + 3^{15}$ into six rational factors.

17390. (C. E. YOUNGMAN, M.A.)—Points on a nodal circular cubic may be taken in pairs, as a, a' whose tangents meet on the curve at A ; let F be the point whose pair is at infinity: then A, a, a', F are always concyclic. Let a, b, c be collinear, and consequently also A, B, C ; then a', b', c', F are concyclic. And if A, B, C, F are concyclic, a, a', b, b', c, c' lie on a conic with respect to which the node and the line of inflexions are pole and polar.

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 Γ , $\xi_1, \xi_2, \dots, \xi_n$ 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.

17392. (W. N. BAILEY.)—If two conics have a common director circle, the points at which the conics subtend equal angles lie either on the common director circle or on the rectangular hyperbola which passes through the points of intersection of the two given conics.

17393. (R. F. DAVIS, M.A.)—If PQ is a variable chord of constant length in a given fixed circle, and O any given fixed point, then the locus of the circum-centre of the triangle OPQ is a conic.

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 $YS/SX = \frac{2}{1}$.

17395. (H. D. DRURY.)—To every triangle belong three pedal lines, and not more than three, which touch the nine-point circle, and the triangle formed by the three is equilateral.

17396. (M. SATYANARAYANA, M.A.)— P is a point on the circum-circle of a triangle ABC . PL, PM are perpendiculars to BC and

CA ; PL produced meets the circum-circle in P_1 . Prove that the distance of LM from AP_1 is $(CL \cdot AM)/CP$.

17397. (H. C. POCKLINGTON, F.R.S.)—Any pentagon being given, prove that it is possible in an infinite number of ways to draw another that shall be both circumscribed about and inscribed in the given one.

17398. (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.

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.

OLD QUESTIONS AS YET UNSOLVED (IN OUR COLUMNS).

11978 [Reproposed, *E. T.*, Sept. 1912]. (Rev. T. C. SIMMONS, M.A.; Proposer's corrected form.)—A line is divided at two random points; prove that the chance that no part exceeds n times any other part ($n > 1$) is

$$2(n-1)^2 / [(n+2)(2n+1)].$$

Hence, or independently, prove the chance that no part exceeds twice any other part = $\frac{1}{15}$.

12044. (M. BRIERLEY.)—A lamp stands on a table, the light of which is 18 inches in height above the table, and at the distance of 15 inches from the light is a globe 12 inches in diameter; it is required to determine the relation which the illuminated part of the globe bears to the area of the shade cast by the globe upon a screen 36 inches behind it.

12699 (Professor HAUGHTON, F.R.S.)—Show, in the case of a floating body having the shape of an ellipsoid of three unequal axes, that its stability is the same with one- n th draught or one- n th freeboard.

12720. (Professor A. E. A. WILLIAMS.)—The bisectors of the angles of a triangle being given, to construct the triangle.

12757. (H. W. CURJEL, M.A.)—If ABC is a spherical triangle, and AD, BE, CF are secondaries to a great circle L , show that the condition $\pm \sin a \sin AD \pm \sin b \sin BE \pm \sin c \sin CF = 0$

(the proper signs being taken) is satisfied when, and only when, L passes through the pole of the inscribed or of an escribed circle of ABC . (In the case of the inscribed circle all the signs are positive, and in the case of the escribed circle touching BC the first sign is negative and the other two positive, and so on, the usual convention as to the signs of AD, BE, CF being observed.)

12819. (Professor WHITAKER.)—A cube is revolved on its diagonal as an axis. Define the figure described, and calculate its volume.

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SYLLABUS.

I. (Sep. 26.) *Organization.*—Limitation of teacher's power: freedom still left to him: relation between curricula and organization: organization by "sides": the form system: the *ordinarius*: the specialist system: the synchronous system: combination of systems: various bases of classification of pupils: co-education: staff and size of classes: share of assistant teacher in organization: visiting masters: prefects and delegated authority.

II. (Oct. 3.) *Time-tables.*—Length of whole school-day: relation between class work and preparation work: arrangement of the major divisions of the day: theory of fatigue and its application to (a) rest intervals, (b) sequence of studies, (c) length of study periods at different stages and for different subjects, (d) relation between physical exercise and mental effort: form in which time-tables should be drawn up: rigidity and elasticity: esoteric and exoteric time-tables.

III. (Oct. 10.) *Discipline.*—Varying meaning of term: special sense of control: basis of discipline: "nature of things": authority: place of consciousness in the maintaining of discipline: "personality": fabled power of the eye: cause and effect: different ideals of class discipline: "talking" in class: relation between discipline and class work: possibility of teaching on the control maintained by another: the "discipline master."

IV. (Oct. 17.) *Relation between Home and School.*—Principle of *in loco parentis*: theory of the "Foster Parent" and the "Elder Brother": unreasonable attitude of many teachers towards parents: *Flachsmann als Erzieher*: relation between social rank of parents and their attitude to the teacher: methods of securing co-operation between home and school: American examples: special difficulties of different classes of teachers: conflicting influences of fathers and mothers: home work and home help: school reports and their manipulation.

V. (Oct. 24.) *Types of Troublesome Pupils.*—Meaning of the terms "average pupil" and "type": advantages of classification by types: dangers of such classifications: temperament and possibility of modifying it: method of superimposing class lists of different "years": correction of character: the ideal pupil as standard: deflection from the standard in two directions according as we consider intellect or conduct: manipulation of characters as actually found in school: specification of types and suggestions for their treatment.

VI. (Oct. 31.) *The Newer Methods.*—Quickened consciences of earnest teachers: danger of falling behind the times: nature of theory: its inevitability: relation of theory to experience: practical dangers of lack of theory and of excess of theory: the doctrinaire and the empiric: the pedagogic type of mind: means of keeping in touch with new developments: sunny side of freaks and fads: canons of criticism: examples from actual experience.

VII. (Nov. 7.) *General Methods.*—The place in *practical* school work of the various general methods, such as the Dialectic, the Socratic, the Heuristic, the Concentric: the principle of the correlation of studies: dangers of the rigid application of any of the general methods: examples of excess of the various methods: need for the modification of each to suit the needs of special subjects: dangers of friction among teachers in applying general methods: need for subordination of individual preferences in favour of general good of school: need for concerted action in the matter of general methods.

VIII. (Nov. 14.) *Art of Illustration.*—Illustration is best test of a teacher's power: need for continual reading and observation to maintain freshness: stock illustrations and their place: danger of neglect of verbal illustration as compared with real and graphic illustrations: analogy and exemplification fundamental forms of verbal illustration: various degrees of *reality* of illustrations—actual objects, models, pictures, diagrams: point of view in illustration: appeal to the preferred sense: dangers of illustration: sources from which illustrative material may be obtained.

IX. (Nov. 21.) *The Key Subject of the Curriculum.*—The *mother tongue* occupies a unique place in the curriculum: always receives recognition in examinations other than those in languages: in social life it again receives special recognition: relation between knowledge and expression: vocabulary and construction: important point is *use* of language, not its analysis: composition best taught by the development of "purpose": place of imitation and precept in training in the mother tongue: danger of over-emphasis of form as compared with matter.

X. (Nov. 28.) *Note-making and note-taking.*—Importance of "notes" in the newer forms of school inspection: teacher's notes take two forms—(a) *teaching notes* and (b) *notes of lessons*: the real value of teacher's notes: relation between teacher's notes and the pupil's reproduction of them: time when notes should be made by pupil: taking note *versus* taking notes: pupil's notes as his textbook: the relation of note-taking to the newer ways of teaching history and mathematics: relation of teacher's authority to the textbook and the notebook.

XI. (Dec. 5.) *Examinations and how to prepare for them.*—Determining power of the examiner: external examinations and how to make the best of them without damage to the pupil: the "personal equation": the use of old examination papers: preparation of "set books": use of "the index" in revision: the teacher as examiner: how to prepare an examination paper: allocation of marks: alternative questions: advice to pupils about to sit for an examination: the marking of answers: numerical *versus* literal marks: how to secure uniformity of standard.

XII. (Dec. 12.) *Under the King and Over Us.*—A study in superiors: teacher's relation to the various powers that be: need for the teacher to study adult psychology: the characteristics of the official as such: the invariable third: official questions and answers: the official mind and how to approach it: an instructive bit of law: the official art of compromise: manipulation of conflicting official regulations: the fundamental agreement: the authorities as the teacher's allies: the whole question reviewed from the point of view of the teacher as himself an official.

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The Educational Times.

THE CIVIC UNIVERSITY.

LORD HALDANE is not only an orator, but he is also a writer. Those who heard him at Bristol must have been impressed by his eloquent statement of the value of a modern—or, as he preferred to call it, a civic—University. Those who were not fortunate enough to hear the address delivered may yet gather its purport and feel its influence from the newspaper reports. Lord Haldane is all in favour of studies wide and deep. The time is past, he declared, when the business man used to look with favour upon a University only so far as it directly produced aptitude for commercial pursuits. "Applied science," he said, "is in its best form only possible on a wide foundation of general science. And the fruitful scientific spirit is developed to-day on a basis of high intellectual training which only the atmosphere of the fully developed University can completely provide. What is true of science in the narrower sense is also true of learning generally. It is only by the possession of a trained and developed mind that the fullest capacity can, as a general rule, be obtained. . . . We are coming more and more to recognize that the best specialist can be produced only after a long training in general learning." The University must then be well equipped and fully developed for the highest work. This does not mean that each University must provide for all studies. Lord Haldane specially pointed out that a University must develop in accordance with local needs.

A leader writer in the *Times* says that "since the Renaissance no movement more fruitful of intellectual growth has been developed in this country than that which has led to the creation of our modern Universities." These are in response to a demand from an ever-growing circle of students. The democracy is insisting upon opportunities of intellectual education. There is at present, as Lord Haldane pointed out, a feeling of grievance "that the Universities of Oxford and Cambridge have

had an undue advantage in the higher Civil Service." "The remedy for what is a real grievance," he went on, "appears to me to be that democracy should add a new plank to its platform and insist upon equality of opportunity in education as something that should be within the reach of every youth and maiden." He points out that only a small minority can hope to take advantage of the opportunities of the most advanced education. It would be a mistake, he says, for the democracy to endeavour to lower the standard and so lessen the efficiency of the Civil Servant; but they must see to it that every boy and girl has an opportunity of profiting by University education if they are fitted to do so. The clever boy or girl can generally manage to get a scholarship to a secondary school, but very few can get on to the University. "Not one child of the people out of a thousand has a chance of becoming an undergraduate at Oxford or Cambridge." "Here, then," he went on, "is a new object of ambition for you, the citizens of Bristol. You have in it your power now if you choose to make it possible for the son or daughter of every poor man in this city, be he high or be he low, to attain to this splendid advantage in life. Only the few can be chosen, but the many may and ought to be called."

The function of the new Universities is to bring knowledge to the democracy to enable it to fulfil worthily the responsibilities that are being laid upon it. No better way can be found at the present moment for men of exceptional wealth to disburden themselves of its weight than in endowing Universities. The University professor asks but little of material wealth—he asks only freedom to work and investigate. But he cannot live, as convention demands, on the fees of his students. The principle of State grants has been admitted, and the amount is sure to increase greatly. The higher the education, the greater the cost, and, we may almost say, the less the pupil is prepared to pay in proportion to that cost. Bristol has been fortunate in possessing wealthy and generous citizens. It is also a marked feature of modern Universities that they are freely open to women as well as to men. On this subject Lord Haldane says: "This is an advance which it is difficult to overrate, and in days

to come its influence for good may prove to be very great."

In concluding his address, Lord Haldane referred to what we may call the community spirit in the new Universities. Oxford and Cambridge exert a unique influence, the result of an atmosphere that is the growth of centuries. Their sphere of influence is Great Britain or even a wider one. The University of Bristol is a possession of the City of Bristol, and it cannot fail to have a marked effect on the life of the inhabitants. The citizen of Bristol may look to the city as the place of his birth, the place where he lived with his parents, and with which his earliest associations are connected. He may look to it as the place where he grew from youth to manhood and made for himself riches and reputation. He may look to it as the arena into which he threw himself in an honourable rivalry for success in public life and for opportunities to do good to his fellows. "And, last but not least," said Lord Haldane, "he may look to it as the home of the University which gave him his great impulses, which moulded his soul and imparted to him not only the knowledge that was the source of strength, but the most glorious inspiration of his youth. If you, in whose hands rests the making of the future, accomplish the task of making this—and, perhaps, even more than this—possible in your own city, you will have deserved well of the nation of which you form part." These are inspiring words and are worth pondering.

NOTES.

SPEAKING the other day at Newcastle, Mr. Pease said that the Board of Education were coming to the conclusion that examinations were not the best test of real efficiency. He did not develop this theme nor explain exactly in what connexion he was thinking of examinations. There are two main aspects in which examinations affect us. In the first place they are a test of the school work, and in this way have a very valuable and stimulating effect upon the pupils and the teachers alike. Certain subjects are taught in a school, either to give information or to supply opportunity for the development of powers. To test these two aims school examinations are undoubtedly useful. The second object of examinations is to afford a means of selecting candidates wishing to enter careers or a further course of study. It is probably this second aim that Mr. Pease had in mind.

WITH regard to examinations as a means of choosing candidates for the Civil Service, there are two contrary movements of thought occurring at the present time. There are those who support Mr. Hartog in the contention that written examinations, testing only a limited field of

power, are not the best. On the other hand, there is the widespread feeling that, in order to prevent favouritism, all appointments in the Civil Service should be made on the results of an examination so conducted as to bring automatically the best prepared candidates to the top of the lists. It is quite evident that there are qualities that a written examination does not test. So long as this is recognized, examinations will continue to perform their useful functions. No definite plan for an alternative scheme has been put forward by the opponents of examinations. The governors of the Naval College at Osborne have developed a scheme in which the personal element is largely in view. But in this case the field from which candidates are drawn is limited. The plan could not be adopted on a large scale.

WE are glad to learn that the Right Hon. A. H. D. Acland has accepted the Chairmanship of the Teachers' Registration Council. Mr. Acland is equally at home in all sections of education. He was educated at Rugby and Christ Church, of which College he was Steward and Senior Student. He was also Senior Bursar of Balliol. He may, therefore, be said to be familiar with education as affecting Universities. In his work on the West Riding Education Committee he has been brought into contact with both primary and secondary schools, as well as with technical institutes. From 1892 to 1895 he was Minister of Education, or Vice-President of the Council, as the title then was. He has since then been Chairman of the Consultative Committee. A Chairman with wider knowledge and greater experience could not have been found. We understand that the Council have decided to appoint a Secretary at a salary of £800 to £1,000.

THE view contained in the article we published last month on the relation of the L.C.C. to polytechnics is supported by a writer in the *Morning Post* of October 11, who draws attention to the very real dangers that secondary schools have to fear. If things go on without protest, secondary schools may have all vitality crushed out of them by the government of officials. We give some extracts from the article in another column. We add one short extract here which indicates the heart-breaking experience of a head master desirous of getting the aid of the Council to send a promising boy of eighteen years and a half to a University. The boy had, while at school in the preceding year, taken Honours in the London Intermediate Examination. The reply received from the L.C.C. Office was: "In the opinion of the Committee it would be good for him to spend another year at school." The reply is inept and calculated to hamper the work of the boy as well as of the school. We read in the newspapers that the L.C.C. propose to pay 97517 of certain salaries. This indicates that the officers are apt mathematicians, and that the decimal point has no terrors for them.

*Examinations
as a test
of Efficiency.*

*L.C.C.
and Secondary
Schools.*

*Entrance to the
Civil Service.*

THE Conference Week of Educational Associations, which the Teachers' Guild has for some time past been anxious to organize in order to prevent the teachers' meetings in January from clashing, is now arranged for January 6 to 11, 1913. The Senate have granted the use of the London University, and Sir Henry Miers has consented to inaugurate the proceedings. Mr. Sadler will open the first discussion. There will be a *soirée* on the evening of January 9. Many associations now hold their annual meetings in January, and there will be undoubted convenience in grouping several of these in one place and during one week. The College is in full sympathy with the scheme, and has appointed a Member of Council to attend the meetings of the Organizing Committee, but the half-yearly meeting of members will, of course, take place at the College as usual.

"A LIVE beetle or a dead frog's leg under a microscope will teach the child's mind better than a hundred pages out of a book." These words were uttered by our Minister of Education recently at Newcastle, where he was presenting prizes to pupils of the Technical College. Put in cold prose, we suppose Mr. Pease's words to mean that the practical study of Nature in the fields or of Biology in the laboratory is more valuable than reading books about Nature or Biology. This is certainly true; but Mr. Pease is compelled to remember the tax-payer. If all town schools requisitioned from the Board of Education a plot of ground for the cultivation of the beetle and a supply of microscopes, the officials would be aghast. The book is less costly; and it is to be remembered that the teaching in schools depends less upon the book than upon the spoken word of the teacher. But Mr. Pease must not be taken too literally. A part of education, it is true, consists of dealing with things at first hand and not at second hand through a book; but another part, no less important, consists in the study of books.

IN the course of an address given at Crewe upon Educational Reform, Sir William Mather, Chairman of the Union of Lancashire and Cheshire Institutes, said that, "reluctant as he was to believe it, it appeared to him that boys acquired higher qualities of character and intelligence in two years as Scout boys than in eight years as schoolboys." The problem is not so simple as Sir William seemed to imagine. It is not possible to isolate a group of boys from all other influences of their environment and to give them no training of any kind except that which they receive in their corps, and to compare the result with another group of boys who have been allowed to come under no influence except that of the classroom and whose natural activities outside the classroom have been entirely suppressed. Only so would it be possible to make a comparison of value. The fact is that the training in school is necessary and valuable,

and the training as a Scout, or whatever form of out-of-school activity is chosen, is also necessary and valuable. The two are complementary. The Scouts whom Sir William admired were also schoolboys.

COMPULSORY cadet training has two sides. It may be viewed as a preparation for war and for resisting invasion, or it may be regarded in its disciplinary aspect. This latter aspect was most prominent in an address that Sir Ian Hamilton delivered the other day at the Birmingham and Midland Institute. He urged in the strongest terms that all schools, both public and private, should have compulsory cadet training. "Every single healthy boy in Great Britain," he said, "must henceforth be trained in character and physique just as carefully and thoroughly as he is now trained to read and write." We do not fail to notice the implication that intellectual studies have no effect on character, and that the control of the mind does not lead to the control of the body. Sir Ian placed the advantages of cadet training in the following order: "Discipline, self-restraint, good manners, cleanliness, physical development, and some useful military aptitudes." This is all very true, but we cannot ignore the value of intellectual studies in the formation of habits of control of the will.

THE valuable magazine, *The Child*, has won for itself a position of security, as is evidenced by the issue of the first number of its third year of existence. *The Child* is especially valuable because it deals largely with the medical side of education, and therefore forms a useful adjunct to the other educational papers. It is edited by Dr. Kelynack, and the contributors include many leaders in medical work. The editor calls it a medico-educational journal, and adds that its object is to provide an authoritative and representative journal for the collection and interpretation of all subjects relating to child life. Its contributions come from all the world over, wherever there is any fresh experiment or new information of interest to the educational world. But the articles are by no means all of a medical character.

WE are fortunate enough to have secured for publication a School Hymn by the late Kenneth John Freeman, who died, an Assistant Master at Winchester College, at the age of twenty-four. The hymn was left unfinished, and the last four lines of verses 2 and 4, and the whole of the final verse, have been added by Mr. M. J. Rendall, Head Master of Winchester. Though written by a Wykehamist for Winchester, the hymn may well be sung in any school. The music is by Mr. H. V. Jervis-Read, whose musical settings are known. It is, perhaps, a "new departure" to admit a contribution of this kind to our columns, but we believe many of our readers will welcome the innovation.

The January Conference Week.

The Live Beetle versus The Book.

Boy Scouts.

Military Training.

A School Hymn.

SUMMARY OF THE MONTH.

THE Governors of Cheshunt College have accepted the plans of Mr. P. Morley Horder for the proposed new buildings at Cambridge. The plans involve an outlay (together with the site) of £30,000, towards which subscriptions are invited. The College was founded by Selina Countess of Huntingdon at Talgarth, South Wales, in 1768. It was transferred to Cheshunt in 1792, and later became one of the divinity schools of the University of London. It was moved to temporary premises at Cambridge in 1905-6. The College is for students studying for the ministry of any Christian denomination who become members of the University and take the Theological Tripos.

A WRITER in the *Morning Post* of October 11 confirms the view taken by our contributor, "L. L. U.," in the October number of this paper, in reference to the action of the L.C.C. towards Polytechnics. Writing under the title of "Proverbial Philosophy," he says:

Just now it is the turn of the Polytechnics. This is not the place to discuss the merits of the particular dispute which has given the Council its opportunity: the important fact is that the Council has seen its opportunity, and that the extinction of the Polytechnics is clearly foreshadowed—extinction not as places of technical education, but as living institutions, for the simple reason that the position of the Governing Bodies of the Polytechnics is being deliberately made such as reduces them to an absurdity. When that process is complete, and it has become manifest that the position is one that nobody would accept who wanted to be of any use to anybody, the way will be clear; the Council will have what is politely called a free hand, and the administration of the Polytechnics will fall into the hands of the intelligent clerk. The *personality* of the institution will have gone. It is an amazing thing that when everybody who thinks about education knows that the one thing that matters about an educational institution—whether it be an elementary school or a secondary school or a Polytechnic or a University—is that it should have a personality, a soul of its own, the chief aim of the greatest Local Education Authority in the world should be the suppression of personality: that instead of trying to make elementary education live it should devote itself to reducing every other sort of education that it can lay its hands on to a mechanical existence one degree removed from death.

THE writer of "Proverbial Philosophy," whose words we have quoted above from the *Morning Post*, makes a very timely protest against the encroachments of the bureaucratic spirit. We would like to quote the whole article, if we had space, but must be content with one more paragraph. This is it:

It cannot be remarked too often that the worst danger threatening our educational system as a whole is organization from below. No one would deny that much admirable work has been done in elementary education during the last forty years; but that work has always been cramped by parsimony—a parsimony none the less deplorable because we have all been accomplices in it; we have never made up our minds either to pay the piper adequately, or, even having paid him, to let him play the tune as a musician would wish to play it. The one dominating idea throughout our organization—magnificently efficient in many places—has been to see that the rate-payers' money is not wasted, and that the managers of a Council school do not put in a new pane of glass without the leave of the Education Officer. That pane of glass is symbolical: it stands for the rule of the intelligent and underpaid clerk; he must be intelligent, because he must be able to write a letter implying that he knows something about education, and he must be underpaid, partly on the general principle that nobody concerned with education should be properly paid, and partly because he must not have spirit enough to think of the mischief that he is doing. His superiors, if not underpaid, must be thoroughly overworked, otherwise they would be incapable of allowing their signatures to appear, even by means of a rubber stamp, at the bottom of the letters in which the intelligent clerk expounds the system. So we get a very effective machine, from which the human element, with all its possibilities of error, and also with all its possibilities of vitality, is as nearly as may be eliminated; and we say: "Go to; this is educational organization; let us have some more of it!"

THE second number of *The Journal of English Studies* contains articles that teachers of English ought not to over-

look. According to the view enunciated by the Board of Education, all teachers in a school are directly or indirectly teachers of English; therefore the *Journal* is of wide interest. We are particularly struck with an article by Mr. H. A. Treble, the aim of which is indicated by the following extracts:

In teaching poetry, the first principle, I imagine, should be, as far as possible, don't teach it at all: i.e., let the teacher intervene as little as possible between the boy and the poem; and, for that matter, the intervention of the editor, commentator, and textbook maker is still more strictly to be limited. . . . We do not teach poetry in order that boys may make verses (an innocent enough accomplishment, if they can be made by boys), but we teach it in order that boys may learn to appreciate verse, and throughout their lives derive pleasure and satisfaction from its perusal. It is this important distinction which differentiates the teaching of poetry from the formal teaching of language. . . . The school lesson in poetry should not be an ingenious device for cultivating in boys a hatred of literature. The teacher should rather be a master of the ceremonies who introduces the boy to a number of persons whose acquaintance is well worth making.

IN connexion with the recent Conference on the Education of Women in the East, the Church Missionary Society have issued a pamphlet, entitled "The Awakening of India's Womanhood." The writer says:

The problem of to-day is how to deal most wisely with the new insistent demand for education, that it may be a purifying and ennobling influence in the new life of India. In Government schools the education is, and must be, secular and non-religious, and, therefore, admittedly destructive of Eastern faiths. It lies with the grant-aided mission schools to do the constructive work so sorely needed, to lay the sure foundations of Eternal Truth, and to insist upon the fullness of Christian character as the true ideal of education.

FROM the *Highway*, the organ of the Workers' Educational Association, we quote the following spirited paragraph from a very valuable article by Percy Redfern:

The nation cannot afford to reduce parents to ciphers and teachers to automatons, and leave all initiative and control to the officials. We need a broader conception of education. We want smaller classes, and at the expense of full attendance, if there is no money for additional teachers. We require a closer classification within the schools, a more varied and flexible system of grouping children, and one broader-based; for children do not differ merely in age. We need schools built to meet some, at least, of the actual variety of children's demands. And especially we want the interest of parents to be enlisted and the freedom of teachers to be increased. The governing powers should understand that they are not the whole community; that despotism, benevolent or other, is intolerable; that their part is to understand and reconcile, in a friendly and serviceable spirit, the aroused desires and ideas of the millions of parents and the tens of thousands of teachers great and small. It is reasonable to ask for a movement in this direction now and at once.

ON the occasion of the opening of a new County Secondary School at Whitby Mr. Sadler gave an address on "Educational Aims." Referring to St. Hilda, of Whitby, he said:

She endeavoured to give to those who followed her and obeyed her, under different conditions and in an earlier time, exactly those privileges which this school was designed to give to those who would come under its influence. She taught them comradeship. She taught them to subordinate their own self-will to the common claims of the great society, and in thus forgoing self-interest to realize the happiness of the fuller life. She taught them to give to others opportunity. Above all, St. Hilda, by example and precept, showed those who came under her influence that the supreme concern of all education was to help those who received it to see what was the true value of different aims in life, to judge rightly and to choose well, and to draw for their life that strength which comes only from one source—faith in a spiritual ideal. These three things—comradeship, opportunity, and insight into the spiritual realities of life—were the chief things which a school like this, under wise guidance and faithful teaching, might give and do.

THE Committee appointed by the Scottish Classical Association to collect statistics on the number of pupils learning Greek in Scotch Schools has issued a report, in which the gradual extinction of the language is foreshadowed. The following figures are given:

Of the eighty-seven schools in which Greek is still taught, and from which candidates are presented for the Leaving Certificate examination, eighty-three are grant-earning schools and four are "public schools" not in receipt of grant. The totals of the complete returns for this session from the eighty-three grant-earning schools are as follows:—1,021 pupils studying Greek, 294 candidates presented on the lower grade, 210 candidates presented on the higher grade, 356 beginners in Greek. An analysis of the figures discloses the startling fact that thirty-five schools have fewer than six pupils learning Greek, that 20 schools have no beginners, and fifteen have only one beginner this year. An ominous circumstance in regard to beginners as compared with five years ago is the large decrease of 38 per cent. Such numbers indicate clearly the beginning of the end.

THE Prince of Wales has matriculated at Magdalen College, Oxford. He lives in College, dines in Hall, and lives the life usual to the undergraduate. He will go to the ordinary lectures, and the subjects to which his attention is to be specially directed are history, geography, political science and political economy, English literature, and the French and German languages. He is to join the Union and share in sports.

FROM the Report of the Tutorial Classes established in connexion with the University of Leeds we take the following extract:

Looking back upon the three years' work the Committee are of opinion that the results have been highly beneficial, though, as regards continuity of attendance on the part of individual students during the whole period, the classes have not altogether realized the hopes which were formed at their commencement. The four classes started in 1909-10 with a total enrolment of about 130, but of these only 58 have completed the full three years. There have been a number of new students to replace those who have withdrawn, the total number in attendance during 1911-12 being 96, and these students have in most cases been fitted to take their place alongside the other members of the classes. Even if the classes have not reached the highest standard of efficiency, it may nevertheless be held that they have fully justified their existence. Many of the withdrawals have been due to causes, such as removals, illness, &c., which are quite outside the control of the students, causes particularly likely to occur in the case of classes organized specially for working men, and not in any way due to lack of interest in the subjects. The students who have remained in attendance have succeeded in obtaining a grasp of the fundamental points of the subjects studied, and have acquired a broader outlook on social and industrial problems.

DR. BUTLER, Master of Trinity, spoke at the Commemoration of the 250th anniversary of the granting of the Charter to the Bradford Grammar School. In the course of his speech he said that

many conditions, under Providence, were necessary to make a great school efficient. There were at least four bodies who in different ways and degrees were responsible for a school's success—the governors, the masters, the parents, and the children. The great duty of the governors, besides intensely loving the school, seemed to him to be to take enormous pains in making the appointment of a master—by confidential communications, by public advertisement, through every possible channel. When they had done that they would be wise if they let well alone, if they maximized their sympathy and minimized their interference. Speaking of the masters, he would say that their aim should be so to act as to be inspirers rather than correctors, inspirers of a positive kind rather than disciplinarians of a negative kind. If there was one thing he would urge upon them it was never to say anything sarcastic, anything against which the unarmed boy had no defence. A sarcastic master, however able, however just, failed to be a centre of instinctive confidence on the part of the boys. They would not go to him as they would to others. As to the parents, he believed opinion had changed for the better where they were concerned. The more the support of parents could be got—not only negative support, but an active endeavour to push the boy forward along the line of his particular bent—the more a great school was likely to succeed."

MESSRS. MAPPIN & WEBB have just proposed to all the apprentices in their Sheffield works a scheme of continuation school study that will cover every need of the artisan in the workshop, the artist in the studio, and the manager at the

desk. The curriculum embraces practical woodworking, silversmithing, all branches of applied art, chemistry, metallurgy, electro-plating, industrial economics, and languages. The classes are all on the syllabus of the Sheffield Education Committee, the students participating in the scheme are expected to attend regularly, and the firm are paying the fees of those who make 90 per cent. of possible attendances, as well as defraying the cost of necessary books.

FROM the Fourth Annual Report of the National Food Reform Association we will quote two paragraphs. The first is:

Of life in our villages and the prevalence of intemperance in eating, an East Anglian correspondent writes:—"I believe the incessant eating has more to do with ill-health than anything else. I see the children eating on their way to school after their breakfast, on their way from school going to their dinner, ditto when they return in the afternoon. I saw a poor little mite of five howling yesterday because of toothache. That child has perfectly black teeth, and always has a chunk of cake or bread and jam, and is fat and white and unwholesome looking. I think the self-indulgence alone is bad. The bad effect of legislation is shown in the so-called temperance legislation. People are not really made temperate, but simply abstain from alcohol, and have a perfect orgy in the way of sweets and tea, which I believe are now doing far more harm to the nation than alcohol. We have a great deal of insanity and nerve disease here; it is chiefly among the teetotallers."

THE second is:

Respecting the adequacy of existing methods of instruction, a medical man says:—"I have been a keen student of food and dietetics all my life. During the fifteen years of my service on the Gateshead-on-Tyne School Board I was identified with the introduction of cooking centres, but I never could induce my colleagues to see the urgent need of teaching all the girls domestic economy, on similar lines as is done in Germany, where the food value—*i.e.* the percentage of proteid and the average cost of every food—is thoroughly taught, enabling every girl when she comes to manage a home to obtain the best value for the least expenditure. I maintain that the money spent in so-called cookery teaching in English Board Schools for the last thirty years has practically been wasted, and each generation has progressed in waste rather than in thrift and domestic economy, where the Germans beat us hollow. When I practised at Manchester I used to give popular lectures on 'Economy in Food,' and the wives yelled with derision when I told them that margarine was as good as butter, and herring better than beef for their family dinner."

THE friends of the late Miss Rosa Morison (Lady Superintendent of Women Students at University College, London, 1883-1911) desire to raise a memorial as a tribute of the affection and respect in which they held her and as a means of commemorating her work in connexion with the higher education of women. To give effect to this desire, some of those associated with Miss Morison in her work at University College, Queen's College and College Hall, Byng Place, together with some of her personal friends, have formed a Committee:—President, the Right Hon. Lord Reay, K.T., G.C.S.I., LL.D.; Chairman, T. Gregory Foster, B.A., Ph.D. (Provost of University College); Hon. Treasurer, Lady Lockyer; Hon. Secretaries, Miss E. Chick, B.A., and Miss E. Goodyear, B.Sc. The Committee have considered several suggestions as to the form the memorial should take. They feel that, in the first instance, portrait medallions or busts should be provided, one to be placed in University College and the other in College Hall; and, in the second instance, that a loan fund or a scholarship should be instituted for the benefit of students connected with University College. The precise form of the memorial must be left for decision until the funds are raised. Whilst hoping that a considerable sum of money may be subscribed, the Committee feel that the value of such a memorial is to be estimated rather by the number of the subscribers than by the amount of the individual subscriptions. It will greatly aid the work of the Honorary Secretaries if those who wish to take part in this memorial will communicate with them forthwith. Communications should be addressed to the Honorary Secretaries, Rosa Morison Memorial Committee, University College, London (Gower Street, W.C.).

THE following salary scale was moved by the Rev. W. C. Eppstein, Head Master of Reading School, at a meeting of the Reading Education Committee, and was adopted to come into force in September, 1913:

(1) The normal commencing salary to be £150, but in the case of First-Class Honours men, or masters possessing unusual qualifications, this salary to be increased to an amount determined by the governors.

(2) The appointment to be in the first instance for two years, and to be terminated at any time during this period on one term's notice being given by either side.

(3) If at the end of two years the governors are satisfied that a new master is doing good work, they shall decide whether he be placed on a scale of salaries rising (a) either to £200, or (b) to £250. In this the governors will be guided by the qualifications of the master, and they may at any time remove a master from the £200 to the £250 scale. When placed on either of these scales the salaries shall increase by annual increments of £10 till the maximum is reached.

(4) The salary of the second master shall be a maximum of £350. When the present second master retires, if his place be filled by another master on the staff, the salary of the latter shall increase by increments of £10 till it reach £350, provided always that in the case of a house master (*i.e.*, a master in residence in either West or East wing) a rent of £40 be deducted for the use of the house.

(5) The salary of the master of the Junior School shall be £210 plus the capitation fee, and that of the master in the other boarding-house shall also not exceed a maximum of £210.

(6) Assistant masters to be superannuated at the age of sixty-five.

SPARKS FROM THE ANVIL.

By M. C. SCOTT.

IN a former article I complained that neither parents nor educationists had, as a rule, decided what they wanted to achieve as the end of their educational labours. Surely I was wrong. In the words of Mr. Dombey and Dr. Blimber, they want to make a man of him. But you remember little Paul replied, "I would rather be a child." "Men," said Mr. Dombey, "make money, live in large houses, have many servants, are successful." "Children," thought Paul, "live with those they love, fetch and carry for those they love, talk softly of the great and puzzling things with those they love, lie quietly watching and thinking often." Had little Paul's lot been different he would have added, "are gay and careless often." But we try to make men of them. We teach them to consider consequences, not as they eternally are, but as they are according to our little society: we teach them the meaning of success as it is seen by our shortsighted vision; teach them to think property of more importance than humanity, personal gain a better thing than service.

Let us play at being children ourselves for a moment; let us pretend we know nothing of the successful school, the scholarship boy, the Mr. Dombey who want their sons "made men of," or even the British Association and vocational training. Let us pretend we just want the child to grow, and therefore must find what he needs for that growth. First of all he needs activity. Watch those eager, prying little fingers—poking, stroking, pulling, examining, the whole time; watch that active body—up and down, noisy, uncertain, clumsy. What can the child not learn through its activity? Froebel guessed at a good deal of it a generation ago; Dr. Montessori is preaching it to us now. As with the bodily activities, so with the mental. Those endless questions, that inability to confine attention to one thing for any length of time: these demand from us readiness, ingenuity, mental agility. Alas! we are already men, slow and ponderous. But if we could keep a modesty which might make us conscious of our deficiencies, that very slowness, coming in contact with the child's shallow alertness, is what would help him, if only we could be saved from the foolish satisfaction which blinds us to the meaning of the child's peculiarity.

Difficulties to be overcome the child demands, too—something against which it can push, and so feel its own power. You can see the delight which difficulties yield if you watch fat legs struggling up a grass bank: the at-

tempt will be made again and again, till the joy of the final achievement. It is the same with all a child's attempts, so long as the difficulty is one he can understand and which produces no feeling of hopelessness. Little children, if well, are never lazy; they are never satisfied with the easy things only.

But periods of activity demand periods of rest and quietness. We always get them in the child; though we are not always ready to use them. There are times when the restless feet are still, the hands quiet, the eyes dreaming. Now, while the bodily activity has ceased, the soul wakes, and stretches out really though vaguely to the things of the spirit world. How often are we grown-ups able to help at such times? We have been in that country, too; we may, indeed, still be there; but we have forgotten the way, and the little child's stumbling feet are still seeking the road.

So it is at all the different stages. We are not to make men of them, even in a better sense than that of Mr. Dombey. We are to minister to the child growth, to the development of the boy, to the aspiration of the youth; then, lo! a man. But we have not made him.

Then how does this agree with my former complaints and demands? Then I said that educationists failed because they did not know for what end they were working nor what they desired to make. I said that having decided that the world needed fathers, mothers, prophets, grocers, singers, seamen, and such-like useful things, we must definitely work towards these ends, always remembering that they could only be attained by a due recognition of a human being's spiritual as well as physical necessities. Is not this antagonistic to the present position? We must know first, on the contrary, what we want as the result of education—*i.e.*, men and women who can serve their generation in various useful ways by hand or head, and fathers and mothers with hearts big enough to take in not only their own children but all the lost ones. Then we must work for these results by helping the children to grow, through the fitting food, air, and exercise which mind and body demand at different stages of growth.

We can only get such men and women by ceasing to regard some callings as honourable, others as vulgar; by ceasing to attempt to make the boy who is fitted to be a carpenter or gardener into a lawyer or a clerk, the artist into a business man, the business man into the parson, or the born milliner into a teacher. What cooks we all are, with our patty pans and ornamental stamps! How we squeeze this poor creature into the one, cut out others by the dozen, so evenly and neatly, yet not economically, for we forget the waste bits between! We must give up our futile pains, and recognize that we are not out to make men, but only to assist growth—to garden, if you like.

This is not mere idealistic dreaming; it is practical common sense. Until it is universally recognized by parents and educationists both in our homes and schools, and not merely allowed theoretically by philosophers, the educational smiths will continue to hammer vaguely and hope doubtfully, while the Mr. Dombey's continue to cry "Make a man of him!"

Because we are to help our girls and boys to be what they are fitted to be, does not mean that we begin at an early age to differentiate, and provide for "engineers, brass-finishers, tinsmiths, moulders, upholsterers, plasterers, and tailors"—I quote from the Clerk to the Edinburgh School Board, who read a paper at the British Association on "Training for Vocations." He went on to say that "only about 30 per cent. of the 10,000 pupils in the Board's continuation classes took the course in English language; in citizenship only about 2½ per cent., and in physical training only about 10 per cent. Surely such vocational training is only manufacturing cogs in a great profit-making machine, not preparing men and women for the great and joyous trust of life.

Not till we recognize the right of all children to life and joy, each child's power to serve the common good, shall we understand our work as practical educationists, with the future of a great nation in our hands. The brass-finishers, tinsmiths, and moulders will be the better workmen if they are also conscious of being heirs to a language, citizens with responsibilities, and men whose bodies have at least some of that grace and beauty which the human body should possess.

DOMESTIC SUBJECTS AS A PROFESSION FOR WOMEN.

No one has yet found a satisfactory title for this profession. Some call it domestic economy, and anyone with the smallest sense of language objects because both words mean the same thing; others call it domestic science, and scientists object because it has so little to do with what is generally known as science. "Domestic subjects" is decidedly clumsy, and the person who can invent a really satisfactory title which will be generally accepted will have done the profession a service. The subjects included are cookery, laundrywork, and housewifery, and sometimes needlework, dressmaking, and millinery. A woman may be qualified in the first or second group by the age of twenty, or in both groups by the age of twenty-two. An extra diploma in high-class cookery may be obtained in six months. A woman who wants to cook or to wash and iron may train in either cookery or laundrywork and obtain a certificate; but a woman who wishes to teach in any one or more of the first group of three subjects must train in all, although she may wish to teach in one only. The first diploma, which is usually cookery, may be obtained after three or four terms' training and after examinations passed as follows:

A. Practical examinations in (1) practical cookery, (2) children's class teaching, (3) adult demonstration. B. Theoretical examinations in (1) theory of cookery, (2) theory of education, (3) chemistry, physiology, hygiene. C. Practical and theoretical examinations in first aid and sick nursing.

The second diploma (say, laundrywork) may be obtained after two terms' training and examinations passed corresponding to A. If laundrywork is the first subject taken, then B and C must be taken with it. In many training schools the subjects are now arranged rather differently, and sometimes the three main subjects are taken together and spread over the whole two years, and what is called a combined diploma obtained, but the amount of knowledge required is the same.

Now this shows that a good deal more than a knowledge of actual cookery (or laundrywork) is required, and that a girl who wishes to become a teacher of domestic subjects must possess a certain amount of brains to begin with, which does not mean that she must be brilliantly clever—at least, in the ordinary sense of the word. It is of no use to expect the girl who is no good at anything else to do well in domestic subjects as a last resource; she will simply be told at the end of her first term at the training college that she had better not go on. A girl with a good all-round education, a fair amount of physical strength, a fair power of organization, and a taste for working with her hands, will find domestic subjects as interesting a profession as any on the market. It should not be recommended to any one who wishes to make a fortune. By hard work it is possible to earn a living, but not much more. The average salaries for teachers are £30 to £120 for 27½ hours a week in elementary work, and £120 to £150 for the same amount in secondary schools. Training colleges do not pay their staff much more. The really lucrative thing is to become a high-class cook and cook for dinner parties, but it is not likely to be so interesting to most people as the teaching of children. As a school subject, cookery and its allies have the great advantage of making a very easy link between school and home. The child takes home what she has cooked, perhaps practises the dishes she has learnt at school during the week end, possibly even asks for recipes for her mother or herself; or, again, she brings her own clothes to wash and iron. During a lesson, if the teacher knows how, she may learn as much as the child. By learning from the child about her home conditions, she is able to improve them, or at least scatter seeds which may fall on good ground. There are also endless ways in which domestic subjects may be associated with other school subjects, such as geography, Nature study, and chemistry.

In secondary schools there is still a tendency to look down on domestic subjects. There is a feeling among some parents and children that the girls will never need to do that sort of thing; they forget that, if they need not do it themselves, they will have to see that someone else does it, and they need to know how it should be done. It is never a waste of time

to learn to do anything well. When girls always stayed at home they had a chance of learning about and practising household duties, and there is no better way of becoming a good housewife. It is a pity that schoolgirls should miss all that kind of knowledge and experience, and the only possible remedy is to have domestic subjects taught at school. Fortunately the scornful attitude is dying out. It is being replaced by an almost exaggerated belief in the importance of domestic subjects. Articles are constantly being written in newspapers by people of all shades of politics in the same sense. Anti-suffragists find nothing so truly womanly. Suffragists, who do not aim at being unwomanly, realize that the more women know about the work they have to do themselves, or to make others do for them, the more they will need to understand and help to control the laws which affect women workers and householders to a greater extent every year.

The Queen has started an institution for dealing with domestic subjects, and royal patronage is always encouraging to some people. But there is more interest in the experiments which are being tried all over the country to discover the best way of imitating home life, in order that as many pupils as possible may benefit by instruction at the same time. This is exceedingly difficult. There are two methods in use at the present time. By the first, which is employed by the London and some other County Councils in the elementary schools, no attempt is made to imitate the home, but domestic subjects are taught, as cookery, laundrywork, and housewifery, in separate centres, or in rooms equipped for the purpose, to classes of from twelve to eighteen girls at a time; the theoretical teaching being applied as much as possible to home conditions. This ensures a thorough knowledge of each subject; and an intelligent girl, taught by an intelligent teacher, ought to be able to apply her knowledge to other conditions; but it is not possible to make eighteen girls cook on an open fire with a tiny oven at one side, or even with a penny-in-the-slot gas stove; or to clean the house with one brush and a piece of rag, if all the girls are to be kept occupied. The second method, which is practised in some country towns, is to take a little house, appropriately furnished, and have a small number of pupils in turns to perform different duties. For instance, during one week two would do the cooking, two the laundrywork, two the housemaid, &c., and change about the week after. The disadvantage is that in real life the whole work would be done by two or three people, and the knowledge of method required to fit in the different kinds of duties in the manner most economical of time and labour is important; but it is not possible to get the work of a whole day into a lesson of two or three hours' length.

A reasonable inquiry would be: What are the prospects held out by this profession? To what does it lead? No one should take up domestic subjects who is not thoroughly interested in them, and in human beings, and who is not prepared to work hard and to go slowly. Teachers may rise to be superintendents and have harder work and scarcely more salary, or to be Government inspectors, county organizers, heads of training colleges or of domestic economy schools. The prospects at present are not very brilliant, but every year new schools are beginning to teach domestic subjects, more County Councils are finding some way of including these subjects among the compulsory subjects for girls; an increasing number of teachers is required, and new posts are certain to be created to facilitate the organization. The demand for teachers is still greater than the supply, and this is a good thing from the teachers' point of view. Public bodies are slow to see that what is worth having is worth paying for, but the domestic subjects teachers are more or less in a position to demonstrate it to them now, and should insist on it wherever possible. Some have already done so, and have thereby benefited their profession as well as themselves.

