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THE HON'BLE DR. SELBY, LL.D., C.I.E.

WITH the recent retirement of Dr. Selby from the post of the Director of Public Instruction, Bombay, and the Vice-Chancellorship of the Bombay University, the long and eminent career of a distinguished educationist has come to a close. An Englishman who puts in a service of thirty years in India, pushing his way from the post of a Professor to that of Principal, Director of Public Instruction and Vice-Chancellor of the University, and who, after a strenuous career of over a generation, is able to win golden opinions, not only from his subordinates, but his colleagues, his pupils, the Government he served and the educated public generally, really deserves something more than the usual formal compliments paid to every setting sun in the official firmament. Dr. Selby counts among his admiring and grateful pupils hundreds of our countrymen who are now occupying distinguished positions in the various walks of life, and their appreciation of his services to the cause of education, may be taken as the testimony of people who can claim to speak with authority about the value of the learned Doctor's work. It was some two years back that his old pupils met to give expression to their sense of gratitude to, and affection for, their revered Guru and decided to raise a memorial to perpetuate his memory in some fitting manner, and the memorial fund has already exceeded five thousand rupees. In October last the Bombay University held a special convocation meeting under the presidency of H. E. Sir George Clarke, to confer on the Vice-Chancellor, Mr. Selby, the degree of Doctor of Laws in recognition of his great learning and his meritorious services to the cause of education. The speeches of His Excellency and Mr. Justice Chandavarkar, which were delivered on the occasion, and which were reproduced in the October Number of the *Educational Review*, set forth clearly the salient features of the life and career of the Doctor. Dr. Selby's life deserves to be carefully studied by every teacher and professor who wants to do his duty to himself and his youthful charge. The profession of a teacher is a sacred profession. He has ample opportunities to mould the character of the young generation, always the hope of a nation. He can infuse into their minds, of course if he is inclined to make proper use of his opportunities, a high sense of duty and discipline, a love of truth and fair-play, and the necessity of physical, mental and moral culture. Example is always better than precept, and the example of a teacher, next to that of a parent alone, has the power of making or marring the character of his pupils. Judged by this standard of the duties and

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responsibilities of a teacher, Dr. Selby takes a high rank among educationists, European and Indian, who have presided over the destinies of the Bombay Colleges for the past many years. We propose therefore to give below the more salient features of the character and work of Dr. Selby, with a view to present them for the guidance of all those who are concerned in the education of the youth of this country.

Dr. Selby was born in 1852, and about his fifteenth year was sent to Durham school, where he was soon elected a King's scholar. In 1871 he was elected to an open scholarship at Wadham College, Oxford, and was placed in the first class in "Literæ Humaniores" in 1875. To a sound knowledge of Latin and Greek he adds some acquaintance with German, French, and Italian, and has all along been a devoted student of languages. He came out to India in 1877 as Professor of Logic and Moral Philosophy in the Deccan College, Poona. Excepting for a short period when he acted as Principal of Rajkumar College, Rajkot, the Doctor was connected with the Deccan College from his first entering the Educational department to the time of his being appointed to the post of Director in 1907. The useful changes and extensions he made during his regime as Principal of the College, have almost transformed the face of that institution. As a direct result of his solicitude for his College, and the deep interest he took in his pupils, within a period of some seventeen years, the number of resident students nearly doubled, the Government expenditure on the college increased by one half, the area of the college grounds was also doubled to make room available for Professors' quarters, new lecture rooms were provided, ample additions were made to the students' residential quarters, various other buildings, large and small, such as servants' quarters, out-houses, &c., were erected, a cricket ground and a pavilion were added, and a boat-house was erected, the last two especially being due to Dr. Selby's personal initiative. In short, all that is attractive in and peculiar to that institution at the present moment, is the handiwork of the late Principal of the College. To quote from a special number of the *Deccan College Quarterly* containing a short sketch of his life and work :—"It is superfluous to describe in detail what our kind Principal has done for this college. In fact its present condition with its comfortable residency, with its magnificent gymkhana and with its splendid staff, is entirely due to the most admirable energy and keen sense of duty displayed by Principal Selby in his brilliant career as Principal. At present this college holds an enviable position amongst the sister institutions; and it has naturally come to pass that Principal Selby's name is inseparably associated with the history of this institution."

More important than all these improvements and extensions which have made college-life at Yerowda more healthy, more manly, and more attractive, the one great thing that characterised the work of Dr. Selby was the strict discipline he maintained in his college and the wholesome influence he imperceptibly exercised over the minds and hearts of his students. As His Excellency Sir George Clarke justly remarked: "The work that he accomplished cannot be presented in the form of figures. The effects of the personal influence which he brought to bear upon large numbers of Indian students exist and will continue to exist; but they

defy calculation." As the head of his college, Principal Selby was a stern disciplinarian. Himself a man of exceptionally regular habits, he wished to make his pupils also equally regular. He visited the least violation of college rules and discipline with heavy fines. He was a strong-minded man, and when he had said or done something, he would stand as firm as a rock. He understood the value of strict discipline in the training of youth, and where discipline was concerned, he was unbending. To strangers, this sometimes appeared like obstinacy, but those who knew him more intimately say that it was the result of the firmness of his disposition. Teachers and Professors know how their resolution is often tried by students and their guardians in matters of attendance at school or college, examinations, promotions and so forth. And here the value of firmness of character such as possessed by Dr. Selby, is seen to the best advantage. To this sternness of discipline, he however joined a kindliness of feeling and a keen sympathy towards his pupils, and he was often seen during his evening walks in the company of students freely talking with them on all manner of subjects. His interest in his pupils did not end with their college career. He took delight in seeing them comfortably settled in life, and he helped them in all possible ways in this respect. Principal Selby paid as much attention to the mental and moral culture of his pupils as to their physical development. He made tennis, cricket, foot-ball, hockey, &c., popular among them, and in boating he even coached them himself. One of the college tennis courts was presented by Mrs. Selby, which rightly perpetuates her name as 'the Mrs. Selby court.' Mr. and Mrs. Selby used to give prizes every year for the tennis tournaments and the regatta races on the river, which is not very far away from the college. Principal Selby contributed every term a large sum from his private purse to the students' gymkhana. Thus his interest in his students was an active and real interest. There was no department of college life where his influence was not felt. It was his constant aim to develop the manhood of his pupils in various ways and to make them sound physically, intellectually and morally.

Dr. Selby has not, so far, written any original work, say on Philosophy, which is his favourite subject. He has annotated a number of the works of Bacon and Burke, being text books prescribed by the University. His exposition of these works is masterly, and his notes are very useful to students. The latest G. R. thus records the Government's sense of appreciation: .....his force of character and intellectual achievements not only earned the cordial approval of Government but also enlisted the support of parents and attracted the sympathy of his pupils.....(He) has stood forward....as an example of the best influence the Western education can bring to the moulding of character in the East. He was not yet sufficiently long at the helm of affairs in the educational department to allow him to introduce any important reforms there, nor had he had time to tackle any of the most pressing educational problems of the day. He has however earned the gratitude of the low-paid teachers of vernacular schools whose pay and prospects he was instrumental in improving. The miserably paid teacher was an anomaly in these days of high prices and a demand for more efficient education, and his lot was the hardest and most unenviable. As Vice-Chancellor of the University, his work was appreciated by all concerned, and Justice

IV. Transformation.

(*a*) Complex sentences into simple—

E. G.—Uneasy lies the head that wears a crown—wearing a crown.

or the crowned head.

He did as he was instructed —He did according to instructions.

(*b*) Compound sentences into simple.

E.G.—He is very old, yet he has good sight,

In spite of his age, he has good sight—and vice versa.

Only very simple exercises will be required.

(*c*) The substitution of one part of speech for another—The exercise may be somewhat more difficult that in the II Form.

(*d*) Change of voice as in the II Form.

(*e*) Appropriate prepositions of the more ordinary words—the teachers to make out a list of such words from the Grammar and Text book in use.

Angry at and angry with
Dwell on and dwell in

and similar pairs.

(*f*) Change of degrees of comparison may well be omitted in the Lower Secondary stage, but the correct uses of the degrees of comparison should be taught.

(*g*) Direct and Indirect narration—only very simple exercises to be done. The questions on the subject should be of a very elementary kind. The passages for such exercises must not consist of more than five lines.

V. Elocutionary specimens may be brought up—the choice being left to the teachers themselves.

VI. *Translation.*—A slightly more difficult kind of exercises than in the Second Form.

Composition.—A short narrative in English may be read thrice in the class and the students may be asked to reproduce the stories in their own language.

The students should be trained to see the plot of a story and give prominence in their composition to the main points.

In original composition, the same procedure as in the Second Form may be adopted with advantage.

Short essays on (1) the national festivals, (2) the car festivals, (3) the railway, (4) travelling in country carts, (5) the method of cultivating rice and other cereals, (6) the constitution of a village, and (7) the description of a river in flood or of a town on a festive occasion may form the subjects in this form.

VII. *Figures of Speech.*—The simile, metaphor and personification.

Only very simple examples should be given.

Conversion of a metaphor into a simile.

VIII. Syntax—Revision of the rules brought up in the I and II Forms as in "A Manual of Grammar."

IX. Conjugation—All moods and tenses.

K. VENCATARAMA AIYAR.

THE EDUCATION OF WOMEN IN BARODA.

At a recent meeting of the Women's Indian Study Association, with Mrs Creighton in the chair, Miss Bhore gave an interesting account of the progress of education among the women of the Baroda State, and of the work of Training Colleges for teachers. In the course of her remarks she said :—

I deem it a pleasure and a privilege to meet the members of the Women's Indian Study Association and to tell them something about my work in the Educational Department of the Baroda State. It is very gratifying to find that the Association has as its main object the study of the conditions of life of Indian women. I need not emphasise the need of such an Association. The ignorance of English women with regard to matters Indian and Indian society

generally (I say it in no censorious spirit) is proverbial, and the existence of such an Association needs no justification. A little patience, a little sympathy, a desire to know each other better and how many of the grave difficulties and troubles we hear of, might never have existed.

Most Anglo-Indian women who come in contact with Indian women care very little to know them or to understand them. A little more sympathy, and an earnest desire to understand them, will meet with a ready response, and give English women countless opportunities to see the goodness and the beauty that lie behind the shy exterior. Indian women are not behind English women in goodness of heart, in brightness of intellect, and in natural strength of character, and when opportunities are given them to exercise these qualities they rise to the occasion ; and the result is a development of the stronger virtues.

Educated and cultured men in India are beginning to see the need for more intelligent companions in their wives, and the necessity for a cultivated society in which men and women can move with freedom and ease, conversing freely, exchanging thoughts and ideas and thus making life interesting and instructive. "Men will always be what women make them ;" if, therefore, you would have men great and virtuous, impress upon the minds of women what greatness and virtue are. This can only be done by giving women the right sort of education and moral instruction, not merely from text-books but through the example of their teachers, whose every action should be consistent with what they profess to teach, for Indian children, with their precocious intellects, are very quick to observe any little breach of the moral code. It has been said : "Don't preach too much to your pupils or abound in good talk in the abstract. Lie in wait rather for the pratical opportunities, be prompt to seize those as they pass, and thus at one operation get your pupils to think, to feel, and to do. The strokes of behaviour are what give the new set to the character and work good habits into its organic tissues. Preaching and talking too soon become an ineffectual bore."

With these introductory remarks I would beg leave to tell you something about female education in Baroda, and the efforts that are being made by His Highness the Maharaja and his officers responsible for the training of teachers, to train up moral, enthusiastic, and devoted teachers.

It is one of the hopeful signs of the times that the numbers in our elementary schools are steadily increasing, and there is a greater demand for an English education for girls in most of the Presidencies of India; but the Province of Gujerat, whence I hail, is rather conservative in that respect. Here most parents are not anxious to educate their girls, and those who are, or rather seem to be so, have an idea that the schools and teachers should adapt themselves to their whims and fancies. They send their children just when they please to school, often with requests, and sometimes with peremptory orders, that "only such and such subjects shall be taught, such and such be eliminated from the curriculum," &c., &c. Singing and calisthenics are objected to by the orthodox. The least disregard paid to their demands often ends in children being withdrawn from school. We often have to meet them half-way just to give the children a taste for learning, and sometimes they take to it very kindly and remain in school a few years longer. No one can realise the difficulties of the situation, and how hard it makes work for those responsible for the education of women, when people are, so opposed to teaching their girls. But tact and sympathy are very powerful weapons, and by means of them we have been able, even under these trying conditions, to accomplish something. The fact that the total number of girls and young women attending the F. T. College, the High School, and Practising Schools attached to the Training College, is now over 700, whereas when I took

to be judicially determined in the newly constituted Courts of Justice: with the establishment of these courts and with the new era inaugurated by British rule there was an immediate rush of litigation all over India. A very wise and humane Regulation of Warren Hastings enacted by its 23rd rule, that "In all suits regarding marriage, inheritance and caste, and other religious usages, and Institutions, the laws of the Koran with respect to Mahomadans and those of the Shastra with respect to Gentus (Hindu) shall be invariably adhered to." And as Sir Courtney Ilbert observes: "Moulavis or Brahmins" were directed to attend the courts for the purpose of expounding the law and giving assistance in framing decrees. During these times when the Judges of the Anglo-Indian Courts had to resort to the aid of these Pundits and Maulavies, the conduct of the causes of Native litigants was almost exclusively in the hands of the English barristers. But soon sprang up a revulsion of feeling against too much reliance in the dicta of these Pandits. Sir William Jones says: "I can no longer bear to be at the mercy of our Pundits, who deal out Hindu law as they please and make it at reasonable rates when they cannot find it ready-made." Though the imputation recorded in the above passage that the Pundits coined the law which they uttered as genuine is quite unjust and unfounded, still the feeling increased in strength and intensity till the institution of Pandits as official referees of the courts was swept away by Act XI of 1864.

(*To be continued.*)

S. VENCATACHARI.

MATHEMATICS.

[Conducted by B. KRISHNAMACHARI, M.A.]

15. The following solution by "BANGALORE" is strictly mathematical.

$x=a^2-2$. $y=b^2-2$.