D. F. CHOLMELEY.

THE REV. L. P. JACKS (editor of the *Hubert Journal*) will lecture on "Religion as based on the need for Salvation," at Lindsey Hall, Notting Hill Gate, on Thursday, November 14, at 8.30 p.m.

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 **September 1913** and **January 1914** Examinations. Names of intending students should be entered **as soon as possible**.

Students who intend to take the **January 1913** Examination should enter their names **at once**.

At the August **1908** Exam., at the Jan. **1909** Exam., and at the Jan. **1910** Exam., Clough's A.C.P. Students secured in all **3** out of the **4 Most Distinguished Positions** on the Lists, gaining **DOUBLE HONOURS** (once) and **TREBLE HONOURS** (twice).

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. 1912 Exam. the only Candidate to obtain Honours in Science at L.C.P. was a Clough's Student.

A FEW TYPICAL LETTERS FROM RECENTLY SUCCESSFUL A.C.P. STUDENTS.

Dear Mr. Clough,
91 Ivanhoe St., Dudley,
Oct. 2nd, 1912.
I have just been informed that I have been successful in completing the Examination for the Diploma of Associate, which I have obtained with Honours in Algebra and Arithmetic.
Thanking you for your excellent aid and wishing your Classes the best of luck,
I am, yours faithfully,
J. J. BAGGOTT.

Dear Mr. Clough,
"Utopia," Normandy, Guildford,
Oct. 3rd, 1912.
I have heard to-day that I have been successful in obtaining the A.C.P. Diploma. I wish to thank you for your admirable tuition. The fact that I have only been studying for about three months, and have been able to give only a very few hours a week to preparation for the Exam., denotes how thorough your tuition has been.
I should like also to mention that I was exempt from all subjects except "Theory and Practice of Teaching," owing to having obtained Distinctions at the Certificate Examination, for which I was also prepared by your most excellent College.

Again thanking you,
I remain, yours truly,
AMY PALLANT.

Dear Sir,
1 Norton Villas, High St., Minster, Thanet,
Oct. 2nd, 1912.
I have just heard the result of the recent A.C.P. Examination, and am pleased to say that I have passed in English, Arithmetic, and History, and have obtained Honours in Geography.
Thanking you for all the help you have given me,
I remain, yours faithfully,
LILIAN B. WILMAN.

85 Church Av., Leighton, Beds.
October 2nd, 1912.
G. B. Clough, Esq.,
Glad to report success at A.C.P., thanks to your notes. For my opinion of Clough's College, see my letter written previous to publication of results.
Yours truly,
A. H. BARLOW.

N.B.—The letter referred to by Mr. Barlow is herewith given.

Dear Mr. Clough,
Crescent House, Leighton, Beds.,
Sept. 9th, 1912.
May I take this opportunity to thank you for your splendid notes, on which I have relied almost entirely for my preparation? I know it is usual to thank one's teachers after one's name is found on the list of successful candidates. . . . For excellence and full notes and solutions, for common sense and reasonable methods of payment, and for most painstaking correction of answers, commend me to Clough's. I shall always recommend you as the most satisfactory College in every respect. On the result being declared, I will inform you of the same, and whether it is success or failure.
I remain, yours gratefully,
A. H. BARLOW.

Dear Mr. Clough,
10 High Cross Rd., Exeter,
3rd October, 1912.
The result of A.C.P. has just reached me, and I find that I have been successful in History, English, Arithmetic, Geography, Chemistry, and Physiology.
I have obtained Honours in this last subject (Physiology), your papers for which were really excellent.
Thanking you for your kind and earnest attention,
I am, yours faithfully,
FRED YELLAND.

For full particulars of any of CLOUGH'S CLASSES—

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, 1912.

THE Summer Examination commenced on the 26th of August, and was held in London and at the following Local Centres :— Belfast, Birmingham, Bristol, Dublin, Leeds, Liverpool, Manchester, Newcastle-on-Tyne, Plymouth; Hong-Kong (China); Lagos (W. Africa); Port Mourant (Berbice); Bangalore, Dehradun, Ghoragulli, Jubbulpore, Lucknow, Madras, Simla (India); Waterville (U.S.A.).

The total number of candidates examined was 279.

The following are the names of the 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.

Ahier, P.
Belford, F. J.
Chance, J.
Clarke, A. F.
Connors, D.
Cox, F. V.
Curtis, E. V.
Davies, W. R.
Dennys, Brother.
Finch, Miss D. A.
Gayfer, W. T.
Girling, T. W.
Hamilton, B.
Hawley, W.
Hughes, D. T.
Ife, Miss E. E.
Johnson, J.
Jones, G. R.
Jones, J. T.
Kenyon Hitchcock, Miss A. M.
Kilshaw, W.
Lakeman, H. S.
Milner, J. G.
Mulholland, W. J.
Murray, J.
Nichols, J. F.
Ozden, J.
Riley, H.
Sloggett, A. L.
Walker, F. M.
Wharton, G.

ASSOCIATESHIP.

Barbour-MacFarlane, P.
Barlow, A. H.
Baty, C.
Reale, Miss M. A.
Bernthal, J. C.
Billingham, Mrs. G. R.
Blackwell, E. W.
Bostock, J.
Brooks, Miss E. M.
Carlisle, R.
Castle, A.
Church, A. E.
Clay, W. J.
De Gruyter, T. D. D.
Drake, H.
Driver, A. J.
Duffy, J.
Dunn, Miss I. L.
Evans, Miss A. T.
Evans, Miss J. M.
Eyre Walker, C.
Ferguson, T. H.
Fuller, R. W.
Gerrard, W. H. P.
Gill, T. G.
Glaysler, C. R.
Glover, Miss C. L.
Godward, P. M. W.
Greenhaigh, S. W.
Grudgings, W.
Gwilt, J.
Hall, E. C.
Hall, J. M.
Hawkes, J. S.
Healey, F.
Holt, R. J.
Hostler, A. C.
Hudson, W. G.
Hutchins, R. E.
Jackson, A. S.
James, S. C. T.
Jones, L. A.
Jones, T. B.
Kear, B. M.
Lake, Miss E.
Lambe, J.

Mannion, Miss D. M.
Matthews, Miss W.
McCall, D. J.
Moore, A.
Mundy, Miss R. K.
Northcott, H. J.
Osman, Miss A. M.
Owen, C. E.
Paine, A. H.
Pallant, Miss A.
Parker, A. E.
Pearson, W. H.
Phillips, G. T.
Priest, W. G.
Rees, D. L.
Robinson, F. H.
Russell, Miss D. W.
Salmon, A. F.
Scott, Miss I. G.
Simons, A. L.
Sircar, P. K.
Sindall, G. A.
Slater, J.
Smith, H. R.
Spreadbury, W. H.
Stephens, R. H.
Stretton, S. G.
Taylor, Miss F. A.
Wilkinson, P.
Williams, F.
Williams, J. T.
Wilson, T.
Wiseman, W. P.
Young, Miss M. M.
Youngs, W. H.

English Language.

Allen, C. A.
Ashe, G. C.
Astley, J. H.
Baggott, J. J.
Baskerville, Miss A.
Baty, C.
Beale, Miss M. A.
Bernthal, J. C.
Blackburn, Miss M. E.
Blackwell, E. W.
Castle, A.
Cahalan, Miss K.
Cree, J. P.
Cropper, J.
Duffy, J.
Edwards, J. W.
Evans, Miss A. T.
Foyle, W. H.
Fuge, F. H.
Fuller, R. W. (*hon.*)
Glaysler, C. R.
Gill, T. G.
Godivier, Miss A. E. L.
Hall, E. C.
Hann, L. C.
Hewett, W. J.
Holcombe, H. J.
Hopkins, Miss G. A. E.
Hughes, S. D. B.
Jackson, A. S.
Jones, L. A.
Jones, Miss R. W.
Jones, W. H.
Kimpton, Miss G. (*hon.*)
Lake, Miss E.
Marsh, C. J. M.
Mauder, A. G. D.
Mundy, Miss R. K.
Northcott, H. J.
Ondin, Miss J. M. L.
Paine, A. H.
Peacock, T. S.
Poland, Miss M.
Roberts, Miss B.

Robinson, F. H.
Savery, W. M.
Shuttleworth, A.
Silk, Miss E.
Sloggett, A. L.
Smith, J.
Spencer, V. L.
Spreadbury, W. H.
Stephens, R. H.
Stonely, S. L.
Stretton, S. G.
Taylor, Miss F. A.
Taylor, G. E.
White, L. R.
Wilkins, W. H.
Wilkinson, P.
Wilman, Miss L. B.
Yelland, F.

English History.

Alcock, F.
Allen, C. A.
Astley, J. H.
Baggott, J. J.
Baker, C. E.
Beale, Miss M. A.
Bernthal, J. C.
Brook, F.
Cahalan, Miss K.
Castle, A.
Clark, R. I.
Clarke, V. C.
Clegg, A. P.
Cooper, Miss E. E. S.
Cox, F. V.
Cree, J. P.
Cropper, J.
Ducklin, Miss E. M.
Duffy, J.
Edwards, J. M.
Edwards, J. W.
Elliott, Miss M.
Ferguson, T. H. (*hon.*)
Foster, P.
Foyle, W. H.
Fuge, F. H.
Glaysler, C. R. (*hon.*)
Grainger, A. E. V.
Greenhaigh, S. W.
Grudgings, W.
Hall, E. C.
Hall, J. M.
Hamilton, J. M. (*hon.*)
Hands, Miss E. M.
Hann, L. C. (*hon.*)
Hereighty, T.
Holcombe, H. J.
Hughes, S. D. B.
Jackson, A. S.
Jones, W. H.
Ludford, Miss A. H.
Marsh, C. J. M.
Mauder, A. G. D.
Metcalfe, Miss E. E.
Mitchell, W.
Moore, T.
Morgan, F.
Mundy, Miss R. K.
Nolan, W. L.
Northcott, H. J.
Omidely, A. A.
Paine, A. H.
Peacock, T. S.
Price, J. H.
Robins, H. F.
Robinson, F. H. (*hon.*)
Silk, Miss E.
Spreadbury, W. H.
Stephens, R. H.
Stratford, Miss A. T.

Stretton, S. G.
Taylor, Miss F. A.
Thompson, G. H.
Varley, C. L.
White, L. R.
Wilkins, W. H.
Wilkinson, P.
Wilman, Miss L. B.
Wilson, A. E.
Wise, C. H.
Worfolk, H.
Wyatt, J. C.
Yelland, F.

Geography.

Alcock, F.
Ashe, G. C.
Astley, J. H. (*hon.*)
Baggott, J. J.
Baskerville, Miss A.
Baty, C.
Beale, Miss M. A.
Bernthal, J. C.
Bickle, F. J.
Blackwell, E. W.
Bracken, R. J.
Brook, F.
Cahalan, Miss K.
Castle, A.
Clark, R. I.
Clarke, V. C.
Clegg, A. P.
Cree, J. P.
Cropper, J. (*hon.*)
Ducklin, Miss E. M.
Duffy, J.
Edwards, J. M.
Edwards, J. W.
Elliott, Miss M.
Emberson, S. W.
Evans, Miss A. T.
Foyle, W. H.
Fuge, F. H.
Glaysler, C. R. (*hon.*)
Gray, W.
Greenhaigh, S. W.
Hall, E. C.
Hall, J. M.
Hamilton, J. M. (*hon.*)
Harvey, Miss M.
Hennessy, Miss B. F.
Hereighty, T.
Holcombe, H. J.
Hudson, W. L.
Jackson, A. S.
Jackson, T. F.
La Rose, C. F.
Marsh, C. J. M.
Matthews, Miss W.
Mauder, A. G. D.
Metcalfe, Miss E. E.
Milton, Miss A. F.
Mitchell, W.
Morgan, F.
Munford, Miss I. A. L.
Mundy, Miss R. K.
Northcott, H. J. (*hon.*)
Ozden, J.
Oliver, Miss I. B.
Omidely, A. A.
Paine, A. H. (*hon.*)
Peacock, T. S.
Pearson, W. H. (*hon.*)
Roberts, Miss B.
Robins, H. F.
Robinson, F. H. (*hon.*)
Savery, W. M.
Silk, Miss E. G.
Sindall, G. A.
Smith, C. H. (*hon.*)
Smith, J.

Spreadbury, W. H. (*hon.*)
Stephens, R. H.
Stonely, S. L.
Stretton, S. G.
Tapley, Miss L. E.
Taylor, Miss F. A.
Thompson, G. H.
Varley, C. L.
White, L. R.
Wilkinson, P.
Wilman, Miss L. B. (*hon.*)
Wilson, E. E.
Wilson, T.
Worfolk, H.
Wyatt, J. C.
Yelland, F.

Arithmetic.

Alcock, F.
Astley, J. H. (*hon.*)
Bagnall, W.
Baskerville, Miss A.
Baty, C.
Bickle, F. J.
Cahalan, Miss K.
Castle, A.
Clark, R. I.
Clarke, V. C.
Cox, F. V.
Cranfield, Miss E. E.
Cropper, J. (*hon.*)
Dean, V. J.
Ducklin, Miss E. M.
Duffy, J.
Dunn, Miss I. L.
Edwards, J. M. (*hon.*)
Elliott, Miss M.
Foster, P.
Fuge, F. H.
Fuller, R. W.
Glaysler, C. R.
Gray, W.
Greenhaigh, S. W.
Griffith, Miss E. L.
Grudgings, W.
Hall, E. C.
Harris, P. H.
Harvey, Miss M.
Hereighty, T.
Hewett, W. J.
Hostler, A. C.
Jackson, A. S.
Jackson, T. F.
Jones, Miss R. W.
Jones, W. H.
Kimpton, Miss G.
Kitson, H.
Marsh, C. J. M.
Matthews, Miss W.
Moore, T.
Morgan, F.
Munford, Miss I. A. L.
Northcott, H. J.
Oliver, Miss I. B.
Ondin, Miss J. M. L.
Paine, A. H.
Peacock, T. S.
Pedely, J. E.
Pridham, H.
Robins, H. F.
Robinson, F. H.
Rungary, Miss F. E. M.
Scott, T.
Silk, Miss E.
Spreadbury, W. H.
Stonely, S. L.
Stretton, S. G. (*hon.*)
Taylor, Miss F. A.
Taylor, G. E.
Thompson, G. H.
Wilkins, W. H.
Wilkinson, P.

Arithmetic (cont.)

Wilman, Miss L. B.
Worfolk, H.
Wyatt, J. C.
Yelland, F.

Mathematics.**LICENTIATESHIP.**

Chance, J.
Jones, G. R.
Ogden, J.
Tindle, G. D.

ASSOCIATESHIP.

Astley, J. H.
Cropper, J.
Dean, V. J.
Edwards, J. M.

Grudgings, W.
Hall, E. C.
Heathcote, W. T.
Holt, R. J.
Jackson, A. S.
Jackson, T. F.
Jones, Miss R. W.
Maccormac, M. C.
McAfee, Miss F. L.
Morgan, F.
Mumford, Miss I. A. L.
Nelson, G. W.
Nolan, W. L.
Northcott, H. J.
Owen, L. A.
Paine, A. H.
Peacock, T. S.
Robinson, F. H.
Spencer, V. L.
Stretton, S. G. (*hon. alg.*)
Sutton, C. H.
Wilkinson, P.
Worfolk, H.

Languages.

e. = Higher English.
f. = French, *g.* = German,
l. = Latin. *s.* = Spanish.

LICENTIATESHIP.

Lakeman, H. S. *ef.*
Milner, J. G. *cf.*
Patterson, W. R. *gs.*

ASSOCIATESHIP.

Baty, C. *f.*
Cree, J. P. *l.*
Cundell, T. *f.*
Duffy, J. *f.*
Elliott, Miss M. *f.*
Godivier, Miss A. E. L. *f.*
Hereighty, T. *f.*
Moore, Miss H. E. *f.*
Oudin, Miss J. M. L. *f.*
Roberts, Miss B. *f.*
Rotherham, C. L. *l.*
Stephens, R. H. *f.*

Science.

a. = Astronomy.
b. = Botany.
ch. = Chemistry.
g. = Geology.
m. = Mechanics.
p. = Experimental
Physics.
ph. = Annual Physiology.
z. = Zoology.

LICENTIATESHIP.

Chance, J. *p.m.*
Culshaw, W. H. *m.ph.*
Curtis, E. V. *m.ph.*
Gayfer, W. T. *a.ch. (hon.)*
Greenfield, B. A. *ph.z.*
Johnson, J. *a.ph.*
Jones, G. R.
p. (hon.) ch. (hon.)
Parkes, J. A. *ph.b.*

ASSOCIATESHIP.

Evans, Miss A. T. *ph.b.*
Fuller, R. W.
ch. (hon.) ph. (hon.)
Glaysher, C. R. *p.ph.*
Heslop, C. *ph.g.*
Hostler, A. C. *ph.b.*
Meikle, J. C. *ph.b.*
Scott, T. *ch.ph.*
Spiers, Miss L. C. E. *ph.b.*
Spreadbury, W. H. *ph.z.*
Taylor, Miss F. A. *ch.ph.*
Yelland, F. *ch.ph. (hon.)*

Botany.*ASSOCIATESHIP.**

Lobley, J. A.

*Under old Regulations.

Diplomas were awarded to the following, who had satisfied all the prescribed conditions:—

LICENTIATESHIP.

Ahler, P.
Belford, F. J.
Chance, J.
Clarke, A. F.
Connors, D.
Curtis, E. V.
Finch, Miss D. A.
Hamilton, B.
Hughes, D. T.
Jones, G. R.
Jones, J. T.
Kenyon Hitchcock, Miss
A. M.
Lakeman, H. S.
Nichols, J. F.
Parkes, J. A.
Tindle, G. D.

ASSOCIATESHIP.

Barlow, A. H.
Bernthal, J. C.
Billingham, Mrs. G. R.
Bostock, J.
Brook, F.
Brooks, Miss E. M.
Church, A. E.
Cooper, Miss E. E. S.
Cox, F. V.
Cundell, T.
Drake, H.
Duffy, J.
Evans, Miss J. M.
Fuller, R. W.
Glaysher, C. R.
Glover, Miss C. L.
Godward, P. M. W.

Grainger, A. E. V.
Greenfield, B. A.
Griffith, Miss E. L.
Hall, E. C.
Hands, Miss E. M.
Harris, P. H.
Healey, F.
Heslop, C.
Hopkins, Miss A. E.
Hudson, W. L.
Hughes, S. D. B.
Hutchins, R. E.
Jackson, A. S.
James, S. C. T.
Jones, T. E.
Kear, B. M.
Kitson, H.
Lobley, J. A.
Mannion, Miss D. M.

Mannard, A. G. D.
McAfee, Miss F. L.
McCall, D. J.
Meikle, J. C.
Milton, Miss A. F.
Mundy, Miss R. K.
Nelson, G. W.
Northcott, H. J.
Osman, Miss A. M.
Paine, A. H.
Pallant, Miss A.
Parker, A. E.
Pearson, W. H.
Phillips, G. T.
Price, J. H.
Priest, W. G.
Pridham, H.
Rees, D. L.
Robinson, F. R.

Russell, Miss D. W.
Salmon, A. F.
Shuttleworth, A.
Slater, J.
Spencer, V. L.
Spreadbury, W. H.
Stretton, S. G.
Taylor, Miss F. A.
Wilkinson, P.
Williams, F.
Williams, J. T.
Wilson, T.
Wise, C. H.
Wiseman, W. P.
Young, Miss M. M.
Youngs, W. H.

The Prize for **Natural Sciences** was awarded to George Randall Jones.

THE COLLEGE OF PRECEPTORS.**MEETING OF THE COUNCIL.**

A MEETING of the Council took place at the College, Bloomsbury Square, on October 16. Present: Rev. Dr. Scott, Vice-President, in the chair; Prof. Adams, Dr. Armitage Smith, Mr. Bain, Rev. J. O. Bevan, Rev. J. B. Blomfield, Mr. Brown, Mr. Charles, Miss Dawes, Mrs. Felkin, Mr. Howe, Mr. Holland, Rev. R. Lee, Mr. Longsdon, Mr. Millar Inglis, Mr. Morgan, Mr. Pendlebury, Rev. C. J. Smith, Mr. Starbuck, Rev. Canon Swallow, Rev. J. Twentyman, Mr. Vincent, 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 above.) The prize of £5 for proficiency in Natural Sciences was awarded to Mr. G. R. Jones.

The report of the Literary Committee stated that steps were being taken for the removal from the library of books which were no longer of use to members of the College.

The report of the Finance Committee was adopted, and a grant of £10 from the College Benevolent Fund was made to a life member of the College.

The House Committee was instructed to make suitable arrangements for providing office accommodation in the College building for the Teachers' Registration Council, as well as for the meetings of the Council, on terms to be arranged between the executives of the two bodies.

Mr. Longsdon was appointed to act as the representative of the College at the Kinematograph Conference to take place in February 1913.

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

By the AUTHORS.—Brown and Johnson's *The Home of Man*, Part II, Europe.
By BLACKIE & SON.—Bird's Test Papers in French; Caxton's Book of Nature Poetry; Dyer's *Education and National Life*; Groves' *Le Texte Expliqué*; Warner's *Tillage, Trade, and Invention*.

By W. B. CLIVE.—London Matriculation Directory, September, 1913; Penn's *Cæsar's Gallic War*, Book V, Chaps. 25-28; Stewart and Satterly's *Juniour Sound and Light*; Tate's *New Junior Latin Reader*; Thompson and Penn's *New Junior Latin Course*.

By MACMILLAN & Co.—Perry and Turquet's *Continents, Cités, Hommes*.
By METHUEN & Co.—Cape's *Short History of Early England*.
Calendar of the Aberdeen University.
Calendar of the St. Andrews University.
Calendar of the National University of Ireland.
Calendar of the University of Leeds.
Calendar of the Victoria University of Manchester.
Calendar of the University College, Cork.
Calendar of the Armstrong College, Newcastle-on-Tyne.
Calendar of the Bedford College for Women.
Calendar of the Royal College of Surgeons of England.
Examination Papers of the University of Manitoba, 1912.

HEAD MISTRESSES' SECTION OF THE COLLEGE.

The first meeting of the above Section was held at the College on October 23. The following were elected members of the Advisory Committee: Miss E. Armstrong, Miss L. S. Byles, Miss F. J. Lawford, Miss H. A. Martin, and Miss K. Stevens. Miss Lawford was appointed Chairman, and Miss Byles Hon. Secretary.

It was resolved: (a) that the section should include head mistresses of private secondary schools as well as head mistresses of public secondary schools; (b) that meetings of the Committee should be held at least once in every term; and (c) that retired head mistresses should be invited to take part in the work of the Section.

ASSISTANT MASTERS' SECTION OF THE COLLEGE.

The first meeting of the above Section was held at the College on October 25. A report of the proceedings will appear in the December number of *The Educational Times*.

PRIVATE SCHOOLS' SECTION OF THE COLLEGE.

The first meeting of the above Section was held at the College on October 26. A report of the proceedings will appear in the December number of *The Educational Times*.

GIFT BOOKS.

Greek Sculpture. 100 Illustrations with an Introduction. By John Warwick. (3s. 6d. net. Otto Schulze.)

An introduction in large type of some twenty pages gives the tyro the means of appreciating and understanding the value of Greek sculpture. The hundred photographs that follow, of the chief masterpieces, are very finely reproduced. The low price at which the book is published should secure its entrance to sixth-form libraries.

Old Rhymes with New Tunes. Composed by Richard Runciman Terry. Illustrated by Gabriel Pippet. (2s. 6d. net. Longmans.)

["Georgie Porgie," "Little Jack Horner," "Humpty Dumpty," and many other old favourites are printed in picturesque type, set to music, and illustrated with many excellent black-and-white drawings and thumb-nail sketches.

The Book of the Kingdom. Being the Bible Story from the Birth of Samuel to the Death of David. By S. B. Macy. With coloured frontispiece, and fifty black-and-white illustrations by T. H. Robinson. (3s. 6d. net. Longmans.)

This is a large volume printed in clear type on excellent paper. The illustrations are well drawn and really illustrative of the text. To a great extent the words of the Bible are retained. Purchasers may feel that they are getting extraordinary value for their money. Mrs. Macy has a pleasant style.

As it is in Heaven. By Alfred Clark. With Illustrations by Frank C. Papé. (7s. 6d. net. Sampson Low.)

Bobbie Burton falls asleep in death and wakes up to find himself in heaven. Here he meets many old friends either of real life or of books. He meets his animal pets too. Bobbie's conversations with them, and the stories which they tell him, make up the volume. The treatment throughout is reverent, and the illustrations are very captivating.

The New Forest. Described by Elizabeth Godfrey; pictured by E. W. Haslehurst. (2s. net. Blackie.)

A well written account of the New Forest, with charming illustrations in colour.

(1) "Days with the Great Composers." Second Series. *Chopin, Wagner, Gounod.* (2) "Days with the Lyric Poets."—*Keats, Longfellow, Burns.* (3s. 6d. each net. Hodder & Stoughton.)

These two books are well produced; good type and paper and numerous coloured illustrations. The writer describes a day in the life of each of the poets or musicians: in the case of the former with descriptions of the music, and in the case of the latter with frequent quotations from the poems. The books afford pleasant reading, but the main charm consists in the well selected and beautifully printed illustrations.

(1) *Cranford.* By Mrs. Gaskell. (3s. 6d.) (2) *Brothers and Sisters.* By Mrs. Marshall. (2s. 6d.) (3) *Millicent Leigh.* By Mrs. Marshall. (2s.) (Seeley.)

(1) "Cranford" is appropriately illustrated in colour by H. M. Brock. On the title-page the copy we have received is described as by Mrs. Gaskell; on the cover appears the name Mary Russell Mitford. It is a curious mistake. (2) and (3) Mrs. Marshall's books still retain their popularity. They are illustrated, and printed on thick paper with wide margins.

Green Willow and other Japanese Fairy Tales. By Grace James, with illustrations in colour by Warwick Goble. (5s. net. Macmillan.)

Charming stories charmingly illustrated in the Japanese manner. There are thirty-eight stories and sixteen page illustrations, beautifully reproduced. The stories are written simply and in homely style. A glossary would have been useful: such words as "tengu," "rin," "biwa," need explanation for the English reader.

The English Fairy Book. By Ernest Rhys, with illustrations by Frederic C. Whitney. (6s. Fisher Unwin.)

Many old friends appear in this volume; but there are many stories that are less well known, taken from the Chap-books. Lyrics are also introduced, from Lyly, Herrick, Shakespeare, and Drayton. Mr. Rhys has retold the tales for a seven-year-old listener.

The Book of Saints and Heroes. By Mrs. Lang. With preface by Andrew Lang. (6s. Longmans.)

Mr. H. J. Ford supplies twelve coloured plates and numerous other illustrations to these interesting stories. Mrs. Lang casts her net wide, and writes with earnestness and simplicity.

(1) *Thrilling Tales of Great Events.* By Walter Wood. (2) *The Treasure Galleon.* By Rowland Walker. (Each 3s. 6d. Routledge.)

The first of these two books consists of tales of battles by sea or land, from the Crimea to the Boer War. They are retold by Mr. Wood from narratives he has actually heard from survivors in each incident he describes. The second book is described on the title-page as "A Tale of Sea-dog Days." Both volumes are illustrated.

Wild Flowers as they Grow. Photographed in Colour direct from Nature by H. Essenhigh Corke. With Descriptive Text by G. Clarke Nuttall. Vol. IV. (5s. net. Cassell.)

The fourth volume of this series contains coloured illustrations that are really delightful in their beauty and accuracy. The letterpress is full of gossip information as well as botanical lore.

SIXTY YEARS AGO.

LAST month we gave a quotation from *The Educational Times* of October, 1852, indicating that the Government, in appointing inspectors of schools, naturally took the opportunity of showing themselves to be patrons of literary men. In the November number of the same year there is a spirited protest from a correspondent suggesting that inspectors of schools ought to have some acquaintance with schools and some interest in education. He points out that, when an inspector does show any knowledge about schools, it is because he has learnt from the inspected what a school ought to be.

The position of the daily governess, who is said to be able to earn £50 a year at the most, is the subject of a scathing article from which we quote the following:—

It is not the poor governess alone that claims our sympathy. We have a word to say as well on behalf of the poor children whose education is thus purchased. What sort of an education is a daily governess, placed in the circumstances described, likely to impart? Is there a moral probability of her acting in any other spirit than that of a hireling? Must not the very vileness of the price at which she has been hired, and the miserable state of pinching poverty and gnawing care which is the consequence of the inhuman bargain, remind her at every instant of her toilsome, cheerless existence, that she is regarded merely as an hireling, and that a hireling of the baser sort—far below the position of the scullery-maid who performs the most menial offices of the house? Is it reasonable to expect that a person whose necessity is thus inhumanly taken advantage of . . . should bring to the all-important task imposed on her that spirit of love, that sense of moral responsibility, that cheerfulness and elasticity of mind without which education sinks down to a moral and intellectual drudgery, a mere carding and milling of the child's mind and heart, the very reverse of what education should be?

One more point and we have done. Can any mother believe that a blessing from on high will rest upon the education of her children thus tainted by the most unjust and inhuman usage of the person on whom a portion of the task is devolved? Are not mothers afraid lest their iniquity towards the governess be visited upon the children?

The reviewer of sixty years ago could be severe, as witness "Hints on Education," by James Willasey. Another "system" put forth, too, as "improved" and "comprehensive," and adapted, so runs the title-page, "to the present state of society in the British Isles, and calculated to discover and encourage the rising geniuses of the realm." Who Mr. James Willasey is we possess no direct means of knowing, for all that he permits us to learn from him respecting himself is that he has had long experience in teaching youth of both sexes. The result of this experience he sums up at page 6:—

"Children are apt to read the Holy Scriptures with indifference or inattention in public schools, and generally regard schoolmasters who attempt to expound them as pre-umptuous quacks." We regret that he was not better appreciated, or rather that the youth of both sexes placed under his guidance should have exhibited so strongly their ingratitude and ill-breeding.

THE International Kinematograph Exhibition and Conference will be held at Olympia, February 1913. Mr. Lyttelton and Dr. Gow have joined the Advisory Committee, and the College of Preceptors has appointed a representative.

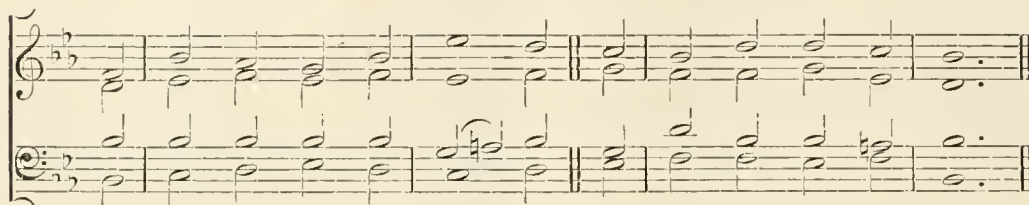
In reference to a "case" the *A.M.A.* writes:—"We are pleased to be able to announce that an entirely satisfactory result has been arrived at, in consequence of joint action between the I.A.H.M. and the I.A.A.M. Once more the value of the Joint Arbitration Committee of head masters and assistants has been made evident. We are learning, by degrees, the value of union and co-operation, and thus the growth of the professional spirit day by day becomes more manifest."

NON NOBIS.

Music by H. V. JERVIS-READ. Words by the late KENNETH JOHN FREEMAN (1882-1906).

Mr. FREEMAN, after a life of exceptional brilliancy and promise as Scholar of Winchester College, Scholar of New College, Oxford, and Assistant Master in Winchester College, died in 1906 at the age of 24. His hymn, "Non Nobis," he left unfinished. Mr. M. J. RENDALL, Head Master of Winchester College, has written the last four lines of verses 2 and 4, and the whole of the final verse.

7.6.7.6. D.



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|---|--|
| <p>1. We thank thee first, our Father,
 Beneath Whose Hand did grow
 Our grassy open downland,
 Our silver streams below;
 Whose Finger paints our meadows
 And tints the clouds above,
 Whose Mercy saves our country
 And makes her worth our love.</p> <p>2. We thank Thee for our Founder,
 And all who wrought his plan,
 Through whom we learn the manners
 That make the Christian man:
 A life of high ambition,
 And yet a humble heart;
 And strength that can be gentle,
 And skill that knows no art.</p> <p>3. We thank Thee for our fathers,
 Who trod where now we tread,
 Our ageless roll of heroes,
 Our unremembered dead,</p> | <p>Whose grave the world encircles
 From South to Northern ice,
 Or lived and died forgotten
 In patient sacrifice.</p> <p>4. We thank Thee for Thy favour,
 As for Thy grace we pray
 On every good endeavour
 In house, and work, and play:
 Bless all the hours of boyhood,
 The sun, the wind, the rain:
 May strength be born of weakness,
 And sorrow turn to gain.</p> <p>5. Oh, grant that now and ever
 No act of ours may cast
 A stain on these fair meadows,
 Or gates, where heroes passed;
 To-day, and through the ages,
 Their Faith shall be our Shield,
 Their Hope shall light our darkness,
 Their Love shall win the field.</p> |
|---|--|

SCHOOL LIGHTING.

By DANIEL H. OGLEY, B.Eng., Royal Technical Institute, Salford.

THE premature decay of eyesight, as evidenced by the increasing number of spectacle wearers, called forth from the German Emperor some short time ago the remark that man was not born to wear glasses. It is not only in Germany, however, that early deterioration exists, as a perusal of the reports of school medical authorities will make it clear that in Britain a large percentage of children are defective as regards sight. Some argue that the percentage was as great, or even greater, in earlier times, and that it is only the medical examinations of our time that is giving voice to the complaint; but to anyone who has made a study of illumination and of the effect of sources of high intrinsic brilliancy on the nerves of the eye, it is felt that unscientific lighting conditions are, in part at least, to blame.

The science of illumination has been, in comparison with the attention that has been given to other branches of the subject, woefully neglected. Gas and electric engineers were, until quite recently, much more concerned with the question of obtaining an additional 1 per cent. from a boiler or dynamo than with that of the correct disposition of the light units, and this in spite of the fact that a much greater saving could easily be effected by anyone who understood the requirements of good illumination. It is felt more and more strongly that what is really needed is an illuminating engineer, apart from the gas or electrical engineer, although the latter by special study could, no doubt, qualify for the position of the former.

School lighting, since it is in their school days that children are in the most easily influenced stage of their development, needs special attention; and one cannot help but feel that the contractor with the rule-of-thumb methods should be banished and his place taken by the expert before further damage is done. The medical man examines the eyesight of a child, finds that it is defective, gives an order for certain kinds of glasses, and proceeds with the examination of the next child. The cause is hardly ever inquired into, though in many cases it would be found that incorrect illumination of the premises was in great part to blame. If in addition to the examination of the children the school was also examined and the effects of the light units carefully studied, much more good would undoubtedly result on the removal of the cause of the mischief. It is quite easy to arrange for good illumination, although a departure from the recognized standard is to many people, no doubt, a crime.

The eye has through the ages become used to light from the sun—that is, to light coming from above. The source itself is not visible, and objects are seen by reflected and diffused light only. The entrance into the eye of intense light from any other direction causes great discomfort, and may result in injury to the nerves. This is because the eye has no protection from light from any source but above, and at once it becomes evident that the sources of illumination should not be within direct vision of the scholars. That this is not so is apparent on viewing the lighting arrangements of any school, for in almost all cases the lamps are hung so that direct light can enter the eyes of practically the whole of the class.

The normal eye can regard with equanimity a source whose intrinsic brilliancy does not exceed, say, five candle-power per square inch. An ordinary candle placed within the line of vision will produce no harmful effect. The intrinsic brilliancy of the poorest carbon lamp is over fifty, and in the case of a good metal lamp may equal eight hundred candle-power per square inch. The result of placing such a lamp in the line of vision is that the pupil contracts in order to protect the retina from the entrance of too much light, dazzling results, and the rest of the field appears too feebly illuminated for clear and easy vision, although it may be quite well enough illuminated under ordinary circumstances.

It cannot be too strongly emphasized that exposed light

sources of great intrinsic brilliancy constitute a severe source of eye trouble when placed directly in the field of view, and should be avoided under all circumstances. Evening students are subjected to this annoyance to a much greater degree than day students are, and when so seated that a lamp is in the direct line of vision find it practically impossible to distinguish characters on the board. The excessive brightness produces an intense image and causes injury to the retina, while the pupil contracting to protect the eye reduces the amount of light entering from the board, and so renders the characters indistinct. Lecturers have been known frequently to complain of headache and eye-strain after evening lectures, and in nearly all cases it has been found that the board was illuminated by means of a row of headlights placed directly within the field of view. The field may, on the other hand, be too feebly illuminated, and in this case, the images not being distinct, the eye grows fatigued in its effort to sharpen them.

If, owing to existing conditions, it is found impossible to avoid placing the lamps within view of the scholars, a diffusing medium should be used to reduce the brightness of the surface. The lamps may be frosted or use made of some of the many excellent globes at present on the market. Critics will immediately urge loss of efficiency, but in view of the high efficiency of the present-day illuminants the loss of some part of the available energy is to be preferred to the ruin of eyesight.

The question arises as to how the lights should be placed to avoid direct vision. It is, of course, possible to place them at a sufficient height to avoid any but occasional glimpses of them, but if the direct system is in use the better plan is to insist on adequate shading. The inverted system has much to commend it. The light is thrown on the ceiling, which latter reflects by diffuse reflection, the source being completely out of the field of view. Arc lamps give trouble and require constant attention, so that for schools with no skilled attendant the use of glow lamps is to be recommended. The absence of shadows is rather wearisome, and objects appear flat, tiring the eye in the effort to perceive them correctly. The inverted system, with a certain amount of direct lighting to produce shadows, is perhaps better.

The illumination of the board is of special importance. Head lights are injurious to the lecturer, and produce glare if there is any polish on the board surface. Very rarely is the surface correctly illuminated for all members of the class. Lighting by lamps placed along the edges and screened from view gives good results, although it requires a dead black surface to avoid reflection. Reflection should also be avoided from desks and matter placed thereon. In this respect may be mentioned the irritation caused by reflection from white road surfaces, such as that of a promenade or stretch of shore.

The same annoying glare may be caused by bad disposition of the light units and the direction of the light should be given very careful attention to ensure that no harmful reflection will take place. If light is received over the left shoulder, glare will be avoided. The paper surface, going to extremes, may even receive attention, and that with a high surface glaze avoided as giving rise to harmful glare.

A point on which too much stress cannot be laid applies to the steadiness of the light supply. It is well known that the eye is provided with an automatic screen—the iris—which regulates the amount of light entering the eye. This screen is not instantaneous in its action, as is evident on passing from a dark to light room. If the source is varying in intensity, the iris can no longer adjust itself sufficiently quickly to protect the retina, which becomes strained in its effort to maintain clear vision in the varying field. Flickering gas jets are sources of much trouble, and in this connexion it may be remarked that metal filament lamps, owing to the low specific heat of the metal, respond much more readily to changes in pressure than do carbon ones. Their intensity will then vary more on a circuit in which the pressure is not adequately controlled—or, in other words, flickering will be more pronounced.

The illuminants employed should yield a spectrum resembling that of daylight as closely as possible. Hygienic considerations require an avoidance of light containing an excess of ultra-violet rays. The mercury vapour lamp, though useful in many ways, should not be used for school lighting. Perhaps preference should be given to light of a faintly reddish tint, as it makes objects appear warm and cheerful, and for this reason the carbon lamp is to be preferred to the metal lamp yielding a whiter light.

With regard to the natural or daylight illumination, attention should be paid to the fact that the whole of the room is sufficiently illuminated. In many cases the windows are so placed that those close to them are in far too strong a light, while others at some little distance experience difficulty in appreciating detail. To receive light over the left shoulder, it would appear that the windows should be placed to the left of the class, or the desks arranged to produce the desired effect. Direct measurement of illumination should be insisted upon, remembering that for most purposes an illumination of one foot-candle is sufficient. It is to be hoped that in time the question will receive the attention it deserves, and the whole of the lighting carefully planned before the construction of any building is commenced.

PROFESSOR SKEAT.

IN the middle of the last vacation I was saddened, though not altogether surprised, to learn of the death of Dr. Morgan; and, in common with other Jesus men, I realized that the very embodiment of the spirit of my College had passed in the personality of its Master. And now it has come to me to feel that another great factor in the lives of many men, bound by a tie almost as close as that of a College and privileged as I was privileged, has gone from amongst them. Professor Skeat died on October 6th. The world of scholarship has lost one of its foremost names, and the school of English at Cambridge its revered leader and head.

Many notices of his life and work have appeared in the press. The chief facts concerning him have been stated again and again. Born in 1835, educated at King's College School, Highgate School, and Christ's College, he first attracted attention by a distinct mathematical ability, and was made a Fellow. A country curacy proving too great a strain for his health, he was given a mathematical lectureship at Christ's. Returning to Cambridge after four years' absence, he never left the University again.

The work of his life began while he was thus occupied with an entirely different subject. He had already become interested in English studies, and his enthusiasm grew as he pursued them in the time left from his lecturing work. When the Elrington and Bosworth professorship of Anglo-Saxon was founded in 1878 there was only one man for the post. Cambridge honoured herself by finding him.

His literary output was enormous. His great "Chaucer" and his even greater "Etymological Dictionary" are household words. His "Piers Plowman," his "Place-Names," and a great number of his other writings are familiar to scholars and to not a few of the general public. In my time, amongst multitudinous other tasks, he was making yet another attempt to versify Chaucer in modern English; though, as I believe he said to me, he could not well hope to succeed where Dryden had failed. His strictly "Anglo-Saxon" work is, from its very nature, less known popularly than his writings on medieval subjects; some, I know, has been long out of print.

But it is, of course, not for me to speak of either the detail or the influence of his labours; and it is, indeed, open to doubt whether an objective estimate of the academic rank of a man of Skeat's great scholarship could be yet made by any of his contemporaries, however qualified and however confident of his qualification. Still more is it questionable whether such an attempt should appear in an obituary published a few hours after his death, in company with remarks

upon the Professor's personal appearance, walk, and method of receiving callers. It should rest with Dr. Gollancz, the most distinguished of Skeat's pupils and the one who knew him best, to give the world at length a considered judgment of his great and magnificent work.

I would only speak briefly of my personal knowledge of him. It is inconceivable to me—and I am very sure that it will be inconceivable to all who were under Skeat, at any rate, in my time—how he could ever have given the impression of being aloof, cold, or "ungettable." Exactly the reverse was the case with us. We always felt that he was the kindest and most genial of men. He would always willingly stop after lectures to explain difficulties, sometimes necessarily quite elementary in character. As I have already related in the daily press, he once came to the rescue of three wretched undergraduates—I was one—who, through a misunderstanding of the syllabus, had left undone a fatal slice of the Anglo-Saxon prescribed for the Tripos: actually constituting himself a sort of honorary coach for a series of evenings during the last month.

He took the keenest interest, moreover, in the two inter-collegiate literary societies, which, I believe, still exist. He would often visit our meetings in undergraduates' rooms and give a delightful talk, which would leave us thrilled with his enthusiasm, and even more than ever in awe of his learning.

He was more than a pioneer and a popularizer. His name will surely stand in the world of letters as synonymous with the profoundest and most accurate scholarship, and his students will cherish his memory with admiration and respectful esteem.

A. C. BRAY.

CURRENT EVENTS.

THE next Members' Meeting at the College of Preceptors will be on Wednesday, November 20, at 7 p.m. Dr. Sophie Bryant will read a paper on "Science and the Home Arts."

MONSIEUR JACQUES-DALCROZE, assisted by six advanced pupils of his college, will lecture and demonstrate in England on the following dates:—Friday, November 15, at 8 p.m., in the Caxton Hall, Westminster. Saturday, November 16, at 3 p.m., Ladies' College, Cheltenham. Monday and Tuesday, November 18 and 19, at 7 p.m., Leeds, by invitation of the University; Albert Hall, November 18; Town Hall, November 19. Wednesday, November 20, at 5.30 p.m., at Manchester, by invitation of the University. Saturday, November 23, at 3 p.m., at the Goldsmiths' College, New Cross Station. Monday, November 25, at 8.15 p.m., in the Great Hall of the London University, South Kensington. Further information may be obtained by post from Mr. P. B. Ingham, Merchant Taylors School, Charterhouse Square, E.C.

THE REV. R. F. ELWYN, Head Master of the King's School, Rochester, has placed his resignation in the hands of the Dean and Chapter, governors of the school. He is suffering from a breakdown in health. Before going to Rochester three years ago, Mr. Elwyn was assistant master at Felsted School. He is a son of the late Canon Elwyn, Master of Charterhouse.

AT the jubilee service, recently held at Clifton College, which was opened on September 30, 1862, the service of fifty years ago was repeated in detail, even to the sermon, which comprised extracts from the oration delivered in 1862 by the first head master, Dr. Percival, now Bishop of Hereford.

THE next combined examination for fifty-seven Entrance Scholarships and a large number of Exhibitions, at Pembroke, Gonville and Caius, Jesus, Christ's, St. John's, and Emmanuel Colleges, Cambridge, will be held on Tuesday, December 3, 1912, and following days, commencing at 9 a.m. on Tuesday, December 3.

THE President of the Board of Education has appointed the following to be members of the Consultative Committee:—Miss M. A. Douglas, Mr. Frank W. Goldstone, M.P., Dr. H. A. Powell, Mr. R. H. Tawney, Mr. F. F. Urquhart. These appointments, which are for a period of six years from October 1, 1912, are made to fill the vacancies caused by the retirement of Mrs. Sophie Bryant,

Sir Henry Hibbert, Mr. Marshall Jackman, Mr. Albert Mansbridge, and Mr. Norman Moore, whose terms of office have expired.

MR. G. R. DAY has been elected Junior Fellow and Lecturer in History at Emmanuel College, Cambridge.