$\therefore\ xy+18=(a^2-2)(b^2-2)+18$ should be a complete square. Assume $b=a+k$

Then $(a^2-2)(b^2-2)+18=(a^2-2\ \{(a+k)^2-2\}+18$

$=(a^2-2)(a^2+2ak+k^2-2)+18$

$=a^4+2a^3k+a^2(k^2-4)-4ak+22-2k^2$

This expression will be rendered a perfect square when $k=3$, the square root being a^2+3a-2 which is the value of e.

$\therefore\ b=a+3$. Similarly $c=b+3=a+6$, $d=a+9$

$e=a^2+3a-2$, $f=(a+3)^2+3(a+3)-2$

$=a^2+9a+16$ and $g=(a+6)^2+3(a+6)-2$

$=a^2+15a+52$.

$\therefore\ a+b+c+d+e+f+g=a+(a+3)+(a+6)+(a+9)+(a^2+3a-2)$

$+(a^2+9a+16)+(a^2+15a+52)$

$=3a^2+31a+84=158$

$\therefore\ 3a^2+31a-74=0$

$(a-2)(3a+37)=0$. $\therefore\ a=2$

$\therefore\ \left.\begin{array}{l} x=2^2-2=2 \\ y=5^2-2=23 \\ z=8^2-2=62 \\ u=11^2-2=119 \end{array}\right\}$

18. (P. V. KRISHNIER, B.A.) $ax+by+c=xy$. Devise a method of easily finding integral values of x and y which satisfy the above equation where a, b, c are integers.

Solutions by I.—T. SUNDARA RAO, B.A.

II "BANGALORE."

III S. ANANTHAKRISHNAN.

I. $ax+by+c=xy$.

$\therefore\ x=\dfrac{by+c}{y-a}=b+\dfrac{ab+c}{y-a}$.

$\therefore\ \dfrac{ab+c}{y-a}$ must be an integer.

Suppose $a=3$, $b=7$, $c=5$

$ab+c=26=1\ .\ 2\ .\ 13$.

$\therefore\ y-3=1$, 2, or 13 or $y=4$, 5, or 16

and $x=33$, 20, or 9.

II. $ax+by+c=xy$.

$\therefore\ xy-ax-by=c$

Add ab to both sides.

$\therefore\ xy-ax-by+ab=c+ab$,

i.e., $(x-b)\ y-a)=c+ab$.

Let f_1, f_2 be two integers such that $f_1f_2=c+ab$. Then $x=b+f_1$, $y=a+f_2$ satisfy the original equation. If $c+ab$ is a prime number then

$\left.\begin{array}{l} x=b+1,\ y=a+c+ab \\ x=b+c+ab,\ y=a+1 \end{array}\right\}$ are the two solutions of the equation.

III. $xy=ax+by+c$, *i.e.*, $(x-b)(y-a)=(ab+c)$.

This equation represents a Rectangular Hyperbola having $x=b$, $y=a$ for asymtotes.

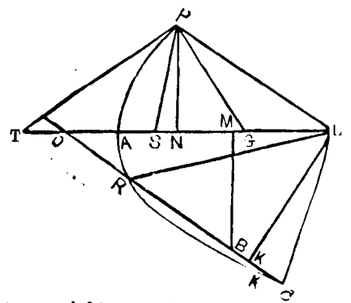
Transfer the origin to (b, a). The equation becomes $xy=(ab+c)$. Any variable point

is $\left\{k\sqrt{ab+c},\ \dfrac{\sqrt{ab+c}}{k}\right\}$.

$\therefore$ We have $x=b+k\sqrt{ab+c}$,

$y=a+\dfrac{\sqrt{ab+c}}{k}$ where k is a variable.

19. The following geometrical proof of this question is given by "BANGALORE."



Let a variable circle passing through the focus S touch the parabola at any point P and cut it in points the Q and R. Let the axis AS meet the tangent at P in T and the variable circle in L.

Since SP = ST, angle STP = SPT. Since TP touches the circle SPL, angle SPT=SLP in the alternate segment $\therefore$ angle STP=SLP

$\therefore$ PT = PL.....(1).

Draw the ordinate PN. Since PTL is an isosceles triangle TN = NL, but AT = AN.

$\therefore$ AL = 3 AN and TN = 2AN.

Since the circle touches the curve at P and cuts it in Q and R twice the ordinate PN=the sum of the ordinates of R and Q, *i.e.* if B is the middle point of RQ and BM is drawn perpendicular to AS, then PN = BM.

Again since the tangent at P and the line QR are equally inclined to the axis, we have angle PTN = MOB where O is the pt. in which QR meets the axis.

$\therefore$ The two triangles PMN and MOB are identically equal.

$\therefore$ TP = OB and TN = OM.

Join LR, LQ and drop LK perp. to QR.

Now $LR^2-LQ^2=RK^2-KQ^2=2.RQ.BK$...(2)

Since angle PTL=PLO and is also equal to QOL the lines QR and PL are parallel; and since PRQL is a concyclic quadrilateral, we have PR=LQ and PQ=LR.

By Ptolemy's theorem PR . LQ + PL . RQ = PQ . LR. $\therefore$ $LR^2-LQ^2=PL.RQ$.

But PL = PT = OB. $\therefore$ by (2) we have 2RQ . BK = PL . RQ.

$\therefore$ PL = 2BK, *i.e.* OB = 2BK.....(3)

Since BML and BKL are right angles the quadl. BK$\angle$M is inscribable in a circle

$\therefore$ OB . OK = OM . OL.....(4)

Since the circle round PNG touches TP at P the rect. TN . TG. $= TP^2 = OB^2$

Also TN = ON (proved) $\therefore$ OM . TG. $=OB^2$.....(5).

By (4) and (5) we have

OB . OK : OB^2 = OM . OL : OM . TG.

$\therefore$ OK : OB = OL : TG.

Since OB = 2BK by (3), OK = 3BK

$\therefore$ OK : OP = 3 : 2 $\therefore$ 3TG = 2OL.

$\therefore$ 3 (TN + NG.) = 2 (OA + AL).

But AL = 3AN and TN = 2AN

$\therefore$ 6AN + 3NG = 6AN + 2OA

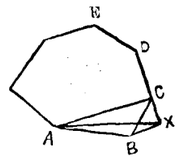
$\therefore$ 2OA = 3NG = 6AS for NG = 2AS
$\therefore$ OA = 3AS.

Hence the line QR passes through a fixed point on the axis.

20. [B. KRISHNAMACHARI, M.A.] Describe a triangle equal in area to a polygon of n sides.

Solutions by V. SANKARANARAYANA IYER, and M. S. SUNDARESWARAN.

Let ABCDE be a polygon of n sides. Join AC and through B draw BX to meet DC produced in X; and join AX.



The $\triangle AXC = \triangle ABC$; add to each of these ACDE.....

$\therefore$ AXDE...=ABCDE...and now AXDE... is a polygon of $(n-1)$ sides and this can be reduced to a polygon of $(n-2)$ sides and so on. Finally we can get a triangle equal to the given polygon.

21. [KELA DEVA RAO, B A. L.T.] Shew that

$\Sigma y^2z^2(yz+zx-xy)(yz-zx+xy)+(\Sigma yz)$
$\times(zx+xy-yz)(xy+yz-zx)(yz+zx-xy)$
$=2x^2y^2z^2(\Sigma xy)$.

Solutions by I V. SANKARANARAYANA IYER and M. BHIMASENA RAO. II L. S. SUBBARAYA IYER, B.A., L.T. III M. S. SUNDARESWARAN.

Putting $xy=a, yz=b$ and $zx=c$ we have to prove that $\Sigma b^2(b+c-a)(b-c+a)+$
$(\Sigma a)(a+b-c)(a-b+c)(b+c-a)$
$=2abc(a+b+c)$.

Putting $a=0$ we can very easily see the left hand, expression is 0. Therefore a is a factor of the expression. Similarly b and c are factors. The expression is also 0 when $a+b+c=0$.

$\therefore$ The given expression is equal to $pabc(a+b+c)$. Equating the co-efficients of a^2bc we have $p=2$.

$\therefore$ The expression $=2abc(a+b+c)$.

II. Let $\left.\begin{aligned} xy+xz-yz&=a\\ yz+xy-xz&=b\\ xz+yz-xy&=c\end{aligned}\right\}$

Then the given expression $=\Sigma\frac{bc(b+c)^2}{4}$
$+abc(a+b+c)$.

It is easily seen that this expression has the factors $(a+b)$, $(b+c)$, $(c+a)$ and $(a+b+c)$.

$\therefore$ The expression,
$=\frac{(a+b)(b+c)(c+a)(a+b+c)}{4}$

$\therefore$ The given expression $=2x^2y^2z^2(xy+xz+yz)$.

III. $\Sigma y^2z^2(yz+zx-xy)(yz-zx+xy)$
$=\Sigma y^2z^2\{yz+x(z-y)\}\{yz-x(z-y)\}$
$=\Sigma y^2z^2\{y^2z^2-x^2(z-y)^2\}$
$=\Sigma y^4z^4-x^2y^2z^2\Sigma(z-y)^2$
$=\Sigma y^4z^4-2x^2y^2z^2\Sigma x^2+2x^2y^2z^4\Sigma xy$.
$(\Sigma yz)(zx+xy-yz)(xy+yz-zx)(yz+zx-xy)$
$=2x^2y^2z^2\Sigma x^2-\Sigma y^4z^4$.
Hence the given expression,
$=\Sigma y^4z^4-2x^2y^2z^2\Sigma x^2+2x^2y^2z^4\Sigma xy+2x^2y^2z^2\Sigma x^2$
$-\Sigma y^4z^4$.
$=2x^2y^2z^2(yz+zx+xy)$.

22. [KELA DEVA RAO, B.A., L.T.] Find the factors of $\Sigma a^2(b-c)(b+c-a)^3$.

Solutions by I.—V. SANKARANARAYANA IYER, and M. S. SUNDARESWARAN.

II.—L. S. SUBBARAYA IYER, B.A., L.T., III M. BHIMASENA ROW.

Putting $b=c$ the expression vanishes. Hence $(b-c)$ is a factor; similarly $(c-a)$ and $(a-b)$ =factors. Again putting $a=b+c$ the expression becomes 0.

$\therefore$ $b+c-a$ is a factor; similarly $(c+a-b$ and $(a+b-c)$ are factors.

$\therefore$ The exp. $= p(a-b)(b-c)(c-a)(a+b-c)(a+c-b)(b+c-a)$. Equating the co-efficients of a^5b we have $p=-1$.

$\therefore$ The expression $=-(a-b)(b-c)(c-a)(a+b-c)(a+c-b)(b+c-a)$.

II. Let $b+c-a=x$
$c+a-b=y$
$a+b-c=z$

Then the expression $=\Sigma\frac{x^3(y+z)^3(z-y)}{8}$.

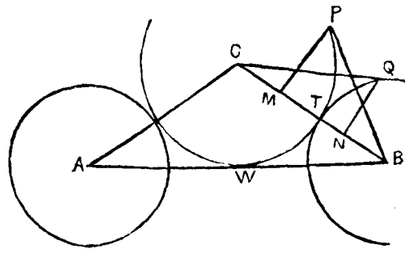
The factors are easily seen to be
$\frac{xyz(x-y)(y-z)(z-x)}{8}$.

from which the factors of the given expression follow.

III. Suppose $b+c-a=x$ $\therefore$ $a=\frac{1}{2}(y+z)$, $b=$etc. $c+a-b=y$ $(b-c)=-\frac{1}{2}(y-z)$
$a+b-c=z$ $c-a=$ etc.

$\therefore$ The given expression
$=\Sigma\frac{1}{4}(y+z)^4\times-\frac{1}{2}(y-z)x^3$
$=\Sigma-\frac{1}{8}(y+z)(y^4-z^4)x^3$
$=\Sigma-\frac{1}{8}(y^5-z^5+y^3z-yz^3)x^3$
$=\Sigma-\frac{1}{8}x^3(y^3-z^3)+\Sigma-\frac{1}{8}x^3yz(y-z)$
$=\frac{xyz}{8}\Sigma-x^3(y-z)$ since $\Sigma x^3(y^3-z^3)=0$
$=\frac{xyz}{8}(x-y)(y-z)(z-x)$
$=-\pi(b+c-a)\pi(a-b)$

23. [M. BHIMASENA RAO.] If a variable circle touches two fixed circles, the polar of the centre of either of the fixed circles with respect to the variable circle envelopes one of two fixed circles.



Solution by the PROPOSER.

Let A and B be the centres of the fixed circles and C, the centre of the variable circle. Let QN be the polar of C with respect to the circle whose centre is B and PM be the polar of B with respect to the circle centre C. Let T be the point of contact.

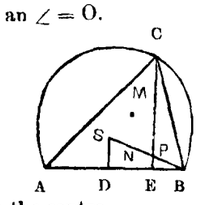
Rect. BT BC = BT^2 + BT.TC = BN.BC + BT TC
$\therefore$ BT.BC—BN.BC = NT.BC = BT.TC
Similarly rect. CT.CB = CT^2 + CT.TB
= CM.CB + CT.TB
$\therefore$ MT.CB = BT.TC
$\therefore$ NT.BC = MT.CB $\therefore$ MT = NT ..... (1).

The semi-circle on CB can easily be shown to touch a fixed circle, centre W the middle point of AB and radius equal to half the difference of the radii of the fixed circles (or half their sum when the variable circle touches one of the fixed circles internally and the other externally). The polar of C with respect to the circle centre B being the inverse of the semi-circle on BC with respect to the circle centre B touches a fixed circle which is the inverse of the circle centre W with respect to the circle centre B. If S and R be the centre and radius of the envelope of QN, because TN=TM, the line PM can easily be shown to touch a fixed circle whose centre is a point S^1 such that B is the middle point of SS^1, and radius equal to $R \pm 2r$ where r is the radius of the circle whose centre is B. Hence the proposition.

24. [M. BHIMASENA RAO.] Describe a triangle having given the base, the vertical angle and a point through which the radical axis of the circumcircle and the nine-points circle of the triangle passes.

Solution by M. S. SUNDARESWARAN.

Let AB be the base and O the given vertical angle. On AB describe a segment of a $\odot$ containing an $\angle = O$.



Let S be the centre.

The radius of the circum ⊙ is SA; hence the radius of the nine-points ⊙ is ½ SA. Let M be the point on the radical axis of the circumcircle and the nine-points circle.

The difference of the squares on the distances of M from S and the centre of the nine-points ⊙ = the difference of the squares of the radii of the circum ⊙ and the nine-points ⊙ = ¾ SA².