THE Agent-General for Tasmania (56 Victoria Street, S.W.) wishes it to be known that teachers may borrow Tasmanian lantern slides, with no expense except the return postage.

THE University of Cambridge have now issued regulations for the examinations for Certificates of Proficiency in Modern Languages (French, German, and English) and Religious Knowledge. The certificates are designed for teachers who desire a proof of their knowledge of the subjects. The first examination will be held in June, 1913. The certificate of proficiency in English is designed for, but is not limited to, foreign students.

ON the occasion of the two hundred and fiftieth anniversary of the granting of a charter to Bradford Grammar School, the Head Master, the Rev. W. H. Keeling, was made a freeman of the city. Mr. Keeling has been Head Master since 1871.

THE University of Oxford has received during the last year a considerable number of gifts, including £30,000 from Mr. Walter Morrison, £10,000 from Miss Mary Shillito, and a legacy of £2,000 from the late Mr. Reginald Cardwell.

A SCHEME has now been arranged for the administration of the gift by Mr. Ratan Tata, of Bombay, of the sum of £1,400 a year for three years, to promote the study and further the knowledge of the principles and methods of preventing and relieving destitution and poverty. The objects of the gift will be carried out by the collection and consideration of materials and information bearing on the subject, by the formation of a bureau for the provision and dissemination of information, and by the increase of knowledge of the principles and methods of prevention and relief by lectures and publications, and in other ways. An office has been rented for the foundation at the London School of Economics. Mr. L. T. Hobhouse, Martin White Professor of Sociology in the University, will be honorary director, and Mr. E. J. Urwick, Tooke Professor of Economics at King's College, will be honorary secretary. Mr. R. H. Tawney, sometime Scholar of Balliol, who has been connected with the Workers' Educational Association, has been appointed director and will take up his duties in January.

THE Free Church Council are organizing for a passive resistance campaign in relation to education, to open in February. Dr. Clifford states that it is proposed to make the demand for the abolition of clericalism in education as wide as possible.

THE "Oedipus Tyrannus" of Sophocles, in the original Greek, will be acted by members of Cambridge University, at 8.30 p.m., on Tuesday, November 26, Wednesday, November 27, Thursday, November 28, and Friday, November 29, at 8.30; and on Saturday, November 30, at 2.30 and 8.30. An acting edition of the play has been prepared, with the translation by the late R. C. Jebb, which, as in 1887, has been kindly placed at the disposal of the Committee. The incidental music, written by Prof. Sir Charles Villiers Stanford, of Trinity College, Doctor in Music, for the performance in 1887, will shortly be on sale. The scenery is painted by Mr. R. C. McCleery.

SUBJECT to the Board of Education making an adequate grant, the L.C.C. Education Committee is to be recommended by the Higher Education Sub-Committee to co-operate in the training of London boys for the mercantile marine by the giving of grants in aid of scholarships. The cost of training a boy is from £25 to £30 per annum, and it is usual to provide a two-years' course. The Sub-Committee considers that London should be sending at least five hundred boys to sea annually.

MR. D. J. JONES, M.A., of the University of Wales, and Mr. J. K. Robertson, M.A., of the University of Toronto, have been awarded "advanced student" exhibitions at Emmanuel College, Cambridge.

PREACHING at a harvest festival service at Slough, the Head Master of Eton (the Rev. the Hon. E. Lyttelton) said the conditions of life had got very much more acute during the last few years, and the position was filling thoughtful minds with grave anxiety. It was principally due to the great change in the wishes, aspirations, and aims of humanity at large. Material comforts had come to be

thought by the mass of mankind as the first thing to be aimed at. All the present difficulties were coming from that one simple fact, that the nations of the earth were striving after a limited number of material good things—wealth, riches, comfort, luxuries, and so on. There were thousands of people who would like to spend less money than they did, but somehow they were under the pressure of public opinion, which told them that unless they advanced in what was called the social scale, and became a little richer and spent more than they did, there was something failing. "Are you getting on?" did not now mean, Were they learning more or becoming better in character? It meant, Were they getting more money to spend? If they believed that the rich people of the earth were the happiest, they were trying to persuade themselves of something which was not true.

THE Fourth Annual Report of the National Food Reform Association gives some account of its recent activities, with special reference to the Guildhall Conference and the publication of "Our Children's Health at Home and at School." It also deals with such subjects as the Coal Strike, the Feeding of Nurses, the Work of the Parliamentary Committee on Food Reform, the Attitude of the Medical Profession, the Insurance Act, the Need for Cookery Reform, and the Connexion between Intemperance and Diet. Copies (price 3d.), with a list of publications, including books of recipes, may be obtained from the Secretary, 178 St. Stephen's House, Westminster Bridge.

THE Council of the Girls' Public Day School Trust have appointed Miss A. S. Paul, present Head Mistress of Notting Hill High School, to be Head Mistress of Clapham High School, in succession to Mrs. Woodhouse, who retires at the end of this term.

THE city of Leeds has opened a training college for teachers in public elementary schools, which is said to be the largest residential training college in the world. There is accommodation for 300 women and 180 men. The cost amounts to nearly a quarter of a million, of which sum the Board of Education pays three-quarters.

MR. A. MANSBRIDGE, at the Church Congress, said that "educational ladders did not reach earth everywhere and were often deficient. The able poor lad slipped into the labour market earlier than the ordinary lad. Child labour during the years of attendance at school was a national curse. What was wanted was a highway of education, and the Workers' Educational Association stood for this highway, upon which would be fullness of opportunity to the poor."

PROF. GEDDES, lecturing at the Essex Hall, "thought that it was highly instructive to watch how people began to read their newspapers, and pointed out how sex intervened in such a seemingly simple matter. Women usually read first the births, deaths, and marriages, in accordance with their more human outlook, and men, guided by their more cosmic interests, usually commenced with the weather. But even such simple beginnings led on to events of world-wide importance. He showed how a high level of discussion on the weather might eventuate in the most far-reaching scientific discoveries, while the serious discussion of mating and the entrance and exit of life were the starting-points of social science and the birth-throes of the study of eugenics."

DR. F. H. HAYWARD will give an address on "The Experimental Vindication of the Moral Education League," at 8 p.m., on November 29, at the Royal Society of Arts. A social meeting, at 7 p.m., will precede the address. Tickets may be had on application to the Moral Education League.

THE Association's [I.A.A.M.] action against the Thorne Grammar School was settled out of court. The governors found that they had no defence for their action in summarily dismissing the staff of their school on the appointment of a new head master. So they paid the member of the I.A.A.M., on whose behalf action was taken, a term's salary, 25s. a week for a term's board and lodging, and the costs of the action.—A.M.A.

IN the case of Montrose College, the legal proceedings instituted secured £170 for the member concerned. A further action to secure the balance due has apparently helped to bring the defendant's head-mastership to a sudden end. We understand that the doors of the College are now closed.—A.M.A.

THE University Tutorial Press, Limited, is inviting application for an issue of £6,000, being the remainder of the authorized share capital. The profits for 1911 were £2,430. Prospectuses may be obtained at 25 High Street, New Oxford Street, W.C. Lists close November 19.

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THE PLAY-MOTIVE IN THE HIGHER CLASSES OF THE SCHOOL.

At the Evening Meeting of the College of Preceptors, on October 16, 1912, Prof. JOHN ADAMS in the chair, T. PERCY NUNN, Esq., M.A., D.Sc., read a paper on the above subject. He said:

I cannot claim that I have discovered a new subject upon which to address you. The wisdom of our ancestors long ago ascribed to play at least the negative educational function of preventing Jack from becoming a dull boy. Every human mother, since first there were human mothers, has known that it is also a means of positive instruction far more effective at a certain stage than any other. Moreover, the well worn saying which connects the field of Waterloo with the playing-fields of Eton is evidence of a belief that its educational importance is not exhausted in early childhood. I have, indeed, seen an ingenious program in which provision is made for teaching boys and girls all they know and all they need to know by the one medium of organized play.

The very fact that a member of our profession could seriously propose a scheme so shocking to common sense compels us to recognize not only that play has teaching value, but also that its use must be regulated by a definite rational theory. Here, again, I am speaking of no new thing. Mr. W. H. Winch published, a few years ago*, two papers in which he passed in review a number of theories of play, and added interesting and important observations of his own; and even this catalogue does not include all the views which have a claim to be considered as original.

The abundance of these theories—some definitely contradictory of others, some merely supplementary—provokes the suspicion that the phenomena of play are much more complex and obscure than the casual observer would suppose. Careful observation confirms this suspicion, and will probably lead the inquirer to two conclusions—first, that elements which, if not identical with play, are at least organically related to it, enter in a most subtle manner into a very large part of our serious lives; and, secondly, that it is doubtful whether any single theory of these pervasive and Protean elements is possible. I propose to accept both of these positions in this paper. I shall not assume that play is a distinct and homogeneous kind of behaviour which can be distinguished at a glance from what is not play; and I shall welcome help towards the understanding of our subject from any quarter where it is offered.

Play has, in fact, been an object of investigation from four distinct points of view in addition to that of the teacher—namely, the points of view of the physiologist, the biologist, the psychologist, and the philosopher. From the physiological point of view, the human organism is regarded simply as a cunningly fashioned machine. Play must in this case be thought of merely as a special way in which the mechanism sometimes works. Two questions thus naturally arise: (1) What are the conditions under which this particular action of the machinery occurs? and (2) what effect (if any) has it upon the mechanism?

From the biological point of view the human being is regarded as an animal born into an environment in which he must somehow establish and maintain himself. The question about play now takes the form of an inquiry into its "survival value." That is to say, we ask whether it can be ex-

* "Psychology and Philosophy of Play" (*Mind*, N.S., Vol. XV).

plained, on the principle of natural selection, as performing some definite service in the secular struggle for existence.

The theorist who occupies either of the foregoing points of view necessarily studies the player and his play from without. The psychological point of view is that of a theorist who is himself the player whose activity he is seeking to describe. The questions which the observer puts to himself in this case are: What is the nature of play as an experience? how does it differ from other forms of experience? and under what psychological conditions does it arise?

Lastly, the philosopher also is concerned with play as a form of experience, but his concern is very different from that of the psychologist. His problem is the nature of the relation between experience and the realities with which experience professes to make us acquainted. From this point of view, play—if only on account of the curious way in which it seems to fuse reality and illusion—is a phenomenon whose significance cannot be neglected.

L.—PHYSIOLOGICAL THEORIES OF PLAY.

(a) *Play as Superfluous Energy.*—The strictly practical aim of our inquiry makes it unnecessary to trouble the seclusion of the philosopher by our questions. On the other hand, we cannot dispense with the help of the physiologist, the biologist, and the psychologist.

The most important contribution to our subject from the standpoint of physiology is the idea that play is an expression of superfluous energy. The physiological machine derives from food more energy than is necessary for the performance of its essential functions, and it uses the unessential activities of play as a means of disposing of the excess. On this view play is justly likened to the "letting off steam" of the locomotive which has taken from the coal more energy than is needed to drive the train.

Expressed in this simple form, the "superfluous energy" theory—which is generally connected with the names of the poet Schiller and our own Herbert Spencer—accounts for many of the obvious phenomena of play. It explains, for instance, the prodigal outpouring of energy that is to be seen—and heard—in any school playground when children are released from the confinement of the desk. It explains, too, why my audience, when they are freed from this lecture, will probably not offer a similar spectacle to the inhabitants of Bloomsbury Square. Childhood is the time when the physiological machine is busiest in the conversion of energy, and also the time when there is least to be done with it. In the adult the mechanism of conversion has settled down to a steady pace at which it supplies just about enough for our actual needs.

The comparison of the child at play with the engine blowing off steam is defective in one important respect. However firmly you insist upon regarding a child as a piece of mechanism, you must recognize that his machinery is physiological, and therefore essentially more than a cunning combination of physical and chemical factors. The physiological machine *grows* as it works, and its working may have a direct effect upon its growth. In a modern railway engine some of the energy not actually needed for locomotion is utilized in exhausting the vacuum brakes, in warming the carriages, &c. Without much extravagance of fancy we may suppose this use of superfluous energy to be extended. For example, the driver, instead of blowing off steam in a railway station, might direct it to a small rotary press, and print off a few copies of next month's time-table. But the liveliest imagination will not enable us to think of the superfluous steam as used to enlarge the cylinders or to improve the adjustments that lead to economy of fuel. Yet in the physiological machine the superfluous energy may be utilized for purposes strictly comparable with these. In other words, play is an activity of the physiological machine which may be turned to the improvement of the mechanism which produces it.

We reach here the first important pedagogical conclusion from the theory of play. You will say, perhaps, that there is no striking novelty in it. No one needs telling that games are a good thing for the health of a child and make him skilful and graceful and physically alert. Granting this, it is, nevertheless, useful to see that the virtue of athletic games depends upon a definite property of the physiological machine which may be utilized for similar purposes in very different

circumstances. We may safely conclude, for example, that no teaching which aims at disciplining the bodily activities can reach the maximum of efficiency unless it draws upon the energy which Nature has earmarked for such purposes and releases only in the form of play.

The foregoing doctrine has an obvious bearing upon the cultivation of all forms of skill, from the massive movements of gymnastics to the finer neuro-muscular adjustments involved in writing, drawing, and the use of tools. It is capable also of a subtler application upon which, since it is less widely recognized, I wish to lay more emphasis. Let us suppose that we could have watched the development of one of the crafts to which the primitive masters of mankind devoted their genius: for example, the manufacture of flint weapons or of earthen pots. However great the ability that was brought to bear upon those inventions—and without question it was exceedingly great—there can be little doubt that the bare solution of the problems they present absorbed it all. The first spear-head was *merely* a thing which would pierce the body of a beast or a foe; the first pot was *merely* a thing that would hold water and resist heat. But, as repetition of the process brought skill and mastery over the materials, the bare solution of the problem demanded less and less energy, and more was available for other purposes. In what form did this superfluous energy express itself? The theory now before us teaches that it took the mysterious form of *beauty*. The flint weapon, the pot, became more than a mere weapon, a mere pot; they became beautiful.

Upon this view, then, beauty in craftsmanship is a play-phenomenon; it is the inevitable expression of the delight of the maker in the process which he has learnt to perform with the ease of mastery, in the task to which he brings more than the minimum of energy needed for the performance. It is unnecessary to remind you of the far-reaching deductions which William Morris and other writers have drawn from what is practically this identical theory of beauty in craftsmanship. It will suffice to point out its great importance in connexion with a sadly neglected side of school instruction. If this theory is sound, the power to produce beauty is not a gift grudgingly given by the gods to a mere sprinkling of fortunate human beings; it is a power which will no doubt vary in strength from individual to individual like other powers, but is essentially as universal as the power to do arithmetic. Let boys and girls make under conditions which stimulate the natural flow of energy, let them acquire by pleasant repetition the mastery which enables them to *play* with their materials, and beauty will inevitably appear—though in varied measure—in the things which they create.

(b) *Play as Recreation.*—Far-reaching as the Schiller-Spencer theory of play is seen to be, it does not cover all the ground. Think of the weary child who forgets his aching legs when the monotonous walk is turned into a game of hide-and-seek, or the tired man who returns to his work refreshed from a game of billiards or cards. It is clear that play is in these cases not a channel of discharge for superfluous energy, but a means by which new energy is placed at the disposal of the physiological machine. According to the common explanation, the efficacy of such "recreative" play lies in the fact that it uses the energy of fresh tracts of the nervous system and gives the exhausted tracts time to get rid of the chemical poisons which have accumulated in them and to make good their losses by anabolism. The examples I have chosen, especially the former, show that this explanation is quite insufficient. Under the influence of play, the child not only continues the activity which had wearied him, but actually puts twice as much vigour into it.

I venture to think that a better explanation will be found in one of the many profound and illuminating ideas which psychology and education owe to Mr. William McDougall. In a notable study of fatigue,* Mr. McDougall quotes instances to prove that the energy which we can expend upon a certain kind of work is not necessarily limited to the energy resident in the nervous machinery which is directly concerned in its production. Many cases of long-sustained activity would be unintelligible unless we could suppose that the brain structures involved in them import energy from sources outside themselves. Further, he identifies these sources with

* "Report of the British Association," 1908.

certain structures whose functioning is believed to be necessary to the manifestations of the innate "dispositions" or "instincts" which are the great springs of behaviour both in beasts and men. My suggestion is that in recreative play we have phenomena essentially the same as those which Mr. McDougall describes. The task which the appropriate physiological mechanism has insufficient energy to perform is conquered by means of energy drawn from the great reservoirs of the instincts. So the hardships of a river picnic may be endured joyfully by virtue of the energy derived from a mild and perfectly conscious flirtation. So the boy at the bottom of the class can perform prodigies of learning when he is fighting for his "side" in a Latin match between opposing teams.

II.—BIOLOGICAL THEORIES OF PLAY.

In turning to the consideration of biological theories of play, we need not leave behind what we have learnt from the physiological standpoint. We shall do well still to hold fast to the idea that play is the expression of a quantity of disposable energy—disposable either because the organism has more superficial energy than it needs to meet the bare requirements of the moment, or because it has been drawn from deep-lying regions of the organism which are not themselves seriously engaged. The questions that the biologist puts to himself concern the typical forms of expression which this disposable energy assumes, and the possibility of accounting for them upon evolutionary principles.

There are two answers to these questions—both so well known that I may deal with them briefly. We owe one to Prof. Karl Groos* and the other to Prof. Stanley Hall.† Groos's theory is based upon two observations. He notes first that play is a phenomenon confined to those animals which at birth are so insufficiently developed that they cannot face the difficulties of life without the help and protection of their parents. The puppy, born blind and helpless, enjoys some months of undiluted play; the chick, who, a few minutes after he is hatched, can pick up a grain of rice or tackle a worm, affects *ab ovo* an almost puritanical severity of manner and life. Secondly, he bids us observe that when the animal plays he always imitates in sport what will be the serious activities of his adult days. The kitten hunts a ball of wool as he will later hunt a mouse; the puppy chases and dodges his brother as he will some day chase and dodge his prey or his foe. When these facts have once been perceived, the interpretation is easy. A playful youth is a biological device to secure to the higher animals an efficient equipment for the battle of life. "It is not so true," says Groos epigrammatically, "that animals play while they are young as that they are young so long as it is necessary for them to play," in order to prepare themselves for the serious business of adult life. In other words, Nature arranges in some species not only that during the early days of their existence they shall have fairly constantly a surplus of disposable energy, but also that it shall be expressed in behaviour which will serve as a useful rehearsal of the adult activities of the species.

There is no difficulty in extending this explanation to the play of childhood. The devotion of the little girl to her doll is the capital instance of a playful activity which is plainly anticipatory of the serious business of adult life. A similar interpretation may be applied to other games, which recur with unbroken regularity in every generation and among children of every colour. There is, however, in respect of play, as in respect of all mental phenomena, a great and most important difference between man and the lower animals. The adult activities of these are relatively few and relatively constant in pattern. Consequently the play of each species is stereotyped and shows little variety. On the other hand, the adult life that awaits the child is very largely undetermined. Nature, therefore, while she bids the young beast rehearse in sport just those activities which he will certainly use some day in earnest, prompts the boy to experiment in his play with an endless variety of possible lives. In this way we may account on biological principles for the incessant "make-believe" which is so universal a characteristic of childhood.

According to Karl Groos, then, play, biologically considered, is anticipatory. According to Stanley Hall, it is often more properly to be regarded as reminiscent. In his view, the plays of childhood are simply incidents in the recapitulation, which the life of every individual exhibits, of the history of the race. For example, the absorption of the boy of nine in imaginary hunting and bloodshed is, like the characteristic bodily form at that age, a momentary re-presentation of a pigny or Bushman stage which the race has long left behind. These developmental incidents may have no more direct reference to adult needs than the tail of the tadpole has to the needs of the frog. Nevertheless, says Stanley Hall, their transitory appearance in due course is necessary to a healthy manhood just as the batrachian must produce and absorb his tadpole tail before he can settle down as a reputable frog.

When we ask for the biological reasons why the play of childhood should thus keep alive the memory of "old unhappy far-off things"—phases in the racial history which had better be forgotten—Stanley Hall tells us that they are often cathartic in their operation. Man cannot shed altogether the ancient tendencies to cruelty and vice, but play is at once a means by which the mischief may be taken out of them and a means by which they may be transformed into impulses of ethical value.

It is impossible to attempt here an assessment of this theory of the atavistic character of play or to discuss Stanley Hall's declaration that Groos's view "is very partial, superficial, and perverse." An impartial bystander may, however, be permitted to suggest that the opposition between the theories is, perhaps, not so great as the author of one of them supposes; that, indeed, they supplement rather than destroy one another. Thus it may be true that spontaneous play derives its typical forms from the adult life of distant ages, and also true that these racial memories still reawaken in each generation because—and only because—they have a direct value for the adult life of the present epoch. If we thus assume that the rival theories differ chiefly through laying emphasis on different aspects of what is at bottom a single phenomenon, we shall be free to use either of them according to the convenience of the moment.

Before passing on it may, then, be noted that Stanley Hall's way of putting the matter is most helpful in the case of play, which, like dancing, is fundamentally a motor phenomenon. His dictum that "play is the purest expression of motor heredity" is here peculiarly illuminating. It has special value at a time when we are searching for sounder principles of physical training than have hitherto inspired the practice of the schools. It leads us straight to the idea that the substitution of dancing for some of the more formal gymnastic exercises may not only help the Englishman to take his pleasures less sadly, but may be the best of all ways of giving him mastery over the body which he has inherited from his forbears. Moreover, it gives at least some support to the speculation that our native dances—rescued from the wreck of time by Mr. Cecil Sharp, Miss Mary Neal, and their devoted comrades—may be a better medium for the physical cultivation of the young Anglo-Saxon than the saltatory idioms of the Latin races or the Slavs.

III. PSYCHOLOGICAL THEORIES OF PLAY.

(a) *Play in Children.*—As we have already seen, the psychologist aims at studying play from a standpoint within the consciousness of the player. His most obvious difficulty is that, in so far as play is a special characteristic of childhood, it is hard to get a trustworthy account of it from within. Children, though by no means so averse from "psychologizing" as they are generally thought to be, can hardly be expected to supply the inquirer with exact and unbiased introspections on this subject. The psychologist must be contented to make more or less precarious inferences from the observable phenomena of play to the states of the child's mind. Occasionally his interpretations will be aided by his own memories or those of players of genius like Robert Louis Stevenson, whose well known essays called "Child's Play" and "The Lantern-Bearers" are two of the most important contributions to the subject that have ever been made.

We owe to Mr. Winch some excellent observations upon the danger of reading phenomena of adult mental life into

* "The Play of Animals," 1896, and "The Play of Man," 1898.

† "Adolescence," Vol. I, Chap. III.

the play of children. To us grown-ups no distinction seems so evident and so great as the distinction between the hard, cold world of objective *fact* and the subjective realm of purpose, thought, and fancy. I say here "seems," because most of us still contrive from time to time to ignore in our practice the gulf which yawns so wide in our theory. We are prone to forget that the child does not find this distinction ready made for him, but has, by gradual and often painful experience, to discover its existence and form. Thus, as Mr. Winch urges, much that is characteristic of a child's play is due not to the transforming power of imagination, but to ignorance and a sheer inability to see the world around him as it really is.

The modern theory of psychological "complexes," as developed by Freud and his followers as a basis for the treatment of the insane, has thrown much light upon the processes of normal minds, and perhaps even more upon the mental behaviour of children. Freud has described in detail the phenomena of "conflict" between two hostile complexes or systems of ideas and emotions in a diseased mind. Very generally one of these drives the other entirely out of the field of attention—as when a lady,* who constantly maintains that she is the rightful Queen of England, ignores the incompatibility of her royal status with the lowlier duties of charring by which she earns her living. The normal child at play has the same power of ignoring realities that challenge the truth of his ideas. "The chair he has just been besieging as a castle, or valiantly cutting to the ground as a dragon, is taken away for the accommodation of a morning visitor, and he is nothing abashed; he can skirmish by the hour with a stationary coal-scuttle; in the midst of the enchanted pleasance he can see, without sensible shock, the gardener soberly digging potatoes for the day's dinner."†

In other cases of insanity the complexes are so equally matched that neither can suppress the other, and a *modus vivendi* must somehow be found. This is generally made possible by a supplementary set of ideas which—simply because they reconcile the incompatibility of the original complexes—may be embraced by the patient with the utmost fervour of belief. Thus the rightful Queen of England may become convinced that her actual humble position is due to a conspiracy to keep her from her throne, and finds evidence of the plot at every turn.

By precisely similar devices, adopted with something of the same conviction, the child is wont to reconcile facts and ideas whose warfare would disturb his mental peace. Here, often, is the explanation of a child's fibbing, and of his inability to keep the memory of facts free from the embroidery of fable. It is, further, one of the commonest features of his "make-believe" play. From Stevenson's mine of illustrations I take a gem of the first water. It is the story of a little boy who could join in a game of football only upon the theory that it was a battle, and "who was mightily exercised about the presence of the ball, and had to spirit himself up, whenever he came to play, with an elaborate story of enchantment and take the missile as a sort of talisman banded about in conflict between Arabian nations."

Instances such as I have quoted show that the mind of a child at play may, like the mind of an insane adult, be at the mercy of a group of ideas which, though it has little or no relation to the actual world, may capture and control the whole current of his consciousness. Stevenson shows us how for weeks together a child may be unable to deal with the most ordinary and humdrum situations of life except in terms of the fancies dominant at the moment. "Perhaps," he writes in an admirable passage, "the most exciting moments I ever had over a meal were in the case of calves-foot jelly. It was hardly possible not to believe . . . that some part of it was hollow, and that sooner or later my spoon would lay open the secret tabernacle of the golden rock. There, might some miniature Red Beard await his hour; there, might one find the treasures of the Forty Thieves and bewildered Cassius beating about the walls. And so I quarried

on slowly, with bated breath, savouring the interest. Believe me, I had little palate left for the jelly; and, though I preferred the taste when I took cream with it, I used often to go without, because the cream dimmed the transparent fractures."

The analogy between the child's "make-believe" and some phenomena of insanity is instructive, but it must not be pressed too far. A child's mind is rarely so securely bound to its fancies that it cannot escape from them easily enough if need arise; and, as Stevenson points out, a single touch of pain will suffice to bring him back to the actual at any moment. Moreover, there is a fundamental difference between the deeper significance of "make-believe" and insanity which their formal resemblance must not lead us to overlook. The delusions of the insane are not merely the jangling of sweet bells out of tune. They can generally be interpreted biologically as the refuge of a weak spirit which cannot bear "the weary weight of all this unintelligible world." They are the expression of a *defect* of energy. The strong mind takes arms against a sea of troubles and, by opposing, ends them. The weak mind gives up the attempt to maintain relations with the whole of the real environment, and simplifies the problem by ignoring a great part of it. On the other hand, the "make-believe" of the child is, as we have seen, an expression not of a defect, but of an *overplus* of energy. The *élan vital* which drives the child along his life's course is not wholly absorbed by the activities which are necessary to maintain relations with the actual world. It urges him to multiply and enrich his experiences, to enlarge his soul by experiments in a thousand ways of life. Insanity is a phenomenon of shrinkage, of decay; the child's "make-believe" is a phenomenon of expansion, of growth.

(b) *Play in Later Life.*—As the shades of the prison house of reality close round the growing boy, the foregoing analysis ceases to give an accurate picture of his mental life. His ideas tend to become ever more congruent with the facts of the external world. Instead of controlling, they become themselves controlled. Does this statement imply that the impulse which expressed itself in "make-believe" play now fails, or that the expression is translated into other forms? To a certain extent both these things happen. As our serious activities increase and consolidate, we have no doubt a smaller overplus of energy to expend upon play. Having performed its biological function of urging us to the discovery of life and our own potentialities for living, much of this overflow of mental energy rejoins the main stream. Again, much of it settles down into regular channels of flow. The boy who has left "make-believe" far behind plays his daily game of cricket; the man who has no scrap of imagination left in him goes every Saturday round the golf links.

Notwithstanding these facts, a portion of the talismanic element still remains, and, as of old, interpenetrates and impregnates almost the whole of our mental processes. Mr. F. H. Bradley, in one of the most valuable of his recent papers,* has demonstrated the falsity of the antithesis commonly supposed to exist between *play* and *work*. If the word "work" be taken to imply more or less strenuous activity directed towards a definite end, then it is obvious that some of the hardest work may be done in play. There is, however, something to be said for defining "work" so that it becomes antithetical, not to "play," but to "game." In this case "work" would imply activity pursued for the sake of a product of definite and permanent value; a "game" would be a form of activity whose value perishes with itself. The subtle-minded hearer may amuse himself by debating the usefulness and stability of this distinction. Meanwhile we may pass on to note with Mr. Bradley that, whether we consider games or work, all human activity is the product of two factors. One factor consists in the conditions which are imposed on the agent *ab extra*. The other factor is the spontaneity of the agent. The difference between these factors appears readily in the analysis of any activity—for example, eating one's dinner. The mainspring of this activity is obviously an imperative, which no one can ignore and live. Nature says: "Thou shalt eat. But she leaves a fortunate minority of us considerable freedom to choose the matter and the manner of our eating. We may dine—in slippers and an easy

* I borrow this illustration from Dr. Bernard Hart's "Psychology of Insanity" (Cambridge Manuals of Literature and Science), which gives a good and simple account of Freud's theory.

† Stevenson: "Child's Play."

* "On Floating Ideas and the Imaginary" (*Mind*, N.S., No. 60).

jacket—on a chop at home, or we may go forth in state to an eight-course banquet at the Savoy. The boundary between spontaneity and external constraint shifts, of course, from case to case. At the gorgeous tables of the Savoy there may be many hauserers after the simple life. They hate the *Persicos apparatus*, but their circumstances of life cause these to be among the unalterable conditions of dining.

In this illustration the external constraint is ultimate. I need not necessarily eat here or thus, but eat somewhere and somehow I surely must. In other forms of activity the constraint which limits the activity is not ultimate. Thus, if I play football or auction bridge, I am bound by the rules of the game; but the acceptance of the rules is itself voluntary. I can escape them by standing out of the game or by persuading my companions to adopt a new code. But if I decide to "play the game," my spontaneity must limit itself to the operations of attack, defence, and finesse which the rules sanction and the tactics of my opponents leave possible. Similarly, if I decide to fill the rôle of Hamlet in a performance of the tragedy, Shakespeare's text becomes a condition of restraint, and spontaneity is limited to the expression of an "interpretation" of the poet's lines. These distinctions seem trivial, but they are, nevertheless, worthy of attention. Set the diner at the Savoy beside Stevenson engaged upon that romantic calves'-feet jelly; compare the impersonator of Hamlet with the little *campador* skirmishing valiantly with the coal scuttle, and you will see that the behaviour of the man is in each case the lineal descendant of the behaviour of the child. You will agree with Mr. Bradley that the essential psychological element in play is not "make-believe," but just that spontaneity which, as we commonly say, "plays" freely with the external conditions of the activity and uses them for issues determined from within. Thus, you will reach the illuminating idea that the intellectual play of children is not a fairy gift which disappears as the visions of six fade into the common day of sixteen, but that its essential characters remain, though their form of combination changes under the influence of the discipline of experience.

IV. PEDAGOGICAL APPLICATIONS.

Though I have touched only upon the most obvious aspects of the problem of play, you may wonder if I have left myself time to say anything which can justify the title of my paper; and, indeed, I cannot hope to do more than to show in a general way the bearing of theories of play upon the instruction of older boys and girls and to make my contentions plain by a few illustrations. I should feel more compunction if this were not a case in which it is important to explain and advocate an attitude rather than to formulate a program.

The intellectual play of young children is overt; its pedagogical possibilities have been successfully explored by Froebel and his disciples. The intellectual play-impulse of older boys and girls is largely concealed—even from themselves—and has rarely been systematically exploited by teachers. No doubt every good teacher appeals to it from time to time, but too often with an uncomfortable feeling that he is using a dubious, if not actually unprofessional, mode of procedure. The advantages of having a theory of the subject are that it helps one to get the most good out of one's casual professional experiences, indicates the most profitable lines for experiment, and emboldens one to persevere in pedagogical adventures which, if they do not lead to El Dorado, may yet bring in a substantial return upon the intellectual capital invested.

It is important, therefore, to bear in mind the main conclusions of our analysis of play. We have seen that it is always the expression of free or disposable energy which either represents the floating balance of food-energy converted over that consumed by the physiological machine in the performance of its routine work, or else is derived specially from reservoirs of energy connected with the fundamental instincts. We have seen that, whether mainly intellectual or mainly the expression of racial motor memories, play always looks forward to the needs of adult life. We have seen that it is a kind of experience which is correlated with the outpouring of disposable energy and is determined in direction in accordance with Groos's biological law. Lastly, we have seen that it is to be identified with the

intellectual spontaneity which reacts in different ways at different ages upon the conditions of constraint imposed by the world and other external forces. It is important, too, to realize the general manner in which the relation between the element of spontaneity and the constraining elements changes as the child grows older. As our examples show, the change consists in a gradually increasing approximation or congruence between the ideas which express the spontaneity of the child and the hard facts which are the conditions limiting his activity. Thus the child who begins by looking for fairy palaces in calves'-feet jelly may end by discovering important new truths about the physics of jellies—and the last enterprise equally with the first may contain the essential elements of intellectual play. The teacher who understands this development will probably *not* seek to teach quadratic equations by means of some variant of "Chevy Chase."

In all applications of this theory it must first be remembered that the energy of play shows itself only where there is some room for spontaneity—some opportunity for the pupil to colour the business in hand with his own individuality. I have already dwelt upon this truth in one important connexion—namely, the cultivation of the power to produce beauty. The principle is, I believe, equally fertile in other subjects of instruction. How long is the tale of students of all magnitudes, from the mighty Darwin downwards, who learnt little or nothing at school simply because the instruction never drew upon the energy which expresses itself in the spontaneity of the pupil! Undoubtedly this doctrine supports those who would adapt the curriculum to the varying intellectual tendencies of the pupils when these are sufficiently pronounced. But I would lay more stress upon the practical and practicable deduction that methods of instruction should always be so chosen that they leave room for some small element of choice: some room for the free play of the pupil's individuality. In literature, in history, in geography, in science, and even in mathematics, methods are nowadays available which offer to the individual student this freedom of intellectual movement, and our theory indicates that such methods are based upon a sound psychological principle.

Secondly, it should be observed that the conception of spontaneity as an expression of disposable energy involves the idea of mastery over the materials in the use of which the spontaneity is to be displayed. There is, perhaps, no reason for limiting the ever-growing curriculum so important as this: that, unless the pupil can obtain by familiarity and repetition a real mastery over the details of his studies, he cannot possibly use those studies as a medium for the expression of spontaneity—that is, they lose the greatest part of their value as a means of building up his individuality.

In the next place it should be noted that the notion that spontaneity must be present by no means implies that constraint must be absent. As we have seen, the direction of natural intellectual development is towards a closer relation between the spontaneity of the individual and the conditions which constrain it, not to the suppression of either of these factors nor to a cleavage between them. Thus, our doctrine, properly understood, tends neither to "softness" nor to anarchy. There is no antagonism between the conception of spontaneity and the conception of "discipline." The composition of, say, a successful *roudeau redoublé* involves a notable degree of spontaneity, but it is certainly neither an easy nor an undisciplined performance.

Fourthly, we must remember that, on the intellectual plane, the energy of the play-motive expresses itself as an appetite for experience—a restless experimenting with life. I believe that the full admission of this principle will transform a great part of our teaching methods. In the young child the experimenting takes the overt form of "make-believe" play. We have to recognize that with older children and adolescents it is still there, but in subtler forms—first the love of the romance of exploration and adventure, later the vivid interest of the adolescent in the broader forms of human work and occupation. Teaching methods must be sought in every subject which will both engage at each level as much as possible of the energy which the play-motive sets free, and will also assist the process of development which leads from one level to the next. The Boy Scout movement has given an almost perfect illustration of the solution of the problem for a certain stage of development—the stage at

which make-believe has not yet ceased to be a natural form of expression of the play-energy, while the individual elements in the play experience have been largely disciplined into congruence with reality. I feel a pang of regret and shame whenever I remember that this great pedagogical discovery was made not by a schoolmaster, but by a layman, who simply retained, like Stevenson, a vivid memory of his own intellectual growth and was bold enough to believe that a method of instruction which makes use of the boy's natural intellectual energy is the only method that can achieve truly satisfactory results.

My one fear with regard to the Boy Scout movement—it is, perhaps, presumptuous to express it on the basis of a very small experience—is lest by the very strength of its appeal at one level of the boy's mental development it should hinder his progress to the next higher level. "Make-believe" at the level where it is the natural expression of the play-impulse is not acting, but it becomes acting at a higher stage—that is, it becomes *pro tanto* an artificial life, which, if it is lived on a large enough scale, may seriously weaken the main current of intellectual energy.

For this reason, I welcome attempts—such as I have seen described during the last few days—to accentuate the intellectual side of the Boy Scout game by "Boy Scout classes" in mathematics and other subjects. I feel confident that topics selected for their relevance to the Boy Scout idea will be quite the most suitable for study at that stage; but I also believe that such studies will form the best means of weaning the boy who remains at school from elements in the Scout program which will no longer be sources of strength and progress.

Broadly speaking, the aim of much of his studies should now be to gain a sympathetic knowledge of those phases of human labour and effort which have most significance for civilization as a whole. Most, if not all, of the school subjects lend themselves easily to the type of treatment implied by this ideal. Mathematics and science are not exceptions, although they are subjects in which the traditional instruction has hitherto been farthest from that which I have in view. There is no reason, for example, 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.

Teaching given in the spirit which I have tried to indicate makes as direct an appeal to the play-motive in the adolescent as the invitation to "make believe" does to the same motive in the young child. The difference is merely that the motive shows itself at the later age as a force urging the boy to identify himself in imagination with the great forms of human occupation and effort which are presented to him. Such a conception of the proper method of instruction differs, of course, fundamentally from the old conception of study as a mental discipline. Nevertheless, I would submit that it preserves all that is really sound in that traditional notion. The boy who is striving to enter into the spirit of the navigator, the man of science, the engineer, the scientific explorer, the controller of a great bank or a great city, is submitting his mind to real discipline—that is to say, his ideas and methods of intellectual work are being formed upon sound and effective models. In ultimate analysis there is no other basis of mental discipline than this—the voluntary effort of the pupil to assimilate the master's habits of thought and work. To force a boy's thinking along lines which are unnatural to him, and hardly intelligible, is not to give him discipline, however perfect the form of the thinking may be. The spontaneous movement of the mind must be there, stretching out to grasp and to assimilate; and the play-motive, in its various forms, is the most constant and trustworthy source of spontaneity to which we can appeal.

A final paragraph must suffice to indicate the final trend of my argument. We have seen that the "make-believe" activity which largely ignores the actuality of the world, moulding it nearer to the heart's desire, becomes developed and disciplined into the tendency to understand the fundamentally important types of human life and action by close attention to the actual conditions under which they are pursued. The last stage of this process should bring the pupil to a stage at which he comes into actual contact with

one of these ways of life—a stage at which the play-energy should show itself typically as a fight for mastery over the conditions by which this way of life is limited and controlled. At the end of so long a paper I can ask you to listen to nothing upon this head beyond a bare confession of faith in the soundness of the final conclusion to which our examination of the play-motive leads—that is, an acknowledgment of my belief that no boy or girl should leave our schools or colleges who has not been fitted by direction, training, and instruction to sustain some definite rôle in the great play of life.

Mr. BAIN complimented the lecturer, but had felt nevertheless some disappointment that the nature of play had been dealt with so comprehensively that he had heard much less than he wished to hear of the special aspect of the subject which had been announced.

Mr. KING had not been able to extract from the paper all that he had hoped for. He had misgivings that this proposal to make use of the play-motive so exclusively was not quite the whole of the matter. It seemed to him to leave no room for the exercise of innate curiosity, the desire to learn something of what was at present unknown, which was scarcely any part of the play-motive, though it was perhaps another kind of outlet for disposable energy. He feared the exaggeration of the idea that education must necessarily be something of a pleasurable nature, as being likely to degrade educational pursuits, and he urged, rather, that the motive of duty, even in matters unpleasant, should prevail.

Miss STRONG asked whether, in this aspect of education, there was room enough for the working of mental discipline. Her view was that in the learning of anything there came a point, sooner or later, where the learner must simply give himself up to the grind, and where he must take on trust for the time the dicta of others. And, if they were only to follow the initiative of the child, how could they induce in him the power to "endure hardness" which was so essential an item in the adult's equipment?

Prof. ADAMS, while leaving the question relating to conflict between duty and pleasure to be dealt with by Dr. NUNN, protested against their being looked upon as necessarily antithetical. Most duties were also pleasures, though it was true that there were many people who did not think of an act as a duty unless it were also more or less disagreeable. He was thinking more of the application of the play-motive to the work of the higher classes, and he invited the lecturer to give some examples of what he was doing with it in regard to mathematics which seemed so unpromising a field for the purpose. He suggested also that play might come in very strongly without there being any lack of hard work. Many of those present would bear him out that children in the higher classes played most in just those subjects in which the individual teacher was most interested, the play spirit entering in only when the teacher was familiar enough with his subject to allow of his playing with it. People were rather afraid of play, and did not realize sufficiently that the play advocated was serious play. It had been remarked that "a child is the most serious thing in nature": he wants to take everything seriously, his play included. Growth-up people often made the mistake in regard to the young of thinking that they must be approached frivolously and flippantly, whereas their favour could be much more effectually won by treating them seriously.

The LECTURER having dealt with the points indicated, the proceedings closed with a very cordial expression of thanks on the part of the audience.

MORAL EDUCATION CONGRESS.

AMONG those who took part, either as speakers or members, in the Moral Education Congress at The Hague, there will be many who will remember the discussion, or rather debate, on the second morning of the Congress, in which startling and often bewildering differences of opinion, not always moderately or quite charitably expressed, revealed the fundamental interest and enthusiasm underlying the moral, religious, and educational problems of our day. Among the chaos of conflicting arguments, assertions, and suggestions, one fact stood out with striking clearness and sounded the right note of hope, even though somewhat faintly, for the future. The cause which could reconcile men and women of openly divergent and often even mutually exclusive views for a short space of time in the pursuit of an ideal of conduct, and which could also surmount the barriers of civilization and race, must contain a germ of living power, which may some day grow into a plant whose

fruit is indeed for the healing of the nations—never more sorely needed than now.

This is one side of the picture. For while all were united in recognizing the desirability of the quest which has for its end no less than the ultimate perfection of man, either here or hereafter, hardly two people were agreed as to the path that led thereto. Speaking broadly, however, the representatives of various schools of thought fell mainly into three groups. First, there were those who considered that moral education should be based solely upon the inherent capacity for morality in the child himself, and should appeal from that to the domestic, social, and civic virtues only, as the incentive to its complete development. Secondly, there were those who believed that, since the origin and final destiny of man is God, the child's education should be based upon His—according to their standard—supreme revelation, the Christian religion. Thirdly, there were those who held that, since every world religion is agreed upon the value of "higher conduct," ethics should be the foundation stone upon which all and every religious teaching should be given.

One of the representatives of the first school of thought—of what is known in France by the name of "la morale laïque"—was M. Buisson, who pleaded most earnestly in the spirit of Comte for the fundamental goodness of human nature. "The child can never go wrong," he said, "while he remains true to the mysterious spiritual forces which are beneath the power of will, action, and feeling; and while he conforms to those laws of nature which he recognizes as the best within him, unfettered by the restraint of dogmatic teaching. You do not ask art or science to lean upon religion: why, then, do you ask it of morality? The virtues should be allowed to develop as independently and generously as the gifts of art and science, for they are endowments as natural as these. We, too, are believers not in the evil, but in the goodness of human nature."

M. Kurt, from Rome, and M. le Chanoine Dumont represented the second school of thought—"la morale Chrétienne"—severally from the standpoint of the Catholic philosopher and of the Catholic educator and priest.

M. Kurt pointed out that human virtue and moral living have always been the possessions of the ancient world, and come to their glorious fruition in highly specialized souls, such as Socrates and Epictetus. But it has remained for the Christian teaching of the Gospels to evolve the highest morality of all in the two great commandments, and to make its appeal to all alike. At its best, pagan morality has created unbelieving philosophers of great ethical power; Christian morality has produced saints whose holiness has resulted in practical supernatural powers. He said, in answer to M. Buisson, that, though the modern school of ethics would have us believe that justice and goodness are solely inherent in human nature and only *within* man, yet that very justice and goodness at their highest are full of flaws. Surely, therefore, it is a far truer conception to believe that these have their perfect and eternal counterpart *without*. It is to safeguard this special morality of the Gospel, into which we need never hesitate to plunge our children, which is the function of the Christian Church.

M. le Chanoine Dumont, the other representative of "la morale Chrétienne," put before the Congress the point of view of Catholic morality and of its religious teaching. "The Church," he said, "is the necessary organization for the practical direction of life. Unless there is at the back of life a conception of man's final destiny, there can be no basis upon which it can be built; since the course of a man's life will be determined by this. Of the way of life, above all things, we must be certain. Since the Church has the authority to teach what is man's final destiny, it follows she has also the means of guiding him in the way which shall lead to its consummation. We, too, are believers in human nature's fundamental goodness and its ultimate perfection, but we, also, believe in the evil which is contrary to that perfection, and which must be checked and eradicated. It is for the way of life and the Faith of Christ, which shall do this, that I stand here to-day."

The third and last school of thought was put before the Congress by two men, one representing the most youthful part of our Western civilization—America; while the other, a Hindu, belonged to almost the oldest, and certainly to one of the most wonderful civilizations and faiths which the world has ever produced—that of India.