M is a given point and S is a known point. Hence MS is known.

∴ if the centre of the nine-points ⊙ is N (which we have to find.)

$MS^2 - MN^2 = \frac{3}{4} SA^2$ or $MN^2 = MS^2 - \frac{3}{4} SA^2$.

∴ N is always at a constant distance from M. N is also at a constant distance from D.

Hence if we describe ⊙ˢ with M and D as centres and $\sqrt{MS^2 - \frac{3}{4}SA^2}$ and ½ SA as radii respectively, the point of intersection N of these two ⊙ᵉ is the centre of the nine-points ⊙.

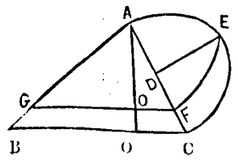
Produce SV to P making NP = SN; then P is the orthocentre of the △ required. From P draw PE perpendicular to AB and produce EP to meet the segment in C.

Then C is the vertex of the △ required, *i.e.*, the △ required is CAB.

25-A. [A PROFESSOR]. From what point of the altitude of a triangle must a parallel be drawn to the base so as to divide the whole into two parts equal in area?

Solution by B. KRISHNAMACHARI, M.A.

Let ABC be the given triangle. Bisect AC at D and from D draw DE perpendicular to AC and equal to AD or DC.



With centre A and radius AE describe a circle meeting AC at F. Through F draw FG parallel to the base BC meeting the altitude AO of the triangle in o. Then o is the point required.

For $\frac{\triangle AFG}{\triangle ACB} = \frac{AF^2}{AC^2}$ .....VI. 20.

$= \frac{AE^2}{AC^2}$

$= \frac{AD \cdot AC}{AC^2}$

$= \frac{1}{2}$.

or the area of the triangle AFG is half that of the given triangle.

QUESTIONS FOR SOLUTION.

31. [T. SUNDARA RAO, B.A.] On two concentric circles, arcs A_1A_2 and B_1B_2 are taken subtending equal angles (α) at the centre O. C is any point and parallelograms OA, OB are described with CO, OA_1 and CO, OB_1 for sides. Prove that the perpendicular bisectors of CO, AA_2, and BB_2 are concurrent and that CO, AA_2, and BB_2 subtend at the point of concurrency angles equal to α.

32. [M. BHIMASENA RAO.] (1) "If any two circles be the inverses of two others, then any circle touching three out of the four circles will also touch the fourth"—Casey's Sequel to Euclid, VII Edition, page 99, prop. 5 corr. 3.—Show that, in general, four out of the eight circles touching the three will touch the fourth; find what further relation must exist among the four circles in order that six out of the eight circles touching the three may touch the fourth and show that in this case one of the remaining two out of the eight circles cuts the fourth at the imaginary angle $2n\pi - i \log (3 + \sqrt{8})$ and the other at its supplement.

(2) Show that the circles which are the loci of the intersection of perpendicular tangents to the incircle and the ex-circles of any triangle are all touched by six circles.

(3) With four given points as centres describe four circles such that they may be touched by 6 circles.

33. [M. BHIMASENA RAO.]

Find a point through which lines drawn parallel to the sides of a given triangle are such that—

(1) their parts intercepted by the sides of the triangle are equal

(2) the sum of the squares on their parts intercepted by the sides of the triangle shall be a minimum.

34. ["BANGALORE."] A point P moves on a curve which is such that if perpendiculars PL, PM and PN are dropped on the sides BC, CA and AB respectively of a given triangle ABC, the lines AL, BM and CN are concurrent.

(1) Find the points of intersection of the curve and any line perpendicular to a side of the given triangle.

(2) From any point P on the curve perpendiculars are drawn to the sides of the triangle meeting the curve again in P_a, P_b and P_c. If Q_a, Q_b and Q_c are the points, where the perpendiculars to the sides of the triangle from any other point Q on the curve, meet the curve, show that the triangles $P_aP_bP_c$ and $Q_aQ_bQ_c$ are in perspective and that the centre of perspective lies on the curve.

(3) Utilise the preceding result to draw the tangent at any given point on the curve.

(4) If from any point on the curve tangents are drawn to the curve, the mean centre of the points of contact is a fixed point.

35. [BANGALORE."] Nine different positive integers (other than zero) can be found such that if arranged as in the following square, the sums of the three integers in any horizontal row, in any vertical column or taken diagonally are all equal to a given number n, provided that n is a multiple of 3 and not less than 15.

a_1	a_2	a_3
b_1	b_2	b_3
c_1	c_2	c_3

When n is given, show that the number of solutions which the square admits of is the greatest integer in $\frac{n^2 - 16n + 72}{36}$, different arrangements of the same integers in any solution being discarded.

COMMERCIAL AND INDUSTRIAL EDUCATION.

ONE of the most obvious defects of the Educational System that has been in vogue in India is its one-sidedness. Education in India has been purely literary. It has raised up a big battalion of clerks, much bigger than the clerkly world requires, with the result that while the artizan can always command good wages, many of the graduates and undergraduates fail year after year to obtain employment, which generally means Government service, and a majority of those that manage to get employed are paid no more than a pittance. Hence the cry that education in India does not "pay." It has been the constant purpose and effort of educationists in India to "stimulate thought power by burdening the memory of the pupil with choice readings from dead languages and so-called standard authors." The Indians of the old world committed the mistake of developing intellect at the expense of other faculties. They imparted culture by the sheer process of memorising. Psychology

was little known in those days and teachers were ignorant of the idea that "the object of education is to train children to use their eyes and ears, their hands and their fingers." Their system instead of teaching the dignity of labour tended towards investing the pupil with a false pride and dislike for manual labour. The mind of the Hindu is naturally opposed to physical work and he shirks "working with his own hands the thing which is good," for he thinks that all handicrafts are mean and despicable. "It is not an uncommon idea in India" wrote Mr. Glyn Barlow, M.A., "that all the promising sons in a family should be put into Government service, or into one of the so-called learned professions." A majority of Indians are of opinion that industrial pursuits are unworthy of an educated man and if any of the sons in a family is to be put to learn an industry it should be the dullest of the lot. A quill-driver on Rs. 10 a month is supposed to be a king among men when compared with an artizan, say a carpenter, on Rs. 40 a month. In India, the mistake has systematically been committed of divorcing the spirit of industrial education from that of general education. Hence the complaint that "the spread of education is one of the chief drawbacks to the development of industry." Real education, which does not aim at developing one faculty at the expense of others, has never been an obstacle to the growth of industry. Look at Germany where education is particularly vigorous. There it is free from "bookishness" and is surrounded by an atmosphere of practicality. German Universities embrace technical schools, mining schools, schools of forestry and schools of agriculture. German methods of education are essentially practical, and this accounts for the lead which the Empire of Kaiser Wilhelm takes in the industrial world.

The importance of Commercial Education is not yet generally recognised in India. Even England at a time ridiculed the idea of teaching commerce in schools and colleges but she soon found her mistake and the London Chamber of Commerce appointed a Special Committee for Commercial Education which resulted in the formation of a scheme for "imparting and encouraging specialised education to England's rising merchants, bankers and accountants." The University of Manchester and the University of Birmingham have to-day special faculties for Commercial Education. It has been observed that "the world's politics revolve on the orbit of the world's commerce," but we have regretfully lagged behind other countries in the matter of Commercial and Industrial Education. It is only during the past few years we have come to realise the evils of a one-sided system of education and feel the necessity of co-ordinating industrial and commercial training with intellectual development. Education must definitely assist men who are going into business. It must "on the one hand develop the moral and social life of the children and make them into good citizens and on the other hand give them the ability to make an honest living and add something to the commonwealth of the country." But our educational system seems to have been intended merely to turn out men qualified to be good clerks rather than persons trained for independent action.

Swadesism is in the air and many of the people of India are advocating industrial and commercial pursuits. We have succeeded in creating a demand for home-made goods but in order to be able to meet it adequately we ought to start more factories and banks.

The question of co-ordinating manual training with intellectual training is now under discussion. It is suggested that "the curriculum of every Secondary School should be so arranged as to permit of classes being opened for teaching Commercial Subjects; and that the Educational Department should recognise and aid all classes which have for their object the teaching of Commercial Correspondence, Commercial Geography, Book-keeping, Short-hand and Type-writing." It cannot be denied that such a course of studies as this substantially helps the student when he leaves school to enter into business. Elementary Education in India must be rendered more practical and less literary and children at school must be trained from the beginning to use their hands and eyes freely. The following scheme of co-ordinating manual training with literary culture was suggested some three years ago by the Rev. Mr. A. Margöschis, in the course of his address delivered before the Tinnevelly Industrial Conference and it may be reproduced here for the edification of readers :—

"The aim should be : (1) to teach the three R's up to the Government Fourth Standard (Upper Primary); (2) to train the eye and the hand by teaching drawing on the Froebel System, Kindergarten lessons, the Sloyd system, Needle Work, Singing and Physical exercises. Agriculture should be taught at convenient places in a practical way to the boys of the Upper Primary and Lower Secondary classes, and pupils of ordinary schools should be drafted into Art Industrial schools and be allowed to select their own industry as soon as they have passed the Third Standard in literary subjects. Only pupils who evince special aptitude for literary education should be taken beyond the Upper Primary (Fourth Standard) in literary subjects and for all others, whilst instruction in literary subjects for two hours a day should be continued throughout their school course, the rest of their time should be devoted to technical study and manual labour, combining industrial with, where possible, agricultural training. As many of the technical words in all handicrafts are in English and cannot be expressed in the vernaculars, English must be taught by conversation for one hour a day to all the pupils of each industrial class."

The experiment of co-ordinating technical or industrial training with intellectual training has not been tried in this country extensively, but in the few cases where it has been tried the results are far from unsatisfactory. We were a few days ago reading in the papers that the University of Madras refused to encourage Commercial education, and if this be really so, "it is hardly the way to foster this important auxiliary branch of education." The Matriculation Examination will, we understand, be shortly abolished and the School Final Certificate introduced in its place. It is therefore necessary that boys who will cease their studies with the Sixth Form should have been given some commercial and industrial training which will enable them to begin a business career as soon as they leave school.

T. S. RAMA SASTRI.

HISTORICAL MUSEUMS IN COLLEGES.

'HISTORIES make men wise' writes Bacon in his wonted brevity—the very soul of true wit. 'Surely not' say we and add 'if by history is only meant a few dates and names of wars and kings stored in their minds.' In fact, the real study of history lies in our power 'to live and move and have our being' in the very 'spirit of the times' of the people whose story we long to know, and to scan the clash or concurrence of ideas among the great groups of mankind. Our aid to such a study of history is centred in a decent museum.

Museum is a 'collection of natural, scientific or other curiosities or works of art.' Upon the utility of a library of historical works to the student, it is needless to dwell. For it is plain, that no true knowledge of facts can be gained without the mastery of the works of many authors who view things

through various glasses. Moreover, even the most faithful historian is apt to be carried away by unconscious emotions due to his individual mental temper or party spirit. The 'prose-poem' of Mr. Carlyle answers to the former and the 'pictorial charm' of Mr. Froud amply justifies the latter. It is too much to expect of them the veracity of a Thucidides. It therefore behoves the impartial student in search of truth, 'to weigh' them calmly, 'consider,' and pass his own independent judgment upon them.

'The Muse of History' observes Mr. Edmund Gosse 'is surely too disdainful of all information that does not reach her signed and counter-signed.' Verily so. We cannot take for gospel truths all the words of an author *de novo*. The age of faith is gone. The days of doubt are at hand. Be it so. For they lead us to 'research,' 'investigation.' Vague theories resting on mere suppositions and inferences shall be exploded; while truth based on facts and proofs shall be established. Is it not worthy of the students of this scientific age and is it not beneficial to society at large? Shall falsehood reign while truth is unheeded?

Moreover, curiosity is the parent of knowledge. The wondering youth cannot look at the coins of Cæsar, the armour of Alexander, the Sage inscriptions of Asoka, the plate of Magna Charta with the Royal Seal of King John, without being struck with the train of ideas they carry with them and cover his soul with an evergreen reverie. He lives in their respective ages—at once a Roman, a Macedonian, an Indian or an Englishman, and instead of hearing second-hand chronicles, he feels one with them, now in weal, now in woe, once listening with rapturous ecstasy to the electric appeals of Mirabow, again warring with the ferocity of a wounded tiger in the rank and file of Napolean.

Writing on Architecture, Ruskin rightly remarks 'It is the manly language of a nation.' How true! The pyramids of Egypt, the Gothic Cathedrals, the rock-cut temples of the Indian Ghats are not dumb entities, but in their majestic silence eloquently plead the cause of a religious mind. With the long spear and the sharp javelin of Charlemaign, a keen student of history can picture to himself the nature of medevial warfare in Europe. The implements of war, the copper plates with the terms of treaties engraven, the hard stones carved on with sayings 'rife with rugged maxims hewn from life,' the works of art and many more articles which a college of moderate means can maintain—all these reveal to us the state of the society wherein moved our antique sires, their minds and ideas, their code of morals and culture, their international relations and civilization in short; and we can trace the evolution or otherwise in the heart and mind of man from barbarity to civilization.

To the careful student of history then, the relics of the past are not inarticulate *quantite negligeable*, but living voices with veritable sermons to inculcate. History becomes the prime source of perennial delight and interest rather than of burden and worry. More. Such a study of history leaves a lasting impression in our minds; for we refuse to wear the mantle spun by other minds and strange hands; but every solution is wrought out of our own. Thus the past revives in its true colours and what do we live for but to seek for remedies in the past for all the maladies of the present?

Such are the uses of the museum! But alas! how few of the colleges are aware of it all! and how many more are obstinate still in their traditional methods of mechanical training! History is not a bundle of chronicles, a book of fables. The history of the world

is the history of the human hearts. There is a regular philosophy in history; a continual process of cause and effect in the 'Science of Society.' Nor is the human brain but an Encyclopedia of information whose business it is to vomit details from the chaos of crowded cells! No; we must dive deep into all details which are but the manifestations of a great current of internal conflict in human ideas and morals, analyse, generalize and find the unity and continuity of the divine revelation. And to ensure such a scientific study of history, a decent museum is an inevitable necessity. Would that every college benefit by the introduction!