"I have felt great surprise," said Prof. Neumann, "at the warmth of the discussion which has prevailed between the representatives of the secular and religious schools of thought, and still more so at the attitude which assumes that "le point de vue morale" is a factor separating the religious and secular educationist, instead of being, as we regard it in America, the common ground between them. We hold that there can be no depth of religious life unless there is a moral foundation to build on, for the outcome may be various, according to the religious teaching given; but the foundation must always be the same."

"I came here," said the Hon. Dr. Sarvadhikary, of the University of Calcutta—and his words calmed the troubled waters of a discussion which threatened to overflow the boundary of courtesy and international consideration—"I am here for instruction and inspiration, and I am indeed astonished to find Christian people disputing among themselves; for I come from a country where the problems of religious education are far more complex and difficult than here. Moslems, Jews, Christians, Hindus, Parsees, and Bdddhists live side by side. This difficulty is recognized by the Government: for as you are trying to do to-day, we, too, have tried to find a common basis, not only of action, but of conduct—higher conduct, which is morality. Do not forget 'the scriptures are many, sages are many,' but they who obey are always within the Good Law. Do not emphasize the things which divide you, seek rather for those things which you most certainly have in common; for unity among yourselves and charity towards all is not the least part of your mission here to-day!"

There were many others who spoke both before and after the member whom we have just quoted, but all were more or less in sympathy with one of these three points of view; and there is no need to set down their words here.

As the long morning drew to its close, it seemed to one member of the Congress that the problem which had been discussed scaled the heights and depths of human experience. "having its foundation in the heart of the sinner and its spires in the holiness of the saint." Its solution is one which in the nature of things must remain partial, and rather resemble the poet's broken arc, which, however, does have its heavenly completion. Yet the same poet tells us also of the inhabitant of a certain star where there was "nowhere deficiency or excess." It was only when the divine discontent at the monotony of a "Neutral Best" worked in his heart that the prison gate was unbarred. Past "the tranquillity that lulls," he was bidden to take his place on earth: fit, at last, to suffer, if need be, and "to wring knowledge from ignorance." In the poet's estimation the possibility of aspiration, even without complete attainment, far exceeds the disappointment of partial failure or the inertia of stagnation. The problem at the heart of the morning's discussion—how to attain moral perfection—was an ideal, as well as a problem, in the poet's mind. Let us accept and face that problem in the same spirit of courage and hope for the future!

WINIFRED FELKIN.

CORRESPONDENCE.

CLEAN SPELLING.

To the Editor of "The Educational Times"

SIR.—I am afraid M. de Saint-Ours has not quite understood the object of my article in your September issue. He writes to object to the suggestion that teachers should reform or simplify the spelling. That is not my suggestion.

Prematurely to introduce a reform, the details of which have not been completely determined, would indeed be unwise. But there is nothing to lose and everything to gain if teachers will consider the problem. They will do well to rid themselves of the idea that the present spelling has any intrinsic claim to beauty, or any venerable antiquity, or much etymological value; and to realize fully how much time is wasted in teaching and in learning it. It will also be of great service if they will pay more heed to the importance and the possibilities of the living, spoken language. When they have taken the trouble to study the society's scheme they will understand better the meaning of "simplification." The spelling *picat* may not in itself appear simpler than *pint*. But the uniform use of *ie* where the present spelling has *igh* (high), *y* (cry), *eye* (eye), *i-e* (line), *ai* (aisle), *uy* (buy), &c., is surely a simplification; and it is of some value to differentiate the vowel of *pint* from that of *glint*, *lint*, *mint*, *hint*, *stint*.

"Le corps enseignant n'est pas chargé de perfectionner," says M. de Saint-Ours. Rash experiment may be dangerous, but I hope the day is far distant when teachers will refuse to consider proposals of such extreme importance as those that aim at a clearer speech and a cleaner spelling.—
Yours faithfully,
WALTER RIPPMANN.

Simplified Spelling Society,

44 Great Russell Street, London, W.C.

EDUCATION OF WOMEN IN THE EAST.

To the Editor of "The Educational Times"

SIR,—Some months ago you allowed me space in your columns in which to state particulars concerning a Conference on the Christian Education of Women in the East, to be held at Oxford early in September. That conference is now a thing of the past, but its influence is likely to be far reaching in educational circles. The members consisted of about a hundred and fifty University women engaged in teaching, and the speakers included the President of the Association of Head Mistresses, the Principal of St. Mary's College, London, the Head Master of Repton, and other educational leaders. Work in the East was represented by Mr. Arthur Mayhew, of the Indian Educational Service, and Miss Garrett, Inspector of Schools in Eastern Bengal and Assam, as well as by men and women who have had long experience in the service of missionary societies.

All the speakers alike insisted upon the urgency of the appeal which is made to the West by the needs of Eastern women and girls, as they emerge from the seclusion of centuries into the freedom brought to them by Western civilization. The character of the education which they receive at this crisis is of supreme importance in determining the future not only of Eastern nations but of ourselves, for women are taking a conspicuous place in the new national movements, and the social problems which confront Eastern reformers are closely bound up with those which perplex us in England. In view of the importance of the subject, a provisional committee to act as a body of reference has been appointed, the members being Miss Douglas, Head Mistress of the Godolphin School, Salisbury; Miss Gray, High Mistress of St. Paul's Girls' School, London; Miss Richardson, of Westfield College, London; Miss Wood, Principal of the Cambridge Training College; and Miss Woodall, Head Mistress of Milton Mount, Gravesend. Miss de Sélincourt, formerly Principal of the Lady Muir Training School, Allahabad, has consented to act as Honorary Secretary to the Committee, and will be glad to receive any questions or suggestions sent to her at 25 Belsize Grove, London, N.W. At the request of the members, a report of the Conference has been prepared, and its publication has been kindly undertaken by the Student Christian Movement. It will shortly be issued at 2s. net.—Yours faithfully,

A. W. RICHARDSON.

Westfield College, Hampstead.

REVIEWS.

"Educational Classics." General Editor, Prof. J. W. Adamson.—(1) *John Locke's Educational Writings*. By J. W. Adamson. (2) *Rousseau on Education*. By R. L. Archer. (3) *Vices, and the Renaissance Education of Women*. By Foster Watson. (Each vol. 4s. 6d. Edward Arnold.)

The general plan of this series is to present the views of the various writers on education in their own words. The ordinary student of education cannot be expected to read all the classics in his subject, and accordingly there is a danger here as elsewhere that he may fall back on such second-hand material as is provided in epitomized textbooks. Some of these are no doubt excellent. Few books have done such valuable work in promoting the study of education as Quick's "Educational Reformers"; but such works need to be supplemented by the actual text of the authors dealt with. Prof. Archer tells us that the purpose of this series is "to give the author's words and leave the reader to form his own conclusions." The reader, however, is not left entirely to his own resources. The editors supply in each case an Introduction, and throughout the text whatever notes are found to be essential. A wise restraint has been here exercised. The introductions are brief, and the notes will be found by most readers to be quite sufficient, while no one can complain of that plethora of explanation that is so wearisome in many books specially prepared for the use of students.

In each case the editor's main business has been to secure the best text and to make the best selection of material; for the series makes no claim to completeness in the presentation of the educational writings of the authors chosen. But, after all, is it necessary, is it even desirable, that the ordinary student should wade through all that the authorities have written? Even the best of them are very unequal: most of them repeat themselves; all of them have written much that may fairly be regarded as insignificant. The selection of what is of real importance is accordingly of the first moment, and only experts of the highest standing ought to be entrusted with the work. The publisher is to be congratulated on his choice of a general editor, while Prof. Adamson in his turn has been most fortunate in securing the co-operation of men all of whom are masters in the particular work they have undertaken.

Locke's contribution to education is of special value, since it approaches the subject from the philosophical standpoint, and yet works it out with a strong bias towards common sense and the practical. It is fitting, therefore, that the general editor should himself take up Locke. For other reasons Prof. Adamson is particularly at home in dealing with this author. Not only is he familiar with the century that produced the "Essay," but he is in thorough sympathy with its author. The introduction is admirably clear, and not only gives an excellent account of Locke's general position in education, but makes a valuable point in correlating Locke's work with the courtesy books and the academies. This point is of great importance in all considerations of the true purpose of "The Conduct of the Understanding." Prof. Adamson has been very happy in his choice of passages that have a genuine educational bearing. The "Thoughts" naturally bulk larger, but the "Conduct" gets about a third of the book. There are fewer gaps in the text of this volume than in the others of the series, but wherever they occur they are bridged over by editorial comment that prevents any gap in the reader's thinking. In this, as in the other volumes, there is a useful chronological table and a satisfactory index.

Prof. Archer has had a difficult task in preparing Rousseau for the English reader. Not only has he had the additional handicap of having to provide a translation, but from the great bulk of educational writing done by Rousseau there arises the need of much omission. All that is really valuable in Rousseau's educational writing is here preserved,

and the numerous interpolations of the editor are skilfully made. The introduction is admirably done. Mr. Archer wisely adopts the view that Rousseau's value is not to be determined by the amount of pedagogic truth that his writings contain, but by the stimulus they gave to the development of educational thought. More than any other educational writer, he must be regarded from the artistic point of view. Accordingly, it is in his case specially desirable that the text should be read in the original; but the next best thing is a sympathetic translation as found here. Mr. Archer gives not only a chronological table and two indexes (one general, the other by subject), but adds a Bibliography of English works on Rousseau. We note that in this bibliography, though Dr. W. Boyd's "Minor Educational Writings of Jean Jacques Rousseau" is included, his more important work (published last year), "The Educational Theory of J. J. Rousseau," is omitted.

Prof. Foster Watson has had a congenial task in introducing to English readers a hitherto little known or even unknown writer, Juan Luis Vives. From some points of view this is the most interesting volume of the three, for not only does it deal with a fresh author, but it treats of a subject that has, at present, a wider interest than it ever had before. The education of women has naturally in these days assumed a practical importance that was denied to it in what our modern women are inclined to regard as the dark ages—that is, all the time that preceded the present revolt. Many women will feel that they have little to thank Vives for; but even the most advanced feminists should welcome historical truth, however much they may seek to change the old point of view. Prof. Watson has made a scholarly presentation of his subject, and expounds the old views without fear or favour. His introduction exemplifies his well-known thoroughness; his identification of Hart as Pyrde must have given him great satisfaction. To the reader, it is an incidental guarantee of the thoroughness with which the original authorities have been examined. The bibliographical note supplies material for further study, if students are to be found thorough enough to follow in Prof. Watson's footsteps. To keep the balance true, the editor has incorporated in an Appendix Vives' "Plan of Studies for a Boy." Both as to execution and as to subject matter, this volume deserves the serious attention of all who are interested in education, whether of men or of women.

Education. By Edward L. Thorndike.
(6s. net. Macmillan.)

Prof. Thorndike describes this as a first book in education, by which we understand that it is to be put into the hands of the student as an introduction to his subject. To this end we have a discussion of the Meaning, Value, and Aims of Education, followed by a treatment in three chapters of the Matter of Education, two chapters on the Means of Education, and two on the Methods of Education. The Results of Education get a chapter to themselves, and the book concludes with two chapters on Education in the United States. So far as the list of contents is concerned, the book is perfectly normal, but the method of treatment is decidedly individual. At the beginning of his career Prof. Thorndike was regarded by his more conservative fellow educators with the suspicion that almost invariably attaches itself to the brilliant young man who comes with an entirely open mind to a new subject. His steady, solid, and successful work as a professor and writer has now removed the suspicion, but the brilliancy remains.

Even when dealing with the commonplace subjects that must be treated in a volume of this kind, Prof. Thorndike cannot help infusing into them a freshness and interest that is not common in textbooks. Some readers will, no doubt, object that in such a book an author should confine himself to matters that are of general acceptance, whereas we have here many matters of a highly controversial character. But such an argument implies that a textbook must be always about a generation behind its time. It ought,

certainly, to contain all the accepted facts, but it is an advantage rather than otherwise to have the growing point of the subject so presented that the students may not only get the necessary backgrounds, but may acquire an impulse that carries them into the current of progress. This is admirably done in the text.

Most writers of textbooks present controversial matters in the form of a carefully co-ordinated statement of the arguments on both sides, but Prof. Thorndike gives his own views, which are very definite, and are supported by capital arguments. Sometimes it would be better if he gave an indication that there is something to be said on the other side, as, for example, when he deals with the Weismann view of heredity. But he is never unfair, and he no doubt feels that in a first book the important thing is to get the broad principles strongly presented, leaving detailed criticism to a later stage.

An excellent feature of the book is the constant reference to the actual work of the school. Its author is evidently keeping in close touch with the practical work of the teacher, and is able to illustrate his views by examples from everyday school experience. He will carry most practical teachers with him in his suggestions, but in his "graphometer" and "composition-meter" he is rather groping after what is desirable than giving practical help. He admits that the attempts in this direction are as yet crude, but he does not emphasize the fundamental difficulty, which is the lack of an objective standard. The specimens of handwriting and composition that he supplies are arranged in order of merit, but the basis of the arrangement is not given. We can imagine a roomful of teachers quarrelling very vigorously about the relative merits of the specimens. He claims that "impartial judges" would arrange the specimens in a certain way, but this is surely begging the standard. In the evidence he adduces he is continually interpolating the phrase "by So-and-So's scoring," thus admitting the essentially subjective character of the assessments. The "graphometer" is open to precisely the same objections as M. Binet's scale and tests, but it supplies an excellent beginning for a very important reform. In any case, Prof. Thorndike has rendered an important service by introducing the matter in a first book. It will prepare the way for the setting up of an objective standard by making young teachers realize the need for it.

Naturally, the book has been prepared for American students, and the direct bearing of the matter on the conditions to be found in the United States lessens its value as a textbook for English students. But those who are making a serious study of education, whatever their nationality, will gain much from the volume, and not least from the two chapters that deal specifically with American education. Throughout the book there are sections that are worthy of consideration by even the most experienced teachers. The treatment of textbooks in relation to private study is a case in point. We have never seen this subject so well treated before.

The Loeb Classical Library.

The early volumes of the "Loeb Library" make their appearance at a time when the Vice-Chancellor of Oxford, for the first time on record in the history of the University, in making his annual review, spoke in English instead of in Latin. The two occurrences have a connected significance. At a moment when the value of the classical language is being hotly challenged, and when many conditions are combining to oust these languages from the scheme of secondary education; at a time when the Vice-Chancellor of the University of Oxford thinks it wise to use the mother tongue instead of the learned language, we have the most comprehensive issue of classical authors that has been projected.

The connexion lies in the significant fact that each volume in the Loeb Classics will have a translation in English, page by page with the original. This translation is, in itself, readable and of literary value, not a mere "key" or "crib." The reader who has forgotten his classics may enjoy the English version and may be tempted back to the original,

while he who has never learnt the languages of Greece and Rome may be tempted to begin the study in the way natural to adults—*i.e.*, by reading. We cannot doubt that the issue of these books will have an enormous influence in bringing back the literatures of Athens and Rome into our daily lives.

Mr. James Loeb, a New York banker, is the originator of the idea, which he has carried out with the advice of M. Salomon Reinach, the French savant. The general editors are Dr. Ronse, Head Master of the Perse School, Cambridge, and Mr. T. E. Page, who has lately given up his work at Charterhouse School. The volumes will be issued at intervals—twenty in the first year. The authors included in the series will range from the time of Homer to the fall of Constantinople. The volumes at present issued are as follows:—

- “The Apostolic Fathers.” Translated by Kirsopp Lake, of the University of Leyden. 2 vols. Vol. I, September; Vol. II, November.
- “The Confessions of St. Augustine.” Translated by W. Watts (1631). 2 vols.
- “Euripides.” Translated by A. S. Way, of the University of London. 4 vols. Vol. I: Iphigenia at Aulis, Rhesus, Hecuba, The Daughters of Troy, Helen. Vol. II: Electra, Orestes, Iphigenia in Taurica, Andromache, Cyclops.
- “Philostratus, the Life of Apollonius of Tyana.” Translated by F. C. Conybeare, of University College, Oxford. 2 vols.
- “Propertius.” Translated by H. E. Butler, of the University of London. 1 vol.
- “Terence.” Translated by John Sargeant, of Westminster School. 2 vols. Vol. I: *Lady of Andros*, *Self-Tormentor*, *Eunuch*. Vol. II: *Phormio*, *Mother-in-Law*, *Brothers*. (Published by Heinemann. 5s. net cloth, 6s. 6d. net leather.)

We can conceive nothing more likely to restore the classics to the place they ought to hold than this public-spirited action of Mr. Loeb, supported by the best known scholars of Europe and America. The volumes are of a suitable size, the printing and paper are excellent, and the price is reasonable. In an article entitled “Machines or Mind,” Dr. Rouse gives some reasons why the classics should be studied. Machinery has given us leisure, he says, and “We offer you the classical literature to employ your leisure. They will not earn you a shilling of money or build one electric tram, but they will fill your mind with wisdom and beauty. There is the use of Latin and Greek literature.” Dr. Rouse thinks translations are but second best. Yet we have the Bible. It depends upon the translation. Those in this series that we have read are excellent, maintaining the interest of the reader and giving him the spirit of the original. The monopoly of science was tottering. The issue of this momentous series will give it the final thrust, and literature, as apart from science, will come to its own again. Generations to come will owe a debt to Mr. Loeb.

GENERAL NOTICES.

ENGLISH SCHOOL BOOKS.

- (1) *Selections from Malory*. By H. Wragg. (158 pp. 2s.) (2) *Norse Tales*. By Edward Thomas. (159 pp. 2s.) (3) *Greek Legends*. By Mary Agnes Hamilton. (190 pp. 2s.)

These three reading books, issued by the Oxford University Press, make part of a uniform series and are apparently intended “for use in middle and senior forms”; but the simplicity of their language makes them more suitable for pupils between the ages of ten and twelve. For older boys and girls they would make very useful and pleasant home reading; but they present too little difficulty to be turned to very profitable account in the classroom. In the “Selections from Malory,” it is true, the antiquated style offers some material for conjecture and explanation; but this advantage has been largely neutralized by the over-abundant foot-notes. The selections have been very judiciously made and the stories are pleasantly told. The “Greek Legends” has some excellent illustrations.

- (4) *Maid Marion*. By Thomas Love Peacock. Edited by F. A. Cavenagh. (x, 139 pp.) (5) *A Persian Hero*. Edited by Wallace Gandy. (xii, 119 pp. 1s.)

These two volumes form valuable additions to Macmillan’s “Series of Literature Texts for Secondary Schools,” issued under the general

editorship of Mr. J. H. Fowler. The former especially would make an excellent classbook, for Peacock’s lively style and half-satirical manner supply an admirable stimulus. The stories from the “Shah Nameh” make very pleasant reading, but the style is rather too simple to make them entirely suitable for class purposes in a secondary school.

- “Historical Lyrics and Ballads.” Edited by S. E. Winbolt.—Book I: *Before 1485*. (xv, 110 pp. 6d.) Book II: *After 1485*. (xv, 110 pp. 6d.) (Blackie.)

The idea of preparing a selection of poems to illustrate incidents in English history is not new, but the field has not been exhausted, and these two little volumes are to be welcomed as offering a certain amount of new material chosen with good judgment. It would scarcely be well, however, to use a volume containing so many old ballads as a continuous poetry reader; for the chief literary food of children should come from more artistic sources. This selection should be of special value in providing illustrative material for the history lessons.

- An Anthology of English Prose*. Edited by Annie Barnett and Lucy Dale. (241 pp. 2s. 6d. Longmans.)

This volume, which is issued with a preface by the late Mr. Andrew Lang, should prove a very valuable help to the study of English literature in the higher forms of secondary schools. Including as it does representative extracts from all the most notable prose writers between 1332 and 1740, it serves the double purpose of introducing young people to the masterpieces of our literature and of giving them a connected idea of the development of prose writing during the period of its most obvious ripening. The choice of passages shows admirable taste and judgment.

- History Plays for Young Folks*. By Ada C. Parker. (48 pp. 2½d. Arnold.)

The idea of dramatizing the events of English history in order to bring them vividly before young learners is one that has deservedly been finding favour in recent years, and this little volume should form a welcome addition to the supply of available material. The task has, on the whole, been very well performed. The episodes and characters have been judiciously chosen and the language is simple and direct. At one or two points the dramatic possibilities seem scarcely to be realized—the intercession of Queen Philippa for the burghers of Calais, for example, is somewhat too readily successful. Due regard is paid to historical accuracy for the most part, but in the granting of the Great Charter too much licence has been taken. King John was no clerk, and the picture of him with pen in hand, signing the document, is an unwarrantable stretch of fancy.

- (1) *Exercises in English*. By J. Mushet. (196 pp. 2s. Baxendale.) (2) *Diagrams: Exercises in the Meaning of English*. By G. G. Loane. (178 pp. 3s. 6d. Macmillan.) (3) *Matter, Form, and Style*. By Hardress O’Grady. (125 pp. 2s. Murray.)

These contributions to the means available for teaching the use of the mother tongue are put forward with the professed purpose of supplying a felt want, but the need for them is not very obvious. The first two embody the methods followed by two practised teachers, and no other teacher could read them through without gaining some valuable suggestions and finding some useful material for exercises, but no new line is struck out in their general scheme. The only *raison d’être* of Mr. Mushet’s book would have been its offer of a more generalized view of English grammar than is commonly taken; but it appears from his preface that his purpose is not to supersede, but only to supplement, the ordinary grammar text-book. Mr. Loane’s collection of exercises would afford quite a useful course of training for a year’s work, but good teachers will find it more satisfactory to plan out their own composition exercises, whether analytic or synthetic, and to look for material rather in the literature that is being studied by the pupils than in any cut-and-dried collection of examples. Mr. O’Grady’s guide to the art of composition has little to recommend it. It is pretentious in manner and what is valuable in his suggestions is by no means new. It is not clear whether it is intended only to help the teacher, or to be put into the hands of the pupils; but in neither case is it likely to be of much service, except in suggesting subjects for composition, which are always welcome.

SCIENCE.

- Junior Magnetism and Electricity*. By R. H. Jude, M.A., D.Sc., Head of the Mathematical and Physical Department, Rutherford College, Newcastle-on-Tyne, and John Satterly, M.A., D.Sc., Lecturer in Physics at the University of Toronto. (2s. 6d. University Tutorial Press.)

This little book makes a special point of fundamental principles, and is especially adapted to the needs of students making a start in this subject. The reading matter is clearly expressed, and is interspersed with numerous experiments for which simply constructed apparatus only is required. Exercises are added at the end of each

chapter. Suitable for students working for Matriculation and similar examinations.

Elementary Quantitative Analysis. By William Briggs, LL.D., Principal of University Correspondence College, and H. W. Bausor, M.A., late Scholar of Clare College, Cambridge. (2s. University Tutorial Press.)

An excellent little book for the price. Very comprehensive, the work being set out clearly. Specially adapted for use as a laboratory companion.

Chemical Theory and Calculations. An Elementary Textbook. By Forsyth James Wilson, D.Sc., Ph.D., and Isidor M. Heilbron, Ph.D., F.I.C., A.R.T.C., Lecturers in Chemistry, the Royal Technical College, Glasgow. (2s. 6d. net. Constable.)

A useful little textbook dealing with the mathematical side of chemical theory. Essentially non-descriptive, it assumes that the student already knows a fair amount of the elements of the subject. The practical problems inserted at the end of each chapter are a special feature.

An Introduction to Practical Physics for Colleges and Schools. By E. H. Barton, D.Sc., F.R.S.E., Professor of Experimental Physics at University College, Nottingham, and T. P. Black, M.Sc., Ph.D., Registrar of University College, Nottingham. (3s. 6d. Arnold.)

This book forms a very useful laboratory companion, that can be recommended to students working for examinations of Intermediate Degree standard. It is assumed that the student works in a well equipped laboratory, the apparatus required being concisely stated at the head of each experiment. The theory of the experiment and method of procedure are explained, special reference being made in the text to points of difficulty. The subject-matter deals with all branches of elementary physics.

Elementary Entomology. By E. Dwight Sanderson, Dean of the College of Agriculture, West Virginia University, Director West Virginia Agricultural Experiment Station, and C. F. Jackson, Professor of Zoology and Entomology, New Hampshire College. (8s. 6d. Ginn.)

An excellent textbook on elementary entomology, in which the economical aspect of the subject is made a dominant feature, it being recognized that, although economic entomology is of immense importance, yet it cannot be satisfactorily understood unless it is based on general entomology as a foundation. The book is profusely illustrated, and the subject-matter is clearly set out. It should appeal not only to the practical student of entomology, but also to the amateur collector.

We have received from the Principal of the Municipal School of Technology, Manchester, a copy of the *Journal*, Vol. V. The *Journal* is a record of investigations undertaken or published by members of the staff or students at the school. The contents deal with a variety of subjects, amongst which the following are worth mentioning: "Electricity Meters, with Notes on Meter Testing"; "Dioptriometers," "On the Rigidity of the Earth," and "Boiler Economics and the Use of High Gas Speeds." There is also an interesting article on "The Electrical Theory of Dyeing." A most interesting volume.

We have received a copy of the second edition of *The Chart of the Elements*, published by the Metallic Compositions Co., Gray's Inn Road, London, W.C. This useful chart can be obtained in roll form to hang on wall at 12s. 6d.; or in map form, mounted on linen, at 8s. 6d.; unmounted, at 3s. 6d. An explanatory introduction is supplied with each chart. A most useful aid to the teacher, this chart should find a place in every chemical lecture room and laboratory.

Experimental Science. Part II: Chemistry. By S. E. Brown, M.A., Head Master of Liverpool Collegiate School. (2s. Cambridge University Press.)

Full of useful and instructive experiments. A most satisfactory book for beginners. Descriptive matter excellently set out.

First Year's Course of Chemistry. By James Sinclair, M.A., and George W. M'Allister, M.A. (1s. 6d. G. Bell.)

A feature of this book is that the discussion on the experiments is placed separately and following the experiment instructions, the idea being to avoid the tendency of students to look for results before the experiments are performed, and so to encourage original observation. The sequence of experiments is excellent.

FRENCH.

(1) *Un Homme à la Mer.* By Louis Desnoyers. (Pp. 91.) (2) *Gil Blas chez les Brigands.* By Le Sage. (Pp. 93.) (1s. 6d. each. Murray.)

These texts are both edited by W. M. Poole and E. L. Lassimonne. The first belongs to the Intermediate and the second to the Advanced section of their series. The plan is the same in both sections. Opposite each page of text is a page of questions on the subject-

matter, the meanings of words and the grammar, on the Direct Method. There follow six to eight pages of notes in French, explaining the meaning of various words and phrases indicated by an asterisk in the text. "Gil Blas" is well known, but Desnoyers' "Un Homme à la Mer" and "L'Amiral Tapefort," included in the same volume, are here edited for the first time. They are written in that lively style for which their author is famous, and their absurdities should be enjoyed by all kinds of boys. The text is in large type, but the questions are in much smaller type—in "Gil Blas" certainly too small—and might with advantage be more widely spaced. Under the heading "Questions de Grammaire" appear a number of questions on synonyms, contraries, and other methods of expression. Most grammatical points receive frequent attention. Some cases of oversight may be noticed. In "Un Homme à la Mer" *chaloûpe* occurs on page 18, but is not explained till page 36. *Donner*, on page 60, has an asterisk, but no note. In "Gil Blas," page 3, the sixth question on grammar must surely require possessive pronouns, not pronouns. Certain words might be included in the notes—e.g., in "Un Homme à la Mer," *s'étalait*, page 38; *attrape*, page 68. In "Gil Blas," *bréviaire*, page 4 (*rosaire*, page 8, is explained), *estropié*, page 42. In the notes, idiomatic phrases are often paraphrased without any further explanation. Something more is needed—e.g., in "Un Homme à la Mer"—for "perdant la tramontane," page 86, than "ne sachant plus ce qu'il faisait"; or, in "Gil Blas," for "être né coiffé" than "être né pour être très heureux."

(1) *Bug-Javaal.* By Victor Hugo. Edited by F. Victor Massard. (Pp. 218. 2s.) (2) *La Mare au Diable.* By George Sand. Edited by F. Victor Massard. (Pp. 173. 1s. 6d.) (Rivingtons.)

The above are volumes (senior and junior) in a new series of texts, entitled "Massard's Series of French Readers," edited according to the New, or Direct, Method. The stories are so well known to teachers (they have long figured in Rivingtons' lists) that they call for no comment, except that they are clearly printed, though the setting is rather close and the margins narrow—points to which attention was directed at the last meeting of the British Association. The notes, exercises, and vocabulary are placed in a detached volume contained in a pocket, with the intention of making preparation work easier for the pupil. The text of "Bug-Javaal" occupies 149 pages, the notes and exercises 66 pages. The notes contain explanations of words and phrases in French, and explanations of word-formation. The latter are good. The explanations of the meaning of words and phrases are not always within the grasp of the pupils who will probably use the book. This is the great difficulty of the method. Occasionally, and wisely, a word is translated. Where uses are illustrated the meaning is rendered clearer. The exercises are chiefly concerned with word-formation, change of tenses, of direct and indirect speech, synonyms, and the use of words and phrases. Those in which various words have to be inserted are not altogether satisfactory. A piece of English for retranslation follows each set of exercises. The text of "La Mare au Diable" occupies 85 pages; the notes and exercises, 50 pages. These are on the same lines in both series. In addition, there is a French-English vocabulary, in two columns, of 33 pages.

GERMAN.

Elementary German Grammar. By E. C. Wesselhoeft, M.A. (2s. 6d. Heath.)

This is not a book for the whole-hearted believer in the Direct Method to whom vocabularies and exercises for translation are anathema. It is, however, far from belonging to the old type of grammar. From the beginning, stress is laid on the order of words; for instance, directions for the position of *nicht* are given in Lesson VIII, directions which are frequently left till the pupil has had every opportunity of making mistakes; and the author aims at training the pupil to consider the sentence as a whole from the very first lesson. With this end in view Mr. Wesselhoeft has given prominence to the verb in his presentation of the grammar, a fact most teachers of German will probably appreciate. Nothing could be better than the way the accidence and syntax of the verb is handled, the treatment of the modal auxiliaries being strikingly clear, though unfortunately the strong form of the past participle of a modal verb is once again mis-called an infinitive. The noun is not treated fully till Lesson XXVI, but paradigms and general rules about declension and gender are gradually introduced before then; indeed, quite early in the book every case of a noun of each gender, with its corresponding article and pronoun, is dealt with in a separate lesson, a method which should help to ensure accuracy. Teacher and pupil alike will be grateful for the clearness and conciseness with which the rules are expressed. The book is strongly to be recommended to those who want to gain quickly a sound and idiomatic knowledge of elementary German.

Free Compositions in German. By F. W. Wilson, Ph.D., Assistant Master at Clifton College. (1s. 6d. Arnold.)

This is an excellent little book for use after one year's study of German. The pieces of prose and verse on which the compositions

are based are carefully graded as to difficulty, and the subjects are so chosen as to embrace a very varied vocabulary. The book is strikingly rich in ideas by which variety may be given to the form the composition takes, and, last but not least, Mr. Wilson spares us the aggressively "funny" stories which so often embitter the composition lesson.

GEOGRAPHY.

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An Introduction to Physical Geography. By Marion I. Newbigin, D.Sc., Editor of the *Scottish Geographical Magazine*. (3s. 6d. Dent.)

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"World Studies."—*Historical and Economic Geography*. By Horace Piggott, M.A., D.Ph., and Robert J. Finch, F.R.G.S., Senior Geography Master at Hornsey County School. (3s. 6d. Dent.)

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Junior Geography. By G. C. Fry, M.Sc.,
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"The Junior Scientific Geography."—*The Atlantic Seaboard of North America*. By Ellis W. Heaton, B.Sc., F.G.S., Principal of the Tynemouth Municipal High School, North Shields. (10d. net. Ralph, Holland.)

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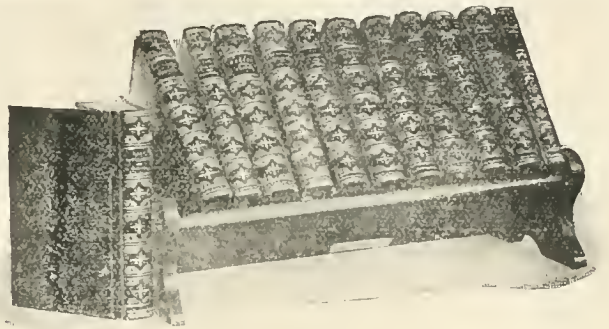
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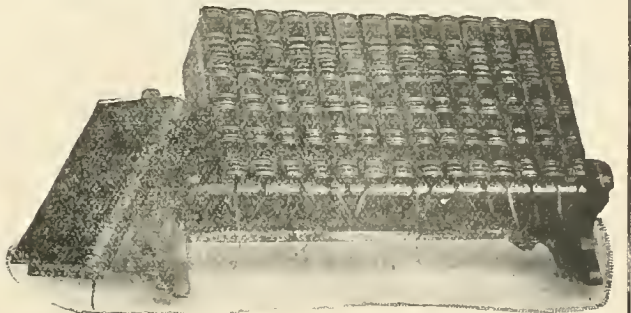
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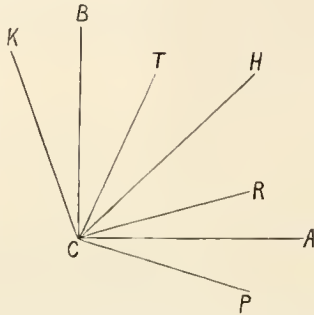
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- (1) To write on one side only of the paper.
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- (3) To sign each separate piece of work.

17137. (M. T. NARANIENGAR, M.A.)—In a rectangular hyperbola prove geometrically that the central perpendicular on any tangent bisects the common chord of curvature at the point of contact.

Solution by R. S. CAPON.

From C, the centre of the rectangular hyperbola, draw CA, CB, CH, CR, CT, CK respectively, in the directions of the axes major and minor, asymptote, radius vector to point of contact of tangent, tangent, and common chord of curvature.



Then tangent and chord are equally inclined to the axes, therefore $\angle KCB = \angle BCT$; therefore $\angle KCB = \angle ACP$, since $\angle BCT = \angle ACP$; therefore $\angle KCH = \angle HCP$, i.e., CP and CK are conjugate diameters; therefore CP bisects the common chord of curvature.

17290. (E. G. HOGG, M.A.)—If P be any point on a circle of radius p ($< R$) concentric with the circum-circle of the triangle ABC, and if Q be its isogonal conjugate, then $(BC \cdot AQ)/AP + (CA \cdot BQ)/BP + (AB \cdot CQ)/CP = 4\Delta R/(R^2 - p^2)$, where Δ is the area of the triangle ABC, R its circum-radius.

Analytical Solution by Professor K. J. SANJANA, M.A.; Professor J. C. SWAMINARAYAN, M.A.; and the PROPOSER.

If α, β, γ are the normal co-ordinates of a point, and p is its distance from the circum-centre, then

$$a\beta\gamma + b\gamma\alpha + c\alpha\beta = \Delta (R^2 - p^2)/R.$$

This is obtained by employing the formula for p^2 , $-(abc/4\Delta^2)[a(\beta - R \cos B)(\gamma - R \cos C) + \dots + \dots]$, which gives $R^2 - R(a\beta\gamma + b\gamma\alpha + c\alpha\beta)/\Delta$ on simplifying.

The result may be obtained by pure geometry also.

If the co-ordinates of the isogonally conjugate point are $k/a, k/b, k/\gamma$, then $k = 2\Delta a\beta\gamma/(a\beta\gamma + b\gamma\alpha + c\alpha\beta)$. Hence

$$\Sigma BC (AQ/AP) = \Sigma (ak/\beta\gamma) = (k/a\beta\gamma) 2\Delta \cdot 4\Delta^2/(a\beta\gamma + b\gamma\alpha + c\alpha\beta) = 4\Delta R/(R^2 - p^2).$$

Professor SANJANA remarks:—As in Question 15763 (Vol. VIII, Reprint, New Series, pp. 110–111) many triangular identities can be deduced.

If $P \equiv I$, then $Q \equiv I$; we get

$$BC + CA + AB = 4\Delta R/(R^2 - OI^2),$$

which gives the usual result $R^2 - OI^2 = 2Rr$.

If $P = O$, then $Q \equiv H$; we get

$$BC (AH/AO) + CA (BH/BO) + AB (CH/CO) = 4\Delta/R,$$

whence $a \cdot AH + b \cdot BH + c \cdot CH = 4\Delta$.

If $P \equiv G, Q = K$; we get $\Sigma a (AK/AG) = 4\Delta R/(R^2 - GO^2)$.

Now $R^2 - GO^2 = \frac{1}{3}\Sigma a^2$; $AG = \frac{2}{3}m_1$. Hence

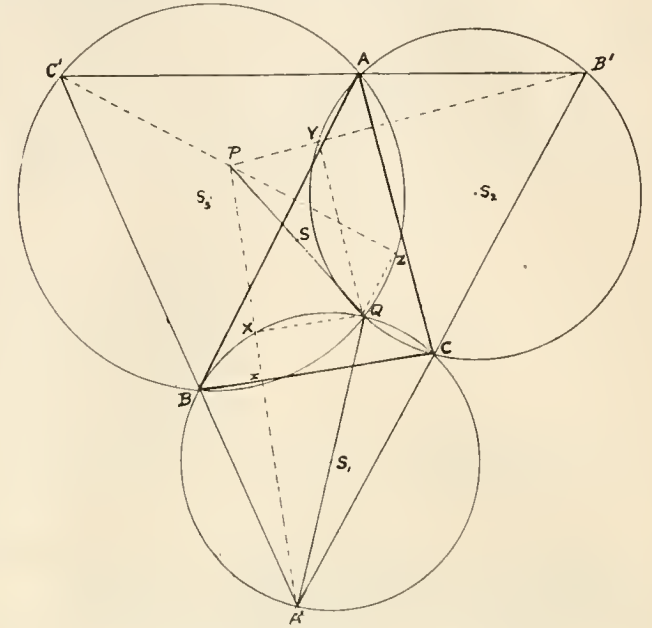
$$(a/m_1) \cdot AK + (b/m_2) \cdot BK + (c/m_3) \cdot CK = 24\Delta R/(a^2 + b^2 + c^2).$$

Solution by Geometry and Trigonometry, by V. DANIEL, B.Sc.

Let ABC be triangle, determined by three circles, radii r_a, r_b, r_c , intersecting at Q, with common chords l, m, n . Draw $A'B'C'$ the maximum circumscribing triangle of species Δ' determined by the

supplements of the angles at Q. Draw QX, QY, QZ chords of the respective circles parallel to a, b, c .

Then $A'X, B'Y, C'Z$ meet in P, the isogonal conjugate of Q with respect to Δ' , and a', b', c' subtend angles $\pi - A, \pi - B, \pi - C$ at P and $A + A', B + B', C + C'$ at Q. ΔXYZ is similar to Δ , and the mid-point of PQ is their common circumcentre.



Let $PQ = 2\rho$. Let $A'X$ meet BC in x . Now, in $\Delta PA'Q$

$$4\rho^2 = 4r_a^2 + A'P^2 - 2A'X \cdot A'P;$$

therefore

$$4\rho^2 + 4Xx \cdot A'P = 4r_a^2 + A'P^2 - 2A'P (A'X - 2Xx)$$

$$= 4r_a^2 + A'P^2 - 4A'P \cdot r_a \cos A'$$

$$= 4r_a^2 + (2R \cos A + 2r_a \cos A')^2$$

$$- 4r_a \cos A' (2R \cos A + 2r_a \cos A');$$

therefore

$$\rho^2 + Xx \cdot A'P = r_a^2 \sin^2 A' + R^2 \cos^2 A = R^2;$$

i.e., $Xx \cdot A'P = R^2 - \rho^2$;

therefore

$$\Sigma (a' \cdot A'Q/A'P) = 1/(R^2 - \rho^2) \Sigma (a' \cdot A'Q \cdot Xx)$$

$$= 1/(R^2 - \rho^2) \Sigma (a'mm) = 4R'\Delta (R^2 - \rho^2);$$

therefore

$$2\Delta/(R^2 - \rho^2) = \Sigma \sin A' \cdot A'Q/A'P = \Sigma [\sin A \sin A'/\sin (A + A')]$$

(a symmetrical invariant for the two species); therefore

$$\Sigma (a' \cdot A'Q/A'P) = 4R'\Delta/(R^2 - \rho^2), \text{ the required result.}$$

Geometrical Solution by W. N. BAILEY.

With slightly modified notation, let O be the centre of the circumcircle of a triangle ABC, P a point within the triangle, and Q its isogonal conjugate. Given $OP = \rho$ ($\rho < R$), it is required to prove that

$$(AQ \cdot BC)/AP + (BQ \cdot CA)/BP + (CQ \cdot AB)/CP = 4R\Delta/(R^2 - \rho^2).$$

Let OP meet the circumcircle at D and E. Draw MPL parallel to BC, meeting AB, AC at M, L. Join CP, meeting the circle at P. Join FM, FA, and draw PK parallel to AB, meeting BC at K.

Proof.— $\angle MFP = \angle BCP = \angle BAF$;

therefore A, F, M, and P are concyclic; therefore

$$\angle MFP = \angle MAP = \angle CAQ \text{ and } \angle MPF = \angle BCP = \angle QCA;$$

therefore triangles MPF, QCA are similar; therefore

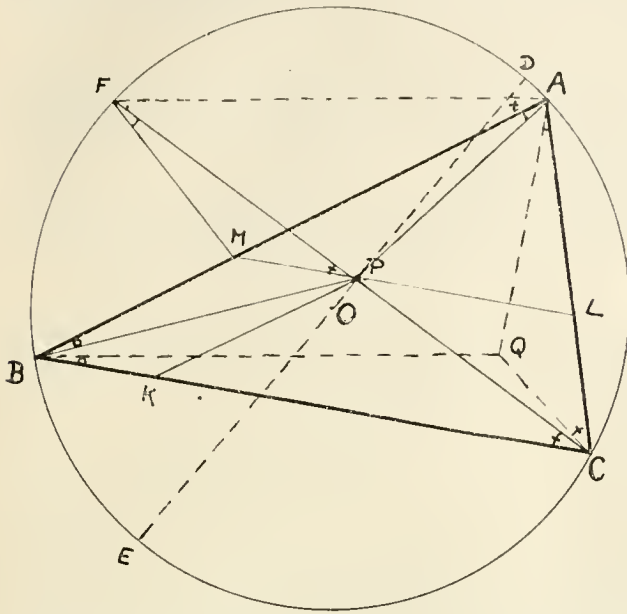
$$MP/PF = QC/CA; \text{ therefore } MP \cdot CA = QC \cdot PF.$$

Now, $R^2 - \rho^2 = (R - \rho)(R + \rho) = DP \cdot PE = CP \cdot PF$; therefore

$$(R^2 - \rho^2) \cdot (CQ \cdot AB)/CP = PF \cdot CQ \cdot AB = MP \cdot CA \cdot AB.$$

Similarly, $(R^2 - \rho^2) \cdot (BQ \cdot CA)/BP = PL \cdot CA \cdot AB$

and $(R^2 - \rho^2) \cdot (AQ \cdot BC)/AP = PK \cdot CA \cdot BC$;



therefore

$$(R^2 - \rho^2) \left(\frac{AQ \cdot BC}{AP} + \frac{BQ \cdot CA}{BP} + \frac{CQ \cdot AB}{CP} \right) = BC \cdot CA \cdot AB \left(\frac{PK}{AB} + \frac{ML}{BC} \right) = 4R\Delta \left(\frac{BM}{AB} + \frac{MA}{AB} \right) = 4R\Delta;$$

therefore

$$(AQ \cdot BC)/AP + (BQ \cdot CA)/BP + (CQ \cdot AB)/CP = 4R\Delta/(R^2 - \rho^2).$$

13584. (Rev. W. ALLEN WHITWORTH, M.A.)—A die of p faces is thrown repeatedly until the number of aces turned up is to the number of not-aces as $1:p-1$. Show that the chance of this happening at the np -th throw and not before is

$$\frac{(np-2)! (p-1)^{np-n}}{n! (np-n-1)! p^{np-1}}$$

Solution by Professor W. H. H. HUDSON, M.A.

Take rectangular axes OX, OY.

Let unit step along or parallel to OX denote the throwing of an ace, and unit step along or parallel to OY denote the throwing of a not-ace.

Let the co-ordinates of P be $(n, np-n)$.

Routes from O to P by steps along or parallel to the axes represent all possible sequences of throws until n aces and np not-aces are thrown.

The chance of any particular sequence is

$$(p-1)^{np-n}/p^{np}.$$

Let the co-ordinates of A be $(1, 0)$; of B, $(n-1, np-n)$; of D, $(r, rp-r)$, where $r = 1.2.3 \dots n-1$.

We shall call D a diagonal point or D-point, and write R(OD) for the number of routes from O to D; thus

$$R(OD) = C_r^{np} = p C_{r-1}^{np-1} = p \times R(AD) \dots (1),$$

and $R(OP) = C_{np}^{np}$.

We want to find the number of routes from O to P that avoid D-points. There are no routes from A to B that avoid D-points.

Of all the routes from O to D and from A to D which pass through other D-points between O and D, consider those that have D_r for their last D-point before D.

Now $R(OD_r) = p \times R(AD_r)$, and $R(D_rD)$ is the same for routes starting from O as for those starting from A; taking account of all values of a from 1 to $r-1$, it follows that the number of routes from O to D also passing through other D-points = $p \times$ the number of routes from A to D also passing through other D-points. (2).

Subtracting (2) from (1), the number of routes from O to D avoiding other D-points = $p \times$ the number of routes from A to D avoiding other D-points.

Now suppose D to be the first D-point through which the routes ODP, ADB pass. Since

$$R(OP) = C_{np}^{np} = p C_{n-r}^{np-r} = p \times R(DB),$$

we have

$$R(OP) = p^2 \times R(ADB).$$

Taking account of all positions of D, the number of routes from O to P that pass through D-points = $p^2 \times R(AB)$.

Therefore the number of routes from O to P that avoid D-points = $R(OP) - p^2 \times R(AB) = C_{np}^{np} - p^2 C_{n-2}^{np-2}$.

This is $\frac{(np-2)!}{n! (np-n-1)!}$; and the chance that a requisite sequence of throws occurs is $\frac{(np-2)! (p-1)^{np-n}}{n! (np-n-1)! p^{np-1}}$.

17389. (J. J. BARNVILLE, B.A.)—(1) Reduce

$$(x^4 + x^7 + 1)/(x^2 + x + 1)$$

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 $A^2 + 7B^2$.

Solution by R. F. DAVIS, M.A.

(1) Using the formula

$$(a^2 + 3b^2)(c^2 + 3d^2) = (ac + 3bd)^2 + 3(ad - bc)^2,$$

we find

$$A = (x^8 + \frac{1}{2}x^7 + \frac{1}{2}x + 1)/(x^2 + x + 1) = x^6 - \frac{1}{2}x^5 - \frac{1}{2}x^4 + x^3 - \frac{1}{2}x^2 - \frac{1}{2}x + 1,$$

$$B = \frac{1}{2}(x^7 - x)/(x^2 + x + 1) = \frac{1}{2}x(x-1)(x^3 + 1).$$

Writing t for $x + 1/x$, it will be found that

$$\{x^7 + 1/x^7 + 1\}/\{x + 1/x + 1\} = t^6 - t^5 - 6t^4 + 6t^3 + 8t^2 - 8t + 1,$$

and this is equivalent to $(t^3 - \frac{1}{2}t^2 - 4t + 1)^2 + (\frac{7}{2})t^2(t^2 - 4)$, giving

$$C = x^6 - \frac{1}{2}x^5 - x^4 - x^2 - \frac{1}{2}x + 1, \quad D = \frac{1}{2}x(x^4 - 1).$$

(2) The first resolution may be effected by the formula

$$\frac{1}{2}(a^2 - b^2) + 7(c^2 - d^2)^2 + \frac{1}{2}(ab - 7cd)^2 = \frac{1}{2}\{(a^2 + b^2) - 7(c^2 + d^2)\}^2 + 7\{2(ac - bd)\}^2.$$

Put $2a = 2x^3 - x^2 - 4$, $2b = x^2 + 2x - 4$, $2c = x^2$, $2d = x^2 - 2x$;

and we get

$$(x^6 - x^5 - 3x^4 + 4x^3 - 6x^2 - 4x + 8)^2 + 7(x^5 - x^4 + 2x^2 - 4x)^2.$$

The second resolution may be effected by the formula

$$\frac{1}{2}(a^2 - 2b^2) + 7(c^2 - 2d^2)^2 + \frac{1}{2}(ab - 7cd)^2 = \frac{1}{2}\{(a^2 + 2b^2) - 7(c^2 + 2d^2)\}^2 + 7\{2(ac - 2bd)\}^2.$$

Put $2a = 2x^3 - x^2 + x - 10$, $2b = x^2 + 2x - 2$, $2c = x^2 + x$, $2d = x^2 - 2x$;

and we get

$$\frac{1}{2}(x^6 - x^5 - \frac{7}{2}x^4 + 2x^3 - \frac{3}{2}x^2 - 9x + 27)^2 + 7\{x^5 - \frac{1}{2}x^4 + \frac{3}{2}x^2 - 9x\}^2.$$

Lt.-Col. ALLAN CUNNINGHAM, R.E., solves (1) as follows:—

Let $N = (x^4 + x^7 + 1)/(x^2 + x + 1)$, the given form.

(i) Then $N = X_7 \div X_1$, where

$$X_1 = \frac{x^3 - 1}{x - 1}, \quad X_7 = \frac{x^21 - 1}{x^7 - 1}.$$

Here $X_1 = (\frac{1}{2}x + 1)^2 + 3(\frac{1}{2}x)^2$, $X_7 = (\frac{1}{2}x^7 + 1)^2 + 3(\frac{1}{2}x^7)^2$;

or (for shortness) $X_1 = a_1^2 + 3b_1^2$, $X_7 = a_7^2 + 3b_7^2$.

Then $N = X_7 \div X_1 = A^2 + 3B^2$, where

$$A = \text{one of } (a_1 a_7 \mp 3b_1 b_7) \div X_1, \quad B = \text{one of } (a_1 b_7 \mp b_1 a_7) \div X_1.$$

One of the pair of A and (the corresponding) one of B are always integers. On effecting the algebraic reductions (which are rather lengthy), it will be found that the integer pair A, B are

$$A = (x^6 - \frac{1}{2}x^5 - \frac{1}{2}x^4 + x^3 - \frac{1}{2}x^2 - \frac{1}{2}x + 1), \quad B = \frac{1}{2}x(x-1)(x^3 + 1).$$

(ii) N may also be written $N = Y_3 \div Y_1$, where

$$Y_1 = \frac{x^7 - 1}{x - 1}, \quad Y_3 = \frac{x^21 - 1}{x^7 - 1}.$$

Here $Y_1 = (x^3 - \frac{1}{2}x^2 - \frac{1}{2}x + 1)^2 + 7(\frac{1}{2}x^2 + \frac{1}{2}x)^2$,

$$Y_3 = (x^9 - \frac{1}{2}x^6 - \frac{1}{2}x^3 + 1)^2 + 7(\frac{1}{2}x^6 - \frac{1}{2}x^3)^2;$$

or (for shortness) $Y_1 = c_1^2 + 7d_1^2$, $Y_3 = c_3^2 + 7d_3^2$.

Then $N = Y_3 \div Y_1 = C^2 + 7D^2$, where

$$C = \text{one of } (c_1 c_3 \mp 7d_1 d_3) \div Y_1, \quad D = \text{one of } (c_1 d_3 \mp d_1 c_3) \div Y_1.$$

One of the pair of C and (the corresponding) one of the pair of D are always integers. On effecting the algebraic reductions (which are rather lengthy), it will be found that the integer pair of C, D are

$$C = (x^6 - \frac{1}{2}x^5 - x^4 - x^2 - \frac{1}{2}x + 1), \quad D = (\frac{1}{2}x^5 - \frac{1}{2}x).$$

17344. (D. M. Y. SOMMERVILLE, M.A., D.Sc.)—Find a construction for the common perpendicular to two skew lines in space, without assuming the parallel-postulate.

Solution (I) by the PROPOSER; Tentative Solution (II) by HENRY RIDDELL, M.E.

(I) Let the two lines be a, b . Through b draw a system of pairs of planes at right angles. These cut a in an elliptic involution of points. Let P be the centre of this involution, and draw PQ perpendicular to b . Then the conjugate to the plane Pb in the involution of planes is perpendicular to PQ , and hence PQ is perpendicular to a .

This construction holds whether the geometry be Euclidean or non-Euclidean. In non-Euclidean geometry an involution of points on a line has two double points D_1, D_2 , and two centres C_1, C_2 , the middle points of the segments D_1D_2 and D_2D_1 . In hyperbolic geometry one of these centres is real and the other ideal or ultraspacial, so that only one real common perpendicular can be drawn. In Euclidean geometry the second centre is at infinity, and the second perpendicular is a line at infinity. In these cases the angle between the two lines is the second mutual invariant. In elliptic geometry both perpendiculars are real. In the case in which one pair of conjugates, other than the two centres, are a quadrant distant, all the pairs of conjugates are a quadrant distant, and the centres of the involution are any pair of conjugates; the two lines have then an infinity of common perpendiculars, and these are all equal. (Clifford's parallels.)

This construction agrees with the projective construction by finding the two common transversals to the two given lines and their conjugates with regard to the absolute; but naturally this latter construction is not a practical one, at least in Euclidean geometry.

(II) From any point P upon one line let fall the perpendicular PQ upon the other. Then from the point Q draw QR perpendicular to the first line. The points P and R have a (1, 1) correspondence, and therefore, if several positions are taken, form two ranges equianharmonic, and their common point will be that from which the common perpendicular may be drawn. Is it legitimate, without the use of the parallel-postulate, to assume that there is only one common point to these two ranges, and that this point may be determined?

17323. (A. W. H. THOMPSON.)—Let $a, b, c; a', b', c'$ be the angular parts of two triangles, whose sides are $a, b, c; a', b', c'$ respectively. Lines λ_1, μ_1, ν_1 are drawn through a, b, c perpendicular to a', b', c' respectively. Similarly lines λ_2, μ_2, ν_2 are drawn through a', b', c' perpendicular to a, b, c respectively. If Δ_1, R_1 denote the area and circum-radius of the triangle $\lambda_1\mu_1\nu_1$, and Δ_2, R_2 the area and circum-radius of the triangle $\lambda_2\mu_2\nu_2$, show that $(\Delta_1/R_1)/(\Delta_2/R_2) = R/R'$, where R, R' are the circum-radii of the triangles $abc, a'b'c'$.

Solution by R. F. DAVIS, M.A.

The triangle $\lambda_1\mu_1\nu_1$ has its angles equal to a', b', c' ; and the trilinear coordinates p, q, r of any point whatsoever referred to this triangle are connected by the relation

$$p \sin a' + q \sin b' + r \sin c' = \Delta_1/R_1.$$

Applying this to the point a which lies on λ_1 ,

$$\begin{aligned} \Delta_1/R_1 &= \gamma \cos(\gamma, \beta') \sin b' + \beta \cos(\beta, \gamma') \sin c' \\ &= 2R \{ \cos(\gamma, \beta') \sin c \sin b' + \cos(\beta, \gamma') \sin b \sin c' \}. \end{aligned}$$

Interchangeably, by considering the trilinear coordinates of a' with respect to the triangle $\lambda_2\mu_2\nu_2$, we get

$$\Delta_2/R_2 = 2R' \{ \dots \}.$$

QUESTIONS FOR SOLUTION.

17400. (SELIG BRODETSKY, B.A., B.Sc., F.R.A.S.)—By means of centres of mass, prove that

$$\text{Lt}_{s \rightarrow \infty} 2^{-s} \left\{ \frac{s!}{\mu! (s-\mu)!} + \frac{s!}{(m+\mu)! (s-m-\mu)!} + \dots \right. \\ \left. \dots + \frac{s!}{(\lambda m + \mu)! (s-\lambda m - \mu)!} + \dots \right\} = \frac{1}{m}.$$

The letters denote positive integers, μ may be zero. Show that this a special case of

$$\text{Lt}_{s \rightarrow \infty} (1 + \nu)^s \left\{ \frac{s! \nu^{s-\mu}}{\mu! (s-\mu)!} + \frac{s! \nu^{s-m-\mu}}{(m+\mu)! (s-m-\mu)!} + \dots \right. \\ \left. \dots + \frac{s! \nu^{s-\lambda m - \mu}}{(\lambda m + \mu)! (s-\lambda m - \mu)!} + \dots \right\} = \frac{1}{m}$$

ν is any positive quantity. Prove more generally that

$$\text{Lt}_{s \rightarrow \infty} (1 + \nu_1)^{-1} (1 - \nu_2)^{-1} \dots (1 + \nu_s)^{-1} \left\{ \sum_{r=0}^s \nu_r^{-\mu} + \sum_{r=0}^s \nu_r^{-m-\mu} + \dots + \sum_{r=0}^s \nu_r^{-\lambda m - \mu} + \dots \right\} = 1/m;$$

$\nu_1, \nu_2, \dots, \nu_s$ are any positive quantities, and \sum_r is the sum of the products r at a time of these quantities. Interpret these results.

17401. (Professor J. C. SWAMINARAYAN, M.A.)—Show that the differential equation $\lambda dr = \sin \theta ds$

represents a family of circles whose centres are situated on the initial line. Also show that the radius of any circle of the system is equal to λ times the distance of its centre from the origin.

17402. (C. M. ROSS, B.A.)—Prove that

$$\sum_{m=-x}^{m=x} \sum_{n=-x}^{n=x} \frac{1}{(m^2 + a^2)(n^2 + b^2)} = \frac{\pi^2}{ab} \coth \pi a \coth \pi b. \quad (\text{Math. Tripes, 1899.})$$

17403. (The late Rev. T. ROACH, M.A.)—Find the sum of the series $x - x^{-1} - \frac{1}{3}(x^3 - x^{-3}) + \frac{1}{5}(x^5 - x^{-5}) - \dots$

17404. (A. M. NESBITT, M.A.)—If

$$\frac{by^m - cz}{x^l} = cz - ax^m = \frac{ax^m - by}{z^l}$$

then will $(\Sigma ax)^2 = \Sigma x^{2l} \cdot \Sigma \{ bc (y-z)^{m-1} \} + 3 \Sigma a^2 x^{2m}$.

17405. (C. M. ROSS, B.A.)—Eliminate x, y, z from the equations $y^2 + yz + z^2 = a^2, z^2 + zx + x^2 = b^2, x^2 + xy + y^2 = c^2, xy + yz + zx = 0$.

17406. (A. W. H. THOMPSON.)—At a point of a helix Δ is the shortest distance between consecutive principal normals. If s be the element of arc at the point, show that Δs is ultimately constant.

17407. (Professor NEUBERG.)—Soient O et A deux points fixes, AB une droite menée par A . Par O on mène une sécante variable qui coupe AB en C , et l'on porte sur OC dans les deux sens les longueurs $CM = CM' = CA$. Le lieu des points M, M' est une strophoïde. Trouver la trajectoire orthogonale de toutes les strophoïdes qu'en obtient en faisant tourner la droite AB autour de A dans un même plan passant par OA .

17408. (C. E. YOUNGMAN, M.A.)—In the parabola

$$r(1 + \cos \theta) = 2a,$$

consider the circle of curvature at 3θ , along with the circle through $\theta, \theta + 120^\circ, \theta + 240^\circ$. These circles meet on the parabola; show that their second common point describes a circular cubic—a pedal of the parabola which envelopes their common chord; inverse to an ellipse of eccentricity $\frac{1}{3}$.

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' .

17410. (Professor K. J. SANJANA, M.A.)—Points P, Q, R are taken in the sides BC, CA, AB respectively of a triangle such that the areas of the triangles AQR, BRP, CPQ are equal but not fixed; prove that the circum-centres of these triangles move on straight lines. If the areas are each equal to the area of ABC , the loci are hyperbolas having for asymptotes the six straight lines at right angles to the sides drawn from the angular points in which the sides meet.

17411. (W. N. BAILEY.)—Tangents are drawn from a given point to the ellipse $x^2/a^2 + y^2/b^2 = 1$. Find the co-ordinates of the symmedian point of the triangle formed by these tangents and the chord of contact.

17412. (Professor E. J. NANSON.)—Given four lines a, b, c, d in a plane, show that the isotomic conjugates a', b', c', d' of each with respect to the other three are parallel, and that

$$p' \cdot qr = s' \cdot rq = q' \cdot ps,$$

where p', qr denotes the join of $p'q, p'r$, and p, q, r, s are a, b, c, d in any order. Find the corresponding theorems in regard to isogonal conjugate points.

17413. (M. SATYANARAYANA, M.A.)—If $\alpha, \beta, \gamma, \delta, \epsilon$ be the vectorial angles of the points A, B, C, D, E on a circle $r = a$, K_1 the point of intersection of the pedal lines of B, C, D, E with respect to the triangles CDE, DEB, EBC, BCD respectively, and K_2, K_3, K_4, K_5 the corresponding points for the quadrilaterals $CDEA, DEAB, EABC$, and $ABCD$ respectively, then K_1, K_2, K_3, K_4, K_5 lie on the circle

$$(x - \frac{1}{2} \alpha \Sigma \cos a)^2 + (y - \frac{1}{2} \alpha \Sigma \sin a)^2 = \frac{1}{4} a^2.$$

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I am, yours truly,
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24 Union Street, Middlesbrough,
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Sirs,
I have just heard that I have obtained a full Associate Diploma with Honours in Geography in the College of Preceptors Summer examination. I feel bound to attribute my success to the excellence of your tuition; your papers in Education and Zoology were particularly stimulating.
Yours sincerely,
W. H. SPREADHAM.

53a Quintin Street, Earlsfield, S.W.
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Dear Sirs,
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.

Kirkurd Schoolhouse, Delphinton, Peebleshire,
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Dear Sir,
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Gratefully yours,
JOHN H. ASTLEY.

2 Belmont Road, Astley Bridge, Bolton,
October 2nd, 1912.

Dear Sirs,
I have great pleasure in informing you that I have passed A.C.P. I attribute my success largely to the excellence of your tuition, of which I cannot speak too highly.
Yours very respectfully,
F. WILLIAMS.

Tyddyn Oer, Bethel, Carnarvon,
October 4th, 1912.

Dear Sir,
I am very pleased to be able to inform you that I have passed in the Theory and Practice of Education and, being a graduate, have thus qualified for the full A.C.P. Diploma. I thank you for your valuable tuition. I knew nothing of the required work for this examination before I started studying under your direction, and you had only eleven weeks in which to cover the syllabus for me, so I certainly derived very great benefit indeed from your excellent notes and model answers, &c. With renewed thanks,
Believe me, yours very truly,
EDITH M. BROOKS.

11 Pentyla, Port Talbot,
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CYRIL E. WALL.

57 Fawe Park Road, Putney,

Dear Sir,
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.

146 Burnley Road, Bacup,
October 2nd, 1912.

Dear Sir,
You'll be pleased to hear that I've been successful in obtaining the Diploma of Associate. Please find enclosed your notes, all of which I found extremely helpful. I beg to thank you for all the assistance you have given me, and I shall take every opportunity of recommending your admirable classes. Believe me,
Yours faithfully,
GERTRUDE BILLINGHAM.

Trinity Schools, Henley-on-Thames,
October 2nd, 1912.

Dear Sirs,
I am now able to say that I have been successful in the examination for the A.C.P. Diploma held in August last. I must thank you for your really valuable help. I am convinced that your guidance is expert, and that your courses are thorough and eliminate cram. Again thanking you,
I am, yours very sincerely,
ARTHUR E. CHURCH.

"Sunnyside," Pound Road, Warley,
October 3rd, 1912.

Dear Sir,
I have great pleasure in informing you that I passed A.C.P. in all subjects necessary at the last examination. I should like to thank you and your staff for the excellent revision papers you sent. Without your help, I am sure, I should not have passed, especially as I was only two months preparing for all the subjects.
Yours truly,
EDWARD C. HALL.

13 Ackroyd Road, Honor Oak Park, S.E.
October 2nd, 1912.

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THE EDUCATIONAL TIMES,

AND
Journal of the College of Preceptors.

Vol. LXV.] New Series, No. 620. DECEMBER 2, 1912.

{Published Monthly, price, to Non-Members, 6d.; by Post, 7d. Annual Subscription, 7s.

BOARD OF EDUCATION.

TEACHERS' REGISTER, COLUMN B. ORDER IN COUNCIL OF 6TH MARCH, 1902.

The Board announce that the period during which they will be prepared to receive applications for the repayment of the sums of £1. 1s., paid by teachers on admission to Column B of the Register maintained by the previous Teachers' Registration Council, is now extended to 28th February, 1913.

Applications for such repayment should be addressed to the Board of Education, and should state the registered number and the service of the applicant, with dates.

There will be no further extension of the time during which applications can be received.

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 15th, 1913, at 7 p.m.

For Syllabus, see page 488.

EXAMINATIONS.

Diplomas.—The Winter Examination of Teachers for the Diplomas of the College will commence on the 30th of December, 1912.

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.

Inspection and Examination of Schools.—Inspectors and Examiners are appointed by the College for the Inspection and Examination of Public and Private Schools.

The Regulations for the above Examinations can be obtained on application to the Secretary.

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The Educational Times.

REDISCOVERIES.

THE Montessori Method has suffered equally from superficial criticism and from unintelligent adulation. To some of the many writers in the newspapers Mme Montessori has once for all removed the difficulties in the way of education, so that in the twinkling of an eye all our schools may become perfect and complete; others ask how it is possible to educate children if they are allowed to do as they like. But those who study Mme Montessori's book not only recognize the value of what she says, but also feel that their own ideals are not dissimilar from hers. In English education our ideals are sound: it is our practice that is sometimes at fault. Our ideals are sound because we have studied the systems of great educators: our practice is at fault because the traditions of school life are too strong for us. But, if our ideals are really alive and not merely a reflection of a far-off sun, we may in the end come nearer to realize them. The fact is that reflected light is not sufficiently strong. There must be constant rediscovery and restatement in order that our faith may remain vital.

Mme Montessori has rediscovered Froebel. But she has this advantage over Froebel. She lives a hundred years later, and she has studied the scientific knowledge of child life that has accumulated during that period. She presents to us, with the power that comes from conviction, the ideals that were in danger of losing their illuminating power through distance. Plato, Locke, Rousseau, Pestalozzi, to mention a few names only of a long line, relight from time to time the beacon that guides us. Mme Montessori is the latest torch-bearer, and we do not exaggerate in saying that the influence of her first school in Rome seems likely to revolutionize educational ideas all the world over. But this will not happen in a moment. There are schools in large numbers, we are told, not in England, where "the Montessori Method" is announced and where that method is entirely misunderstood and the teaching given lifeless and barren. We

have it on the authority of Mr. Edmond Holmes that there is one such school even in Rome.

The main principle underlying the system is that the utmost freedom possible should be given to the child to "grow" in suitable surroundings. "Growth" is the leading idea. In order that there may be growth there must be freedom. We cannot tell how the child would grow naturally, how his powers would develop, or what activities he would display, if he is constantly kept in a state of repression. There must, then, be freedom. There must also be suitable material provided on which the child may exercise his activities. But an activity that is harmful to the child or to others must be repressed. Thus it is a travesty of the method to say that children may do exactly what they like. Mme Montessori's chapter on discipline reads like a fairy tale, and observers from Rome tell us the same story that seems, when we think of our own schools, too good to be true. The explanation is that, when sufficient care is taken to provide for the child's natural activities, original naughtiness has little temptation to display itself.

To allow freedom for the development of natural activities brings a corollary of no small importance. The teacher becomes an observer. Mme Montessori points out with some vigour that one might as well ask an entomologist to study the habits of a case of pinned butterflies as ask an observer to study the habits of children seated at desks and under "discipline." The children must be free and the teacher must watch. The corollary is obvious. No hard-and-fast method can be laid down, at any rate until teachers have become observers for some years. By observing one learns what the children need to help them to educate their powers. In the course of time it might be possible to collect so many results of observation that definite lines of education could be laid down. But that time is not yet. When it is said that the Montessori method is to be introduced into a school, it must be remembered that the meaning is that the teachers are to become observers of the free activities of the children.

As a result of her observation, Mme Montessori has perfected a series of "material" which she has found

helpful. But this material wrongly used may become as harmful as any other apparatus. There is this great danger in didactic material—lest the dead material should be mistaken for the life-giving principle. There is a second danger. Mme Montessori has found the material useful among a certain sort of very young children. She would be last person in the world to say either that the material was final or that it was essential. Froebeli-ans will remember that not many years ago the Gifts were used in a mechanical and barren way.

The principle is the main thing. Teachers who have grasped the principle of the new gospel can use their own methods of carrying out that principle. Rightly understood, it means that the mechanical obedience that we have expected from our pupils must cease to be demanded. We must cease to believe that the child is made up of evil impulses, and that the teacher's business is to whip the old Adam out of him. The new gospel tells us to trust the impulses of the child—to remember that the child is growing and needs the sunshine of love if he is to gain confidence in the exercise of his own powers.

Constant repression, the constant demand for mechanical obedience, the insisting upon immobility—all these are devitalizing to the child, and worse. They tend to prevent the one main object of all education, and that is the control of the will. In a school where the discipline is said to be good, a boy has no chance of practising control of will. Compulsion meets him at every turn. And when he leaves school, not only does he miss the props and supports to which he has grown accustomed, and so becomes liable to fall to the ground; but the natural props and supports of his own character have not had a chance to develop, and he is left helpless. These are sweeping statements, and are, fortunately, by no means of universal application in English schools. There are kindergartens and schools in England as good as those in Rome; but there can be no doubt that we are ready for the message that Mme Montessori has to bring to us. She has worked her way to her convictions through a full life of study and observation, with deficient children and with infants in the poorest parts of Rome. The principle that has resulted from her investigations is applicable to children of all ages. Herself a woman of quite remarkable power, she has done what the best among us may reverently admire. She is a great woman, a great teacher. Ordinary men and women can no more do what she has done than they can do what Arnold and Tolstoy did; but, if we grasp and realize the essential principle and are not led away by unessential detail, we may look forward to a definite increase in the influence and value of school life.

THE Polyglot Club issues a very full program of lectures, debates, and readings for the ensuing session. The languages included are English, French, Spanish, German, Italian, and Russian. There are also social events, including a *Diner Français* and a *Liederabend*. Information may be had from the Hon. General Secretary, Mr. George Young, 5 and 6 Clement's Inn, Strand, W.C.

NOTES.

IN our August number there was an article by Mrs Ingham describing the Jaques-Dalcroze *Eurhythmics*. method of Eurhythmics. Those of our readers who were not fortunate enough to see one of the demonstrations that took place last month may refer to this article. But indeed a printed account is not so convincing as to listen to an address by Mr. Jaques-Dalcroze, and to see his pupils at work. The system of training aims at producing harmony between brain and muscle, and, as a result, a complete control of the will. Mr. Jaques-Dalcroze is a musician who has taught musicians; but in the course of his studies he has become convinced that every child needs to learn the rhythm of its own bodily movements in order to lead a life of harmonious poise. For this he recommends a period of half an hour twice a week: no great demand on the time-table. The system is much more than gymnastic exercises performed to music. The pupils interpret the music by movements of arms and feet. No one who was present at the demonstrations can doubt the value of this new method of teaching balance and control. We give in another column some extracts from the speech Mr. Jaques-Dalcroze delivered.

IN March 1911 Mr. Edmond Holmes studied the Montessori system in Rome on behalf of the *Mr. Holmes and the Dottoressa*. Board of Education. His report has now appeared. It is very clear that Mr. Holmes is fully convinced of the value of the principles of the system. With regard to the method of carrying out the principle Mr. Holmes is less enthusiastic, and we arrive at the conclusion that in his opinion the use of the didactic material in unskilled or unsympathetic hands might prove uninspiring and dull. The tenement infant schools in Rome are no longer under Mme Montessori's control. In one of these Mr. Holmes saw what he calls a travesty of the method "so comically bad" that it had to be abandoned. The two schools of which he speaks with high praise had been working, one for two months, the other for three. These remarks warn us of the danger of an attempt to introduce the system in a wholesale manner. We are convinced that Mme Montessori's principles are thoroughly valuable when properly realized. They are applicable to all education. The didactic material used for applying these principles in nursery schools is quite another matter, and is probably not suitable for English schools. Much harm has already been done by mistaking the method for the principles.

WE pointed out some time ago that many teachers who were registered in Column B of the old *The Missing Guinea*. Register had not heard that they might have their guinea back on application. When questioned on the subject in the House of Commons, Mr. Pease said that the Board had sent information to all the bodies of teachers represented on the Council and had,

further, advertised in thirty-nine newspapers that the guinea might be claimed before August 31 of this year. The Board have at present no authority, continued Mr. Pease, to repay the guinea to teachers who have sent in their application since August 31. The fact that Mr. Pease says that the Board have at present no power to return the guineas of late applicants seems to imply that he is not unwilling to receive such powers. We may trust Sir Philip Magnus to see that this is done if it should prove possible. The Treasury has authorized the repayment. The Board have no desire not to hand over the money. Naturally it was thought that six months' notice of the intention was sufficient. It appears to be an indication that many teachers never read an educational paper. Registrations in Column B numbered 11,660; only 4,581 applications for the return of the fee were received before August 31.

THE popularity of the picture theatre reminds one of the excited pleasure of little children when they are given a picture book.

Cinematograph. Next to doing something, there is nothing so fascinating as watching something. The London County Council, always ready to listen to some new thing, have discussed the possibility of introducing the cinematograph into the London schools, and members of the Education Committee have been present at a special performance designed to show films that are helpful in education. The Education Committee of Sheffield have gone a step further by instructing the School Management Sub-Committee to consider the advisability of introducing the cinema into schools. Some time ago the apparatus was introduced into medical lectures. There can be no doubt that the improved moving films can be made a useful adjunct to lessons, just as the magic lantern was used twenty years ago. It all depends upon the films used. Because many of the picture theatres display mainly "Wild West" melodramas, the idea has grown up that the cinema is opposed to sound education. Another example of mistaking the method for the principle. Because undesirable music may be heard in some music-halls, we do not decline to cultivate the art of music.

THE newspapers have been very busy with the changes that have been announced in the timetables of Harrow School. We suppose that changes are always taking place; but the memory of the public is short. It is probably forgotten that school music, formerly despised as fit only for girls, dates no further back than the time of Mr. Farmer. At the other end of the social scale the air is equally full of rumours of change. It is now held that skill in making boots is not developed by laboratory experiments in physics. In such a town as Kettering, for example, the definite vocational education of the majority of children should be directed towards training the activities, mental and muscular, involved in the

manufacture of boots. But this definite training need occupy but a short time. There remains the education that will enable the child to become master of his own activities, to take a wide outlook on life, to develop his powers in a harmonious whole, and to lead a life of enjoyment for the sake of himself and the community in which he lives. In advocating vocational education we must recognize that the vocation is only a part of life.

THREE Education Bills have failed, and the "unrest" continues. The Free Churches claim that they do not receive fair treatment, and they are determined that, if possible, the fourth Bill shall find its way on to the Statute Book. In a recently issued manifesto the Northern Counties Education League say that it is practically certain that an Education Bill will be introduced during the present Parliament. "We cannot afford," they add, "to court another failure," and therefore they call upon the Free Church Council to combine in bringing pressure on the Government. The manifesto urges "complete public control through popularly elected *ad-hoc* authorities of all forms of State-supported education and the entire emancipation of the teaching profession from any vestige of clerical control." Mr. Pease, speaking at Rotherham, said that the Government intended to introduce an Education Bill, and that, although some people might not think it sufficiently heroic, it would be an honest attempt to remove the Nonconformist grievances. We are not so enamoured of State control that we wish it to become universal. We would like to see some opportunity for independence.

THE circumstances that have led up to the regretted resignation of Dr. Headlam are somewhat of a blow to the Board of Education; but Mr. Pease, when questioned in Parliament, categorically denied the charges of discourtesy and peremptory action. The moral of the whole unpleasant incident is, in our opinion, that education, whether of elementary-school children or of advanced students, is too important to be left to the chance receipts from the local bazaar or subscriptions from the wealthy donor. The Board says that a village school must be enlarged. Whether this can be done or not may depend upon the willingness of the locality to make or buy cakes and aprons. The Board says King's College must be rebuilt. Obedience to the edict depends upon the individual millionaire. This ought not to be. If the State thinks that King's College requires new buildings, the State should provide them. At the same time the State should leave the management a large amount of freedom. It is a pernicious doctrine that, because the State pays, therefore the State must control down to the smallest detail. Education needs more State grants and greater freedom to manage itself and grow in grace. The dead hand of the State may extinguish all fire of enthusiasm.

MR. STANLEY MAXWELL, Chairman of the Private Schools Association, in an address delivered at Birmingham on the subject of school examinations, made some trenchant criticisms of the proposals of the Consultative Committee which were issued some months ago. These proposals are understood to indicate the view that there should be established a Secondary School certificate which should become the recognized avenue to the professions and the higher positions in commerce. The certificate would be based on inspection, examination, and the judgment of the school staff. Apparently it would be given only to pupils in schools inspected by the State. The references in the report of the Consultative Committee to private schools are vague. Mr. Maxwell is probably right in pointing out that, if this certificate were established, private schools would be at a disadvantage. At a time when the general spirit of the country is endeavouring to increase the opportunities of education, this scheme would restrict and narrow them to one class.

SUMMARY OF THE MONTH.

At the end of last month Mill Hill School celebrated the twenty-first anniversary of Dr. McClure's Head Mastership. A complimentary dinner was held on the preceding evening. Many presentations were made to Dr. McClure and to Mrs. McClure. Sir Albert Spicer presided at the school ceremony. He said that he was there on behalf of the Governors to offer to Dr. McClure their very sincere congratulations on his majority as Head Master, to thank him for all the splendid services he had rendered to Mill Hill, and to wish him and Mrs. McClure God's blessing in their future. When they thought of what Mill Hill was when Dr. McClure came there twenty-one years ago and what it was to-day, and what the changes were that had taken place as a result of his Head Mastership, they recognized what grand work he had done. The playing fields, the new chapel, the gymnasium, the new block of schoolrooms, the chemical laboratory, the scriptorium, the sanatorium, the library, and the fact that their buildings now stood in a freehold estate of no less than eighty acres, and that the Old Millhillsians' Club comprised over 1,000 members, all testified to the tremendous advance which had taken place in the school. Dr. McClure had shown himself to be one of England's greatest head masters, and he had also done excellent work for the teaching profession generally.

DR. H. J. SPENSER, Head Master of University College School, writing to the *Daily Telegraph* on the subject of handwriting, says:

As regards the public schools, the *causa causans* of bad handwriting is to be found in the demands of the colleges of the older Universities. These require a very high standard of proficiency in their scholarship candidates. This demand imposes premature specialization on the public schools, whose curricula are largely moulded to meet scholarship requirements. In order to satisfy this demand and obtain the scholarships, the public schools, in their turn, are driven to insist on an undue degree of proficiency in those who enter from the preparatory schools. Hence, to a great extent, English and handwriting are crowded out of the preparatory schools' curricula.

MR. OSCAR BROWNING, writing in *Everyman* in continuation of the Symposium inaugurated by Mr. A. C. Benson and Dr. Rouse, says:

I should like to see the term "secondary education" abolished, and that there should be one public education, for which I should have no objection to use Mr. Benson's term "civic education." My friend, Prof. Earl Barnes, who came from America to England to study our educational system, told me that, after three years' careful

investigation, he was unable to attach any distinctive meaning to secondary education. He had asked many authorities to tell him the difference between secondary and primary schools, and all he had gathered from them was that the term "secondary" implied a higher social status and a greater devotion to sport.

AFTER describing different types of secondary schools Mr. Browning continues:

In the course of a long life I have had unusual opportunities of seeing every kind of education in the working. I was for fifteen years a master at Eton, where I was educated as a boy. I was for more than thirty years engaged in University and College work at Cambridge, and for eighteen years of that time I was Principal of an elementary training college. I do not hesitate to say that, in my opinion, the best and most successful of these three systems of education is the primary; the worst and the least successful, the secondary. It is often held that intending teachers educated in primary schools will be improved by being sent for a time to secondary schools. My experience teaches me that those who do this are much more likely to be corrupted than improved, and that they learn in secondary schools a passion for sport and habits of idleness from which in primary schools they would be free.

THE Board of Education have issued the Report of the Departmental Committee which has been inquiring into the question of playground space in elementary schools. The object of playgrounds is to enable children to have suitable recreation and physical exercise. The Committee are of opinion that organized games are best played in fields or parks, when such opportunity is available. They recommend that in the future better facilities for games should be secured than has been the case in the past. With regard to existing schools, they recommend that, after 1920, a playground allowing less than 10 square feet for each child should be classed as "insufficient." After the year 1925 this standard should be raised to 15 square feet for each child. A roof playground should, if it covers the whole building, be considered sufficient for one department or floor.

MR. M. E. SADLER, speaking at Hull on the aims of higher education, drew a comparison between English and German methods and said that

our problem was to see we did not lose in our education that moral conviction and religious earnestness of purpose without which English training is nothing. We must breathe into our education that stern intellectual temper, decision, and firmness of purpose which was the great distinguishing mark of German education, and this could not be done unless we got into our schools and Universities the best men and the best women that could be found. Those were the only people who could teach, and, in order to get them, the profession must be made an honourable career and one to which the whole community could turn, knowing that, in the strength and faith and diligence of that profession, the future welfare of the country lay. Such men and such women, and these alone, could do what England permanently needed and what was the fundamental need of education—they could preserve that individual power and enterprise.

SIR JOHN GORST, writing to the *Daily News* on the subject of co-education, says:—

Twelve or fifteen years ago, while I was officially connected with the Education Department, its introduction into secondary schools and boarding schools was the subject of official inquiry. None of the objections to it suggested by mere imagination was ever substantiated. The late Sir John Hibbert got many Lancashire and Westmorland grammar schools turned into co-education schools with excellent results. Two of my own grandchildren have been for nearly three years at a co-education school at Letchworth—"Letchworth School"; it would be a misfortune to remove them. The disastrous effects of complete separation of boys from the companionship of girls is well known to everyone who has had experience, like myself, as a master in one of the great public schools.

PROF. GREGORY FOSTER asks us to announce the scheme for rebuilding College Hall, a residence for women students of the University of London. The Council of College Hall have obtained from the Trustees of the Bedford Estate an option to purchase the site in Gordon Square for £7,500, and from the Coward Trustees to purchase the remainder of the lease for £3,195. They propose, as soon as they have acquired the site and as soon as sufficient funds are forthcoming, to erect

a new building, which will provide study bedrooms for about sixty residents, a library, a dining hall, common rooms, a studio, and gymnasium. The total sum needed for the purchase of the site and for erecting and equipping the new building is estimated at £30,000, towards which £8,400 have already been promised or received. An influential Trust Fund Committee has been formed for the purpose of raising and administering the money. Of this Committee, the Chancellor of the University (the Earl of Rosebery) is a member, and Lord Avebury is the Treasurer. The Committee also includes: Lady Bradford, Miss Leigh Browne, Sir Edward Busk, Lady Busk, Mrs. Creighton, Mrs. Henry Fawcett, Mrs. Hopkinson, Lady Lockyer, Miss Sarah Prideaux, Mrs. Henry Sidgwick, and Miss May Thorne, M.D. The scheme has been reported to Her Majesty the Queen, and the Council have been informed that the object is one which meets with Her Majesty's entire approval. "So soon as the necessary funds have been raised to complete the scheme, the Queen will be prepared to give her favourable consideration to the question of the College Hall being named after Her Majesty." Further particulars may be obtained from the Hon. Secretary, Miss Alice Lindsell, College Hall, Byng Place, London, W.C., or from the Treasurer of the Hall, Lady Lockyer, 16 Penywern Road, Earl's Court, London, S.W., to either of whom subscriptions may be sent.

DR. FRY, Dean of Lincoln and late Head Master of Berkhamsted, in moving a resolution on the subject of pensions in secondary schools at a public meeting convened by the North Midland Branch of the Incorporated Association of Assistant Masters, urged on the Board of Education the justice of the claim of secondary teachers on the State for national aid in the matter of pensions, and declared that the teaching profession was one of the worst paid in Great Britain. Secondary teachers were at a disadvantage through not being so numerous as elementary teachers, and had not yet learned the value of combination. The National Union of Teachers possessed a power of pressure that was quite understood by Ministers, and if secondary-school teachers were to obtain anything like justice they would have to put the screw upon people who, it was consoling to know, were quite accustomed to having the screw put on. He urged that in any pension scheme a start should be made with grant-earning schools; that it should be framed with a view to its extension to other schools; and that, if applied optionally now, it should be compulsory in the future.

In answer to Mr. Goldsmith, Mr. Pease said that he had referred an inquiry upon the subject of pensions to the Departmental Committee, concerning "certain schools other than elementary to which the Board of Education gives grants," but that this would not include all secondary teachers. The exact words of the first clause of the reference are:

To consider and report upon the best system by which provision can be made for the superannuation of teachers in secondary and technical schools and institutions, schools of art, colleges, and schools for the training of teachers, pupil-teacher centres, and other schools and institutions (not being Universities or University colleges), which are aided by grants from the Board of Education, and upon its cost both immediate and ultimate.

It was an appreciative audience that listened to Dr. Yorke Trotter's lecture on "The Rhythmic Method of Musical Training" at the Aeolian Hall on November 16. The lecture was not the only interesting part of the proceedings, for the accompanying practical demonstration showed in a remarkable manner the very valuable results that it is possible to obtain, even from the most youthful pupils, by the application of this method. The ability shown by the younger, and the marked originality shown by the older, students was little short of extraordinary. The Rhythmic Method has, as its ultimate aim, not so much the teaching of facts as the cultivation of what might be aptly termed the musical temperament. The lecturer pointed out, in the course of his address, how music is capable of assuming a prominent position as one of the most powerful factors in educational methods. The old-time mechanical drudgery of learning music note by note is to be regarded as a thing of the past, and in its place we have a method which, to judge from the comparative ease in which the various pupils answered and skilfully executed

difficult exercises, evidently forms the easiest of roads to a complete knowledge of fundamental principles. Pupils also receive that practical knowledge which enables them to develop those principles into practical form.

ALARM is felt in some quarters at the proposals contained in the Report of the Medical Officer of the London County Council, which are understood to advocate the abolition of social distinction in schools for young children. We have italicized the important phrase in the extract that follows:—

The conditions of public elementary schools are not wholly satisfactory from the health or social point of view; they will soon become good enough if every child in the country is compelled to spend five or six years of its life in attendance at a State school. The ultimate benefit of such a requirement in the development of national solidarity and citizenship, and in the removal of class distinctions, need not be dwelt upon here, but the benefit in national health and improved schools, and the desire for the betterment of education, can scarcely be overstated. The opposition which such a proposition, as a matter of practical politics, would be likely to receive on sanitary and educational grounds is alone a proof of its necessity.

SIR JAMES CRICHTON-BROWNE read a paper on "Brain Rest" at a recent educational conference at Tunbridge Wells. He said that the belief was current that a boy wearied with mental work would find recuperation in cricket or a cycle run, but that was bad physiology. Gymnastics were not restoratives where there was mental fatigue. Some thirty years ago he published a table showing the average amount of sleep required by children at different ages, and, looking over that table in the light of further experience, he would amend it in only one particular. Instead of allowing 12 hours' sleep to children of from four to six years of age, he conceded 13. To his other estimates he would adhere, giving as a minimum 11 hours' sleep to children from seven to nine, 10½ hours to children from nine to fourteen, 10 hours to children from fourteen to seventeen, 9½ hours to youths or maidens from seventeen to twenty-one, 9 hours to young men and women from twenty-one to twenty-seven, and 8 hours to all at later stages. He had seen painful instances of the immediate effects of insufficiency of sleep in highly strung, sensitive boys at public schools, and it was not only in public schools that the evils of deficient brain rest were encountered. The sleep of the rising generation was being detrimentally interfered with, and the consequences must be a rich crop of neurasthenia and mental enfeeblement in the future. Enormous numbers of young children lived under conditions which made a sufficiency of brain rest of the right sort impossible. They got but snatches of adulterated sleep with no brain nourishment in it, and went to school in the morning unrested, the despair of the teacher and a reproach to our civilization.

THE *Westminster Gazette* makes the following comment on a recent utterance of Lord Rosebery:

As to books, Lord Rosebery heard a librarian say the other day that no book is dead, the "most depressing thing" he has ever heard about books in all his life. A library ought to be a library of living books, and there ought in some obscure situation to be a receptacle for books no one is ever likely to ask for once in two hundred years. Coming from books to newspapers, he recalled the not distant days when all the London newspapers were engrossed with the question whether we should eat standard bread cooked in paper bags. Now Lord Rosebery cannot hear of any one who touches standard bread or has ever seen a paper bag. This is excellent chaff, and in a similar vein may we say that we hope we have all by this time sown our sweet peas?

THE Advisory Committee appointed by the Imperial Education Conference of last year met for the first time last month. The following report was issued:—

The Committee, after discussing the question of the procedure to be adopted at future meetings, proceeded to consider a statement which was laid before them by the Board of Education's Office of Special Inquiries and Reports of the action which that Office had taken as the result of the resolutions passed at the meeting of the Imperial Education Conference in 1911. These resolutions of the Conference had been largely concerned with the interchange of information in various ways among the several Education Departments of the Empire. A certain number of general questions arising under

this head were considered by the Committee, and detailed suggestions were made with regard both to the regularizing of this interchange and to facilitating the issue in official memoranda and special reports of such information as could be regarded as suitable for publication.

THE Report of the Congress of the Universities of the Empire, edited by Dr. Alex Hill, has now been published.

SIR PHILIP MAGNUS asked the President of the Board of Education whether he could state the total number of persons on the old Register of Teachers under Column B when the Register was closed; the number of such persons to whom the fee of one guinea paid for registration had been refunded as promised; and whether he would state what steps were taken to inform registered teachers that their fee would be returned on application.

Mr. Joseph Pease: The answer to the first part of the question is 11,660. On February 29, the Board announced that they were prepared to receive, until August 31, 1912, applications for repayment of the guinea by teachers on admission to Column B of the previous Register. The announcement was published in thirty-nine papers, including all the educational papers, and was communicated to all the appointing bodies (fifty-three in number) mentioned in the Schedule to the Order in Council constituting a new Registration Council. 4,581 persons whose names were registered in Column B applied for a refund before the August 31, 1912, and received their guineas.

RHYTHM IN EDUCATION.

By E. JACQUES-DALCROZE.*

IT is with a certain hesitation that I attempt to explain in words my method of training by rhythm, for it is based entirely upon my personal experience in the systematic and continual practice of movements, and it is almost impossible to describe sensations other than those which the reader has himself had opportunities of experiencing.

The combination of sensations awakened by the practice of a system of movements based on measures of time and space develops a peculiar sense, that of kinæsthetic rhythm, which it is as difficult to explain to the uninitiated as it is to explain sounds to the deaf or light to the blind. Nevertheless, I shall try to explain shortly the reasons of a psycho-physiological nature which have induced me to formulate a system of training based upon rhythmic movements; but it will not be possible, I repeat, to explain the mental and physical effects of this training, for there is only one way to understand rhythmic gymnastics, and that is to practise them oneself.