B. N.

SYLLABUS FOR MIDDLE SCHOOL.

FIRST FORM.

I. The sentence must be made the basis of all teaching.

II. The principal parts of a sentence to be dealt with in this Form are (1) The subject, (2) The predicate, and (3) The object.

III. The subject may be a *noun* or *pronoun*.

The subject may be enlarged by an adjective.

IV. The predicate is a verb transitive or intransitive.

The transitive verb must always have an object.

V. The tenses to be taught in the First Form are the present indefinite, the past indefinite and the future indefinite. Compound tenses need not be touched upon except when they occur in the Text.

VI. The indicative mood and the imperative mood should be taught.

VII. The assertive [both *affirmative* and *negative*] and the interrogative forms of simple sentences should be frequently touched on.

VIII. The order of words in a sentence should be attended to. The subject—the predicate and the object where the verb is *transitive*.

IX. The predicate may be qualified by an adverb.

Where the predicate is a transitive verb, the *adverb* should not be placed between the transitive verb and the object. The position of the adverb is either before the verb or after the object in such cases.

X. The object may be noun or pronoun.

The object when a noun may be qualified by an adjective.

N.B.—It will be necessary to include pronominal adjectives in the list of adjectives qualfying the subject or object.

XI. The following rules of Syntax to be brought up:—

(*a*) A verb agrees with its subject in number and person.

(*b*) Two or more singular nominatives joined by *and* require a verb in the *plural*.

(*c*) The comparative degree of the adjective is used when *two* objects are compared.

(*d*) The superlative degree when *more than two objects* are compared.

(*e*) The comparative degree is followed by *than*.

(*f*) The *indefinite* article is used with the singular only; the definite article with either number.

(*g*) Every common noun in the singular number requires an article or some such word as *this, my, each*, etc.

(*h*) Pronouns agree with the nouns for which they stand in gender, number and person.

(*i*) A relative pronoun agrees with its antecedent in gender, number and person.

(*j*) Transitive verbs govern the objective case of nouns and pronouns.

(*k*) Adverbs qualify verbs, adjectives and other adverbs.

XII. The use of the following prepositions to be taught:—

(1) In, (2) on, (3) by, (4) with, (5) to, (6) before, (7) behind, (8) after, (9) at, (10) among, (11) between, (12) below, (13) beyond, (14) for, (15) from, (16) towards, (17) under, (18) above, (19) upon, (20) beside, (21) within, (22) without, (23) into, (24) over.

XIII. The use of the following conjunctions should be learnt:—

And, although, though, as, because, but, then, yet, if, that.

XIV. The conjugation of verbs in the indefinite tenses of the indicative mood.

XV. The plurals of singular nouns occurring in the text,

the past tense forms of verbs occurring in the text,

and the changes that such words undergo when the inflexional suffixes are added should form black-board lessons.

XVI. The order of words in interrogative sentences should be impressed.

The use of the tense auxiliary *do* must be taught in connection with the interrogative and negative sentences.

XVII. Reading—Accentuation important.

XVIII. Dictation—Syllabification—constant black-board illustrations.

XIX. Translation—only simple sentences—to be confined to the vocabulary in the text.

XX. Subject matter—No question to be asked which requires more than two simple sentences.

XXI. Analysis—of simple sentences—in the tabular form—subject—adjuncts to the subject—Predicate—object—adjuncts to the object—Adverbial adjuncts to the predicate.

XXII. Composition:—

A. (*a*) Appropriate subjects to be given for predicates.

(*b*) Appropriate objects to be given for predicates and subjects

(*c*) Appropriate predicates to be given for subjects and objects.

(*d*) Suitable adjuncts to subjects, objects and predicates.

E.G.—(1) An old man———with a stick in his hand.

(2) The thief stole———of the girl.

(3) ———overflowed the banks.

(4) ———man cannot hear what I say.

(5) ———child cannot speak.

(6) The peacock is a——— bird.

(7) The crow is a———bird.

(8) The buffalo walks———.

(9) The dog———.

B. In composition exercises where a number of sentences requiring consecutive thought on the part of the boys are expected, the better course is to elicit the sentences from the boys by the process of catechising.

The objects must be familiar.

The rice plant—The plantain—The cocoanut.

The cow—The buffalo—The cat or dog.

The brick or tile—A piece of cotton cloth—Gold—Copper or silver.

The vocabulary required for the foregoing subjects may be selected from the Reading book in use as far as possible. It is only in unavoidable circumstances that new words should be introduced. The teachers are expected to maintain note-books showing the vocabulary they use in such composition exercises.

SECOND FORM.

I. (*a*) The simple sentence as in the First Form.

(*b*) The subject of a simple sentence may be (1) an adjective, (2) a verb in the infinitive mood, (3) a gerund, (4) a phrase.

(*c*) The foregoing as objects.

(*d*) Adjuncts to the subject or object—(1) Participles, (2) appositional nouns, (3) phrases—infinitive or prepositional.

(*e*) Predicates—Transitive verbs taking one object—Transitive verbs taking two objects—Factitive verbs—Transitive verbs of incomplete predication—Intransitive verbs of incomplete predication.

(*f*) Adverbial adjuncts to the predicate—(1) Adverbial phrase, (2) prepositional phrase, (3) Adverbial objective, (4) An absolute phrase.

In short, the simple sentence in all its variety.

II. *The compound sentence.*

The co-ordinative conjunctions to be thoroughly mastered. Frequent exercises on the use of the co-ordinative conjunctions. Construction of compound sentences with the conjunctions alone given. One half of the co-ordinate clause may be given and the student asked to supply the other half appropriately.

III. *The complex sentence.* Complex sentences with one subordinate clause:—

(*a*) Noun clauses introduced by *that, when, how* and *why*.

(*b*) Adjective clauses introduced by the relative pronouns *who, which* and their inflections and *that.*

(*c*) Adverbial clauses introduced by the following subordinative conjunctions:—(1) Although, (2) as, (3) if, (4) lest, (5) than, (6) that, (7) though, (8) unless, (9) whether, (10) because.

IV. Conjugation of verbs in all the tenses simple and compound in the indicative mood.

V. In addition to the rules of Syntax brought up in the First Form, the following may be learnt. Manual of Grammar.

208, 209, 210, 211, 212, 213, 217, 218, 222, 224, 227, 231, 248, 254, 255, 256, 257, 258, 262, 274, 275, 284, 294, 303, 338, 341.

VI. The analysis of sentences, simple, compound and complex in the tabular form as in "A Manual of Grammar."

VII. *Etymology* as in "A Manual of Grammar."

VIII. *Composition.*

(1) The composite forms of the more familiar words occurring in the text:

E. G.—The noun form of *true* is *truth.*

The appellative noun from *lie* is *liar.*

The adjective form of *prosper* is *prosperous.*

(2) Changing the *voices* of verbs in sentences.

(3) Contraction of sentences: *E. G.*

This is the place where I reside may be changed into

This is my place of residence.

This was the man who was seen by me yesterday may be changed into

This was the man seen by me yesterday.

Phrases may likewise be contracted into simple words.

I shall be there *in a short time* may be changed into I shall be there *shortly.*

IX. In the text book, longer answers from the portion brought up that in the first form may be required.

The vocabulary of the first form to be constantly brought into play.

Translation of complex sentences with *one* subordinate clause, the vocabulary being confined to known words only.

X. (1) The subject matter of stories from the extra book studied. The abstracts to be written by the boys themselves. A model lesson may first be given by the teacher on the salient points to be brought out in the abstract.

(2) Original composition.

Familiar objects—*both animate* and *inanimate.*

The object to be placed on the table.

Each boy to say something relevant to the object. As each sentence is given by the student, it may be written on the board. Naturally, there will be no order in the ideas expressed. The teacher will then arrange the ideas under the correct heads. The boys may be asked the reason for the location of their sentences under particular heads. The first day may be spent in this kind of exercise. Boys need not be made to take down anything on paper on the first day. On the next day, they may be asked to reproduce the essay in their note books.

THIRD FORM.

I. Revision of the portions done in the I and II Forms.

II. All the varieties of the complex sentence with only one subordinate clause.

III. All the various forms of co-ordination.

IV. Transformation.

(*a*) Complex sentences into simple—

E. G.—Uneasy lies the head that wears a crown—wearing a crown.

or the crowned head.

He did as he was instructed —He did according to instructions.

(*b*) Compound sentences into simple.

E.G.—He is very old, yet he has good sight,

In spite of his age, he has good sight—and vice versa.

Only very simple exercises will be required.

(*c*) The substitution of one part of speech for another—The exercise may be somewhat more difficult that in the II Form.

(*d*) Change of voice as in the II Form.

(*e*) Appropriate prepositions of the more ordinary words—the teachers to make out a list of such words from the Grammar and Text book in use.

Angry at and angry with
Dwell on and dwell in

and similar pairs.

(*f*) Change of degrees of comparison may well be omitted in the Lower Secondary stage, but the correct uses of the degrees of comparison should be taught.

(*g*) Direct and Indirect narration—only very simple exercises to be done. The questions on the subject should be of a very elementary kind. The passages for such exercises must not consist of more than five lines.

V. Elocutionary specimens may be brought up—the choice being left to the teachers themselves.

VI. *Translation.*—A slightly more difficult kind of exercises than in the Second Form.

Composition.—A short narrative in English may be read thrice in the class and the students may be asked to reproduce the stories in their own language.

The students should be trained to see the plot of a story and give prominence in their composition to the main points.

In original composition, the same procedure as in the Second Form may be adopted with advantage.

Short essays on (1) the national festivals, (2) the car festivals, (3) the railway, (4) travelling in country carts, (5) the method of cultivating rice and other cereals, (6) the constitution of a village, and (7) the description of a river in flood or of a town on a festive occasion may form the subjects in this form.

VII. *Figures of Speech.*—The simile, metaphor and personification.

Only very simple examples should be given.

Conversion of a metaphor into a simile.

VIII. Syntax—Revision of the rules brought up in the I and II Forms as in "A Manual of Grammar."

IX. Conjugation—All moods and tenses.

K. VENCATARAMA AIYAR.

THE EDUCATION OF WOMEN IN BARODA.

At a recent meeting of the Women's Indian Study Association, with Mrs Creighton in the chair, Miss Bhore gave an interesting account of the progress of education among the women of the Baroda State, and of the work of Training Colleges for teachers. In the course of her remarks she said :—

I deem it a pleasure and a privilege to meet the members of the Women's Indian Study Association and to tell them something about my work in the Educational Department of the Baroda State. It is very gratifying to find that the Association has as its main object the study of the conditions of life of Indian women. I need not emphasise the need of such an Association. The ignorance of English women with regard to matters Indian and Indian society

generally (I say it in no censorious spirit) is proverbial, and the existence of such an Association needs no justification. A little patience, a little sympathy, a desire to know each other better and how many of the grave difficulties and troubles we hear of, might never have existed.

Most Anglo-Indian women who come in contact with Indian women care very little to know them or to understand them. A little more sympathy, and an earnest desire to understand them, will meet with a ready response, and give English women countless opportunities to see the goodness and the beauty that lie behind the shy exterior. Indian women are not behind English women in goodness of heart, in brightness of intellect, and in natural strength of character, and when opportunities are given them to exercise these qualities they rise to the occasion ; and the result is a development of the stronger virtues.

Educated and cultured men in India are beginning to see the need for more intelligent companions in their wives, and the necessity for a cultivated society in which men and women can move with freedom and ease, conversing freely, exchanging thoughts and ideas and thus making life interesting and instructive. "Men will always be what women make them ;" if, therefore, you would have men great and virtuous, impress upon the minds of women what greatness and virtue are. This can only be done by giving women the right sort of education and moral instruction, not merely from text-books but through the example of their teachers, whose every action should be consistent with what they profess to teach, for Indian children, with their precocious intellects, are very quick to observe any little breach of the moral code. It has been said : "Don't preach too much to your pupils or abound in good talk in the abstract. Lie in wait rather for the pratical opportunities, be prompt to seize those as they pass, and thus at one operation get your pupils to think, to feel, and to do. The strokes of behaviour are what give the new set to the character and work good habits into its organic tissues. Preaching and talking too soon become an ineffectual bore."

With these introductory remarks I would beg leave to tell you something about female education in Baroda, and the efforts that are being made by His Highness the Maharaja and his officers responsible for the training of teachers, to train up moral, enthusiastic, and devoted teachers.

It is one of the hopeful signs of the times that the numbers in our elementary schools are steadily increasing, and there is a greater demand for an English education for girls in most of the Presidencies of India; but the Province of Gujerat, whence I hail, is rather conservative in that respect. Here most parents are not anxious to educate their girls, and those who are, or rather seem to be so, have an idea that the schools and teachers should adapt themselves to their whims and fancies. They send their children just when they please to school, often with requests, and sometimes with peremptory orders, that "only such and such subjects shall be taught, such and such be eliminated from the curriculum," &c., &c. Singing and calisthenics are objected to by the orthodox. The least disregard paid to their demands often ends in children being withdrawn from school. We often have to meet them half-way just to give the children a taste for learning, and sometimes they take to it very kindly and remain in school a few years longer. No one can realise the difficulties of the situation, and how hard it makes work for those responsible for the education of women, when people are, so opposed to teaching their girls. But tact and sympathy are very powerful weapons, and by means of them we have been able, even under these trying conditions, to accomplish something. The fact that the total number of girls and young women attending the F. T. College, the High School, and Practising Schools attached to the Training College, is now over 700, whereas when I took

charge of my duties in 1901 there were scarcely 300 in the schools, will be sufficient proof of the progress we are making. As far as elementary education is concerned, we in the Baroda State have brighter prospects, for compulsory primary education has been extended to all parts of the State by a law of 1906. His Highness the Maharaja himself, a ruler of the highest culture, is anxious to extend the benefits of education to all classes alike, that every home may be happier and brighter, and that the wife and mother may take up her rightful duties and be a wise and experienced guide to her children, and know and understand the responsibilites of citizenship.

To those who do not know Baroda and its ruler it may appear that I am drawing too bright a picture of the work that is being done in the State. Let me assure you this is far from being the case. I can only point to the visible effects of a few reforms His Highness has initiated; but none but those who have had the privilege of serving under him can appreciate the unwearying toil, the lofty courage, the unswerving justice, the noble patience which is content to sow the good seed in silence, indifferent alike to praise or blame, which have earned for his Highness the Gaekwar the title of a model ruler.