For the last twenty years scientists have noticed the influence which rhythmic movements of the body have upon the intellectual development of mentally deficient children. The muscular sensations enrich the brain with motor images, the harmonization of muscular antagonisms produces a mental calmness favourable to thought, and forms direct co-ordinations between brain and body. But, if this re-education of the motor nerve-centres has a good influence upon the intellectual development of the mentally deficient, why should it not have the same happy effect in the case of the normal? If simple physical exercises of a rhythmic nature give to the former class a greater control of mind and body, may we not expect that a more complete and more highly organized system of rhythmic gymnastics will have a good influence upon the mentality of children of ordinary intelligence?

It must be clearly understood that I am not talking of "hygienic gymnastics," nor of calisthenics nor of systems of physical exercises with musical accompaniment. The latter can, at the best, be called "metrical gymnastics." The act of performing physical exercises to time is no doubt an excellent training of the sense of order and accuracy, but time is not rhythm, although often united with it. Rhythm is individual, time is disciplinary. If we wish to construct a system of

movements peculiarly rhythmic, that is to say, a system which enables the limbs to realize with ease all natural rhythms, we must accustom them not only to move in a certain time, but also to vary the duration of the individual movement; each muscle must contract or relax quickly or slowly; or again, the slow contraction of one muscle must be accompanied by the quick contraction of another.

Next, we must vary the degrees of energy of these contractions, accustom each part of the body to make, with a minimum of resistance, crescendos and decrescendos of innervation, and to combine the crescendo of innervation of one limb with the decrescendo of another. We must give each limb the power of carrying out contradictory movements, and, by training the inhibitory centres, make them capable of suddenly interrupting and varying these movements. At the same time we must create in the pupil a large number of fresh motor habits or awaken those which have fallen into disuse; we must reduce the time lost between the order given by the brain and the response of the muscles, eliminating every unnecessary intervention of other parts—in a word, teach the individual to form clear mental images, to realize quickly and well what he pictures, and, by the suppression of unnecessary resistances, to develop clear and forceful thought.

Normal life depends upon harmony of nerve-centres, control of motor functions, and balance of antagonistic vital forces. In most cases neurasthenia has its origin in constant struggles between the imagination and the power of externalization, in the lack of co-ordination of the muscular functions and in a lack of harmony in the nerve-centres.

The study of rhythms, expressed naturally by the body in every degree of innervation, speed, tension, or relaxation—not only on the level, but also on inclined surfaces, staircases, &c., and with constant attention to the relations of space and time—is certainly a good training for the nerve-centres, and develops not only the power of attention, but also presence of mind and strength of will.

This study must be effected under the necessary conditions of safety, accuracy and rhythmic variability, so as to train the muscles in every degree of dynamic action, and thus endow the brain with the greatest possible number of rhythmic images, clear and definite, because produced by the memory of strong and complete sensations. And this can be done by making use of music, in which we find so many natural and ingenious combinations of time values and an infinite number of rhythmic models for physical movements. Music, however, can be the guide, often indeed the cause, of our movements; by its power of stimulating brain and body it can perform the miracle of creating between them rapid means of communication, and ennoble, idealize, and render artistic our physical functions by restoring to them their full powers. For movement in itself is nothing; the innumerable rhythms of the body have no value for the training of man, except when they are used as a means of physically realizing mental impressions.

The body rendered supple and energetic, ready for all forms of expression of which nature has made it capable, becomes an instrument of emotion and beauty, giving plastic expression to thought.

And here music steps in with its formative and co-ordinative power. By relying on music, letting it permeate us and letting it harmonize with the inner music of our being, which is the living symphony of our feelings and emotions, we assure to our subconscious faculties possibilities of free self-expression and thus obtain a balance in the necessary antagonism of our subconscious and conscious forces.

By studying, by experiencing, the conflicting play of co-ordinated and antagonistic muscular action, we can attain to a clear conception of the laws of balance which control life, assure the free development of the individual, and give a basis for true social intercourse.

"Rhythm," according to the excellent definition of Carl Ludwig Schleich, "is a kind of compromise between power and resistance. . . . The nature of the resistances conditions the nature of the expression of the primary force which in itself is unchangeable."

Any complete system of education should give the individual the conscious control of a fully harmonized brain and body, and thus give the power of harmonious intercourse with other members of the race for the forming of social

* A condensed English version of the speech delivered in French to The Music Teachers' Association on November 15, 1912.

life; and the development of society throughout the ages depends itself upon the harmonization of those two great antagonisms ever ranged in opposition, namely, Tradition and Emancipation, Affirmation and Hypothesis, the Respect for what no longer exists and the Respect for that which might be, the Present and the Future.

THE BOARD OF EDUCATION AND MODERN LANGUAGES.

THE latest of the Memoranda on Teaching and Organization in Secondary Schools that are being issued by the Board of Education is one that deals with modern languages. In compiling it the Board have followed the procedure adopted in the case of the Memorandum on the Teaching of English. Indeed, we may say that they have improved upon their previous procedure. In the former case they called into their discussions members of the English Association; with regard to the present Memorandum they invited a full discussion of it from selected members of the Modern Language Association meeting in Committee at the Board, and they also laid the draft before a special committee of head masters, head mistresses, and other representative persons. The Memorandum, then, is no ukase issued by a central authority to obedient underlings, but it is an honest attempt upon the part of the Board's secretaries and inspectors, with the help of those teachers in secondary schools who are most cognizant of the subject, to give information to teachers of modern languages, and to indicate the lines on which progress is being, and should be, made.

The result is a useful document, helpful to the head master who organizes, and helpful to the teacher who teaches. If we compare the teaching of French in the secondary schools of to-day with the teaching of Latin in the past, we realize at once the special difficulties that confront the teacher of modern languages. To make our meaning clear we must premise that we are speaking of schools of the old grammar-school type, which are now for the most part under county or municipal control. In these schools the ages of the pupils range from ten to seventeen years, but many pupils enter the school at the age of twelve or thirteen and leave at the age of fifteen. The knowledge of French possessed by these pupils at entrance to the secondary school varies very greatly. Many have learnt no French at all. It follows that the difficulty of classification is a very serious one. Where to place pupils of twelve or thirteen whose general intelligence would put them in the third form, when the other pupils in the third form have been learning French for two years, is the problem. The final solution of the difficulty can only be that, as the organization of secondary education progresses, no pupil over eleven years of age shall be received into a secondary school. Until this is possible the evil can only be recognized, but not cured.

The variation in the leaving age of the pupils presents an equally important problem. Until this age is not below sixteen, again we say the problem can only be stated but not removed. It is the short period of life at a secondary school that is the cause of many complications of time-table and curriculum. If we could guarantee that all pupils would come to school at the age of ten and remain until the age of eighteen, we could organize the teaching of modern languages effectively, and remove the reproach that pupils now leave the secondary school without of necessity possessing any sound knowledge of modern languages. Between the ages of ten and eighteen three, if not four, foreign languages could be learnt thoroughly. Sound, pedagogic principles could be followed, and the modern languages would no longer be the rivals of the classical languages, for both could be taught well without encroaching on the time necessary for science, mathematics, and other essential subjects.

Modern languages have had to fight for due recognition, just as science had to fight in a previous generation. For

the moment teachers of modern languages suffer under this disability. They are not sufficiently numerous for the work that has to be done. In other words, there is a lack of well qualified teachers of modern languages, and both the schools suffer and the subject suffers in the eyes of a critical public. But this is a temporary difficulty, and it is rapidly vanishing. We mention it here merely to point out that the two difficulties—proper classification and qualified teachers—have handicapped seriously the teaching of modern languages. In the older grammar school Latin was the one language taught to younger boys, and every teacher was trained in this language.

When the secondary-school period comes to be generally recognized as extending from the age of ten to the age of eighteen, it will be possible to teach all the foreign languages desired without strain and without cramming. Beginning with French, a sound foundation will be laid before Latin is introduced. These two languages will be studied side by side until sufficient progress has been made to justify the introduction of Greek or German, or, in the case of pupils on the language side of a school, of both these languages. Italian and Spanish may also be introduced, either as additions or as alternatives. But, as things are, many pupils will have to be content with two, or even one, foreign language. The Board of Education have been attacked for an alleged desire to force Latin on all schools as the only foreign language when one is taught, or as one of two when the curriculum admits of a second. They have also been accused of encouraging the suppression of German. These accusations can scarcely be justified. With regard to Latin, the Board point out that they have no desire to insist that Latin should be taught in every school or to every pupil. They do advise, seeing the need for Latin as a condition of University study, that every pupil should have the opportunity of studying Latin if needed. In reference to the rivalry between French and German, they point out that nothing but custom makes it seem natural that French should be taught to every pupil. There is no reason why a school that teaches only one modern foreign language should not choose German, or perhaps Spanish, instead of French.

Of course, no Memorandum on modern languages can omit a discussion of the value of the direct method in teaching. The inspectorate of the Board includes ardent New Methodists, as well as those whom the latter call old fashioned. The representatives of the Modern Language Association numbered, we believe, six, and it is probably safe to say that six points of view were put forward. On the *ad-hoc* committee appointed to discuss the draft we may be sure there was considerable divergence of view. But the Memorandum has not proved on that account to be a colourless compromise. On the contrary it will be seen that there is a very general agreement as to the aims of modern language teaching. The Board do not advocate the direct method with all the warmth of a convinced New Methodist, but they fully realize the startling results of the direct method where it has been applied with knowledge and discretion. There are always those who fight for the things that are, and those who stand for a change nearly always exaggerate their case at first. But it is quite clear that all the younger teachers are inclining towards the direct method and the Board is in sympathy with them. Knowledge is, of course, essential. Ignorant attempts to carry out the direct method are fraught with disaster. It is better to use the tools we can handle than to spoil a tool that is beyond our powers.

One of the difficulties of dealing with any subject in secondary schools is that these schools vary in type. The Board recognize this throughout the Memorandum, and also give in the appendixes full details of the organization and scheme of instruction in a number of typical schools covering each grade of secondary education. Clifton College stands for a public school where (including the preparatory school) the school period lasts for eight years, and in which four languages can be taught. The Perse School is included as the one in which the direct method has been fully adopted in all languages. Bolton and Colchester Grammar Schools

are typical schools where modern languages are made a distinct feature. Holloway County School is of the new type. For girls we have the Leeds High School and the Sydenham County Secondary School; and the Tottenham County School is for boys and girls. All of these are doing, as the Memorandum tells us, meritorious work in modern languages, though, of course, there are other schools of equal merit. In all cases full details are given. These cannot but be very helpful. One of the most interesting of the appendixes is a memorandum from Mr. L. von Glehn on the aims of the direct method.

Criticism there will be undoubtedly upon the Memorandum, for no pronouncement could please all extremists. But we have read the whole with great care and we find sound sense on every page. Every point is dealt with—organization, method, use of translation, teaching of composition, choice of books, and many other matters. On all these the Board have steered a wide middle course, giving much helpful information, discussing problems with insight, and pointing clearly to a goal far in advance of that to which most pupils to-day attain.

THE COLLEGE OF PRECEPTORS.

MEETING OF THE COUNCIL.

A MEETING of the Council took place on November 16. Present: Sir Philip Magnus, President, in the chair; Prof. Adams, Dr. Armitage Smith, Mr. Bain, Mr. Barlet, Rev. Canon Bell, Rev. J. O. Bevan, Rev. J. B. Blomfield, Mr. Brown, Mr. E. A. Butler, Mr. J. L. Butler, Mr. Charles, Mr. Cholmeley, Mrs. Felkin, Mr. Howe, Mr. Hay, Miss Lawford, Rev. R. Lee, Mr. Longsdon, Mr. Morgan, Mr. Pendlebury, Miss Punnett, Mr. Rule, Mr. Rushbrooke, Rev. Dr. Scott, Dr. Sibby, Mr. Somerville, Mr. Starbuck, Mr. Storr, Rev. Canon Swallow, Mr. Vincent, and Mr. White.

THE Chairman, at the opening of the proceedings, read a letter addressed to the President and Council by the Secretary, in which he expressed his desire to resign the office which he had held for thirty-eight years.

The Chairman and other members of the Council spoke warmly of the services that the Secretary had rendered to the Council, and the letter was referred to the Finance Committee for consideration and report to the Council at their next meeting.

THE SECRETARY reported that meetings of three of the new sections of the College—viz., the Head Mistresses' Section, the Assistant Masters' Section, and the Private Schools' Section, had been held on 23rd, 25th, and 26th October, respectively. Each Section had appointed an Advisory Committee, to consider matters affecting the Section and to report to the Council thereon.

Diplomas were granted to the following, who had satisfied the prescribed conditions:—*Licentiate*ship: Miss J. Murray, A. A. Hodgkinson; *Associate*ship: T. G. Gill, L. A. Jones, M. C. Maccormac, P. K. Sircar, H. R. Smith, and C. Eyre Walker.

Prof. J. Adams was appointed to deliver the Psychology Course of Lectures to Teachers, to commence in February next.

On the recommendation of the Examination Committee, the following additional examiners were appointed:—*English Language*: H. C. Brooks, B.A. Camb.; R. B. Lattimer, M.A. Oxford. *Classics*: J. F. Acheson, M.A. Oxford; J. M. Mitchell, M.A. Oxford. *Scripture History*: Rev. W. H. Branfoot, M.A. Oxford. *English History*: Walford D. Green, B.A. Camb. *Spanish*: F. de Arteaga, M.A. Oxford.

On the recommendation of the Private Schools Section of the College, it was resolved that the Council should make arrangements for holding at the University of London during the Conference Week of Educational Associations in the second week in January, a representative meeting of those who were interested in the existence of private schools.

Mr. W. A. Wagstaff, M.A., Head Master of the Central Foundation School, E.C., was elected a member of the Council.

Saturday, January 25, was appointed as the date of the next Ordinary General Meeting of Members of the College.

The following persons were elected members of the College:—

Mr. J. Blake Harrold, F.C.I., A.C.I.S., 61 Streatham Hill, S.W.

Miss F. Bowers, Carden School, Peckham Rye, S.E.

Miss M. E. Walters, A.C.P., 1 Baxley Villas, Bradford Road, Trowbridge.

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

- By the BOARD OF EDUCATION.—The Montessori System of Education.
By A. & C. BLACK.—Nightingale's Visual Geography.
By BLACKIE & SON.—Bruce's English Exercises for Higher Classes.
By W. B. CLIVE.—Dumville's Fundamentals of Psychology; London University Guide and U.C.C. Calendar.
By MACMILLAN & Co.—Fowler's Hawthorne's Tanglewood Tales, Part II.
By METHUEN & Co.—White's Handbook of Physics; Wilmot-Buxton's Stories from Scottish History.
By the OXFORD UNIVERSITY PRESS.—Bradby and Rieu's *Lettres de mon Moulin*; Bryant and Lake's *Elementary Greek Grammar*; Chatwin's *Goldsmith's She Stoops to Conquer*; Colles's *Growth of Music, Part I*; Garrod's *Oxford Book of Latin Verse*; Herbertson's *Elementary Geography, Vols. V and VI*; Innes's *Kingsley's Hereward the Wake*; Jones's *Companion to Roman History*; Loveday and Green's *Introduction to Psychology*; Lowe's *The Wars of Greece and Persia (from Herodotus)*, and *Selections from Cicero*; Paine and Mainwaring's *Primus Annus*; Paine, Mainwaring, and Ryle's *Decem Fabulae*; Percival's *Shakespeare's Merchant of Venice*; Savory's *Das erste Jahr des Deutschen Unterrichts*; Schuster's *Longfellow's Hiawatha*; Walpole's *Acts of the Apostles*; Whiskard's *Goldsmith's Good-Natured Man*; Wiehr's *German Prose Composition*; Wilson's *Wieland der Schmied*; Wood and Powell's *The Hebrew Prophets for English Readers, Vol. IV*; Workman's *Memoranda Mathematica*; Wright's *History of French Literature*.
Calendar of the University College, London.
Calendar of the University of Birmingham.
Calendar of the University of Sydney.
Calendar of the King's College and King's College for Women.
Incorporated Accountants' Yearbook.

PRIVATE SCHOOLS SECTION OF THE COLLEGE.

The first meeting of the above Section was held at the College on October 26. The following were elected members of the Advisory Committee: Miss E. Bowers, Mr. A. Millar Inglis, Dr. F. A. Sibby, Mr. W. Vincent, and Mr. F. J. Whitbread. Dr. Sibby was elected Chairman and Mr. Whitbread Hon. Secretary.

A meeting of the Committee was held on November 16. Dr. Sibby in the chair, when the following resolution was unanimously adopted: "That it is desirable to secure during the Christmas vacation a really representative meeting of those who are interested in the existence of private schools, and that the College of Preceptors be requested to take the needful steps to secure such a meeting."

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 October 1912:—

Class I.

Lewis, F. C. | McPherson, G.
Smith, Miss O. W.

Class II.

Brooks, Miss E. M. | Clarke, E. H.
James, S. C. T.

THE Council of the Girls' Public Day School Trust have appointed Miss M. M. Berryman, M.A. Lond., Mental and Moral Science Tripos (Girton College), at present Assistant Mistress of Clapham High School, to be Head Mistress of Notting Hill and Bayswater High School.

"I BELIEVE myself that incalculable benefits have resulted from education. The curriculum of elementary schools is, of course, a grotesque thing, because it aims at culture and information rather than at the direct arts of living; but the kindly discipline, the cleanliness, the care provided for children in impressionable years by the elementary schools, are all of immense worth."—Mr. A. C. Benson in *Public Opinion*.

CHANGES IN THE JUNIOR SCHOOL.*

By Miss E. R. MURRAY.

My place to-night is to be the opener of a series of discussions on educational experiments actually going on in our very conservative England. We are told so often of our backwardness—that we are behind Germany, behind Denmark, behind America, that it was really comforting to read in a recent paper the statement that “remarkably good work is being done by English teachers.” The three great changes which have come, or are coming, into our junior school are the introduction of Nature study instead of object lessons, the introduction of handwork, and the reduction in the size of classes. We Froebelians feel that the great thinker from whom we take our name is not getting the credit that is justly due to him in reference to these changes. We are heartily willing to allow that much is due to Pestalozzi, and that Froebel himself owed much to that hero among educational pioneers. But we venture to think that our various societies and our Froebel Union, with its examinations and certificates, have borne a worthy part in helping these much needed reforms. We think that it is largely from our kindergartens and from those infant schools where the head mistress had some dealings with the Froebelians, that the handwork and the Nature study have climbed up into the school.

In our secondary school for girls the head mistresses began to complain of the gap that occurred between the kindergarten and Form I. To bridge this gap they engaged Froebelian teachers for their lower forms. Froebelian teachers are also in demand in the preparatory departments of boys' schools, but this practice is not nearly so usual as it ought to be, and the little boy of six or seven is moved on that they “may make a man of him”—which seems equivalent to losing all interest in anything except cricket and gym.—under the care of an utterly untrained male teacher.

Prof. Findlay, in his little volume “School,” says that “some of Froebel's followers are prone to assert that the methods of the kindergarten should be carried over to the later years,” and that in doing so they contradict their own master. For Froebel knew what Prof. Findlay refers to as the heart of his book—*viz.*, that there are stages of growth, and modes of activity, both mental and bodily, suited to each stage. The kindergarten stage is the time for play, and play, according to Prof. Findlay, is to image an activity and to act out the image; whereas in the succeeding stage normal children seek “to test themselves against the outside world by achieving a result.” Froebel's words are: “What formerly the child did only for the sake of the activity, the boy now does for the sake of the result. . . . If in his former activity he imitated phases of domestic life, in his present activity he shares the work. . . . The boy wants to try his strength in everything, that his strength may increase and that he may know its measure.” And the Froebelian who wants to carry his methods into the school is, however, only giving a wider meaning to the word kindergarten, which is not really a place of play as opposed to work, but an attempt to provide right conditions of development suited to each stage. So in the junior school we cry for less bookwork, less spelling, fewer copies and sums, and more active investigation, more constructive and creative work.

I think we kindergarten teachers have been ahead of the junior school, too, in our Nature-study methods. We did not use—perhaps we did not understand—the word “heuristic” when it first came in, but we were heuristic without knowing it, just as M. Jourdain talked prose. I know a school where the staff persuaded the head mistress to discuss

the absurd methods of the preparatory-school department, because of “the ill-disciplined” children sent up, and one mistress complained: “You can't stop them asking questions till they get into Form III.”

Some of the changes I have seen are worth describing because others can take warning and avoid our mistakes. Froebel's material, known as gifts and occupations, was definitely intended to foster self-development, spontaneous education. But how was it used? Fifteen years ago you might have seen, as I have seen, a class of solemn seven-year-olds, each provided with a box of bricks. When the box had been opened, according to rule, you might have heard the teacher tell the children to pick up one cube and count its faces, edges, and corners. All this having been duly elicited and written on the blackboard, the cubes were replaced in their corners and the boxes put away. Could anything have been more deadly dull? Could anything have been more inactive, more unchildlike? There was certainly no bookwork. The concrete was present and the children did their own counting. But what child with a box of bricks wants to do anything but build with them? The material which was specially selected to draw out the children's activity was placed before them, but all signs of activity were carefully repressed. Curious things have been done in Froebel's name. A young teacher came to me once to ask advice, for she had been told to teach number for a whole term, using only the eight little cubes of Gift III. When it was suggested that after she had exhausted its possibilities for number teaching she might let the children build, she said, “I daren't; they are using Gift IV for building.” Another came to ask how she could carry out the orders given her to teach fractions for a term, using only Gift V.

Much that Froebel proposed in 1826 is only getting into our schools now. He described his “education room” where the boys were building “castles and palaces, temples and docks,” using the materials they had gathered in the forest, just as H. G. Wells has lately described his “Floor Games.” He told us how fathers ought to educate their children—the weaver by letting the child himself press down the treadles and see the effect, the joiner by letting him use the tools and choose the right wood and afterwards see the very tree growing in the woods; and “he who sells by weight by letting him put on and take off the weights himself,” &c. In Froebel's People's School, “instruction” was to “rest on life itself and creative effort, on the union and interdependence of doing and thinking.” The children were to bind their books, to make kitchen utensils of wood, to care for garden, orchard, and field, to make straw mats for the hot beds, besides whittling boats, windmills, and water-wheels.

Why did so many of Froebel's followers steep themselves in geometrical paper-foldings and cuttings and leave on one side the binding of books; the making of kitchen utensils of wood; boats and windmills? In our student days we had to work out unending courses of paper-folding and cutting. We had even to work out series of ornamental patterns with the building bricks. Then we dictated them to the children. The whole class must do exactly the same. Not a child dared image any result, for she might go wrong! The child might produce with his fingers what the teacher's mind had conceived. That it would be vastly better for his fingers to execute the conceptions of his own mind was heresy. But how it came to be heresy is more than anyone can find out. It was this formal, geometrical, cut-and-dried use of the simple and childlike material that became popular. Many are the books with courses of paper-folding, courses of mat-plaiting, courses of brick-building, courses of this and that, but always courses. That is what so many of us are still apt to want—a definite course which we can follow from day to day, and save our own precious brains, as well as those of the children, from any unnecessary exertion.

It seems to me that the first thing that gave a blow to these miserable courses was something that we all laugh at now, because it, in its turn, grew to be a monster that had to be scotched, and that is what we call “connectedness”

* From a paper read to the Froebel Society on October 3. Printed by permission of the author.

or "correlation." The children became critical, the teachers uneasy, and correlation in its narrow and forced sense had to go by the board. But that does not mean that the sane and human connexion of ideas and interests must be abandoned. It was about 1901 that Miss Findlay introduced us to the monographs written about the experimental school conducted under the auspices of Prof. Dewey, of Chicago, and then and there I personally felt that I had found salvation. Prof. Dewey is one of the few modern educationists who is fair to Froebel. He says frankly that his school "had endeavoured to carry into effect certain principles which Froebel was the first consciously to set forth." It takes one big man, perhaps, to understand another, but after Prof. Dewey had shown us how to set to work, it all seemed so natural, so Froebelian, that we wondered we had not seen it for ourselves.

The kindergarten was to be a living out on the children's own plane of what they see around them. And what they see is chiefly domestic life. We threw over what was left of formal courses and forced connexions, and started on dolls' houses without delay. We made painting aprons and sleeves for our babies; provided grocers' boxes and red paint to imitate bricks for outside walls; and real wall-paper to measure and cut for inside walls; and joy reigned. Some of us still remember what a friend called "the perpendicular dance of delight" with which the children greeted the advent of hammer and nails to make little tables and chairs. . . .

And now it is fully recognized that in the kindergarten children under five or five and a half really play. The kindergarten is a nursery, a place of nurture, where a skilled gardener who knows the nature of the plant watches and guards the early stages of development. As far as possible, we leave the children free. But sympathy they want, and training to pretty behaviour, training to recognize the rights of others. The timid child requires encouragement; the overbearing must be shown that he is one of many. We have no formal educational material. The child wants chiefly to investigate his surroundings and to experiment with all his powers. He is best left alone if the right material for experiment is placed within his reach.

AIMS AND IDEALS OF THE SCHOOL.*

THE key-note of the school is self-reliance. We wish all children to learn to do everything for themselves and to be everything for themselves. We wish them to feel the brotherhood of humanity and their relation to the rest of the universe, as well as to be able to do those practical things which will supply their daily material needs. By that they will learn to act independently, but co-operate in the spirit.

In order to carry out our ideals (which are, of course, beyond complete attainment, or they would not be ideals) we give special attention to health. Children must be made healthy before we expect anything from them. We put health first and highest, because self-reliance is impossible without it, and because we wish to see perfect bodies as well as pure minds and noble hearts, and because with health there will always be happiness, with happiness there will always be beautiful thoughts and feelings, and by these the world is made and re-made. Doubtless, we all learn by pain and grief, but we are convinced that more can be learned by health and happiness.

We do not separate material and spiritual things. Everything interacts, everything has a spiritual significance, and the spirit has countless material aspects; hence we strive to combine the practical and mystical at all points. We try to simplify life on every side—in dress, in diet, in games, in work, in faith. We do not wish to impose *our* thoughts

or beliefs on the children, but to keep the original meaning of the word "educate," and "lead out" what is in *them*. Hence we give freedom in large measure, and opportunities for silence and solitude, which are essential for individual development.

We strive to preserve the child in the child, in order that we may preserve the child in the adult too, and so preserve wonder, faith, trust, simplicity, enthusiasm, receptivity. We treat the children as if they were our equal in age and understanding. They are our friends; hence we live and work together with mutual respect and perpetual sympathy. We discourage any prejudice as to class, sex, creed, colour, nation. We want to foster the universal love, so as to meet all people on the common basis of human needs and human feelings. We believe in developing character rather than in knowing facts, in the heart rather than in the brain, in intuition rather than in tuition.

We dispense with rules and discipline almost entirely. We give freedom and love and trust, which are what we all long for. There are no rewards and no punishments. Right-doing is its own reward. Disease and remorse are punishment enough for disobedience to Nature and to conscience. Work, moreover, when related to the realities of life, is enjoyed by all, and especially by children; and they never show any disinclination, when healthy, to learn.

We do not favour any early specialization. All children need to learn to do sewing, washing, gardening, and all housework as soon as, or sooner than, they learn to read and write. Boys and girls receive the same general training. There is no reason why girls should not be as self-reliant as boys. We want a close bond between school and home; hence parents are requested to come to school as much as possible. We want all to have an understanding of the universe by direct communication with Nature; hence we encourage sleeping in the woods, camping and tramping parties, sun-baths and dew-baths, paddling in streams, watching the sun rise, planting trees, rearing seeds, and so on.

When children first inquire about birth's mystery we think it most important that they should receive a full and true explanation. If parents do not feel able to undertake this duty, we are pleased to make the explanation, taking happy analogies from Nature. We assume that a child at birth is pure as new fallen snow, and that we mar or maintain that purity.

We do practically no conscious instruction. The staff consists of an equal number of men and women, who try to *live* what they wish the children to learn. Love is, to us, the great teacher. In the ultimate, love is all that we need from others, and experience is, as we all know, incomparably more valuable than any deliberate teaching. At the most, we can suggest (and that is what we should do) a path for children to take, but let them make the journey one of adventure and personal discovery.

Religion is, with us, synonymous with life. There are no special times for prayer, and no doctrine is followed. We stand where all creeds meet—on the basis of truth. Readings are made from any Holy Scripture, and from any writer whose work helps towards joy and the uplifting of humanity, for such work is Holy Scripture too.

Tools, toys, &c., are provided. Children may bring their own raw materials and make something by their own ingenuity. Ready-made toys only invite destruction, and are not educative. Moreover, children must be prepared to lend freely, since the difference between "Mine" and "Yours" is not one which the school encourages. We have faith in being rather than in having, in comradeship rather than in leadership or in rivalry.

Children are received, however young, for the aims of the school reach back to the child's birth—and before that, to the parent's. We aim at an uncooked vegetarian diet, realizing that for those whose diet has been otherwise it is a matter of time to get gradually to it. We aim at few, simple, handmade, beautiful coverings for the body, feeling that strength comes by gradually accustoming ourselves to wear very few clothes. The wearing of few clothes and the

* Reprinted by permission of Mr. Philip Oyler, M.A., Principal of the Morkshin School, Headley, Hants.

eating of uncooked foods help not only towards health, but in simplifying existence, and so giving time to really live. There will be no servants. The little offices of daily life will be made noble, and each will do his share when strong enough and able to do so.

Our scheme of education is founded, we believe, upon bed-rock, and any child so educated will find a place in cities or country (for the basis of life is the same, if the surface differs); but we expect some to get so sure a faith in simple life that they will want to be part of the nucleus of a self-supporting colony which we intend to start later.

Languages spoken by members of the staff are English, French, German, Swedish. The school is in temporary quarters pending the building of specially designed small houses, each to contain six children and two staff, acting as father and mother. These are to be built entirely of timber, because it is health-giving, where stone, brick, and metal (especially) are devitalizing; they will be long and narrow, facing south, so that no living room, bedroom, or workroom will be on the north: they will be of two stories only, so as to avoid danger by fire: they will have a very wide balcony the whole length of the house, so that all beds can be drawn out on to it for sleeping purposes; they will be on high ground, on sandy soil, with wide horizons near and pine trees near: they will have their own well for drinking water. A garden will be made by the staff and children, but land near will be purposely kept wild so that native flowers and animals can be studied. No domestic pets will be kept, but kindness will be shown to all living things. We want them to have the freedom and love which we desire for ourselves.

CURRENT EVENTS.

THE half-yearly meeting of the College of Preceptors will take place on Saturday, January 25, 1913, at 3 p.m.

READERS who want fuller information about Mr. Jaques-Daleroze will do well to buy a little book that has just appeared, entitled "The Eurhythmics of Jaques-Daleroze" (Constable, 1s.). The book consists partly of descriptions of Mr. and Mrs. Ingham, and partly of extracts from addresses delivered by Mr. Jaques-Daleroze. There is an introduction by the Vice-Chancellor of Leeds, and a chapter on "The Value of Eurhythmics to Art" by Mr. M. T. H. Sadler.

THE Annual General Meeting of the Incorporated Association of Assistant Masters in Secondary Schools will be held on Friday, January 3, 1913, at St. Paul's Schools, West Kensington. To commemorate the twenty-first year of the formation of the Association a dinner will be held at the Waldorf Hotel on Thursday, January 2.

IN our account of the late Mr. K. J. Freeman, whose school hymn we printed last month, there was an unfortunate error of fact, which his father, Mr. G. Broke Freeman, kindly corrects in the correspondence column of this issue.

THE death is announced of the Rev. Jamson Smith, formerly Head Master of King Edward's School, Camp Hill, Birmingham.

MR. ARTHUR GRAY, M.A., has been elected Master of Jesus College, Cambridge.

SIR ARTHUR QUILLER-COUCH has been appointed King Edward VII Professor of English Literature at Cambridge.

IN March of this year an anonymous donor offered £20,000 for endowing a Professorship at Cambridge, to be called the Arthur Balfour Professorship of Genetics. Mr. Balfour and Mr. Asquith were to be the electors of the first holder of the chair. Mr. Reginald Crundall Punnett has been appointed.

MR. C. H. BURDEN has been appointed Head Master of Beverley Grammar School.

THE International Guild of Paris has opened a Branch at Gordon Hall, Gordon Square, W.C. Particulars from the Secretary.

MR. HENRY FROWDE announces the publication of "The Pageant of English Prose," a companion volume to "The Pageant of English Poetry." There are five hundred prose passages cited and a full index.

THE Council of the City and Guilds Institute have conferred Fellowships upon Mr. Alfred Chatterton and Mr. W. D. B. Duddell.

THE publishers of the *Hibbert Journal* announce that the Head Master of Eton has accepted the place on the Hibbert Editorial Board left vacant by the death of Dr. Stubbs.

TEACHERS and students of history should not overlook the very useful quarterly entitled *History*, edited by Mr. Harold Wheeler. The current number contains an article by Dr. Pollard on "History and the General Public." It is the spirit of conviction and enthusiasm that pervades this quarterly that gives it an especial value.

MR. H. A. L. FISHER, Fellow and Tutor of New College, Oxford, has been elected Vice-Chancellor of the University of Sheffield.

THE Annual Meeting of the Classical Association will be held in Sheffield in January, 1913.

THE REV. W. PARKER, Assistant Master at Tonbridge School and late Warden of St. Columba's College, has been appointed Head Master of King's School, Rochester.

"THE Montessori System of Education," by Mr. Edmond Holmes, price 2d., has now been issued by the Board of Education. It is No. 24 of the series of Educational Pamphlets.

THE *Review of Reviews* is publishing an excellent series of relief maps of the Balkan States and other European regions. Copies are being published apart from the *Review*. A specimen set can be had for 6d., and twenty-five copies of any single map for 2s. 6d.

THE introduction of the kinematograph into schools is rendered more practical by an announcement that Messrs. L. Kamin & Co., 27 Powell Street, Goswell Road, E.C., are offering projectors on hire at 10s. a week.

IN the *A.M.A.* for November, Mr. J. Montgomery, first Hon. Secretary of the Incorporated Association of Assistant Masters, and now Head Master of Uckfield Grammar School, gives an account of the formation of the Association in 1891.

THE School Journey Association held its annual meeting last month. It reports a year's work of increasing activity. The Hon. Secretary, Mr. H. W. Barter, 51 Elm Grove, Peckham, S.E., will send information to inquirers.

MESSRS. WILLIAMS & NORGATE have now taken over the publication of the *Oxford and Cambridge Review*.

THE Oxford Local Examinations will in the year 1914 be held in March, July, and December. The March examination is for Senior candidates only.

A STATUTE will be promulgated in Congregation at Oxford, on December 3, to establish a Certificate in French and in German, which shall be open to persons, whether members of the University or not, who shall have obtained Honours in the Final School of Modern Languages or who have satisfied the examiners in the Pass School. The candidates will be examined in the colloquial use of French and German.

THE Trustees of King William's College, Isle of Man, have appointed Canon E. C. Owen, Head Master of St. Peter School, York, Head Master of the College, in succession to the Rev. E. H. Kempson, who was recently appointed Canon of Newcastle.

PATON'S LIST of SCHOOLS and TUTORS IN INDIA.

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"I am directed to thank you for the copy of the List of Schools which you have sent for His Excellency."

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"His Excellency desires me to acknowledge receipt of the copy of this year's List of Schools. He will have it circulated at Army Headquarters, and feels sure it will prove of interest and value to those who have children they wish to place in schools."

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"I am directed by His Highness the Maharajah to acknowledge with thanks the receipt of a copy of this year's List of Schools. The information which the book furnishes is very valuable and has interested His Highness the Maharajah very much."

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"I am directed by His Highness to convey his thanks to you for sending him a copy of List of Schools and Tutors, and to assure you of His Highness' appreciation of this useful publication."

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"I have received your beautiful List of Schools, and have placed it in a conspicuous position in my library at the disposal of the parish priests of the town, who may have occasion to advise parents in the choice of a school for their children."

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Bishop of Tinnevely and Madura.

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Bishop of Nagpur.

"I have much pleasure in thanking you for your 'List of Schools and Tutors, 1912.' As it contains some of the Catholic Schools, it may be at times of use to some of our people wishing to send their children to England."

Archdeacon of Bombay.

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"I am in receipt of yours of September 29, covering a copy of your publication of List of Schools and Tutors, and beg to thank you for same. I have placed your book in the Reading Room, and feel sure it will be read with interest by many of the members."

The Secretary of the Canadian Club, Montreal.

"I beg to acknowledge receipt of your List of Schools and Tutors for which I thank you on behalf of the Executive Committee."

The Secretary, Vancouver Club, B.C.

"I have your copy of List of Schools and Tutors, and it shall find a place in our Reading Room."

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The Secretary of the Hong Kong Club.

"Best thanks for your new List of Schools, which you have kindly presented to the Club."

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"The work will prove a valuable addition to our Library, and I am very much obliged to you for it."

The Secretary of the Athenæum Club, Hobart, Tasmania.

"I am directed by my Committee to accept, with thanks, your List of Schools, and to congratulate you upon the very excellent publication."

The Secretary of the North Queensland Club, Townsville.

"I thank you for your List of Schools and Tutors. The book has been placed in the Reading Room for the convenience of members."

The Hon. Secretary of the Mombasa Club, East Africa.

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Messrs. J. & W. Pitts, Merchants, St. John's, Newfoundland.

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The Chief Justice of Malta.

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The Librarian of the Legislative Library, Victoria, B.C.

"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."

The Government Agency, Northern Province, Ceylon.

"In acknowledging receipt of the List of Schools, I have the honour to state that I will place the book in the Town Library, where it will be accessible to all."

Member of the House of Representatives, Sydney.

"I acknowledge, with pleasure, the receipt of this year's List of Schools. The book is a valuable one, containing information which will prove valuable to every reader. I shall be pleased to place same before many Australian parents to peruse this splendid edition."

The Librarian, Government Library, Pretoria.

"Many thanks for the presentation copy of List of Schools. It is an admirable compilation, and we are especially glad of it owing to the *large number* of enquiries we have *re* suitable English Schools. Please charge us for next year's issue."

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The Senior Puisne Judge, Penang, Straits Settlements.

"I have to thank you for the handsome volume containing a List of Schools. I have transferred it to our Library here, where parents having children to be educated will be most likely to see it."

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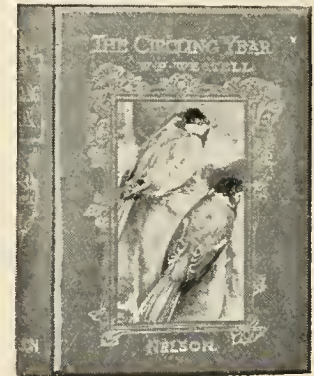
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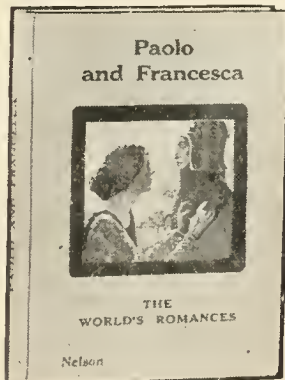
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MONKEYNUTS.

THERE was something so seraphic about the expression of young Thomas, as he lifted his glance to the stained glass windows, that I was quite sure it was his fault that poor stupid Amberley next to him was shaking with laughter. The two boys were sharing a hymn book. And while the whole three hundred youngsters bellowed forth their delight and gratitude for the many chances that public school life affords of picking rushes by the river, I was wondering precisely what this new devilry of young Thomas's might be.

One's thoughts will wander, as mine did during sermon time that Sunday. They started from young Thomas's mischievous ways and wandered on to memories of masters who had been poor disciplinarians. And so they came to rest at the memory of "Monkeynuts."

The story I have to tell of Monkeynuts is in two scenes. The opening scene is the library of a fine old moated manor in Sussex on an evening of the Christmas holidays. There sat the Squire, in an armchair upholstered in red plush, and discoursed to me of school days at Windlesham College. Squire was a man of forty-five or so: sold out of the Guards at thirty-two, when he came into his estate, which he has been contentedly mismanaging ever since. His handsome, rather florid countenance, with projecting brown eyes, showed not a glimmer of inward light. His somewhat bald occiput covered no more brains than were essential to mismanaging his fine estate. We were both old Windleshamites, and I am also a first-class listener. He recalled the prowess of his school days, and constantly in his talk the name of "Monkeynuts" recurred.

"I often wonder," he said, "what has happened to Monkeynuts. He became professor, I believe, in some potty little university"; and went straight on to tell me how he had once driven a flock of ducks from the nearest pond, all miry and quacking hysterically, into Monkeynuts' class room.

I fancy I am right in asserting that this was the most important event in the Squire's existence.

"Yes, I often wonder what's become of Monkeynuts."

I could have told him. Monkeynuts is known to the world as Prof. Halbard, almost our first scientist to-day, a man of many academic decorations, known to the learned as the discoverer of Algoloid, to the public as the inventor of a patent light, and to the Squire as Monkeynuts.

"What a time we had chasing those ducks about under the desk, and the old man standing on his seat, tearing his hair with rage and wagging his ragged old beard at us. He tried to beat some of us with bits of old packing-case once."

He chuckled and his face assumed a deep shade of red.

"But I owe him a debt of gratitude for one thing," he said. "He coached me in mathematics one term so as to enable me to pass up into the Fourth Form; otherwise I should have been superannuated; then I should never have got into the Army either."

And at the thought of the loss to England which Monkey-nuts had thus with difficulty staved off, we both grew very grave.

* * *

The second scene is in a certain hotel in Florence, at *table d'hôte*. Among those who drifted in late was one distinguished figure, a tall old man of the scholarly type with noble forehead overshadowing dreamy eyes. Hair and beard were snow white, but the eyebrows were still quite dark. He was a prince of scholars. He was Prof. Halbard, as you have already divined. He was recovering from overwork, I learnt, moving in leisurely fashion from place to place in Italy. And indeed a melancholy sat upon his countenance and there was weariness in all his movements. Mrs. Halbard was with him. I made her acquaintance in the drawing-room after dinner. On learning her husband's name I informed her I was an old Windleshamite. I do not think she had known before that her husband had ever taught science in a public school. She was too worried and preoccupied with the Professor's condition to pay much attention to what I said.

"Even the most insensible of us," I said, "understand what a privilege it must have been to be taught by Prof. Halbard." And I told her how the Squire had handsomely admitted his own indebtedness to the great man. (I did not tell her about the ducks, or how he had described X—as a "potty little University.")

She brisked up at once. "Oh, now," she exclaimed, "do tell my husband about that. D'you know, although it's such a little thing, I'm *sure* it would please him immensely. I'll go and see if I can find him now."

Five minutes later the professor himself appeared. His face, which had seemed so weary, had lighted up. He shook me warmly by the hand and assured me he had the pleasantest memories of Windlesham. It occurred to me to ask why he did not impart so pleasant memories to Mrs. Halbard, but I refrained.

"I met an old pupil of yours last Christmas," said I.

"So Mrs. Halbard told me. Do tell me, how is Sackerson getting on? Dear me, I often wonder what has happened to Sackerson."

"He told me, Professor, that he should never forget your kindness in coaching him in mathematics, and thus saving him from superannuation."

The worn face of one of the greatest savants in Europe from which new academic honours had not availed to lift the depression, positively beamed with delight. He chuckled, and I noticed how his head wagged when he spoke again.

"Ah, he was a little fiend, that boy. Still, a good-hearted boy, too. I was very fond of Sackerson. Dear me, it's delightful to be remembered in this way. So he hadn't forgotten that superannuation business! Well, no doubt he made a first-rate soldier, too. Just the sort we want in the Army, don't you think? . . ."

* * *

Here my meditations ended as the sermon reached its concluding sentence. And after the boys had filed out I made my way straight to young Thomas's seat (suspicious beast!)—yes, to the seat of the seraphic Thomas (did you know that "seraph" means "snake"?). On the fly-leaf of his hymn book he had scribbled in pencil, "If old Tarbrush wants to know afterwards what we were talking at, say I trod on your toe by accident."

F. R. G. DUCKWORTH.

SCIENCE AND THE HOME ARTS.

At the Evening Meeting of the College of Preceptors, on November 20, 1912, Miss H. D. OAKELEY, Warden of King's College for Women, in the chair, Mrs. BRIANT, D.Sc., Lit.D., read a paper on the above subject. She said:

The complex title of this lecture implies, in the first place, that it is to be about the education of girls, since the exercise of the home arts is part of the destiny of the girl. In the second place, the title implies a triple inquiry:

(1) Should study of the home arts be a necessary part of school education?

(2) How far, and in what sense, does the effectiveness of this study depend on correlation with appropriate science studies?

(3) What is the main object, in any case, of science study in the girls' school?

A fourth possible question there is, but I do not propose to discuss it now. It is a question the answer to which depends on all the concrete circumstances of the case, and involves classification of scholars, and perhaps of schools, according to projected life career, duration of educational period in school, and proposed continuation of education during later years. The question is whether, in balance of curriculum and correlation of studies, science should yield precedence to home arts or home arts to science. On this I will content myself with suggesting, as a main principle of guidance, that the first responsibility of the school is to do in school those things which are least likely to be done elsewhere, or at a future time; and the second is not to lay foundations of knowledge in any subject unless there is time and energy to lay them properly—*i.e.* so that they will bear the superstructure of further knowledge afterwards.

As regards the other three questions, let us take them in reverse order. When (3) and (2) are answered, every woman can answer (1) for herself—answer it, that is, in each of its parts. Should every woman be skilled in home arts? If so, should every girl be taught them in the secondary school—*i.e.* before she is sixteen, or at the most eighteen, years of age? There are two alternatives to this course. She might be taught, as in the new German system, by attendance at special classes organized in a *Frauenschule* (to use the German word), or she might be taught at home, as in the old days, by light practice during school life and responsible duties of assistance at the later stage.

We come back to the more obscure and, in my view, most important question. Why do schoolgirls study science at all? Is it as a valuable exercise for their minds, one of a set of exercises planned to develop each kind of mental power, as Swedish drill is planned for the development of the muscles severally and jointly? Or is it for purposes of utility, in application of knowledge to the solution of practical problems—the cleaning of metals, the growing of plants, the cooking of food, and the maintenance of household efficiency in water supply, electric lighting, and general upkeep? Or is it to liberate the growing mind from the dullness of stagnant intellect, and from the limits within which, as literary and pure logical intelligence, it has so often been condemned to move—to liberate it by training it to understand its world?

More briefly, is it for mental exercise, or for practical education, or for scientific knowledge that we build school laboratories and pay teachers to take charge of young recruits—training them to weigh and measure, to analyse and test, to make experiments—and watch breathless for the results? To all these questions some kind of affirmative answer might be, and is, commonly returned.

Just as a healthy young animal needs, and delights in, the exercises natural to it, so does the child animal require opportunity for the strengthening play of mind, no less than it requires fit exercise for the development of the body. In one of its partial ideals, education is an all-round *exercise* for the child. It is a true ideal just so far as it is right to regard the child as a physical being, true to type in the sense that lions and bears and unprogressive savages are true to type.

In so far, however, as education implies progress, to the extent of bringing the new generation up to the point of

efficiency for human life in a progressive state, it must at least shape itself with a view to promoting his studies so as to fit him for some useful work in life. This is a higher end than the other, more humane in motive, and, therefore, more conducive to morale in direct effect. If pursued wisely, it includes the other, and sends out its votaries true to type in the sense of progressive humanity up to a certain point.

But only up to a certain point. The world has need of a well trained rank and file, each one set in so far as he is a worker on the things that pertain to his work. If that were all, this would no doubt be a well fed, finely clad, and comfortable world, an orderly world, dutiful also, and even kind; but, oh! so dull, so far beneath its own possibilities in disinterested thought, lively feeling, and free imagination. After all said and done, it is best for ourselves and our world that, even at the cost of some comfort and productive efficiency, we should go through life with an active disinterested love of knowledge as such and be educated so that we know how to satisfy it.

So, though education is mental exercise and has a utilitarian aim, its purpose as teaching *how to know* is its most important purpose. From this point of view, it is clearly the main object of the science teaching in schools to train the learner by the use of his intelligence in all its reflective and practical manifestations, using each as the occasion demands, to the discovery of particular truths in Nature and their explanation in the connected system of knowledge which is called Science. By co-operation of teacher and learner in practical work, interspersed with discussions on theory leading on to more practical work—observation or experiment—the learner is trained to discover facts, to reason from them, to think out explanatory hypotheses, and to test them. Each piece of work done involves a piece of knowledge honestly acquired: it involves also the experience which implies skill in the pursuit as well as acquaintance with the way in which knowledge has to be pursued. The learner acquires science: he acquires also the methodology of science and the manual technique it requires.

In a class of senior students studying inductive logic, those who have previously covered a matriculation course in science are found to have a considerable advantage in appreciating the discussion of first principles and their application, not to natural science alone, but to all the affairs of human interest. The reason is obvious: they have been trained to reason in the concrete with the strictness that natural science in our day is able to achieve; they know, therefore, how the thing is done, and have no difficulty in following descriptions of the process and discussions on the principles which it implies. Also, as they have some skill in the process, they are fairly apt in applying it to more involved and contentious subjects, like Tariff Reform, Free School Dinners, and the Municipalization of London Street Traffic. (I would not, however, desire it to be understood that I consider natural science and logic jointly a sufficient training for efficiency in political problems such as these.) For our present purpose let it suffice that the school science course should teach some science to the learner in such a way that she should come out with a sound conception of science as a whole, and with scientific intelligence sufficient to enable her to teach herself further, if she will, with the aid of books, lectures, and laboratory equipment.

For the majority who end these studies when they leave school, there remains the valuable insight into Nature already gained and the development in logical intelligence already noted. This development does not wait for lessons in logic to bring it into practical effect outside the laboratory. Seventeen years ago, in the North London Collegiate School, I co-operated with the science mistress, Miss Edith Aitken (now the head mistress of the Pretoria High School) in reorganizing the science teaching throughout the school, so that opportunity for laboratory work should be open to the girls from about twelve years of age upwards. (The provision is much more ample now, and *all* the girls come into it.) The effects of the first experiment were soon apparent. The little observers, fresh to the work, were very happy: they worked in twos—sometimes in threes, for lack of room—and they were allowed to speak about what they were doing. They were from the first a picture of free orderliness, and never gave any trouble. Presently the influence began to tell upon the

rest of their work. The result on general intelligence surpassed all expectation. I had relied much on mathematics, especially geometry—*i.e.* geometry reformed, as we taught it then; not transformed, as we are sometimes worried into teaching it now—I had relied for the most part on mathematics for the development of reasoning habits or, at least, a rational turn of mind. Practical science succeeded in a range of cases inadequately moved by the more abstract study. The use of the hand ranks, no doubt, with the use of the tongue in stimulating thought. Also, it is a pleasure in itself, and thereby sustains the mental effort. Above all, and this matters most, it makes things happen. You can do a thing and find out what happens; afterwards you want to make that happen, and so you do it again. It is exciting to learn about cause and effect and the uniformity of Nature in this impressive way.

I have confidential talks with new children after they have been about half a term in school. "And the work in the laboratory: do you like that?" This, after hearing various frank opinions about arithmetic, composition, and French perhaps. "Oh, yes, very much," says the child. "I wonder what you like best about it. What do you do in your class?" Then I am told about different things. One describes the weighing of a cubic centimetre of water, and finding out the weight of a cubic centimetre of glass by calculation based on the measurement of a glass stopper by weight and by volume. This leads to the comparison of the two, and the verdict is given: "I like it because it is so interesting to find things out." Another—whose favourite subject is geography—also likes to find things out. "It is just like discovering Africa," she says. Others lay stress on the happening of things. All enjoy their self-activity; but I am much mistaken if they do not enjoy even more the direction of that activity to the discovery of some fact, and presently to the explanation it may call for. Let no one say that the girl child's main interest in lessons does not lie in the solution of the fascinating problem of knowledge. It is this interest that grips her in the science laboratory, and its satisfaction there is potent in effect on the development of her general intelligence. The twelve-year-old girl is found to take great interest in discoveries such as the following, and the inquiries to which they give rise:—

1.—(a) If a metal is heated in air it gains in weight. (b) If heated in a limited supply of air, only part of this air is used up. This leads to the discussion of "combustion," and to the fact that air contains at least two gases having different properties. (c) Other substances lose in weight when heated. Which of these substances become metallic in character after being heated?

2.—If water is boiled in a flask, and the flask well corked, the water can be made to boil again by pouring cold water over the flask.

3.—If the same substance is weighed surrounded by air, water, and methylated spirits, it is found to weigh a different amount in each case.

The essence of science study consists in asking a question and finding out the answer to it. The requirements of the learner, therefore, are (1) interest in the matter set before him, (2) curiosity or the impulse of inquiry, (3) research by means of intelligent manipulation and reflection, (4) perception of result and formation of judgment accordingly. With new recruits of sleepy intelligence and unskilled in attentive habit, the first requirement—that of interest in the matter—is very important. The matter should arrest attention from the first. Hence the value educationally of utilitarian, humanistic, or any other sort of interest as to which the attitude of inquiry may be assumed to be nascent in the crude child's mind. The best beginning, on an average, may, no doubt, be made in Nature study during preparatory-school years. Few children will fail of interest over the investigation of plants—especially queer plants—and little beasties. Thus, a habit of inquiring interest is formed. Attention develops, and skill of eye, hand, and mind increases, so that presently the attitude of inquiry may be assumed for almost any subject-matter suitably presented. Indeed, the happy atmosphere of the modern school goes far to make children interested, as a matter of business, in such material for practical inquiry as may be set before them. Still, when there is no reason to the contrary, they might be given a choice of material for the sake of the stimulus. Minds differ much in the

bent of interest. Some are drawn to scrutinize familiar objects like starch, salt, and soap. Some there are to whom the less known is the more provocative. Some care most for inquiries of practical utility, of which the following are interesting examples:—

Why does the addition of baking-powder make cakes rise?

Why is it easier to wash greasy dishes in soda-water?

Why do you wrap up lace in blue paper?

Do pipes burst when the water freezes or when the thaw comes?

Why?

What is the difference between simmering and boiling?

Some, on the other hand, have a disinterested curiosity ready for most inquiries; girls, perhaps, have this rather more than boys. A class will contain a variety of types: opportunity should, therefore, be given, so far as possible, for the operation of every stimulating motive, in order to secure that first step in the lesson which may so easily be missed, the leap of the learner's initiative through inquiry to research. Then comes the labour of investigation, the setting up of apparatus, the experiment with all its detail of selecting, calculating, measuring, and manipulating, the result, its observation, and the interpretation thereof.

If the object were mental exercise and the attainment of general intellectual skill—as pedagogists used to seem to say—a series of disconnected lessons on interesting subjects would apparently suffice. Occasional lessons of this kind have their use, especially for young children; but a series of lessons with no continuous interest in subject-matter running through it is no substitute for a continuous course. Not only is mental energy wasted by the necessity of stimulating interest anew from the beginning each time, opportunity also is wasted and attention frittered away—attention which should be utilized for the development of that central interest to which the sum total of all the consecutive inquiries lead up, the interest in the subject-matter of the series as a systematically connected whole. This sort of series is, of course, much more interesting to the learner. Learners, in fact, are very human: they do aspire, though more or less obscurely, to unity of aim in all their endeavour. Scrappiness, as part of a system, wears them.

Now, there are two ways in which a subject-matter may have unity of aim. It may be a science proper—i.e. a systematic unfolding of the truth of Nature in one of her characteristic manifestations—physics in all its branches or chemistry or biology. Or it may be a selection from one or more sciences of the truths on which are based the practical principles governing the successful exercise of an art such as medicine, education, agriculture, cookery. The unifying motive in this latter case may be of considerable potency, well calculated to arouse interest in each and sustain interest throughout all the lessons. The course of inquiry suitable for investigation of the subject in the order which is best, logically or heuristically, as science, must however give way to practical considerations at some points. Some links would be omitted, some taken in a different order. The subject ceases, in fact, to be science—if we are strict about our nomenclature—and becomes another excellent thing—a scientific art, an art treated in reference to the sciences that explain it.

In recent years it has been proposed to substitute for science, in at least some girls' schools—all, say the extremists—a body of scientific doctrine duly worked out in laboratory practice and bearing on the exercise of the home arts. As I understand Prof. Smithells, who is certainly not an extremist, he was impressed by what seemed to him to be a lack of interest in science on the part of girls. This, he thought, could best be remedied by drawing on the natural interest of girls in the practical demands of the home life and leading them up through this to interest in a system of scientific inquiry corresponding. Stripped of all particulars, the proposal was to use the utilitarian or artistic motive as driving power, by the operation of which habits and the taste for scientific inquiry might be acquired, and this with the advantage of a practical bias which would tend to preserve the interest and keep it ready for use.

Hence arose a controversy on Science *versus* Domestic Science in girls' schools—a controversy not yet exhausted. Is science, as the exposition of truth in due order of development, to be used for the purpose of secondary education; or

shall the activity of girls in the laboratory be regulated by inquiry into important and interesting problems arising out of desire to penetrate the mysteries of diet, cooking, washing, and household cleaning?

A controversy like this can do nothing but good in the long run, especially if it could be limited to persons who know what the inside of scientific education is. There is sure to be some heat at first; then, as experiments mature, the discussion develops into sound dialectic; we learn from each other; the traditional view makes some admissions; the new view adjusts itself a little better than at first to the ultimate truth of the matter.

The controversy is, however, complicated by the plain man's natural prejudice in favour of the domestic efficiency of women, and his tendency to jump to the conclusion that this will be increased by the substitution of domestic science for science in the schools. I fully admit that there is reason in the plain man's prejudice, but, for the rest, domestic science without domestic arts would do little to allay it; and it is by no means certain that this combination would have so much advantage over domestic arts following on, or accompanied by, a course of science proper. Such a course would naturally make use of homely illustrations as much as possible; indeed, this is implied in the ideal of development along heuristic lines. I admit that enough has not always been made of this.

As for the plain man's intervention, I make no complaint. It is, in part, his business, so far as the end to be achieved is concerned. He must weigh the opinions of the experts, however, before his judgment is given.

The main body of opinion among the science teachers does, in fact, swing back to the position that science, as such—i.e. in connected sequence—should be studied by all who, with the time and opportunity of secondary education, are capable of understanding it. Further, it is held that girls are capable and do, on the average, take much interest in it, both as regards the detail of inquiry and the development, through inference, of further inquiry, step by step. Extrinsic underlying motives are not needed by the average girl as a stimulus to interest; but their value is fully admitted none the less, since they suggest that application of science to the affairs of life, the root idea of which should be planted early. It is maintained, moreover, that science cannot be taught with that clearness as to the issues involved and their relation which the average mind requires if it be taught in the form of a commentary on the complex body of the domestic arts.

It is a very different matter to teach the domestic arts in the form of a commentary on the sciences. This is, I think, the ideal of the kitchen laboratory in some schools—e.g. The Ladies' College, Cheltenham. It is implied, as one variant at least, in the King's College course for the training of domestic science teachers. The objective of this course, like that of an agricultural college or, indeed, a medical school, is the application of the ground sciences involved to a particular art. It is an educational establishment of applied science. Its course includes study of the ground sciences—(1) Physics, Chemistry, Biology, and Economics; (2) courses on the application of these to Hygiene, the Home Arts, and Household Management; (3) Practice of the Home Arts—i.e. Cookery, Cleaning. The course is for three years. Its effectiveness will, no doubt, be greatly increased when it comes to demand, as it presently will, that candidates for entrance shall show themselves well prepared with a preliminary knowledge of the ground sciences. With physics and chemistry at matriculation level, the applied sciences could go forward soundly from the first. More time to ruminate is important in these matters.

I refer to the King's College course because it exemplifies the normal process by which a practical interest is dealt with scientifically. This process, to be satisfactory, must be thorough so far as it goes. The science foundation must be science, not a row of scientific conclusions the reasons for which were never understood by the student. This is the prime and most important requisite, as without it there cannot be secured from the first the settled turn of mind to intelligent inquiry, attentive manipulation, and sound inference. In the second stage—the application of the sciences—further combinations of intelligence are evoked. There is the diagnosis of the practical problem and the selection, by inference from previous knowledge, of means to its end. There is experiment

to test diagnosis and inference by doing the thing to see whether it can thus be done. Also there is a field for new investigation, difficult but fascinating, by which knowledge itself is enriched. Lastly, but side by side with the science studies, goes study of practical methods and practice in the arts themselves.

It is obvious that the world has need of many women trained on these lines—not as teachers only; indeed, it may be that for teaching in the schools the main supply should be of another type. For the business of life, in commerce, in social service, in home life, in the management of institutions, women of this sort ought to be in demand. I understand that they are.

Our business is, however, with the school. Is it the solution of the problem to introduce into the schools the beginning of an education of this sort with all its parts represented—an abridged edition, in fact, useful in itself, whether enlarged later by those who have opportunity or not?

Many secondary schools can count on no more than a four-years' course—*i.e.* from twelve to sixteen—for the bulk of their pupils of secondary school age. A five years' course is in these schools considered very satisfactory, and six or seven years likely to mean that the girl is belated in development or is going on with special studies for the University. From twelve to sixteen or seventeen we have the growing mind, plastic as to the form of its interests and habits—prone, therefore, to shape well under steady treatment with clear aim, but liable to get involved in a chaos of half-formed and divergent tendencies if the course is zigzag and the treatment—even if only in appearance—confused.

Thus the time for all subjects is only a short four or five years, and physically as well as mentally the period is critical. Much depends on these few years for healthy, well balanced bodily growth; much depends also on getting the young mind into the right human swing. Literature we must have—history, geography, language. If there is good arithmetic, with sufficient demand on precise intelligence and sufficient application to concrete inquiries, then mathematics need not otherwise be pressed for the first year. It will be better to postpone the more abstract science for a little, in order that practical elementary science may take the lead. The girl is ready for this at twelve years of age—earlier in many cases. Thus, a good four or five years' course of practical physics and chemistry can be secured. It is of the essence of the preceding argument that this course should be science proper. What, then, about the plain man's demand for the home arts, and what about the development of the scientific temper in dealing with them?

The best solution is, I believe, the German solution, that the girl should, at the end of the ordinary school course, take another year either in a special school—the German method—or at the top of the secondary school, as some of us try to solve the problem here. I should explain that the girls of the *Gymnasien*, or higher schools, in Germany are exempt from this new custom, on the ground that they are going into professions and cannot spare the time from their studies. Of that exemption I approve. These are the girls who ought, and well can, pick up their domestic education at home and consolidate it at some convenient opportunity.

If these courses of study for girls, who would otherwise be leaving school with a satisfactory general school certificate, could be provided in this country out of rates or taxes, with free admission, the parents in most cases would gladly let them stay. It is the additional expense which is the difficulty. Fathers cannot afford it, and mothers hope, if they are capable mothers, that they can themselves teach their daughters much. So they can, but much is left undone.

Other solutions there are, but we have no time now for detailed particulars. Domestic arts do, in fact, make a part of the curriculum extending over several years in many schools. I do not, however, find that under these systems there is time set apart adequate in amount for the study, both of the ground sciences and their application to the practical problem. In most cases the science course and the art course go on side by side. Any idea of the applied science which the girl gets arises out of the mutual interest kept up by science mistress and domestic arts mistress each in the other's business. A good deal can be done in this way—a good deal, I mean, considering that this is the abridged

edition of the thorough course. Sometimes one mistress takes both subjects, and this is a good solution when the school is too small for two. When the school is large enough, it is better, in my judgment, to maintain a strong representation on both sides, and expect co-operation between them.

A full year's course of domestic arts study at the end of the school course has the advantage of making it possible to teach the applied science in a systematic manner during this year, thorough as far as it goes. Coming to it after the regular science course, the learner is well fitted to understand it and appreciate its value. It may not run *pari passu* in all particulars with the lessons in cookery and cleaning, but the parallelism is sufficient to produce the desired effect. That effect is the production of a home girl competent to do household things that have to be done, and to do them with a mind thoroughly wide awake to all the issues involved—a girl whose intelligence works always at the back of her will, a girl of insight no less than of practical skill.

We cannot hope, however, to obtain for all girls this thorough training in science and the home arts. It may often happen that, for lack of time in schools where the leaving age is early, and for some girls in most schools, we may have to choose between them. With this alternative in view as a possible solution of time-table difficulties, it is important to inquire whether the domestic arts themselves cannot be taught in a scientific spirit, so as to involve sound logical training in dealing with the common things of life. The housewife who has no notion of patiently discovering the conditions of success and failure in her various operations, who does not know how to learn from her wide sphere of interesting experience, who clings to old saws and pretentious theories accidentally acquired and never put personally to the test—this is the kind of housewife we desire to abolish. It will do the world little good to put in her place a person similarly trained as regards practical work, but having some discontinuous acquaintance with scientific facts about starch and fat and sugar, about food values and the action of chlorine in bleaching linen.

What we want is the housewife trained to the most attentive observation of the effect she is producing throughout every operation that she undertakes—trained, too, to careful appreciation of the result in praise or dispraise and to mental registration of the conditions favourable to success. Trained thus, she will blame herself for all her failures, and, save for the awkwardness of the novice, seldom repeat them. Also she will stand a fair chance of growing up with a logical mind as capable of inductive reasoning on the problems of experience in the social world as if she had spent the same time working in the science laboratory.

The moral is:—make the domestic arts teaching itself more scientific—*i.e.* more searching as an art and more exacting as a discipline in attentive observation, wise generalization, and accurate registration of results. If this is done well enough, it is domestic science, so far as it goes.

The CHAIRMAN said that the lecture had been of absorbing interest, especially from its having received so philosophical a treatment. Its subject was one aspect, treated in a modern way, of the great question started by the ancient philosophers, "Is knowledge virtue?" especially in the Greek sense of knowledge in relation to practical life, and in relation to the domestic arts. The problem seemed at its acutest in this most scientific age. She desired to express general agreement with the treatment accorded to the subject of education generally, and the high importance of the value of science and that which a scientific education should confer on the pupils; and it was a great satisfaction to learn from so experienced an authority of the girls' natural interest in knowledge *per se*, and the ways in which it might be awakened in minds of varied character through the common incidents of daily life. She would instance as especially valuable the stress laid upon the awakening of intelligence and the fostering of the child's ability to be useful in some one sphere in later life. The line was often too sharply drawn between the utilitarian and the ideal, and she felt that, even if it were a paradox, a tincture of useless knowledge in this connexion was capable of defence. Dr. Bryant was probably right in saying that a complete abridged edition of the King's College for Women Course could not be attained in schools any more than of any other University course.

MISS LEES, while recognizing the difficulty of obtaining the two highly desirable ends of true science and knowledge of the home arts, she rather feared the compromise which had been suggested would not work out well, and that the time might be better spent in implanting some habits of consequence. To master

a new idea so as to make it a part of the mental furniture was a slower process with girls in their teens than was sometimes realized. Ideas presented too numerous tended to thrust one another out of place, and she felt it was preferable to aim at a useful acquaintance with the home arts and, with reluctance it might be, to let the science go.

Miss MARTIN had found that girls of twelve years who had been set to work in groups in the laboratory approximated to the type of those from the kindergartens—i.e., they were orderly, easy to teach, and able to follow out trains of ideas, in strong contrast with those who came from schools of other kinds. She contended that science training fostered resourcefulness. Among many instances of this she would mention that of a girl, who, on leaving school, had taken over and carried to success a hitherto languishing poultry farm, and that of another who, having herself fitted a motor to a boat, had entered and won a race, during which she had found it necessary to readjust her disordered engines.

Miss BARTRAM spoke of the much greater readiness with which pupils who had been through a course of science took up such a subject as cookery, as compared with those not so prepared.

Miss MASTERS, in reference to the post-school course at Cheltenham, remarked that good results were obtained in the case of those girls who had been through the school, while with such as came from outside, and had not done much science previously, considerable difficulty was experienced from their lack of the necessary underlying knowledge. In the kitchen laboratory investigations of foodstuffs and their chemical reactions were carried out, and, as these were conducted by the chemistry teacher, they were easily kept in close relation with the chemistry course.

Miss MINOR said that a good deal of experience had shown her that it was difficult to correlate the domestic work with the science work unless there had been a sound training of three or four years in science, but that, given such previous training, the correlation was most interesting and a great delight to the students. But the difficulty found in most schools was that few mistresses could correlate satisfactorily. She would have liked to hear something said as to the quickening power which domestic work had on girls of slower mental ability. It had been ascertained as the result of direct experiments that subjects which had previously been found difficult were easily grasped after a course of domestic work. In her opinion the ideal course was the post-school course, owing to the larger amount of time which could be given to theoretical training in all branches of domestic science.

Miss FOSTER, while agreeing as to the advantages of the post-school course, pointed out that many girls at sixteen were plunged into a business career, and must thus miss their domestic training altogether; while those who remained were in most cases destined to be elementary teachers. Less time was, of course, available in the earlier years, but something might be done in the last year of school life, after the science teaching, in domestic arts and dress-making. An attempt to correlate her work in chemistry with that of the cookery mistress had been made, but had been abandoned because it was found impossible to teach a number of principles in chemistry as preparation for one cookery lesson.

Miss MACKENZIE had, after some difficulties and the yielding of many points on both sides, succeeded in agreeing upon a course with the mistress in cookery, which subject was entered upon after two years of ordinary science work. Ideally this began a year too early, but it had been found possible, without too great sacrifices, to fit in a fairly good elementary course.

Mrs. BRYANT having given a very clear exposition of the points brought out in the discussion, votes of thanks to the Lecturer and to the Chairman were carried with acclamation, and the proceedings closed.

CORRESPONDENCE.

To the Editor of "The Educational Times."

SIR,—In connexion with the copy of "Non Nobis," as published in the current issue of *The Educational Times*, it is stated that Mr. Kenneth John Freeman, the part author of the poem, was a Scholar of Winchester, and also of New College, Oxford. It should have been stated that he was a Scholar of Trinity College, Cambridge. The latter is so essentially different a distinction that I should be much obliged if you would make, in the forthcoming issue of *The Educational Times*, the necessary correction in this respect. The correction would be especially appreciated by many Cambridge men as due to the memory of one who was not only a Scholar of Trinity, but also (in addition to many other distinctions) Craven Scholar and Senior Chancellor's Classical Medallist.

—Yours obediently, G. BROKE FREEMAN.

12 New Square, Lincoln's Inn, W.C.,

November 1, 1912.

SIXTY YEARS AGO.

FROM "THE EDUCATIONAL TIMES" OF DECEMBER, 1852.

SELF-IMPROVEMENT is a matter of the utmost difficulty [for assistant teachers] in boarding schools. I was eleven years assistant in boarding schools. The first four was with a person who had been draper, merchants' clerk, &c., and finally kept a boarding "house," with fifty-five boarders. We were employed from 6 in the morning till 9 at night in his service. With the zest of a policeman he watched our candles out at 10 o'clock. We were not allowed to be up early in the morning: "it disturbed the baby." In the next situation we were employed the same number of hours (fourteen hours in the day for seven days in the week), but had no restrictions as to the remaining ten hours. I retired early, but in summer and winter I have been up at 4 o'clock. When the snow was on the ground, I have lighted my "dip" (all we were allowed), put on my cloak and hat, and for two hours before anyone else was up have been quietly pursuing my studies. I learnt French thus, that I might be able to read Lacroix and Poisson. I have many a time been at the lodging of my French master by 5 in the morning, where we read mathematics together; it was truly the pursuit of knowledge under difficulties. The time for private study was, and is, little enough; the confinement excessive. . . . I have been for months without leaving the premises except to go to church or walking with the lads. —(From a letter to the Editor, signed "A Preceptor," urging that further opportunities of education should be given to young masters.)

REVIEWS.

Peter Ramus and the Educational Reformation of the Sixteenth Century. By Frank P. Graves. (5s. 6d. net. Macmillan.)

It is interesting to observe how they are all being found out, those old educational worthies who wrote and fought for education in days gone by, and are now being rescued one by one from their obscurity. It is true that Ramus cannot be fairly described as being obscure in the realm of general and religious philosophy, but it is probable that few teachers have heard much about him. One is tempted sometimes to wish that writers on education would confine themselves to the really educational work of the worthies they discover, but the need of the knowledge of the man to understand the nature of his work is realized by the most competent critics, and nowhere has this need for a knowledge of the whole man and his life-work been made more manifest than in this scholarly treatment of the great anti-Aristotelian. Prof. Graves devotes 107 of his 218 pages of text to the life history of Ramus. To the student of the general history of education this treatment is too full, but to the specialist who wants to understand the educational developments of the sixteenth century the biography of Ramus will well repay careful study. Prof. Graves sees to it that the student does not find his pages dull, and the elaborate foot-note references guarantee the thoroughness with which the material has been prepared.

By the light of the biographical portion the reader is led to understand, in some degree at least, the peculiarly pedantic way in which those old writers approached their subjects. Ramus is above everything a logician. His pages bristle with dichotomized classifications. These are reproduced in Dr. Graves's book with commendable accuracy, and the commentary is such that the modern reader probably is in a better position to understand Ramus's teaching than were the contemporary readers. The reader of to-day is repelled by the elaboration of the analysis that marks the Ramian writings, but Prof. Graves is able to put before us such a concise statement of the general principles on which Ramus works that we feel that we have a key supplied at the very beginning. When we realize the laws of Universality, Homogeneity, and Primacy of the General, and their Ramian equivalents, the Law of Truth, the Law of Justice, and the Law of Wisdom, we begin to understand the principles on which this old pedagogy was rationalized. Yet out of these elaborations Ramus evolved conclusions that have an appeal to the most practical modern schoolmaster. It gives us to think when we are told that

"five hours are required in every instance to impress and make of value what is learned in one hour." In giving an analysis of the content and method of the *trivium* and the *quadrivium* Prof. Graves has an excellent opportunity, of which he fully avails himself, to make his readers realize the attitude of mind of those old school-craftsmen. We cannot but admire their ingenuity, but even the most sympathetic modern reader must rejoice that we have to go so far back in history before we find these refinements in active operation. In all these antiquated subtleties modern problems are implicit, and the thoughtful reader can gather how Ramus would decide on such modern problems as formal training, the water-tight compartment system, and the methods of what we now call the New Geometry. We are afraid that modern readers of a practical turn of mind will be repelled by the non-biographical part of this book. It is a work for the scholar rather than for the practical man, but among the scholars must be included the genuine students of educational history. For those who are making a special study of the historical side of educational theory this book will prove at once attractive and useful. In his previous historical work Prof. Graves has earned the right to be regarded as an authority, and this book will enhance his already established reputation.

Principia Mathematica. Vol. II. By Alfred North Whitehead, Sc.D., F.R.S., and Bertrand Russell, M.A., F.R.S. (30s. net. Cambridge University Press.)

In these days the inquiry into the foundations of mathematical science has opened up a wide field for those stimulated by a love of research. The present is the second large volume of a set of three which together constitute the entire work, the last being still in the press. A considerable number of mathematicians are already familiar with Mr. Russell's "Principles of Mathematics," and to these it may be said that the new work formed in its inception a sequel to the earlier treatise, but that its scope necessarily widened so rapidly and to an extent so little anticipated at the outset, that the original intention of the authors was perforce abandoned, and the new treatise has developed in absolute independence so far as its predecessor is concerned. The full significance of the later work cannot be gauged accurately without some difficulty. It aims at the most subtle analysis of mathematical thought, with a view to establishing as its basis ideas fewer in number and simpler in character than the hitherto accepted intuitions. Compared with the new body of assumptions, the axioms of the past become more or less complex theorems. Further, the treatise aims at constructing an instrument of reasoning capable, on the one hand, of illuminating the path of the searcher after the mathematical atom, suitable, on the other, for the task of extending the region of successful deduction. Let us assume for the moment that the language in everyday use is inherently adequate for the elaboration of the arguments involved; it would nevertheless require hedging in at every step to an extent which would render it inconceivably clumsy. Hence the authors have deemed it expedient to frame a new written language highly symbolic in character and resembling shorthand in its comprehensiveness. In part their system of symbols has been borrowed from the notation of earlier writers, but it has undergone extension and development to meet the growing needs of the writers of the present work. For a mathematical instrument, such as the one under consideration, to fulfil its purpose, it is moreover essential that it should be competent to avoid all possibility of the existence of "contradictions" and "paradoxes," and it is held by Dr. Whitehead and Mr. Russell, that some form of the "doctrine of types" yields the best if not the only means of securing the desired end. We cannot do better than quote the authors' own definition of the important doctrine. Entirely negative in effect, "it forbids certain inferences which would otherwise be valid, but does not permit any which would otherwise be invalid." If we consider the contents of the first two volumes of the new treatise, we find that the authors commence by discussing such general propositions as have a relation to mathematical reasoning universally, and are far from being connected merely with some particular branch of the science. Mathematical Logic, therefore, forms the first "Part" of the treatise, and, together with investigations preliminary to the consideration of Cardinal Arithmetic,

occupies the whole of Vol. I. The text of Vol. II includes, as the subjects of close detailed discussion, Cardinal Arithmetic, Relation Arithmetic—embracing, as a part only, the investigation of number in its ordinal aspect—and the general theory of Series. It would be inferred even without statement that each of the main divisions of the treatise is arranged further in a series of most carefully considered sections and sub-sections. Throughout the work the reader will find valuable summaries of the discussion about to follow. The importance of such condensed analyses is self-evident when we regard the great extent of the treatise as a whole. Were it not for the brief surveys above mentioned, the student possessed of but restricted leisure would be deterred by the hopelessness of any attempt to master such selected portions of the contents as might have special reference to his own needs. By their presence in the work, it becomes on the contrary possible for him to obtain the desired amount of information of a particular character, this being sufficiently but not unnecessarily amplified.

The Science of Etymology. By the Rev. W. W. Skeat. (Pp. 242. 4s. 6d. net. Clarendon Press.)

This book, completed only a few months before the author's death, may not be monumental enough in its proportions to be described as his crowning work; but in one or two respects this epithet would not be inappropriate. Though it professes to be only an introduction to the subject, a guide to the use of the "Etymological Dictionary," the book is important because it presents the ripest fruit of research and reflection in the field of English philology from one who devoted his life to the study and is justly regarded as its leading authority. It may almost be said, indeed, that the author's long life is coincident with the history of the science, and though, of course, many other workers have contributed, it is his share that bulks most largely in the result. Prof. Skeat has taken the opportunity here not only of presenting his conclusions in the final form he wished them to assume, but of bringing up to date the record of his investigations into the origins of particular words. Perhaps the most interesting features upon which special insistence is laid are the importance of the spoken language in contrast with the written symbols by which it has from time to time been recorded, and the help which a study of English philology may offer to the interpretation of Sanskrit in return for the similar help it receives from that source. Considering the professed aim of the book, it might, perhaps, have been better if the author had been more eclectic in his illustrations. The comparatively inexperienced student of etymology, to whom the book is addressed, may find himself a little bewildered by the wealth of examples, and would have been grateful for the author's help in directing his attention to the most typical. Apart from this slight drawback, the book will be found to be full of interest and instruction.

GIFT BOOKS.

PUBLISHED BY HENRY FROWDE AND HODDER & STOUGHTON.

The Air Patrol. By Herbert Strang. (6s.)—Mr. Strang emulates Jules Verne in looking ahead, and he gives us a fascinating story of two young men who, with the help of an aeroplane and supported by a few Pathan miners, are able to hold a pass on the North-West Frontier of India against an invading Mongolian army long enough to enable the Indian army to come to the rescue.

The Romance of India. Edited by Herbert Strang. (6s.)—Mr. Strang has already written "The Romance of Canada" and "The Romance of Australia." His many admirers may read this book with confidence that their interest will be held from start to finish. History is often so condensed that all life is squeezed out of it, or it deals only with causes and tendencies. This book deals with the actual exploits of military heroes, from Alexander to the present time. The descriptions are taken from well known writers.

With the Armenians. By Claude Grahame-White, in collaboration with Harry Harper. (6s.)—No boy's Christmas library is complete without a book on aeroplanes. Few people are more qualified to write such a book than Mr. Grahame-White. We can recommend this volume without any reserve. It is instinct with vitality, and

describes in a very interesting style what the airmen of yesterday and to-day have done or are doing.

The Pirate Aeroplane. By Captain Gilson. (5s.)—Here are thrilling adventures enough to satisfy the most voracious appetite. Captain Gilson is a practised writer. He takes his heroes into Arabia, where they fall in with a race of people, descended from the Egyptians, who have lived in isolation for many centuries. The idea of the pirate aeroplane is a good one; but the scheme of the freebooter is in the end frustrated.

The Unwilling Schoolgirl. By Marjory Royce. (5s.)—The experiences of Ethne St. Ives, brought up in the lap of luxury till the age of fourteen, and then sent, entirely against her will, to a boarding-school, are full of interest. Miss Joyce can write a good story, and has the rare power of describing both girls and mistresses in a sympathetic and convincing manner.

The Motor Scout. By Herbert Strang. (3s. 6d.)—Young Tim O'Hagan and his motor bicycle have a variety of adventures during the progress of a revolution in one of the States of South America. Tim enjoys many exciting perils, and does good service as a scout.

(1) *Herbert Strang's Annual.* (2) *The Blue Book for Boys.* Edited by Herbert Strang. (3) *The Green Book for Girls.* Edited by Mrs. Herbert Strang. (4) *The Green Book for Children.* Edited by Mrs. Herbert Strang. (Each 2s. 6d.)—In any one of these four books the purchaser may feel that he is getting good value for his money. The volumes are large, the type and paper good, and illustrations, coloured and plain, abound. (1) This contains many stories by well-known writers, as well as articles on such subjects as Torpedoes and Scientific Recreations. The fare is varied and wholesome. (2) This volume is a collection of interesting stories, among which we would pick out "The Magic Football," by J. Storer Clouston, and "Famous School Rebellions," by S. E. Winholt. (3) Mrs. Strang has got together some twenty-eight stories that will appeal to girls. The illustrations are charming. (4) The stories and rhymes are for little ones. The type is large, and almost every page is illustrated. The illustrations are very apt, and will be enjoyed by young children.

The Rose Fairy Book. Edited by Mrs. Herbert Strang. (6s.)—Mrs. Strang and her lieutenants have collected, and in some cases retold, a number of old favourites. They form a handsome volume, plentifully illustrated in an attractive style. Each page has a coloured border. The type is large, so that young eyes need not be strained. There is a charming picture of Little Red Riding Hood in her grandmother's cottage.

Baby Books. Edited by Mrs. Herbert Strang. (6d. each, net.)—(1) "What Baby Sees" contains a number of familiar objects and bright pictures, with a few words in large letters, so that baby grows accustomed to the printed word. (2) "Rhymes for Baby" are daintily printed, with simple and amusing pictures. (3) "Stories for Baby" are rather more advanced than the foregoing, but are equally suitable for mother to tell to baby. (4) "What Baby Reads" is a reading-book on the "Look and Say" method. The matter is sensible and the pictures most charming.

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The Children's Longfellow. Stories from the Poet's works told by Alice Massie and illustrated by E. S. Farmer. (2s. 6d. net.)—The stories are told in simple language that recalls the diction of the poet; but, of course, the charm of the rhythm is lacking. As an introduction to the poet for youthful readers this book might prove of value.

"Play-books of Science."—*Electricity and Electrical Magic.* By V. E. Johnson. (1s. 6d.)—This book contains over one hundred experiments which are intended for boys who have a bent in this direction. The experiments are fully illustrated.

The Song of Frithiof. Retold in Modern Verse by G. C. Allen, D.D. Illustrations by T. H. Robinson. (2s. 6d. net.)—This reproduction in modern English verse of one of the Norse Sagas will be welcomed by many readers who enjoy the directness and simplicity of the Norse heroes. Dr. Allen, in his preface, is unnecessarily modest about his verse. It reads well.

Animals around Us. By Martin Merrythought. With Illustrations by Edith B. Holden. (2s. 6d.)—Martin Merrythought has conceived the idea of describing in amusing verse four-footed animals that are commonly found in England. The idea has been well supported by the illustrator. It is claimed for the book that the information given is scientifically correct, and that it is more likely to be remembered in this form. The type is large and the pictures full of vigour.

PUBLISHED BY BLACKIE & SON.

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The Discretion of Decina. By Maude Leeson. (5s.)—The characters are delightful and the story full of interest.

Two Gallant Sons of Devon. By Harry Collingwood. (5s.)—Mr. Collingwood adds one more to the list of stirring tales he has written. This story deals with the adventurous times of Queen Elizabeth. The heroes come into the clutches of the Spanish Inquisition, but they escape and find treasure in the laud of the Lucas.

Boys of the Border. By George R. Bennett. (3s. 6d.)—This is a tale of the days of Henry II, and deals with the adventures of two boys living in Somersetshire.

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(Continued on page 518.)

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Perhaps there are fewer works on elementary solid geometry than on most of the other branches of mathematics which form part of a senior school or junior college course. For this reason, and also because the authors of the present volume are possessed of the practical educational experience needful for its production, the new textbook is likely to prove acceptable to teachers. The course recommended is in the main similar in scope to that followed by already existing treatises of like standard; it presents, however, special features in that it introduces the reader to the elements of three-dimensional co-ordinate geometry and to the rudiments of the theory of perspective. The student is supposed also to have made some progress in the use of the integral calculus. How far the authors are justified in substituting in general the informal teaching of the subject for the formal proof of the propositions of three-dimensional geometry is a point on which one hesitates to dogmatize in the period of transition through which mathematical teaching is passing to-day. It may be said that at least the aim which underlies the method is good—namely, to enable the student to “think in space,” for all recognize the difficulty that usual y attends early attempts to form correct mental pictures of the figures that exist in space of three dimensions, whilst they can be represented on paper by two-dimensional diagrams only.

Works on Elementary Arithmetic.—(1) *The Rational Arithmetic.* By George Ricks, B.Sc. Lond. (Macmillan.) (2) *Experimental Arithmetics.* By Bertram A. Tomes. (Blackie.) (3) *Realistic Arithmetic.* By H. G. Wood. (Nisbet.) (4) *McDougall's Girls' Suggestive Arithmetical Tests.* (5) *McDougall's Rural Arithmetic* (Fourth Year).

The first series that appeared of the “Rational Arithmetic” has now been in circulation for some considerable time, and has already been accorded favourable notice in these columns. The little volumes now before us form suitable complementary publications arranged on precisely similar lines and specially designed for the use of classes in girls' and in rural schools respectively. In their “Experimental Arithmetics” Messrs. Blackie & Son have issued in two forms a useful series comprising corresponding teacher's and pupil's volumes, the former embracing, in addition to the exercises that constitute the scholar's booklets, numerous valuable notes and suggestions for the benefit of teachers employing the work. A small number of diagrams enliven the text. As a pictorial publication on the subject the “Realistic Arithmetic” by Mr. H. G. Wood (Nisbet) will probably prove very attractive to little children. McDougall's “Girls' Suggestive Arithmetical Tests” follow the scheme of the same firm's “Girls' Suggestive Arithmetics” and afford an abundant supply of useful material for oral and written exercise drill. A specimen volume only of Messrs. McDougall's little treatise on “Rural Arithmetic” is before us. This publication is intended to meet the needs of the elementary school in a country district.

EDUCATION.

The Education of Catholic Girls. By Janet Erskine Stuart. With a Preface by the Archbishop of Westminster. (3s. 6d. net. Longmans.)

The Archbishop assures us that the author “has had a long and intimate experience of the work of which she writes,” and every reader of the volume will recognize that such must be the fact. It is natural, perhaps, that the Archbishop should write somewhat bitterly of the “hostility shown in high quarters towards every Catholic educational endeavour”; but one must acknowledge the tendencies of modern opinion and seek means of accommodation or compensation. He is dissatisfied with educational results and thinks the cause “is very largely to be found in the neglect of the training of the will and character, which is the foundation of all true education.” However this may be, Miss Erskine Stuart's volume is a most thoughtful and capable study. Religion first, then character; chapters on the elements of Catholic philosophy, the realities of life, lessons and play, and then a series of chapters on the different subjects of education, with remarks on the higher education of women. The denominational note is there, but it is not obtruded, and Protestants as well as Catholics may read the sober and earnest pages with great advantage.

Mr. H. K. Lewis (136 Gower Street, W.C.) publishes a third edition (1910) of *Mentally Deficient Children: their Treatment and Training*, by G. E. Shuttleworth, B.A., M.D., &c., Medical Examiner of Defective Children to the Willesden Education Committee, and formerly to the School Board of London, &c., and W. A. Potts, B.A., M.D., &c., Consulting Medical Officer, National Association for the Feeble-Minded, &c. (5s. net.). A practical chapter has been added on the examination of children requiring special instruction, and there are several new illustrations. A comprehensive, careful, and most useful work.

PHILOSOPHY.

“Philosophies Ancient and Modern.”—(1) *Epicurus.* By A. E. Taylor. (2) *Swedenborg and the “Sapientia Angelica.”* By Frank Sewall, M.A., D.D. (3) *Nietzsche: his Life and Works.* By Anthony M. Ludovici. (1s. net. Constable.)

(1) Prof. Taylor gives a bright and forcible sketch of “the thought and temperament of a remarkable man—not the history of a scientific school.” As a man of science, Epicurus has his place “with the circle-squarers and the earth-flatteners”: his physics “are throughout the result of an unhappy attempt, which no clear-headed thinker would ever have undertaken, to fuse together the radically incompatible doctrines of Democritus and Aristotle.” The account of the central doctrine of Epicurus is discriminating, and the facts of his life and character are carefully sifted out and interestingly presented.

(2) Swedenborg is probably best known, if but very vaguely known, as a theologian, but he was also very remarkable as an original inquirer in many different departments of science. Dr. Sewall's exposition is very slight, but it is more than sufficient to put readers on inquiry; and the final chapter (by another hand), “showing the present status and influence of Swedenborg's system in relation to modern thought and faith,” might very advantageously have been more substantial. However, the space permits only an outline, and this outline will send serious readers to larger books.

(3) Dr. Oscar Levy, the editor of the complete and authorized English translation of Nietzsche's works, furnishes a preface, which is not helpful. Mr. Ludovici sketches the life of Nietzsche, and the principal aspects of Nietzsche's teaching, admirably enough, but rather rhetorically than with plain statement and sober criticism. Nietzsche has certainly been misrepresented, if not also calumniated; but it would have been better in every way if this volume had dealt more seriously and effectively with Nietzsche's handling of the questions raised.

FRENCH.

La Littérature Anglaise (Pages choisies). By H. Taine. Edited by R. T. Curral. (Pp. 96. 1s. 8d. Harrap.)

This is one of “Harrap's Shorter French Texts.” The introduction occupies 5 pages; the text, 81; an alphabetical list of authors and characters in literature, 5; notes on words and references, 2; subjects for composition, 1; and idiomatic phrases for retranslation, 4. The introduction gives the simple facts of Taine's life, and a good account of his method. The extracts range from Chaucer, by way of Ben Jonson, Shakespeare, Milton, Dryden, Addison, Swift, Fielding, Goldsmith, Dr. Johnson, Pope, Burns, Scott, Wordsworth, and Byron, to Dickens and Thackeray. And that is far from all that the 81 pages contain. The study of a large number of these extracts can be of no value without a good knowledge of English literature and, in a less degree, of French literature. It must be an advanced class that can profit by them. The selections of a more general nature supply good material for intensive translation—often the phrases look so simple and are so difficult—and for free composition. The

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subjects indicated seem either to demand mere reproduction of Taine or a high standard of knowledge and original thought. Some helps and hints for treatment should surely be given.