Six hundred new schools have been opened, and the total number of pupils attending the vernacular schools showed a phenomenal increase of 55 per cent. Out of the six hundred new schools I should say (I am sorry I have not the exact statistics) 200 must be girls' schools. At so early a stage one cannot expect any but statistical evidence of what has been the result of the innovation, but the signs are all hopeful, and the number of students who have qualified in the different standards is, I understand, much higher than in previous years. I myself have been away from the field of work for nearly a year owing to ill-health and have not been able yet to visit all the girls' schools and speak from personal experience.

My services were lent to the Baroda State by the British Government in 1901. It is now seven years since I took charge of my duties as Lady Superintendent of the Female Training College and Inspectress of Girls' schools throughout the State.

Including the compulsory schools (I should roughly say) there are in the State over 350 girls' schools—Mahomedan, Marathi, Gujerati and a High School for girls which prepares them for the Matriculation Examination of the Bombay University.

The work I am engaged in is of absorbing interest. It is one, however, calling for the display of much sympathy, judgment and tact in dealing with the religious prejudices of the people. This is a rock that has made shipwreck of many a noble scheme already, and the problem that faces us is to maintain the march of progress while giving in to local prejudice on unimportant matters.

I soon saw that with all my enthusiasm and devotion for the work I should achieve nothing without a competent staff of educated women, trained as teachers, for in these schools there is work to be done which they alone can do adequately.

We have a Women's Training College in Baroda as well as a Training College for men, where we train teachers for our Primary schools.

The Women's College is attended chiefly by young widows and the wives of schoolmasters, or of the men who are being trained in the Men's Training College, and who are generally poor and in need. When the husband and wife pass out, fully qualified, they are sent to the same place—the man to a boys' and the woman to a girls school.

The standard of instruction in the Female Training College, as we call it, was, till recently, not high, nor was it up to date. We felt, however, that the time had come for altering this state of things, and attracting to the College larger numbers of more intelligent girls and women, and from the better classes, if possible. To effect this I was asked by His Highness to submit a scheme. I felt the object we aimed at could only be attained by completely reorganising the staff, the curriculum, and the system of scholarships. Every student is paid to learn, and the payment varies with the standard in which she is. This scholarship, as we call it, enables her to live comfortably away from home. She on her part has to sign an agreement to serve the State for a number of years, and if for any reason she is unable to keep her share of the contract she has to refund a portion of the money she has received in scholarships. Such cases of broken contracts are very rare.

My new scheme entailed an increased expenditure of some thousands of rupees annually; but His Highness, with his usual generosity and desire to do all he can for female education, sanctioned the scheme. And now we have a staff of well-trained, devoted and enthusiastic workers to help in this great and important work of training teachers who are to exercise so much influence on the minds of the young, and help to form their character and make them good citizens.

The training course has been extended from three to five years, and the greater expenditure of money thus entailed has been more than compensated for by increased efficiency. This extended period will enable us to turn out more efficient teachers. The girls and women who enter the College know very little indeed, and cannot do much in three years. A longer period of instruction and training was a necessity. It was the first step towards any real progress.

All the work of the College is in the Vernaculars.

An attempt at training in Kindergarten had previously been made. A few isolated games and occupations were taught haphazard and styled Kindergarten. I set to work and introduced a systematic training in Kindergarten to suit our wants and needs. The training and the teaching had to be done side by side, and very strenuous work it was. But I found apt pupils, who entered into it with zeal and enthusiasm, and are now doing excellent work. I cannot help feeling proud of them. Pardon this little human weakness of self-eulogy!

The little children, too, take a delight in coming to school, and, instead of the howling and crying so usual in the past, you now hear shouts and laughter. It does one's heart good to go into a class and see the happy, bright and intelligent faces of the children, thoroughly enjoying and interested in their work. I do not mean to say this is so in every school, but I do hope we shall, in another five or six years, be able to say it of every school in the Baroda State.

The Female Training College code includes higher literature, child nature, natural science (or nature lessons), theory and practice of teaching, criticism lessons, domestic economy (theoretical and practical) Kindergarten fancy work of all kinds, cutting out garments, and plain sewing.

The demand for trained women-teachers is very great, but it will be a little time before we can adequately meet it. His Higness has recently sanctioned a much higher scale of pay, and all who get a certain percentage of marks in the final examinations are entitled to it. There is thus a direct incentive to do well, and it is already having the desired effect. The number of admissions into the Training College, Practising Schools, and the High School has increased to such an extent that we are obliged to make extensive additions to the already very large building in which these schools are accommodated.

If ever any of you have the good fortune to visit India, and Baroda in particular, I would ask you to make it a point of visiting the Women's Training College, and if I am still there, I shall be delighted not only to show you round the College, but all the girls' schools in the city. It will give you some idea of what the Ruler of Baroda is doing to ameliorate the condition of his people. He realises that until the women are educated, all reform is bound to be one-sided and difficult to accomplish.

Our Maharaja has sanctioned another very large sum for erecting a Boarding Establishment, which is badly needed. Girls come in from all

parts of the State, and often are obliged to stay in damp, dark, and badly-ventilated rooms, in crowded parts of the town, amongst unhealthy surroundings. The object of this Boarding Establishment is to provide for these girls and widows healthy accommodation amid æsthetic surroundings, and to give them a higher ideal of life. Also the discipline and training in neat and tidy habits to which they must submit, cannot fail to influence them in after-life.

Not only is the Female Training College, with its Practising School and High School, directly under me, but I am more or less responsible for all the girls' schools and the Zenana classes.

These Zenana classes are entirely managed by women teachers, and are for young or elderly women whose circumstances will not permit them to attend school, and who yet are anxious from one motive or another to learn something. The working hours are from two to five in the afternoon, when women have most leisure. Only useful subjects are taught, such as literature, practical arithmetic, a little history, fancy and plain work, and cutting out garments. This is all they care to do at present, for they look at education more from a utilitarian point of view.

Every woman who passes, in whatever standard she be, gets a prize. These prizes are higher in value than those given in the girls' schools. To many a woman a prize is a great attraction, and often tempts her to join one of these classes.

Then, again, women who pass in the higher standards, and who are anxious to do something for themselves, are often appointed Assistant Teachers in village schools or compulsory schools: and they get enough to keep themselves.

A Library for women has also been started to create among them a love for reading in their leisure hours, instead of wasting time in idle gossip, or indulging in scandalous talk about their neighbours. This, we hope, will give them an opportunity to train and cultivate their minds by some little study of history, biography, natural science and poetry.

The Library was started a month or two before I left, and therefore I am not in a position to say much about it; but I have every reason to hope the women are making good use of it, and profiting considerably by it.

When I am touring in the capacity of Inspector, I make a point of visiting all the schools in the big towns. My reason for doing so is to make these schools fit models for imitation and guidance to the smaller schools. It gives me an opportunity year by year to see what progress has been made, and how far suggestions have been carried out.

After I have finished my work of examining schools, I remain in the same town two or three days longer, if the rules permit, and get together all the teachers from the different schools, male and female, and give them hints and suggestions on teaching, and demonstrate what I say by giving model lessons. This appeals to them more than lengthy, learned discourses on the methods and theory of teaching, which they cannot grasp, and of which they are likely to form wrong conceptions; besides, it is easier and less of an effort for the class of teachers we have to deal with, to copy and put into practice what they see than what they hear. Of course, to do this means real, hard work; but then, it is our duty. I always try to realise and impress upon our teachers that if we would grow in usefulness, we must be ever watchful that we fail in no duty or trial.

I, personally, am more than repaid when I see the gratitude of some of the teachers, and their earnest desire to take advantage of these opportunities and benefit by them.

They tell me that the tendency in most Examiners is to find fault and criticise their work unfavourably, without ever perceiving any redeeming point; but "No one will show us how to remedy the faults," they say. The natural result is that until they know how to avoid the mistakes they will repeat them.

The Baroda State is not a compact State, but consists of scattered tracks all over the province of Gujerat, including Kathiawar.

District life for any one, and for a woman in particular, has many disadvantages, but it has

also its compensations. You get opportunities of visiting and seeing places full of historic memories and natural beauties. You come in contact with and have the chance of knowing and understanding people from different parts of the State. You learn something about them, their life and their habits, as you could never do sitting in a big town and picking up your information through the medium of others To those who are content to put up with some measure of discomfort, who are able to appreciate the quiet beauty of the country, and can find something of interest in the simple lives of the village folk there is a charm in this itinerant life which they would be loth to miss.

The Government buildings in which the schools are accommodated are generally very imposing, roomy, well-built, and well-ventilated. Wherever stone is available, they are built of stone but generally of red brick—a very pleasing contrast to their surroundings. Many of these schools are well fitted with appliances and apparatus, and in some the wooden furniture is of the very best. You will see that the Baroda Government are doing their best to make education for women popular. All that money, thought, and foresight can do is being done; if all that is being done does not raise and improve the condition of women it will not be the Ruler's fault.

I am sorry to be obliged to conclude with an apology; but I am an invalid (though I may not strike you as being one), and have to be careful not to overdo anything. I have not told you all I wished to, nor have I done it in the way I wanted to. I have touched only the fringe of this great and all-important problem—Female Education in India. I have given you only a passing and, I fear, totally inadequate glimpses of the great drama that is being acted on the stage of woman's life in India. The way is long and the goal far distant. We know that we must face opposition, and sometimes failure; but a faint heart never won a great battle, and as has so well been said, we should crown each milestone we pass with roses instead of wetting it with tears.

To the earnest worker, those beautiful lines of the poet Clough have often brought comfort and peace and renewed strength:—

Say not, the struggle nought availeth
The labour and the wounds are vain,
The enemy faints not, nor faileth,
And as things have been they remain.
If hopes were dupes, fears may be liars;
It may be in you smoke concealed,
Your comrades chase e'en now the fliers,
And, but for you, possess the field.
For while the tired waves vainly breaking,
Seem here no painful inch to gain,
Far back, through creeks and inlets making,
Comes silent flooding in the main.

For all my shortcomings this evening I must plead my ill-health as an excuse, and trust you will grant me your indulgence.

In the course of her answers to questions addressed to her after the lecture, Miss Bhore gave an interesting account of the very practical manner in which examinations in cookery are conducted in the girls' schools. The shopkeepers of the neighbourhood are invited to set up stalls, and display their wares in the school compound. The judges, who are recognised experts in the art of cookery then give instructions to each scholar as to the particular dish she is required to make. She receives money and is told to expend it as she thinks best in the purchase of ingredients; she then makes a tour of the tempting stalls and returns with her purchases, which, with their cost, must be submitted to the judges. Then begins the real business of preparing and cooking the required dish; each scholar must do everything herself and present the finished dish for the inspection of the judges. The cookery lessons are very popular both with the children and their parents, who are eager for their daughters to learn to make new dishes. This is the practical side of cooking and domestic economy, but the theoretical side is not neglected. Hygiene is taught, and also First Aid to the Injured.

Education is free and compulsory for girls and boys between the ages of seven and twelve; teach-

ing in the elementary schools reaches to about the Fourth or Fifth Standard of English schools, and for girls, includes reading, writing, arithmetic, nature lessons, plain and fancy needlework All instruction is in the vernaculars; English has only been added comparatively recently. The State schools are all managed from the Central Offices; there are no local committees of ladies.

There is, said Miss Bhore, great difficulty in finding efficient teachers, as a strong prejudice exists amongst women against teaching as a profession. Many inducements, however, are held out; women are paid higher salaries than men in many cases. By sending their daughters to be educated side by side with other scholars in the State schools, the noble and aristocratic families give practical demonstration of their appreciation of the value of education for every woman in the State.

Mrs. Crieghton, in her thanks to Miss Bhore for her kindness in lecturing to the Women's Indian Study Association, at a time when her health was not good, ably expressed the warm interest of all present in the practical steps that are taken in Baroda by His Highness and his officers for the advancement of education among girls and women, and wished the movement increasing success.—The *Indian Magazine and Review.*

DR. SELBY'S RETIREMENT.

Mr. Justice Chandavarkar's speech at the entertainment given recently by the Graduates' Association, Bombay, to Dr. Selby and his reply.

The Hon. Mr. Justice Chandavarkar addressed the meeting in the absence, through indisposition of the Association's President, Sir Pherozeshah Mehta. Justice Chandavarkar said he was quite sure that if the President of the Association had been present there that evening they would have listened to words most appropriate to the occasion. The services which Dr. Selby had rendered to the cause of this Presidency were manifold. Those services had earned for him everlasting gratitude, not only of the people of this Presidency but of the people of India. (Cheers). The Hon. Sir Pherozeshah had commissioned him (the speaker) to take his place on that occasion. Mr. Chandavarkar said that he was afraid that the words coming from him would not be quite so graceful and fitting to the occasion as would have been the case had they the pleasure to listen to Sir Pherozeshah. They were all familiar with the life and work of Dr. Selby in India. Expression had been given more than once regarding the history of Dr Selby's career in the Educational Department. He therefore did not dilate upon the services which Dr. Selby had rendered to India for thirty-two years. Those services were most strenuous, full of anxieties, worries and responsibilities, rendered in India. And yet after thirty-two years' hard work what did they see in Dr. Selby? They found in his life and work a noble illustration to follow. After thirty-two years' laborious work Dr. Selby, on the eve of his retirement, was the very picture of health, strength and happiness. (Cheers.) The climate of India often came in for abuse. This country had been now and again described as the land of regrets. Some years ago in the course of a conversation, Dr. Selby remarked to him that he could not understand why people cursed the climate of India as being unfitted for hard work. He regretted it the more when his Indian friends complained bitterly of the Indian climate. The climate of India was not so black as it was painted by some. Dr. Selby had taught them that if a man was true to himself and true to mother nature, his health and strength were bound to be as vigorous as those of any healthy sound young man. (Hear, hear). This was what they learnt from the career of Dr. Selby, who lived a methodical life and did not allow himself to be worried about the difficulties and the disappointments of life. Dr. Selby had been once described to the speaker by his friend who was rather hypercritical, as having many good qualities of head and heart but possessing one defect. That defect was obstinacy. But the speaker

considered that it was not a defect of character. It was more a merit than a defect. When once Dr. Selby had made up his mind on a subject, there was nothing to deter him from his purpose and principle. That was the dominant characteristic of the late Mr. Justice Ranade and Mr. Telang. Obstinacy in Dr. Selby was his strict resolve to adhere to principles. He is a man of convictions. He need not tell Dr. Selby that theirs was the genuine expression of attachment, which proved that it was not true to say that East was East and West was West, and that the Indians could not understand the English and the English could not understand the Indians. (Hear, hear and cheers). Dr. Selby had never catered for popularity. He was a credit to the College of which he was the head, he was a credit to the University and on his return he would be a credit to his country which had sent him out here thirty-two years ago. Addressing Dr. Selby, the speaker said that now he was going away from amongst them. It caused them a pang to say good-bye to him. His friends and his students would certainly miss him very much. Wherever he would go he would carry with him the everlasting gratitude of the Indians for his conscientious services in the cause of their education and enlightenment. They would always regard him as their own. Though he was going away he was leaving behind him an example of strenuous toil, honesty of purpose and adherence to duty. Referring to Mrs. Selby, Mr. Chandavarkar said that she had been known to take motherly care of poor students. In conclusion, he wished Dr. and Mrs. Selby long life and prosperity.

DR. SELBY'S REPLY.

The Hon'ble Dr. F. G. Selby, in reply, said that the many friends he had made in this country during the 32 years that he was here had made it difficult for him to say good-bye now. Most of those who were present that evening know him for a long time in this country which he and his wife had always felt as their home. Wherever he would go in future he would see nothing and meet nobody with greater pleasure and regard than those associated with him in this country. With regard to the University he said he could not fully thank them; the University had given him a degree which was the highest and the most welcome honour in this country. He also thanked the other public bodies for the kindness in making his path pleasant. With Bombay he came in contact very late in life, and when he became the Vice-Chancellor he came in contact with men as old as himself, some older than himself, many whom he knew, many whom he did not know, but they all helped him in doing his work and treated him with kindness though he had no claim upon them. He was treated with particular kindness by men like Sir Pherozeshah Mehta and Mr. Justice Chandavarkar, and therefore if his work was creditable the real credit of the work lay with those who helped him in achieving it. For the last two or three years he had been engaged in the work of reforms in connection with the Deccan College, which institution he would always regard with supreme affection during the rest of his life. He saw among his pupils sons of those who were his pupils some years ago and had an experience which did not come to many in this country. Recently he had an occasion to travel about in Ahmedabad and other places, where he met those who were his pupils 25 years ago and their regard and kindness were so great as if their connections with him had been never interrupted. One did not feel and realise the sense of responsibility until he had been the head of a college. When he came here first he was only a professor and as such his connection with the pupils was of an ordinary kind and his duties were light. But as soon as he became the head of the college he began to realise and feel the responsibility of his office. He well understood how much trust the parents put in the head of the college to whose charge their sons were assigned and he was in

duty bound to look after their interests, their welfare and their happiness. He had nothing more to express but the feeling of gratitude and he regarded nothing more pleasing than the appreciation of what he had done or tried to do. His healthful appearance to which Mr. Chandavarkar referred was, Dr. Selby, said due to his regular habits and clockwork methods. He had, in connection with his duty, a certain amount of work to do and he could not go through that work if he had not observed these regular habits. If those gentlemen, who looked older than they really were, had only adopted regular methods they would not have looked as they did and Dr. Selby advised his pupils and other young gentlemen who desired to preserve a healthful appearance to acquire regular habits. He knew many students and business men broke down in this country, but that was not owing to the climate. It was due to their own irregular habits. With regard to the work Dr. Selby had to do in this country he remarked that he was happy with it, and was more than satisfied with the appreciation of it. He owed his success to the help and co-operation of his friends. If he could pass such a long period in this country happily it was through the kindly help of his friends. The experience of his wife was the same; she thanked those ladies who came in contact with and helped her during the time that she had been in this country. Mr. Chandavarkar had spoken about his life in India and he wished to say more about Mr. Chandavarkar. He wished to say what great admiration he had about his abilities and knowledge. He had been appointed Vice-Chancellor of their University and he was sure they had an ideal before them as high as they would desire. In conclusion he wished them good-bye and once more thanked them sincerely for their kindness.

Dr. and Mrs. Selby were garlanded, and the meeting broke up after three cheers for the guests of the evening.

UNIVERSITY TRAINING.

BISHOP OF BOMBAY'S LECTURE.

The Right Reverend Edwin James Palmer, D.D., Bishop of Bombay, delivered recently a lecture on "University Education in England" in the Municipal Hall, Hubli. The lecture was attended by a large number of Europeans and Indians. Mr. H. V. Chinmulgund, Joint Sub-Judge, was voted to the chair.

The Bishop in the course of his lecture first gave his hearers an idea of the number of colleges, students, and teachers in Oxford and Cambridge. In Oxford there were about 200 teachers for about 2,500 students, or one teacher for about 13 students. That was the reason he said, why in England a teacher could so satisfactorily look to the education of his students. In England, a student generally began his University education at the age of nineteen and finished it at the age of twenty-three. The lecturer then described the routine of a student's daily life. He explained what a characteristic part the various clubs at Oxford debating, literary, political and recreational—played in the life of a University student as every student belonged to one or more of those clubs. He then proceeded to give an idea of the aim of education as given at Oxford and Cambridge. It was, as the great Greek Philosopher Plato said, to help the growth of the entire man—the growth of his body, mind and spirit or soul.

The lecturer described the wholesome effect of out-door games on the students,—not only in making their physique healthy and strong, but also in greatly influencing their character. Games serve to give the students the best lessons in unselfishness and obedience to superior. The lecturer said that he was not at all sorry that much attention was given by Englishmen to sports, let people of other nations say what they might Then with regard to the education of the mind—the great aim of University education in England was not to stuff the minds of the students with mere facts and figures, but to draw out and develop their abilities. Aristotle said that the wise man was he who knew what were the right questions and also knew when he had received the right answers. University education in England made the students wise in that sense. The ideal of their studies was that they should know something of everything and everything of something. Then with regard to the education of the spirit, each college has a chapel attached to it where Divine worship is performed; and every student was required to read some religious book. Students of other religions than Christianity were not however compelled to attend the chapels.

There was also another aspect of education, the indirect education derived from the influence of the teachers, environments of which to a great degree moulded the character of the student. The lecturer spoke of the potent influence which his teacher exercised on him while he was himself a student. One of the chief characteristics of an English teacher was his entire sincerity; he had no make-believe about him. The lecturer then proceeded to say that in his day, Indian students in English Universities mixed very freely and sympathetically with English students. But within the last three or four years there had been a deplorable tendency on the part of the Indian students to eschew the English students and stick to their own countrymen. The Bishop in every emphatic terms comdemned this new tendency. Indians, he said, should go to England, not to confine themselves to their own people but to broaden their minds and the new baneful tendency only threw away that opportunity.

The President before thanking Dr. Palmer for his lecture compared the University education of India with that of England and showed what were the defects. He hoped that Dr. Palmer, being an ex-officio member of the Senate of the Bombay University, would try to remove as far as possible the defects found in its curriculum. He was glad that Government were also contemplating the introduction of some very momentous changes in the system. In conclusion he hoped that there would be many occasions when broad-minded Englishmen, of the stamp of Dr. Palmer, would mingle freely with educated Indians, that there might be a better understanding between them and that one community might learn many things from the other.

His Lordship in reply said he would be very glad to meet Indians on a common ground and that he would do all in his power to bring about whatever reform was found necessary in the system of Indian education to make Indians good citizens.

OUR ENGLISH LETTER.

LIVERPOOL, *December* 1908.

The past month has not been without its sensations. We have again marvelled at the German Emperor whose outspokenness bewilders us more than the most cryptic of others' utterances, and we have been startled by the assertions of Lord Roberts that we are totally unprepared to ward off a German invasion. In domestic politics we have had the Licensing Bill debacle and the new Educational Bill. The brewers are prepared to fly to other ills they know not of (expecting to be enlightened about Budget-time) rather than bear the ills at present proposed: and in education Anglicans and Non-conformists are disposed to make mutual sacrifices and initiate a new system, rather than perpetuate the present discord. Unfortunately we are once again forced to write at a time when things are still hanging in the balance. Last month it was a question whether the Bill would be introduced, it is now doubtful whether it will be carried through.

Two men deserve all praise:—Mr. Runciman and the Archbishop. Mr. Runciman has been acting in a dual capacity being himself both arbitrator and one of the contracting parties as a prominent and devoted Non-conformist. Thus

the negotiations have largely been taking place between him and the Archbishop, and it is no fault of either if the proposed compromise is not effected. Many are now feeling that the Archbishop has been misjudged. His reputation has been that of a courtier and a speaker of smooth words rather than an ecclesiast or a statesman. It would seem that he has suffered like most men of moderate views. Seeking a middle course, and prepared to meet his opponents, he has not been highly enough esteemed by either friend or foe. But upon both these questions—Licensing and Education—he has shown himself able and willing to take a firm stand. He is willing to face the wrath of the brewers withholding their contributions from Church funds as a protest against his protest, and of the Anglican extremists to whom simple Bible-teaching is a "corrosive poison." All honour to him. If his defence could not secure the Licensing Bill, we hope success will attend his efforts on behalf of the Education compromise.

The proposals of the Bill have in the main taken the shape we suggested a month ago. We do not of course reply that we are the authors of the compromise, but that we divined its nature. No denominational schools in single-school areas: right of entry to council schools: facilities for contracting out—these are the main points of the Bill. Their fairness may be assumed from the fact that they do not satisfy either party: it is a compromise such as the Englishman takes a peculiar pleasure in and the Scot abominates. Lord Halifax and Mr. Hirst Hollowell are loud in their protests. The Anglicans are "betraying their trust," and the Non-conformists are "sacrificing their principles." The battle cry has rung out, but the hosts are not rallying for the fray. Many distinguished prelates have joined the Educational Settlement Committee (an influential committee called into existence a week ago), and most of the militant Non-conformists, like Dr. Clifford and Mr. Silvester-Home, are showing a commendable desire for peace. The Roman Catholics are united in their opposition. They object to being forced out of a national system by having to 'contract-out,' but no really national system in which they could be included within anyone's powers to conceive, much less to devise and work out.

The third clause of the Bill was to have been discussed yesterday, but it has been postponed till to-day, pending further negotiations. We shall probably learn in the course of a few hours whether the Bill is likely to be carried or no. What are the dangers? Largely a matter of finance. Are the proposed grants to schools contracting-out adequate for the purpose? Mr. Runciman has authorised an increase from 35 to 50 per child. At least an additional 7 is asked for. The Cabinet, and still less the Liberal party, are not inclined to grant it. It would seem to an impartial observer that a danger on each side has to be avoided. Enough money has to be provided to make 'contracting' out possible, but not enough to make it the general rule instead of the exception. Too much would be as detrimental as too little: the latter would endanger the denominational settlement, the former would endanger a national settlement. The desideratum is a national system which is not so cast-iron as to admit of no exceptions. We hope a middle course may be found on this matter. This is undoubtedly the question which was being settled yesterday in private conference.

The other danger is Mr. Balfour. We yield to no one in our admiration for the ex-Premier. He is a giant among the intellectuals not that we would include all Members of Parliament in that category. But we cannot recognize in him a friend of this Bill, and his opposition is none the less effective for being somewhat veiled. When Mr. Asquith bluntly pointed out that there were some who were anxious for a settlement and others who were not, Mr. Balfour rose to make an angry protest against "needless offensiveness;" he protested

overmuch in fact: he would not have cried out, if he had not been hit. And we can understand Mr. Balfour's hostility. This Bill is intended to overthrow the Act of 1902. That Act was mainly the work of Mr. Balfour, who carried it through with great determination and skill. No man welcomes the overthrow of his own work. Mr. Balfour certainly does not. We do not think we are overestimating his influence upon his followers, outside and inside the House of Lords, in marking him down as the chief danger the Bill has to fear.

Ought the Bill to become law?' We think the existence of the Settlement Committee is strong evidence in the affirmative. We quote from a letter sent to the Press by its Secretaries: "A committee has been formed to support the Government, the Archbishop of Canterbury, many Non-conformist leaders, and others in their efforts to secure an educational peace. The committee is endeavouring to focus the large mass of opinion both among churchmen and Nonconformists favourable to a settlement of the religious controversy which is harassing the country, impeding administration, and injuring the efficiency of the schools. The committee includes men and women of all political parties and of the various religious bodies. It will work on non-party basis. The members do not necessarily regard the proposals for settlement as in every way a satisfactory solution of the problem, but rather than prolong a controversy hurtful to the religious life and educational interests of the nation they are prepared to acquiesce in general support of the proposals of the Government. They realize that to secure a friendly settlement all parties must make great sacrifices for the common good. Those who have joined the committee signify thereby their willingness to assent to the general lines of settlement proposed by the Education Bill, but must not be held to have committed themselves to all its details or to an acceptance of the financial proposals of the Bill in their present form."

A representative list of signatories follows: among others it includes the Bishops of London, Winchester, and Southwark: the Dean of Westminster; the Revs. J. H. Joweth, J. H. Moulton, and Silvester-Home; the Master of Trinity, Professors Somday and Inge; the Lord Mayor of London and the Chairman of the London County Council; the Heads of Oxford House and Cambridge House; Mr. Arthur Benson and the Editor of the 'Spectator.' The list is surely representative and influential enough. And most save men will hope that this Religious Controversies Bill will pass, and then let us to Education! Enough of jangling, let us get to business. This Bill would at least mean a truce, it might mean peace.

The Education Bill has quite dwarfed other topics during the last fortnight. But in Liverpool a minor question affecting the older Universities has provoked considerable discussion. A Liverpool merchant has refused to pay a bill incurred by his son at an Oxford hotel, and his refusal was borne out by the court. The bill was one for somewhat extravagant dinners, not ungraced by wine. But the undergraduate was an 'infant,' and so payment could not be enforced. The Varsity man does not as a rule care to put forward his infancy as a plea: we wonder what were the feelings of the undergraduate in question, and what were the comments of his friends. There is something Gilbertian in the idea of entertaining one's friends to several sumptuous repasts at the expense, if not at the invitation, of the proprietor of the Clarendon. The outcome in Liverpool is, of course, viewed as another 'exposure' of the older Universities. They are not held in high favour in commercial circles. But a very promising movement is just on foot, largely the result of splendid spadework by Mr. Sidney Ball for years past, to bring Oxford nearer to the working classes and them to Oxford. We shall report progress later. Oxford is moribund; long live Oxford!