New Junior French Reader. Edited by J. P. R. Marichal and L. J. Gardiner. (Pp. 202. 2s. University Tutorial Press.)

Here we find our old friends La jeune Sibérienne, the dogs Scipio and Capi, le roi d'Yvetot, Gil Blas, l'Enfant Espion, le Meunier de Sans Souci, and other acquaintances and strangers. Each piece is provided with a *questionnaire*—how the custom spreads!—confined almost entirely to the subject-matter. The text occupies 126 pages. The notes, giving references and translations, 30 pages; retranslation, 9 pages; and the vocabulary, 24 pages. The volume supplies useful material for "unseens."

A New French Grammar, based on the Recommendations of the Joint Committee on Grammatical Terminology. By Prof. E. A. Sonnenschein. (2s. 6d. Clarendon Press.)

Prof. Sonnenschein was Chairman of the Committee appointed by the various associations of language teachers to draw up a scheme of terminology applicable to all the languages that are taught in English schools. He has also prepared a Latin grammar on similar lines. We call attention to this in another column. So far as we know, this is the first French grammar that includes the results of the committee's work. It has been submitted to several other members of the committee, whose names are mentioned, and may therefore be said to have behind it a considerable body of opinion. The grammar is in English; it is clearly arranged, includes both accidence and syntax and has a full index. A very useful book that will have a wide circulation.

HISTORY.

"The Cambridge Historical Readers," edited by G. F. Bosworth, F.R.G.S., and published by the Cambridge University Press, comprise an introductory hook of Greek and Roman stories and four books (primary, junior, intermediate, and senior) on British history, narrated on the concentric plan and correlated with geography. The books are well graduated both in matter and in style, and they are fresh and attractive. Each book contains a coloured frontispiece and numerous illustrations, maps, and plans. An efficient and handsome series.

Messrs. Nelson's "Royal School Series" includes *Highways (or Highroads) of History* and *Highroads of Geography*, each of them extended

series, admirable in matter and lavishly illustrated and got up. They have been prepared in accordance with the latest and most approved methods of teaching history and geography, and the illustrations of the history volumes are reproductions of great works of the great artists, partly in full colour, partly in black and white. The treatment is, of course, carefully progressive, and the history is presented in every aspect, social as well as political, while pertinent poetical passages are appended. With the nine historical volumes goes a valuable companion volume of *Fingerposts to British History*, by Mr. R. S. Rait and Dr. J. Edward Parrott. The geographical volumes similarly deal with the industrial, commercial, and social activities and customs of the communities. We do not remember a more thorough, more interesting, or more handsome set of reading books.

ENGLISH.

Advanced English Grammar through Composition. By John D. Rose, M.A., Rector of the Kirkcaldy High School. (2s. 6d. Bell.)

It is difficult to see how it is that Mr. Rose teaches grammar "through composition" any more than any other grammarian that uses literary examples to illustrate principles. He sets out the usual scheme of grammar in his own way and furnishes exercises in parsing (or what amounts to parsing, more or less) and analysis, and he adds chapters on prosody, a historical sketch of the English language, figures of speech, &c. The grammatical matter is just as good (or as bad as in the mass of grammars. The definition and classification of the parts of speech, as usual, shows occasional lack of grasp. "Myself" is a word added to the pronoun 'I,' and that gives it emphasis" may be good French construction, but it is bad English. "He heard that the bank had failed which he had put his money in" is an amazing example from the pen of an instructor in English. In fact, the essential weaknesses of the book (apart from definition and classification) seem to arise from the author's losing sight of "composition."

English Composition for Junior Forms. By E. E. Kitchener, M.A., L.C.P., Whitgift Grammar School, Croydon. (1s. 6d. Murray.)

A very simple course, which will teach young pupils many things that they ought to do, and many things that they ought not to do, in their compositions. It is graduated, though one is rather startled to find paragraphs treated before complex sentences, and even before the use of pronouns, adverbs, &c. A judicious teacher will make merciful omissions here and there. On the whole, however, the little work is a sound practical step in the direction of reason and

efficiency. It is not a little gain to recognize (1) that the subject is difficult and large, and (2) that there are some very essential things that can be definitely taught.

We welcome a second edition of *The Growth and Structure of the English Language*, by Otto Jespersen, Ph.D., Lit.D., Professor in the University of Copenhagen (M. 3 60, Teubner), which, it may be remembered, was awarded the Volney Prize of the Institut de France in 1906. The work has been carefully revised.

History of English Literature; from Beowulf to Swinburne. By Andrew Lang. (Longmans, complete, 6s.; Parts I to IV, 1s. 4d. each; Part V, 1s. 6d.)

Mr. Lang tells us in his preface that he has not attempted an encyclopædia of literature. He has selected, and spends his greatest care on, the great writers and their masterpieces: but he has also treated of the minor authors whose work influenced the greater writers. There are but few extracts. The book is not one for an unintelligent candidate to cram up for an examination; but it will be read with real pleasure by any student into whose hands it may fall, and it will arouse and stimulate a living interest in literature. Mr. Lang's book will at once take rank among histories of literature analogous to that held by Mr. J. R. Green's "History of the English People" among school histories.

ENGLISH LANGUAGE AND COMPOSITION.

The Concise Dictionary of Current English. Adapted by H. W. Fowler and F. G. Fowler, authors of "The King's English," from the Oxford Dictionary. (3s. 6d. net. Clarendon Press.)

Over a thousand pages in double columns densely packed, but still a quite handy volume. It is built up of the materials and follows the methods of the unique "Oxford Dictionary," and a dictionary it is, not an encyclopædia. Unusually large space is given to common words, especially in explanation of idiomatic uses. Illustrative sentences are liberally furnished to show different meanings and applications, mostly from standard authors. Space is saved for such extensions by curtailing the treatment of words that properly belong to an encyclopædia, and by severe economy of expression. It is a very difficult matter to draw the line of admission and exclusion of vocabularies, and we are glad to find that the compilers adopt a liberal principle, and refuse to stand upon the absurd notion of "dignity." Spelling, pronunciation, and etymology are brought up to date. This is, beyond all comparison, the best hand dictionary available.

Expository Writing. Materials for a College Course in Exposition by Analysis and Imitation. Compiled and edited, with Questions and Exercises, by Maurice Garland Fulton, Professor of English in Davidson College. (6s. net. Macmillan.)

Exposition is a very complex business, and the illustration of it requires large scope and verge. Prof. Fulton provides ample space, which he fills with a sufficient variety of essays in exposition. Each of these essays he treats by way of questions and analysis, adding exercises for original composition in imitation. Inevitably there is a great deal of useful matter in these comments and suggestions, but there is also much that is loosely collateral or ineffective. Teachers may make their own selection from the exercises, many of which seem to us to involve collection of materials more than the handling of the materials for the specific purpose. True, "the method of analysis and imitation is both psychologically and pedagogically sound"; but to obtain rewarding results from practice of the method students must be armed with a preliminary training in the mechanics of composition, which is not to be gained from the generalities—sound as they are—set forth by Prof. Fulton. The author, indeed, gives pages of selected references to books on the various elements of exposition, and students must rely on these or on similar works. Though Prof. Fulton's analysis is too often weak, there is enough good material in his book to make it worth the attention of teachers of advanced composition.

MISCELLANEOUS.

Loretto School, Past and Present. By H. B. Tristram. (7s. 6d. net. Fisher Unwin.)

Much has been written about Loretto, and it is not very long since we had under notice a life of its famous Head, Dr. Almond; but everybody interested in education will welcome the present authoritative account of the school by Mr. H. B. Tristram, Almond's designated successor, unfortunately retired after five years' service. The distinctive characteristics of Loretto are fully exemplified, not merely its athleticism (whose influence has gone far in organized physical education), but every aspect of its vigorous activities. "I don't care for Loretto being the strongest or the cleverest school," wrote Almond in his final farewell to the school; "I want it to be the most rational and the best." Almond was constitutionally and perpetually at feud with Mrs. Grundy. He was an independent and strong man, and his work lives. There are twelve illustrations, "The Head" naturally forming the frontispiece.

The Charterhouse of London: Monastery, Palace, and Thomas Sutton's Foundation. By William F. Taylor. (7s. 6d. net. Dent.)

The foundation of the Charterhouse as a Carthusian monastery is

most interestingly and mainly connected with the famous warrior Sir Walter de Manny (or Mauny), and the charter dates March 28, 1371. Mr. Taylor narrates very fully the vicissitudes of the religious community, the occupation of the house as a noble's mansion during the latter half of the sixteenth century, and the three centuries of Thomas Sutton's charity and school. The historical associations are of the most varied character, and the social and individual interest is keen. Contemporary documents are freely quoted. A very laborious and careful compilation, full of changing interest. There are thirty-eight excellent illustrations.

Wimbledon Common: its Geology, Antiquities, and Natural History. By Walter Johnson, F.G.S. (5s. net. Fisher Unwin.)

Recently we accompanied Mr. Johnson to Battersea Park; and now he takes us to Wimbledon Common, intent upon "awakening an intelligent interest in the grandest of our suburban open spaces." He enters with enthusiasm and knowledge upon the geology of the Common, the flowering plants and the curious fungi, the archaeology of Caesar's camp, the historical associations, and so forth. The book is primarily intended for natural history students, but its interest is much wider. Though Mr. Johnson has knighted Swinburne, he seems to be very accurate otherwise. A charming and instructive work, with four maps and twenty-five illustrations.

William Morris to Whistler: Papers and Addresses on Art and Craft and the Commonweal. By Walter Crane. (6s. net. Bell.)

The volume brings together a dozen articles, reprinted, with more or less modification, from various journals. The papers cover a wide field, or rather many fields, branching out from principles of art to multifarious applications of artistic ideas in social life, with excursions into the history of art, medieval and modern. A very suggestive and charming work, with many illustrations, partly from drawings by the author.

Oxford Gardens. By R. T. Gunther, M.A., Fellow of Magdalen College, Oxford. (6s. net. Oxford: Parker. London: Simpkin, Marshall.)

This work is "based upon Daubeny's 'Popular Guide to the Physick Garden of Oxford,'" but the original account has been revised and greatly extended. Appended are notes on the gardens of the colleges and on the University Park. Mr. Gunther has put a great deal of laborious work into the compilation, and on special subjects he has had the assistance of specialists. There are over thirty good illustrations.

Petrarch's Secret; or, The Soul's Conflict with Passion. Three Dialogues between Himself and S. Augustine. Translated from the Latin by William H. Draper. (6s. net. Chatto & Windus.)

Though modern writers are fairly agreed that these Dialogues throw more light upon Petrarch's personality than any of his other works, apparently "no English translation has hitherto been published." Now that interest in the man is increasing with increased knowledge of his work, this translation will be warmly welcomed. The Dialogues picture Petrarch as he was in the crisis of his middle years, having been written in or about 1342, when he was thirty-eight. Two illustrations.

The Art of the Orator. By Edgar R. Jones, M.P. (3s. 6d. net. Black.)

Mr. Jones has the advantage of being an able practitioner of the art that he essays to expound and illustrate, though we are bound to say that he enters a disclaimer. He examines the scientific basis of the art, and sets forth the importance of logic and composition. An able work, instructive and suggestive.

An English Primary School. By A. K. Pritchard and F. Ashford. (1s. 6d. net. Harrap.)

A charming account of how two ladies carried on a school for very young children in Yorkshire. The book is sketchy, the problems dealt with are put in with a light touch, and their solution faintly indicated. But there is a real breath of vivifying air that makes the whole school-day alive and enjoyable. We are reminded of Mr. Holmes's "Egeria" and of Mme Montessori's "Babies' House," but these two ladies show a wider culture than Egeria, while they do not pretend to the science of the Italian doctor. Apparently the school is under the Board of Education; but when the Inspector asks for a time-table he is frankly told that there is none. Miss Pritchard and Miss Ashford are in the forefront of their time in recognizing that the teacher's part is to remain in the background and to let the child do what is to be done. Their success in a school bound by regulations, both central and local, is really remarkable. It could only be possible with small classes. Incidentally, the book preaches the needed doctrine of freedom for the teacher.

How to Colour Photographs and Lantern Slides. By Richard Penlake. (1s. net. Routledge.)

The first part deals with surface colouring with aniline dyes and oil and water colours; the second with crystoleum work and with various other processes. The author is an enthusiast for colour in photographs, and imparts his knowledge and experience in a direct and

(Continued on page 522.)

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clear style. We count 8 full-page photographs by the author, very different in subject, but all effective; and there are 23 figures. A very useful little manual.

The third edition (1910) of *The Elements of Ethics*, by John H. Muirhead, LL.D., Professor of Mental and Moral Philosophy in the University of Birmingham (3s., Murray)—one of the most valuable of the series of "University Extension Manuals"—has been largely rewritten and altered in details in order "to bring the ethical theory of the text into closer connexion with recent psychology on the one hand and sociology on the other."

Messrs. Duckworth & Co. have just reissued, as a new volume of their excellent "Crown Library," *Science and Religion in Contemporary Philosophy*, by Emile Boutroux, translated by Jonathan Nield (5s. net). We noticed this able and interesting volume in a recent issue.

PUBLICATIONS RECEIVED.

EDUCATION.

Peter Ramus and the Educational Reformation of the Sixteenth Century. By F. P. Graves (Ohio State University). Macmillan, 5s. 6d. net.

Psychology, An Introduction to; more especially for teachers. By T. Loveday (University of Sheffield) and J. A. Green (University of Sheffield). Clarendon Press, 3s. 6d. net.

Teaching in School and College. By W. L. Phelps (Harvard). Macmillan (New York), 4s. 6d. net.

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

The Fundamentals of Psychology. A brief account of the nature and development of mental processes, for the use of teachers. By Benjamin Dumville. University Tutorial Press, 4s. 6d.

Pestalozzi's Educational Writings. (Educational Classics.) Edited by J. A. Green with the assistance of Frances A. Collic. Edward Arnold. 4s. 6d.

ENGLISH.

Ten Great and Good Men. Lectures by Henry Montagu Butler-Master of Trinity College, Cambridge. New Edition. Edward Arnold, 3s. 6d. net.

Précis Writing. Second Series. By Ernest A. Belcher, Head Master Christ's College, Christchurch, New Zealand. Edward Arnold, 2s. 6d.

A First Book in English Literature. Part VI, Wordsworth to Tennyson. By C. Linklater Thomson, Horace Marshall, 2s. 6d.

Thesaurus of English Words and Phrases. Classified and arranged by Peter Mark Roget, M.D., F.R.S. Revised by S. R. Roget (1911). Longmans, 2s. 6d. net.

Mythological Rhymes. By Sir Reed Gooch Baggorre. Francis Hodgson, 4s.

Patience: A West Midland Poem of the Fourteenth Century. Edited with Introduction, Bibliography, Notes, and Glossary, by Hartley Bateson. Manchester University Press, 4s. 6d.

Hereward the Wake. By Charles Kingsley. Oxford University Press, 1s. 6d. net.

Geoffrey Chaucer: The Complete Works of. Edited by the late Prof. Skeat. With glossarial index. New edition, 2s. and 1s. 6d. net.

The Merchant of Venice. Edited by H. M. Percival, M.A. Frowde, 2s. net.

(1) Richard the Second. (2) The Winter's Tale. "The Tudor Shakespeare." With notes. Macmillan, each 1s. net.

A Midsummer Night's Dream. With Glossary. Routledge, 6d. net.

The Three Questions and King Alfred and the Cakes: Two Plays for Children. By Howard Candler. Dent, 6d. net.

(1) Three Tales from Andersen (ages 6-9). (2) Sylvie and Bruno (ages 9-11). "The Children's Classics." Macmillan, (1) 2½d., (2) 3½d.

CLASSICS.

New Junior Latin Reader. By A. J. Tate. University Tutorial Press, 2s.

Classics and the Direct Method: an Appeal to Teachers. By W. H. S. Jones, M.A. Heffer, Cambridge, 6d. net.

De Bello Gallico, Book V, chapters 25-53. Edited by L. M. Penn, M.A. With Notes and Lexicon. University Tutorial Press, 1s.

New Junior Latin Course. By J. V. Thompson and L. M. Penn. University Tutorial Press, 3s. 6d.

RELIGION.

The Scientific Basis of Religion. By Rev. J. O. Bevan. Geo. Allen, 2s. 6d. net.

The Teaching of the Lesson. A Pocket Commentary on the International Lessons for 1913. By G. Campbell Morgan, D.D. Hodder & Stoughton, 1s.

The Steep Ascent: Missionary Talks with Young People. By Emily E. Entwistle, L.L.A. Jarrold, 2s. 6d. net.

Old Testament History: from the Creation to the Time of Christ. By the Rev. A. R. Whitham, M.A. Rivingtons, 2s. 6d.

The Hebrew Prophets for English Readers. Edited by Francis H. Woods, B.D., and Francis E. Powell, M.A. Volume IV, containing Haggai, Zechariah, Malachi, Joel, Deutero-Zechariah, Jonah, and Daniel. Clarendon Press, 2s. 6d. net.

FRENCH.

Lettres de Mon Moulin. By Alphonse Daudet. Edited by H. C. Bradby and E. V. Rieu. Clarendon Press, 2s. 6d.

Mathurin Régnier. Oeuvres. Dent, 1s.

Vocabulaire Français. By J. P. R. Mariehal. With phonetic symbols. Bell, 1s. 6d.

Marlborough's Self-Taught Series. (1) French Self-Taught, 1s. and 1s. 6d. (2) French Grammars, 1s. and 1s. 6d. (3) Key to "French Grammar," 6d.

GERMAN.

Wieland der Schmied. Adapted from the German Saga, and edited by A. E. Wilson. Oxford University Press, 1s. 6d.

Lesestücke mit Fragen. By A. E. Wilson and A. G. Denniston. Murray, 2s.

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Bell's English History Source Books. 1s. each. (1) The Age of Elizabeth. Selected by Arundell Esdaile, B.A. (2) Walpole and Chatham. Compiled by Katharine A. Esdaile.

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DIARIES.

- The Cambridge Pocket Diary, October 1912 to September 1913.
- The Cambridge Diary (quarto sheet to tear off). Cambridge University Press.
- The Stamp Collectors' Annual. A Year-book of Philately. Edited by D. B. Armstrong. 44, Fleet Street. 1s. net.
- L'Année Pédagogique Publiée. Par L. Cellérier et L. Dugas. Paris, Librairie Félix Algan. 7.50 fr.
- Pitman's Year-Book and Diary. 1s.
- University College of North Wales: Bangor. Calendar, 1912-13. Manchester: Cornish.
- The London University Guide for 1913. University Tutorial Press. University College. Calendar for 1912-1913. Taylor & Francis.
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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.

17280. (E. G. BINCKES BERGHOLT, M.A. Cantab., F.C.I.S.)—To construct a Magic Square of sixteen cells, from sixteen different prime numbers, which shall have the smallest possible constant total. (See *The Queen*, Feb. 17th, 1912.)

Solution by the PROPOSER.

Any one of the four following squares (which, though different squares, are all constructed out of the same sixteen numbers, and in which these sixteen numbers all fall into the same groupings, four by four) solves the problem (the summation being 102):—

3	5	71	23
17	41	13	31
53	37	11	1
29	19	7	47

3	71	5	23
53	11	37	1
17	13	41	31
29	7	19	47

11	1	53	37
7	47	29	19
71	23	3	5
13	31	17	41

11	53	1	37
71	3	23	5
7	29	47	19
13	17	31	41

The following is my (condensed) proof that a total smaller than 102 is an impossibility.

We may divide prime numbers into two classes: (*a*) those which leave remainder 1, and (*b*) those which leave remainder 2—when divided by 3. The prime 3 (leaving remainder 0) forms a class by itself.

I. If we do not include the number 3, magics formed from sixteen different prime numbers must either use (i) all sixteen from one class, or (ii) four from one class and twelve from the other, or (iii) eight from one class and eight from the other. In order to fix a minimum summation for such squares, we need only consider class (iii).

Now the first eight primes of class (*a*) total 212; the first eight of class (*b*) total 226; no square of this kind can therefore sum to less than $\frac{1}{2}(212+226)$; i.e., to less than 110. But each row or column must consist of two primes of class (*a*) and two of class (*b*); the constant total must therefore be a multiple of 6; and the minimum is therefore 114.

Such a square I published in *The Queen* of February 17, 1912. The following diagram shows the distribution of the residues 1 and 2 in that particular case:—

2	1	2	1
2	1	2	1
1	2	1	2
1	2	1	2

but other distributions are possible.

II. If we do include the number 3, it will be found that, when the constant total is a multiple of 6, we must use nine primes of one class and six of the other. Minimum is 102.

When the constant total, divided by 3, leaves remainder 1, the square must use ten primes of class (*b*) and five of class (*a*). Minimum 110; 98 and 104 being impossible.

When the constant total, divided by 3, leaves remainder 2, the

square must use ten primes of class (a) and five of class (b). *Minimum 112*; 100 and 106 being impossible.

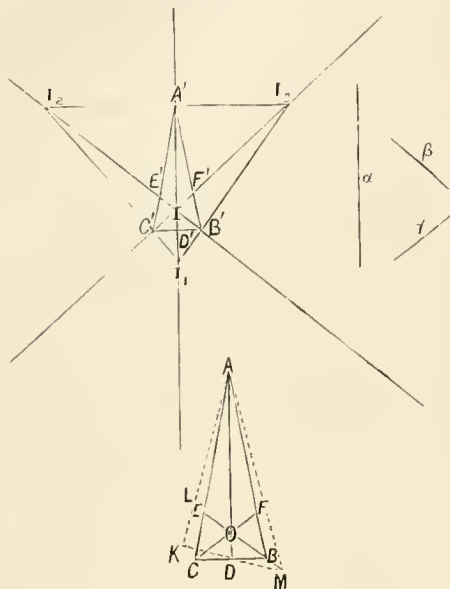
Note.—I must not be understood to assert that totals of 110 and 112 can actually be constructed. I have, in fact, a strong suspicion that there is nothing between 108 and 114.

12720. (Professor A. E. A. WILLIAMS.)—The bisectors of the angles of a triangle being given, to construct the triangle.

Solution by CONSTANCE I. MARKS, B.A. (Lond.).

Let α, β, γ be equal in length and parallel in direction to the bisectors of the angles of the required triangle.

Through any point I draw straight lines Π_1, Π_2, Π_3 of indefinite length and parallel respectively to α, β, γ .



At A' , any point on Π_1 , erect a perpendicular to Π_1 , producing it to meet Π_2, Π_3 in I_2, I_3 .

If I_2B' perpendicular to Π_2 meets Π_1 in I_1 , then it is well known that I_1I_2 cuts Π_3 perpendicularly at C' , say; hence $A'B'C'$ —the pedal triangle of $I_1I_2I_3$ —is a triangle whose angular bisectors are in the required directions.

If, in the diagram, $A'D' = \alpha, B'E' = \beta, C'F' = \gamma$, then $A'B'C'$ is the required triangle.

If $A'D' \neq \alpha$, let AD' be drawn equal and parallel to α .

On AD describe a triangle ACD similar to $A'C'D'$ and similarly situated. At A in AD , on the side remote from AC , make $\angle DAB = \angle DAC$, and let AB meet CD produced in B .

Bisect angle C by CF meeting AD in O and AB in F . From the method of construction it is evident that CF is parallel to $C'F'$, and therefore also to γ .

Similarly BE is parallel to β .

Therefore ABC is a triangle in which the bisectors of the angles, namely, AD, BE, CF are respectively parallel to α, β , and γ , and in particular $AD = \alpha$ by construction.

It follows that (1) $BE = \beta$, (2) $CF = \gamma$, (3) ABC is the required triangle.

For, if $BE \neq \beta$, then one must be greater.

Suppose $\beta > BE$, and along BE produced towards both B and E^* take $LM = \beta$, and making $\angle LAE = \angle BAM$.

Join MD (for D is, by construction, on the required triangle), and produce it to meet AL produced in K (say).

Now AMK is the new triangle.

But AMK cannot be the required triangle, for, even if ML bisects the angle M (which, in general, is not so), the third angular bisector KO cannot (P'layfair's axiom) be parallel to COF , that is, to γ .

Therefore $\beta \not> BE$.

Similarly, we may show $\beta \not< BE$.

It follows that BE is neither less than nor greater than β .

Therefore $BE = \beta$.

Likewise $CF = \gamma$; hence ABC is uniquely the required triangle.

Mr. R. S. CAPON finds, from a variant interpretation, one of a series of triangles:—

From any point A on one of the three bisectors IA, IB, IC draw AB', AC' and AB'', AC'' making equal angles with AI , and let $B'C', B'', C''$ meet in O .

If O' is the reflection of O in IC , join AO' and let AO' meet IC in C .

Join OC meeting IB in B .

Then ABC is one of the required triangles.

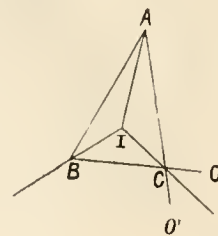
For $(IB'B' \dots)$ and $(IC'C'' \dots)$ are (1, 1) ranges.

Therefore, if BC passes through O ,

$$\angle BAI = \angle CAI \text{ and } \angle ACI = \angle BCI;$$

and therefore

$$\angle ABI = \angle CBI.$$



Historical Note by W. J. GREENSTREET, M.A.

According to M. Barbarin this problem was once set by Catalan as an exercise in elementary geometry. It is said to have defied the genius of Pascal. In the *Intermédiaire des Mathématiciens*, Vol. II, p. 171, there is a bibliographical note by H. Brocard, of which the following is a summary:—

The general case was set in the *Nouvelle Correspondance*, questions 57 and 222, and the particular case for a right-angled triangle was solved in the *Nouvelles Annales*, 1880, pp. 464-7. The *Bulletin of the Philosophical Society of Washington* contains a monograph on this case, due to M. Baker (no date is given). It contains six solutions, and gives two constructions.

The same problem was proposed in the *Ladies' Diary* for 1797 and in other collections in later years. Euler discussed the general question (*Mém. de Pétersbourg*, xi, 1765). Terquem (*Nouv. Ann.*, 1842, p. 86) gives the formula for the length of the angular bisector through C .

With the two corresponding equations for the other bisectors we have an analytical possibility of determining the sides. But the elimination leads to an equation of a high degree, probably because it also includes the solutions for the external bisectors. If two bisectors are equal, the equations can be arranged to show that the corresponding sides must be equal. Tentative solutions are also to be found in the *Nouv. Ann.*, 1879, pp. 311-5; 1894, pp. 28-40; and in 1895, pp. 49-55. Van den Berg has treated the problem in the *Nieuw Archiv der Wiskunde*, xvi, 1889, pp. 179-99. The most effective of all the memoirs on the subject appears to be that by M. Barbarin, in *Mathesis*, 1896, pp. 143-60. I have looked this up, and it is worth noting that he first takes the problem: "Construct a triangle, given one angle and the in- or ex-bisectors of the two others." He finds a cubic giving the relation between the angle and the length of the two bisectors. Between the angle and the lengths of any three concurrent bisectors he also finds a relation of the third degree. This is a relation of the fourth degree for the angle and three non-concurrent bisectors. Then, for our problem, he finds an equation of the 14th degree reducing to the 12th, and for non-concurrent bisectors one of the 16th degree. He also investigates the principal particular cases. A plate is given showing the graphs of two curves of the 8th and 7th degree respectively, the intersections of which will give the roots required in the general case.

17368. (N. SANKARA AIYAR, B.A.)—Show that

$$m(m^2 + m + 8)(m^2 + 3m + 2)(4m^2 + 5m + 19)$$

is always divisible by 840, and show that when m is of the form $4n + 2$ it is divisible by 1680.

Solutions (I) by Lt.-Col. ALLAN CUNNINGHAM, R.E.;

(II) *by* II. FREEMAN, B.A.

(I) For shortness denote the factors thus: $N = m_1m_2m_3m_4$, where

$$m_1 = m, \quad m_2 = (m^2 + m + 8), \quad m_3 = (m^2 + 3m + 2),$$

$$m_4 = 4m^2 + 5m + 19.$$

Now $m_1m_3 = m(m + 1)(m + 2)$ = product of 3 successive numbers, so is always $\equiv 0 \pmod{3}$.

Again, every number m = one of $5\mu, (5\mu + 1), (5\mu + 2)$; and also = one of $7\mu, (7\mu + 1), (7\mu + 2), (7\mu + 3)$; and also = 2μ or $(2\mu + 1)$.

And $m_1m_3 \equiv 0 \pmod{5}$, when $m = 5\mu, (5\mu - 1)$, or $(5\mu - 2)$ obviously, $\equiv 0 \pmod{7}$, when $m = 7\mu, (7\mu - 1)$, or $(7\mu - 2)$ obviously.

Also $m_2 \equiv 0 \pmod{5}$, when $m = (5\mu - 1)$,

$$m_4 \equiv 0 \pmod{5}, \text{ when } m = (5\mu + 2).$$

And $m_2 \equiv 0 \pmod{7}$, when $m = (7\mu + 2)$ or $(7\mu - 3)$,

$$m_3 \equiv 0 \pmod{7}, \text{ when } m = (7\mu + 1) \text{ or } (7\mu + 3).$$

Also $m_1 = 0, m_2 = 0, m_3 \equiv 0 \pmod{2}$, when $m = 2\mu$.

* It is evident that BE cannot be produced towards B alone or E alone, for then AD ceases to bisect the angle A .

And $m_2 \equiv 0 \pmod{2}$, $m_4 \equiv 0 \pmod{4}$, when $m = 2\mu + 1$.
 And $m_1 \equiv 0$ and $m_2 \equiv 0 \pmod{2}$, and $m_3 \equiv 0 \pmod{4}$,
 when $m = 4\mu + 2$.

Collecting the above results,
 $N \equiv 0 \pmod{8.3.5.7}$ always, and $\equiv 0 \pmod{16.3.5.7}$,
 when $m = 4\mu + 2$.

$$\begin{aligned} \text{(II) } m(m^2 + 3m + 2)(m^2 + m + 8)(4m^2 + 5m + 19) \\ &= m(m+1)(m+2) \{ (m-2)(m+3) + 14 \} \\ &\quad \times \{ 4(m-1)(m+4) - 7(m-1) + 28 \} \\ &= 4(m-2)(m-1)m(m+1)(m+2)(m+3)(m+4) \\ &\quad - 7(m-2)(m-1)m(m+1)(m+2)(m+3) \\ &\quad + 14m(m+1)(m+2) \\ &\quad \times \{ 2(m-2)(m+3) + 4(m-1)(m+4) - 7(m-1) + 28 \} \\ &= 4M(7!) - 7M(6!) + 14m(m+1)(m+2)(6m^2 + 7m + 7) \\ &\quad - 4M(7!) - 7M(6!) + 14m(m+1)(m+2) \\ &\quad \times \{ 6(m+3)(m-1) - 5(m-5) \} \\ &= 4M(7!) - 7M(6!) + 84M(5!) - 70m(m+1)(m+2)(m-5). \end{aligned}$$

Now whether m be odd or even, two of the factors of the last expression must be even: *i.e.*, the last expression is $70 \times$ a multiple of 12.

Therefore the whole expression is a multiple of 840.

The first three terms are always a multiple of 1680.

When $m = 4n + 2$, the last term is

$$\begin{aligned} 70(4n+2)(4n+3)(4n+4)(4n-3) \\ &= 70(4n+2)(4n+3)(4n+4)(4n+1) - 70.4(4n+2)(4n+3)(4n+4) \\ &= 70M(4!) - 70.4.M(3!) \\ &= M(1680). \end{aligned}$$

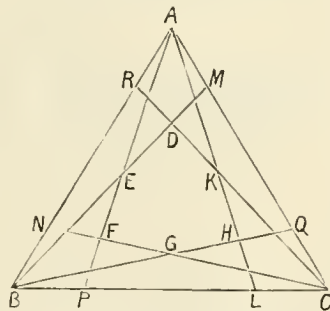
11978 [Reproposed, *E. T.*, Sept. 1912]. (Rev. T. C. SIMMONS, M.A.; Proposer's corrected form.) A line is divided at two random points; prove that the chance that no part exceeds n times any other part ($n > 1$) is

$$2(n-1) / [(n+2)(2n+1)].$$

Hence, or independently, prove the chance that no part exceeds twice any other part = $\frac{1}{10}$.

Solution by Professor W. H. HUDSON, M.A.

Take an equilateral triangle ABC of unit area; divide each of its sides in the ratio $1 : n$ in the points P, L, Q, M, R, N; join each of these points to the opposite angle by straight lines intersecting, as in the diagram, in D, E, F, G, H, K.



The areal coordinates of any point within the triangle ABC represent a possible subdivision of the line, and the areal coordinates of any point within the hexagon DEFGHK represent a subdivision that complies with the requirement that no part exceeds n times any other part. All positions of a point are equally probable.

Therefore the required chance is the ratio of the area of DEFGHK to that of ABC. Join AD, BF, CH (omitted in diagram).

The area between the hexagon and the triangle is

$$6 \times \Delta BFC - 3 \times \Delta BGC.$$

F is the intersection of $y = nz$, $y = nx$, whence $x = 1/(n+2)$.

G is the intersection of $z = nx$, $y = nx$, whence $x = 1/(2n+1)$.

Therefore the required ratio is

$$1 - 6/(n+2) + 3/(2n+1) = 2(n-1)^2 / (n+2)(2n+1).$$

Note. The areas of the triangles BFC, BGC may be obtained geometrically without the use of coordinates, but not quite so briefly.

In the case of $n = 2$, when the sides of the triangle are trisected and ML, RP are perpendicular to BC, the geometry is somewhat simplified.

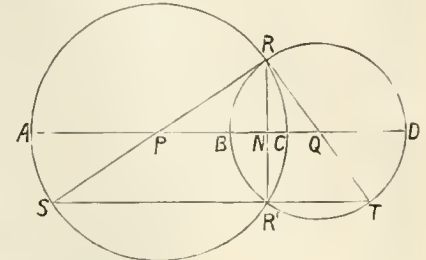
17214. (J. M. CHILD.)—(1) If A, B, C, D are any four points on a straight line, and RR' the common chord of the two circles described on AC, BD as diameters, then

$$4(AB \cdot BC \cdot CD \cdot AD) = (AD - BC)^2 \cdot RR'^2.$$

(2) Deduce the formula $\Delta^2 = s(s-a)(s-b)(s-c)$.

Solutions (I) by R. F. DAVIS, M.A., and the PROPOSER; (II) by W. F. BEARD, M.A.; (III) by C. M. ROSS, B.A., and KESHUB DASS DE.

(I) (1) Let P, Q be the middle points of AC, BD, and N the point of intersection of RR' with AD. Then, employing the theorem that the difference of the squares of the tangent from any point to two given circles is equal to twice the rectangle contained by the perpendicular from that point on the radical axis and the join of the centres, we have



$$AB \cdot AD = 2PQ \cdot AN, \quad BC \cdot CD = 2PQ \cdot NC.$$

Therefore $AB \cdot BC \cdot CD \cdot AD = 4PQ^2 \cdot AN \cdot NC = 4PQ^2 \cdot RN^2$, &c.

$$(2) \quad AD = AP + PQ + QD = RP + PQ + QR,$$

$$BC = AC + BD - AD = RP - PQ + QR,$$

$$CD = BD - BC = QR + PQ - RP,$$

$$AB = AC - BC = RP + PQ - QR, \text{ \&c.}$$

[*Note.*—Mr. Davis seems to agree with me that it is new (at any rate to us it is) that the segments of four-point line are as $s : s-a : s-b : s-c$ of a triangle which has such an obvious connection.—J. M. C.] [Rest in *Reprint.*]

17363. (C. M. ROSS, B.A.)—Prove that

$$\begin{vmatrix} 1 & 1 & 1 & \dots & 1 & 1 & 1 & \dots & 1 \\ a & a & a & \dots & a & u_1 & u_2 & u_3 & \dots & u_n \\ au_1 & au_2 & au_3 & \dots & au_n & u_1^2 & u_2^2 & u_3^2 & \dots & u_n^2 \\ a^2 & a^2 & a^2 & \dots & a^2 & \dots & \dots & \dots & \dots & \dots \\ \frac{\partial a^{n-1}}{\partial u_1^{n-1}} & \frac{\partial a^{n-1}}{\partial u_2^{n-1}} & \frac{\partial a^{n-1}}{\partial u_3^{n-1}} & \dots & \frac{\partial a^{n-1}}{\partial u_n^{n-1}} & u_1^{n-1} & u_2^{n-1} & u_3^{n-1} & \dots & u_n^{n-1} \end{vmatrix} = \{1! 2! 3! \dots (n-2)! n!\} n^{n-1}.$$

Solutions (I) by C. E. WRIGHT; (II) by the PROPOSER.

Forming the product in the usual way, it is

$$\sum_{r,s} \left\| \sum_{k=0}^{n-1} \left(\frac{\partial}{\partial u_k} \right)^r (u_k)^s \right\|.$$

If $r = s$ the term is $n \cdot r!$. If $r > s$ the term is zero.

Hence the product may be written

$$\begin{vmatrix} n & \dots & \dots & \dots & \dots \\ 0 & n \cdot 1! & \dots & \dots & \dots \\ 0 & 0 & n \cdot 2! & \dots & \dots \\ 0 & 0 & 0 & n \cdot 3! & \dots \\ 0 & 0 & \dots & \dots & \dots \\ 0 & 0 & 0 & \dots & 0 \cdot n \cdot n \cdot 1! \end{vmatrix} = n^n [1! 2! 3! 4! \dots (n-1)!],$$

which differs slightly in form from result stated.

[Rest in *Reprint.*]

QUESTIONS FOR SOLUTION.

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. 1, 1908.)

17419. (Professor J. C. SWAMINARAYAN, M.A.)—Solve completely the differential equations

$$(a) \quad 3p \cdot d^2p/ds^2 - (dp/ds)^2 = 9,$$

and

$$(b) \quad 3p \cdot d^2p/ds^2 - 2(dp/ds)^2 = 18,$$

and further prove that (a) represents a parabola, and (b) a rectangular hyperbola in their most general shape.

17420. (J. J. BARNIVILLE, B.A.)—If $u_n + u_{n+1} = u_{n+2}$, prove that the scale of u^n is indicated by the products

$$(1-1)(1+3+1)(1-7+1) \dots \dots \dots \text{(i)}$$

$$(1+1-1)(1-4-1)(1+11-1) \dots \dots \dots \text{(ii)}$$

$$(1+1)(1-3+1)(1+7+1) \dots \dots \dots \text{(iii)}$$

$$(1-1-1)(1+4-1)(1-11-1) \dots \dots \dots \text{(iv)}$$

according as $r = 0, 1, 2, 3 \pmod{4}$.

E.g., $u_5^4 - u_0^4 = 5(u_4^4 - u_1^4) + 15(u_3^4 - u_2^4)$.

17421. (T. STUART, M.A., D.Sc.)—Express, by a direct process, and without using conformal division, 67280421310721 (a factor of $2^{21} + 1$) in the quadratic partitions $a^2 + b^2, c^2 + 2d^2, e^2 - 2f^2$.

17422. (Professor H. LANGHORNE ORCHARD, M.A., B.Sc.)—Find the coefficient of a^n in

$$(10) \cdot (10 + a) \cdot (10 + 2a) \cdot (10 + 3a) \cdot (10 + 4a) \dots (10 + 9a).$$

17423. (The late Professor COCHEZ.)—Trouver la condition pour que le plan $lx + my + nz = p$ coupe la surface

$$x^2/a^2 + y^2/b^2 - z^2/c^2 = 1,$$

suivant une parabole.

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 $2a^3$.

17425. (C. E. YOUNGMAN, M.A.)—Any circle through a certain pair of points on the axis of a limaçon will cut the curve at the feet of four concurrent normals.

17426. (R. F. DAVIS, M.A.)—A moving transversal intersects one given fixed circle in P, Q, and another in P', Q'. If the ratio PQ : P'Q' is constant, prove geometrically that the envelope of the transversal is a conic whose focus divides the join of the centres in the given ratio.

17427. (Professor K. J. SANJANA, M.A.)—Three hyperbolas H_a, H_b, H_c are drawn, having for asymptotes (AB, AC), (BC, BA), (CA, CB) respectively; and O is any point in the plane of the triangle ABC. Prove that the diameter OA of H_a , and the diameters conjugate to OB and OC of H_b and H_c respectively, are concurrent. So also for OB of H_b and OC of H_c .

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.

17429. (N. SANKARA AIYAR.)—If the opposite sides AB, CD of a quadrilateral meet at E, the limiting points of the system of director circles of conics inscribed in the quadrilateral, are the foci of the conic which has the triangle EAB for self-polar triangle, and CD for directrix.

17430. (H. D. DRURY.)—To construct a triangle, given the distances of either the circum-centre from the sides, or the distances of the in-centre from the angles.

17431. (Professor R. W. GENESE, M.A.)—ABCD is any quadrilateral, P, Q, R, S points of division on the sides, such that

$$AP : PB = DQ : QC \quad \text{and} \quad AR : RD = BS : SC.$$

Prove that PQ, RS divide each other in the same two ratios.

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 $AP_1, P_1P_2, \dots, P_{n-1}P_{n-2}$ 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 θ_n is the angle between the n -th and $(n-2)$ -th portions of the line, show that $\lim_{n \rightarrow \infty} \theta_n = \pi/(1+2k)$.

17433. (Professor NEUBERG.)—Soient A', B', C' les milieux des côtés d'un triangle ABC. Désignons par α, β, γ les longueurs des médianes AA', BB', CC' , et par ρ_a, ρ_b, ρ_c les rayons des trois cercles qui passent respectivement par B et A', C et B', A et C' et touchent les médianes AA', BB', CC' . Démontrer les relations

$$\rho_a \rho_b \rho_c = \alpha \beta \gamma / 64 \sin A \sin B \sin C, \quad \rho_a / \alpha + \rho_b / \beta + \rho_c / \gamma = \frac{1}{2} \cot V,$$

V étant l'angle de Brocard de ABC.

17434. (GEORGE C. IRWIN.)—The areas of a triangle and its inscribed circle are proportional to their perimeters.

17435. (Professor E. J. NANSON.)—Two tetrahedra are such that each edge of one intersects the edge opposite the corresponding edge of the other. Show that the joins of corresponding vertices (and also the meets of corresponding faces) are generators of a hyperboloid.

OLD QUESTIONS AS YET UNSOLVED (IN OUR COLUMNS).

11906. (Professor DE LONGCHAMPS.)—Résoudre les équations $(a-b)^2(2x-a-b)^2 + (b-x)^2(2a-b-x)^2 + (a-x)^2(2b-a-x)^2 = 2K^2$, et $(a-b)^2(2x-a-b)^2 + (b-x)^2(2a-b-x)^2 + (a-x)^2(2b-a-x)^2 = (a'-b')^2(2x-a'-b')^2 + (b'-x)^2(2a'-b'-x)^2 + (a'-x)^2(2b'-a'-x)^2$.

12328. (Professor LAMPE, LL.D.)—Parallel rays of homogeneous light having passed through a transparent sphere, the focus of the rays traversing it in the vicinity of the centre is found to coincide with the focus of the rays going through those parts of the sphere which are most remote from the centre. Prove the index of refraction of the matter to be $n = 1.8393$.

12373. (V. RAMASWAMI AIYAR, M.A.)—From a variable point on a given normal of a paraboloid four other normals are drawn to the surface. Prove that the locus of the centre of the sphere passing through the feet of these four normals is a straight line, and that the envelope of the sphere is a conicoid.

12388. (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 $ut - au^2/\{2f(f-a)\} - v^2/2a$, where v is to be determined from the first equation.

12820. (Professor COLAW.)—Find three positive integral numbers such that the product of the first and the sum of the others is a square and the sum of their cubes is a square.

12832. (R. F. DAVIS, M.A.)—Prove that, if $x = p$ be 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 $x = 0, 2, 4, 10, \frac{13}{3}, \frac{28}{3}, \frac{3}{4}, \frac{103}{15}, \frac{266}{9}, -1, -\frac{2}{3}, -\frac{7}{3}, -\frac{172}{69}, \&c.$]

NOTICE TO CORRESPONDENTS.

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

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THE LONDON MATHEMATICAL SOCIETY.

Thursday, November 14, 1912.—Annual General Meeting. Dr. Baker (President, 1910-11), and afterwards Prof. Love (newly-elected President) in the chair.

Messrs. J. R. Airey, F. E. Edwardes, A. B. Grieve, L. J. Mordell, and F. B. Pidduck were admitted into the Society.

The Council and Officers for the ensuing session were elected as follows:—President, Prof. A. E. H. Love; Vice-Presidents, Dr. H. F. Baker, Mr. J. E. Campbell; Treasurer, Sir Joseph Larmor; Secretaries, Mr. J. H. Grace, Dr. T. J. I’A. Bromwich; other Members of the Council, Prof. W. Burnside, Mr. A. L. Dixon, Dr. L. N. G. Filon, Mr. J. H. Jeans, Dr. E. W. Hobson, Mr. J. E. Littlewood, Prof. H. M. Macdonald, Major P. A. MacMahon, Mr. H. W. Richmond, Dr. A. E. Western.

The following papers were communicated:—

Prof. W. Burnside: On Groups of Linear Substitutions which possess Quadratic Invariants.

Mr. E. Cunningham: Theory of Functions of Real Vectors.

Mr. A. B. Grieve: Some Properties of Cubic Surfaces.

Mr. J. B. Holt: On the Irreducibility of Legendre’s Polynomials.

Dr. E. W. Hobson: On the Representation of a Summable Function by means of a series of Finite Polynomials.

Mr. G. N. Watson: Some Solutions of Laplace’s Equation.

Prof. W. H. Young: On the Determination of the Summability of a Function by means of its Fourier Constants.

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