Reviews and Notices.

THE OXFORD STUDENTS' HISTORY OF INDIA: BY VINCENT A. SMITH, M.A., I.C.S., RETIRED AUTHOR OF "THE EARLY HISTORY OF INDIA." CLARENDON PRESS: OXFORD. 2*s.* 6*d.*

As the author himself expresses in his preface this little book is intended primarily to meet the wants of students preparing for the Matriculation Examination of the Calcutta University according to the latest syllabus. The author is a standard authority on the subject and his chronology, as Mr. E. W. Thompson points out in his History of India, is the only complete system before the general public. Almost all the topics mentioned in the syllabus are dealt with and the syllabus itself is reprinted as Appendix B for reference. Several illustrations and coloured maps have been introduced. The chronological tables at the ends of different periods are very useful. We heartily recommend the book as a standard adequate text-book for Indian students.

"KAPALEE" POCKET DIARY FOR 1909 WITH PENCIL AND RIBBON. SIZE $6\frac{1}{2}'' \times 4''$. As. 6.

This is the first of its kind published by Messrs. Murthy & Co., Printers and Publishers, Madras. The diary is well got up and is very useful as containing a variety of information. It has one full page for a day and the price is cheap compared to other diaries published in Madras, taking the size, get-up and other things into consideration.

We acknowledge with thanks the receipt of *Schoolmasters' Year-book for 1908* and *Public Schools Year-book for 1908* from Messrs. Sonnenschein & Co., and the *Handy Atlas and World Gazetteer* from Messrs. Ward, Lock & Co. We heartily recommend both of them to teachers.

Indian Educational Notes.

MADRAS.

Mr. A. Subramanya Aiyer, B.A., L.T., Lecturer, Rajahmundry College, is to be Professor of Logic and Moral Philosophy, Presidency College, *vice* Rao Bahadur S. Mangesh Row retired.

Mr. T. V. Sivakumara Sastri, B.A., L.T., Assistant Lecturer, Kumbakonam College, is to be Lecturer, Rajahmundry College, *vice* Mr. Subramanya Aiyar.

The above appointments to take effect from 18th January 1909, the date of re-opening of the Presidency and Rajahmundry Colleges after the Christmas vacation.

Mr. T. V. Sivakumara Sastri, B.A., L.T., is to be Member of the Provincial Educational Service in the 9th grade.

The following transfers have been ordered :—

Mr. K. Ramunni Menon, B.A., from the 3rd to the 2nd grade.

Mr. A. C. Pranatartihara Aiyer, B.A., from the 4th to the 3rd grade.

Mr. J. W. Coombes, B.A., L.T., from the 5th to 4th grade.

Mr. A. S. Vaidyanatha Aiyar, B.A., from the 5th to the 4th grade.

Mr. M. Kameswara Rao, B.A., from the 6th to the 5th grade.

Mr. K. P. Guruswami Aiyer, B.A., from the 6th to the 5th grade.

Mr. T. J. Venkatachala Aiyer, B.A., from the 7th to the 6th grade.

Mr. D. A. Hobday, B.A., from the 7th to the 6th grade.

Mr. K. R. Doraiswami Aiyar, B.A., from the 8th to the 7th grade.

Mr. H. A. Hart, M.A., L.T., from the 8th to the 7th grade.

Mr. T. Janakirama Aiyar, B.A., from the 9th to the 8th grade.

Mr. A. Subrahmanya Aiyar, B.A., L.T., from the 9th to the 8th grade.

The promotion of officers Nos. (4), (6), (8), (10) and (12) will have effect from 4th January 1909, the date of retirement of Mr. M. Singaravelu Mudaliyar and that of the others from 1st January 1909, the date of retirement of Mr. Rao Bahadur S. Mangesh Rao.

Mr. H. W. Callaghan, B.A., L.T., Headmaster, Central High School, Mercara, is to be Assistant Inspector of Schools, South Arcot-Trichinopoly division, *vice* Mr. M. Singaravelu Mudaliyar who has been permitted *to retire*, but to act as Headmaster of the Central High School, Mercara, until further orders.

Mr. Khaja Khan Sahib Bahadur, B.A., Assistant Inspector of Schools, Madura division, is to act as Assistant Inspector of Schools, South Arcot-Trichinopoly division, *vice* Mr. H. W. Callaghan.

MR. M. Ramaswami Aiyangar, B.A., L.T., Third Assistant, Teachers' College, Saidapet, and Acting Assistant Inspector of Schools, Guntur-Nellore division, is to act as Assistant Inspector of Schools, Madura division, *vice* Mr. Khaja Khan Sahib Bahadur.

MR. S. V. Melagiri Rau, Sub-Assistant, is to act as Assistant Inspector of Schools, Guntur-Nellore division, during the employment of Mr. G. V. Subbarayudu Sastri on other duty or until further orders.

MR. M. Ramaswami Aiyangar, B.A., L.T., is to act in the 9th grade of the Provincial Educational Service.

MR. S. V. Melagiri Rau is to act in the 9th grade of the Provincial Educational Service.

THE Director of Public Instruction is pleased to grant Mr. N. N. Sundareswara Aiyar, Sub-Assistant Inspector of Schools, Ariyalur Range, privilege leave for two months, with effect from the date of relief and to appoint Mr. P. Subramania Aiyar, B.A., L.T., Headmaster, Government Training School, Trichinopoly, and Acting Sub-Assistant Inspector of Schools, West Srivaikuntam Range, to act for him in the probationary class during his absence on leave or until further orders.

THE Acting Director is pleased to appoint Mr. S. Balakrishna Aiyar, B.A., L.T., Sub-Assistant Inspector of Schools, Kumbakonam Range, (till lately temporary Assistant, Kumbakonam College), to act as Sub-Assistant Inspector of Schools, Sankaranayinarkoyil Range, in the probationary class, during the absence of Mr. A. Govidarajulu Mudali, B.A., on leave or until further orders. To join expeditiously.

THE Acting Director is pleased to grant Mr. A. Govindaraja Mudali, Sub-Assistant Inspector of Schools, Sankaranayinarkoil range, privilege leave for a month and eleven days from the 16th December 1908.

THE Acting Director is pleased to grant Mr. B. C. Ramaswami Aiyar, Sub-Assistant Inspector of Schools, Tiruppattur range, privilege leave for two months and fifteen days with effect from the 3rd December 1908.

THE unexpired portion, namely, three days of the privilege leave granted to Mr. S. Gantayet, Sub-Assistant Inspector of Schools, Aska Range, is hereby cancelled.

THE Acting Director is pleased to grant Mr. B. Kameswara Rao Pantulu, Sub-Assistant Inspector of Schools, Narasapur range, privilege leave for three months with effect from the date of relief and to appoint, with the approval of the President, Taluk Board, Narasapur, Mr. V. Lakshminarasimham, Supervisor of Primary Schools, Narasapur Sub-range, to act for him in the probationary class during his absence on leave or until further orders.

THE privilege leave granted to Mr. T. Mangesha Rau, B.A., L.T., Sub-Assistant Inspector of Schools, Harpanahalli range, is extended by fifteen days, the leave being on half pay.

MR. R. Tirumurti Rao, B.A., L.T., Acting Sub-Assistant Inspector of Schools, Nellore Range, to act as Sub-Assistant Inspector of Schools, Satyamangalam range, sub. *pro tem.*, in the Probationary class, *vice* Mr. A. Chakravarti, M.A., on other duty or until further orders—to join, as soon as possible, on relief from the Nellore Range.

THE Government are pleased to sanction a grant of Rs. 3,200 or one-third of the actual expenditure, whichever is less, towards the cost of improvement and extension of the hostels for Indian and European students attached to the Young Women's Christian Association, Madras, subject to the following conditions :—

(1) That in carrying out the work the suggestions of the Chief Engineer in his note are adopted;

(2) that the work is completed before the 1st June 1909;

(3) that a certificate of the actual expenditure incurred on the work is submitted before the 1st July 1909;

(4) that the amount expended on the work does not fall short of Rs. 9,600 as actually verified;

(5) that all other conditions prescribed in the Grant-in-Aid Code have been duly complied with; and

(6) that the following special conditions are accepted, namely :—

(*a*) that the rules of the hostels, including regulations regarding rent and boarding charges, should be subject to the approval of the Director of Public Instruction;

(*b*) that students of recognized institutions who ask for admission and are eligible for it should have priority of claim to all other applicants; that after students, the claims of teachers of recognized institutions must be considered;

(*c*) that no student be admitted without the written consent of the principal of the institution in which she is studying; and

(*d*) that there should be hostel committees on which the institutions from which the students mainly come are adequately represented.

2. Subject to the above conditions, the grant will be paid as funds become available.

MR. T. S. Kumarasami Aiyer, Head Master, Cuddalore High School, severed his connection with the institution as he took up appointment elsewhere. Mr. G. Shiva Row, B.A., L.T., Head Master of the Shiyali Mission High School, is appointed Head Master at Cuddalore on Rs. 100. The members of the Committee selected him unanimously as he has secured a first class pass in English in B.A., and holds excellent testimonials. It is to be hoped that the High School will make further progress under the new Head Master.

A Technical School has been opened in the town of Tinnevelly. Agriculture, Commercial Correspondence, Book-keeping, Typewriting are being taught. The school is run by Mr. M. S. Parnalugan Pillai, a successful teacher. The school has attracted a number of students and promises to be a success. A rich Mirasidar has undertaken to finance the concern and is making arrangements to find a local habitation and a name.

THE annual distribution of prizes to the Christ Church Sunday and Day Schools was held recently in the compound of Christ Church, Mount Road. There was a large attendance of visitors. Before commencement of the proceedings, a group photograph was taken of the Incumbent, teachers and pupils. After a hymn and prayer by the Rev. Henry Hacking, M.A., Incumbent of Christ Church, the children entertained the audience with action songs and recitations. The Japanese fan drill by the girls in costume was well executed. The Rev. Mr. Hacking next read a brief report of the schools during the past year. Mr. Hacking was anxious that the youngsters should attend regularly, and thought that parents were largely to blame for the failure of the children at the examinations in the Day School, quite forgetting the fact that the future success in life of the latter was dependent on the interest taken in attending to their studies. He asked the parents to help the teachers in their work by sending the children regularly to school. Mrs. Firth, who presided, afterwards distributed the prizes, two being presented by that lady for the best girl and boy in the whole school. The interesting function terminated with a hymn and benediction by the Rev. Mr. Hacking.

GOVERNMENT has directed that such teaching grants as are actually paid from Provincial funds to aided elementary schools should be paid to the Managers direct by the officers of the Educational Department instead of being paid through the Local Boards and Municipal Councils as at present.

HIS Excellency the Chancellor of the University of Madras approves of the election of the following two persons as Ordinary Fellows of the University who were elected by Registered Graduates at an election held, under section 7 (1) of the Act, at the Senate House on the 19th day of December 1908:—

Mr. V. S. Srinivasan, B.A., L.T., and Mr. P. Lakshminarasu Nayudu Garu, B.A.

His Excellency the Chancellor of the University of Madras approves of the election of the two persons as Ordinary Fellows of the University, who were elected by the Faculty of Engineering at an election held, under section 9 (1) of the Act, at the Senate House on the 19th December, 1908:—

Mr. Cecil A. Smith, M.I.C.E., and Mr. A. B. Strange, M.I.C.E.

THE unexpired portion, namely, seventeen days of the privilege leave granted to Mr. Sat. Kameswara Rao, Sub-Assistant Inspector of Schools, Amalapur range, is hereby cancelled.

COCHIN.

WE hear that the Nettur High School is to be abolished shortly.

IN commemoration of the Sacerdotal Golden Jubilee of His Holiness Pope Pius X and by way of furthering the interests of the Catholic community of South Canara, a few of the leading gentlemen of Mangalore have come forward to organize a fund for annually granting scholarships to deserving students of the Catholic community of South Canara, to enable them to study for some profession like the Law, Medicine, Engineering, Telegraphy, Forestry, Agriculture, &c. The idea having generally met with the approval of all, meetings were held, the scheme discussed, and rules framed, which are now published for general information.

ARRANGEMENTS are being made to open a class for training female teachers in the Victoria Jubilee Girls' School, Trichur.

THE most important chapter in the report on the administration of the Cochin State for the last official year, just issued, seems to us to be that on public instruction, the new educational policy was outlined, the salient features of which are the following:—(a) The constitution of a staff for direction and inspection consisting of (1) a Chief Inspector as the head of the department with control over all educational institutions of the State except the College, and (2) three Deputy Inspectors and the abolition of (i) the posts of the Superintendent of Education and Inspecting School Masters, and (ii) the system of inspecting schools under the direct control of the Dewan by the Special Inspecting officer deputed every year for the purpose, without any definite powers; (b) The revision of the teaching staff of the Ernaculam College involving the abolition of the post of Vice-Principal and the creation of five new Lecturerships to suit the requirements of the new University syllabus of studies; (c) The revision of the

teaching staffsof all Sircar High Schools by the appointment of a trained Head Master and a separate teacher for the VI Form of each school, so as to afford necessary relief to all Head Masters to enable them to spend more time in supervision according to the Educational Rules, and the equipment of the staff with graduates trained in teaching English, Mathematics, Science and History; (d) The restriction of the number of parallel divisions of a Form or two, so as to leave scope for the development of private institutions. The intention of the Sircar according to the reorganisation scheme is said to be the appointment of an expert educationist as Special Officer for three years so as to enable him to gain local experience and then draw up a scheme for the development of education, specially elementary education. The selection of a competent officer is still engaging the attention of the Sircar. The increase of expenditure due to the revision is Rs. 15,100 per annum. In addition to the reorganization, the following proposals were also sanctioned in the review year.—(1) Improvement of the scale of pay of Primary School teachers; (2) The opening of ten new Primary Schools for boys; (3) The opening of six new schools for backward classes; (4) Making the education of girls in all Sircar Primary schools and classes of Secondary schools and the education of backward classes free throughout; (5) The opening of an Industrial school at Trichur; (6) Increased grants-in-aid to aided schools of all classes; (7) Improvement of the Training or Normal School at Trichur, and the institution of scholarships for training female teachers; (8) The equipment of the College and the Sircar High Schools with the necessary science apparatus, etc.; (9) The construction of an Hostel for the Ernaculum College; (10) Improvement of the Sanskrit Patasala at Tripunithurab, and the institution of technical and industrial scholarships and revision of the rules relating to free scholarships in the College and Schools. All these reforms, naturally, gave an impetus to education, conducted by private agencies.

THE high percentage of passes with the large number of honours produced by the Ernakulam College at the recent F. A. Examination is unprecedented. Out of 63 students that appeared from this institution, 44 passed in the second class and 6 in the first class. The percentage of successful students therefore is 79·4. One of the 'honours' students is the 24th Prince of Cochin. We understand that the Principal, Mr. Davies, has received a telegram from an old student stating that Ernakulam stands first in the Presidency. As there are 48 first grade and second grade Colleges in the Presidency, this speaks well indeed for the West Coast in general and Ernakulam in particular. But of course, the results of the Ernakulam College have always been good, though this year's is the best of all. —*Floreat Collegia Ernakulanensis.*

TRAVANCORE.

THE Government of Travancore has been anxious to introduce a manual of training into the State, but Dr. Larson, who gave an exposition of the Lloyd system in Mysore was unable to pay Travancore a prolonged visit. The Travancore Durbar has now secured the services of a European expert, and is awaiting the sanction of the Government of India before appointing him permanently to the Education Department of the State.

BOMBAY.

THE Lieutenant-Governor visited the Ripon College recently. His Honor, accompanied by the college authorities, first inspected the laboratory and watched with interest the experiments in physical and chemical sciences by the students. He also put some questions to the students, and seemed pleased with the answers. His Honor then went to the First Year class and listened for some time to the lecture on logic. Going up to the B. A. class, where Professor Janokinath Bhattacharji was lecturing on Shakespeare's Macbeth, His Honor inquired about the number of students. In the First Year class, His Honor had a few minutes' conversation with Professor Jitendro Lall Banerji, about Ruskin, the subject taught in the class being Ruskin's "Crown of Wild Olive." His Honor then went round the school department, and asked a very small boy in one of the lowest forms to construe a passage in English. The boy acquitted himself creditably. An address of welcome in Sanskrit was presented to His Honor in the courtyard, by Pundit Sitanath Kavyathirtha, Professor of Sanskrit, on behalf of the College Council. The visit lasted over an hour.

WE notice, writes the *Sind Gazette*, that the Government of Bombay have decided not to devote further funds to the enlargement of secondary institutions till the more pressing needs of primary education have been provided for. We have nothing to say against this policy if an effort is to be made under the primary head to fit the children receiving instruction for their own class of life. If the present system, however, is not to be revised it would be preferable not to extend primary instruction for the present. The results have not so far been very satisfactory, and as much over-hauling requires to be done at the lower end of the educational ladder as is proposed by the Governor for the upper part. In Sind specially the starting of new schools rather than making those that already exist more efficient is to be deprecated. In connection with High Schools we cannot forbear to quote the appreciation expressed of the management by Mr. P. Wren of the N. J. High School in Karachi. Mr. Contractor, who succeeded Mr. Wren, says: "I return here after an absence of four years and find a marvellous change in the manners and discipline of the boys. It was a revelation to me that so great and healthy a change in the spirit of the boys could be effected

by the personality of one man in the short space of three years. The atmosphere which surrounds the school boys here is entirely different from what is found in other schools. Here the students possess the right sort of spirit and are the right sort of students." The way in which English is taught in some of the schools appears to be somewhat peculiar and illustrates the difficulty of obtaining efficient teachers. In one school in Gujerat a boy was taught that "watching the swallows" meant "looking at the sparrows." Such instances it may be hoped are rare, but they help to account for some of the extraordinary jargon calling itself English which is used at times by students who are supposed to have received a good education.

POONA, says a contemporary, is about to say good-bye to one who has been known for a great many years in connection with its chief educational establishment. The Hon'ble Dr. F. G. Selby, LL. D., M A., etc., has grown into Poona life by long years of connection with those who are now fighting life's battles outside the circumscribed area of the Deccan College. Whenever he has come on to the public platform his speeches have always been marked as those of the ripe scholar and all that is summed up in the word gentleman. He is a man of large views, and it seems sad that we are about to lose him just now, at a time when he is filling an arduous and responsible post with honour to himself and credit to the Government he serves. His sympathies are wide ones and know neither caste nor creed as distinction. In one of his latest speeches here a short while back he gave some excellent advice to the Mussulman community to extend the teaching of their youth if they would run the race now being set before them.

MR. Jacob Sassoon recently made a donation of Rs. 50,000 to the funds of the Jewish Free School at Byculla, Bombay. Some years ago Mr. Sassoon gave two lakhs to the same institution.

A RECEPTION was held at the Bombay Chamber of Commerce to enable the members to meet Professor Lee Smith of London School of Economics who is delivering a series of lectures on higher commercial education in Bombay. The honorable President in opening the proceedings explained that experiment of bringing the Professor out to stimulate the interest in higher commercial education had been proposed by Government as a step towards the establishment of a school of higher commercial education in Bombay and the proposal had received the support of the Chamber of Commerce. He thought their thanks were due to Government for their experiment and he hoped they would all show their appreciation by assisting Government in any future development which might take place. Professor Lee Smith said that it was necessary that the faculty which was proposed to be established should also give liberal education as was done in most of the Universities and other countries. Chance should be given to students in India of scientifically studying those local and national institutions in which they were going to have a share. Another special point to which he would refer was that they were going to appeal to the wide variety of students and therefore they must have a wide range of optional subjects. He would now give them a rough outline of the curriculum. In the first year the first subject to be learnt would be English, he meant commercial business English. Students must learn to write first class accurate business letters in English. The second subject would be economics including Economic History in which the principles of theories needed to be appealed to Indian conditions in England were not similar to those in India. In short, the students should be taught Indian economics. The third subject would be Economic Geography. The fourth would be Modern History including Indian. The fifth would be the study of political institution in which particular stress would be laid on the working of Local Government which was the subject deliberately taught in England. In the second and third years, the subjects would be (besides all subjects of the first year) accountancy and business methods and Political Theory. The student would be required to learn any two or any three of the following:—(*a*) Foreign language or vernacular; (*b*) Science; (*c*) Another science; (*d*) History and theory of the present organization of banking and currency; (*e*) History of transport; (*f*) History of Insurance; (*g*) History of international trade; (*h*) Structure and organisation for selected industry; (*i*) Theory and practice of statistics; (*j*) Psychology; (*k*) accountancy and business methods; (*l*) Economic principles; (*m*) Economic History; (*n*) Political theory and institutions; and (*o*) Economic Geography. His scheme was still very tentative. He would also like to refer to evening class for those who could not attend ordinary classes during day.

THE Annual Convocation for Conferring Degrees, to be presided over by His Excellency the Chancellor, will be held in the Sir Cowasji Jehangbier Hall of the University on Tuesday, the 16th February 1909, at 5·45 p.m.

The following gentlemen have been nominated as members of the Board of Accounts for the University.

1. K. Subramani Aiyar, Esq., B.A., L.T., F.S A.A.
2. Choonilal D. Saraya, Esq., L.M. & S.
3. Jamshedji A. Dalal, Esq., M.A., LL B.

PRINCIPAL Sharp, M.A., of Elphinstone College, has been appointed as Director of Public Instruction.

CALCUTTA.

THE Government Weaving College at Serampore, Bengal, has been formally opened.

THE students of the Agra College held their usual entertainments during Christmas week. A cricket match, played against a team of Parsees from Bombay, and drawn in favour of the college, and a dramatic performance to mark the eighteenth anniversary of the College Literary Society were the features of the celebration.

THE National Medical College of India (191, Bow Bazaar St., Calcutta), has advanced greatly by opening its own Dissection rooms. The equipment of the College is now complete, the practical classes in Physiology, Pathology, Operative Surgery, in full working order. Boys who have passed their Matriculation or studied up to that class will be admitted to the L.M.S. (Nat.) class. The monthly fee is only Rs. 3. H. H. the Maharaja of Baroda has generously donated Rs. 2,500 for the College and its Hospital for further equipment. Boys are being now enrolled.

THE All-India Mahomedan Educational Conference opened at Amritsar City on the 26th ultimo, when the Hon. Nawab Bahadur Salimulla, of Dacca, delivered his Presidential Address. He inveighed against the prejudice of the "old school" to the study of English, saying that English education, or any sort of education, was not incompatible with Islam. He assured his hearers that they must launch some fresh theories of education to thwart free-thinking in its basest sense. He proposed that the young minds be armed with the precepts of their religion and with the lessons that they derive from the lives of the heroes of their faith, that when they grow old they might be the better able to fight their way through their battle of life. It should be their duty to keep their childish brains free from the blights of evil and pernicious ideas so that when they attain the age of reason, the seeds of education sown in their youthful minds might blossom into fruitful results undisturbed by the storms of irreligious thought born of doubt and darkness.

After alluding to the establishment of the proposed Moslem University in Calcutta, he concluded as follows:—

Gentlemen, I wish to draw your attention to the proposal for making out a census of educated Mussulmans. This was first of all started under peculiar difficulties by the late Mr. Theodore Beck, our late popular Principal of the Aligarh College. The Moslem population in India is not inconsiderable and by comparing reports with the educational advancement of other communities we find that the rate of progress is in all the provinces of India—except the United Provinces of Agra and Oudh—as slow as that of a snail. It is essential for the elders of our community to direct their attention towards this problem to find out the reasons for our thus lagging behind the other communities. From what I know of this I can confidently assert that poverty is not the only cause, though I doubt not it is one of the reasons for it. The greatest cause of all is the neglect and the idleness of our co-religionists, and this is found in all its intensity among the upper ten of our community. If these people devoted themselves to giving a liberal education to their children they would be very successful, assisted as they would be by the resources which their wealth can command. They should be more especially educated as without it they would be nothing better than encumbrances that dog the wheel of progress. It is the only duty of this Conference to direct the attention of these rich men to the benefit of education and inform them of the baneful influence of ignorance.

MR. Manoharlal, M.A., has been appointed to the Minto Professorship of Economics in connection with the Calcutta University.

AMONG the educational problems of modern Bengal, the need of a better physical training of young men has long been recognised by all who are practically concerned in school and college work. The university authorities demanded systematical teaching in gymnastics and drill in the schools; the Government arranged training courses for teachers; the young men themselves have joined in large numbers the many athletic clubs, but in all there has been no plan or system. The Young Men's Christian Association which felt the need as keenly as other institutions, was for several years planning to get a specialist from America to deal with the question. In America this department has long formed an important feature of the Association's work, and thoroughly scientific training is given to the physical directors, many of whom are fully qualified medical men. The principal difficulty in engaging such a man for Calcutta was the financial responsibility, but when the Government of Bengal heard of the project they readily agreed to pay one-third of the necessary expenses, while another third has been guaranteed by leading men of the Indian community, including some of the representative colleges.

As a result a Physical Director for Calcutta has been secured in the person of Dr. J. H. Gray of New York, who, in addition to taking his medical degree, has passed through the Y. M. C. A. training school and has several years' experience of such work in one of the leading New York Associations. Dr. Gray, who arrived shortly before Christmas, has already started several classes in connection with the Y. M. C. A and has met with a very hearty response, especially from the Bengali students.

MR. C. Little, Professor of Presidency College, Calcutta, on leave, has been granted by His Majesty's Secretary of State for India, an extension of leave on medical certificate for five months and six days.

PUNJAB.

THE Punjab Government have sanctioned thirteen agricultural scholarships at the Lyallpur Agricultural College. Ten are of the value of Rs. 10 per month, tenable for two years; one is of Rs. 5, and another of Rs. 3; while the Denzil Ibbetson scholarship is of the value of Rs. 12 and is "to be held for one year by the student, without regard to caste, who at the end of the first year has done best in practical agriculture."

AT the recent sitting of the Moslem Educational Conference, the Nawab of Dacca presiding, a very strong protest, for which three thousand signatures are said to have been obtained, was put on record against the proposal, put forward by Dr. Chatterjee in his Convocation address, to give primary instruction in Punjabi. The entire assembly rose when this matter came up, and strong feeling was shown, the remarks of every speaker who condemned the proposal being punctuated by loud applause.

A REMARKABLE letter says Prof. Ruchi Ram Sahni, of the Government College, Lahore, shows how university life in the close-pressed capital of the Punjab is physically cribbed, cabined and confined for sheer want of building-space, and propounds the idea of an organised retreat to the *jungle* where land is limitless. At first there may be those who will profess to stagger before the audacity of the idea. Yet if university education were now being brought into existence in the Punjab for the first time probably no idea would seem more truly audacious than that of setting down an impecunious university and its many impecunious affiliated colleges in the heart of a densely packed capital where land is almost fabulously expensive and the price of all other things outrageously high. Young universities and colleges, if they are healthy, are essentially expansive for the first law of youth is growth. In the case of Punjab institutions, expansion ought in future to be more than ordinarily rapid, if only because it has in the past been more than ordinarily slow. Stunted in size and crippled in action, the university was not even conscious of its own unhealthiness till five years ago when the tempest of university reform nearly blew it off its feet. Now the university is all for progress, but without the space for progress. To remain permanently in Lahore is to condemn university life for all time to wear straight-jacket.—*The Civil and Military Gazette.*

SRIMATI Malini Devi, widow of an ex-clerk, has bequeathed to the D. A. V. College, Lahore, Rs. 28,000 in property.

PENDING the arrangements for the opening of the Government Technological Institute at Cawnpore which are being pushed forward, it has been decided by the authorities to encourage students of the technical class at the Roorkee Civil Engineering College who are sufficiently advanced to specialize in some of the industries of the country. During the current year over a score of students are taking up the electric and cotton trade courses, while the sugar industry has attracted a couple of students, and soap-making one.

BHAI Ram Singh, Vice-Principal of the Margo School of Art in Lahore, succeeds Mr. Percy Brown transferred to Calcutta as Principal.

THE Hon. Mr. Justice H. G. Richards, of the Allahabad High Court, has been appointed Vice-Chancellor of the Allahabad University in place of the Hon. Mr. Justice Aikman, who has resigned.

IN an interesting address at the Arabic School Sir John Hewett said that the study of Arabic Classics deserved every encouragement as it not only enables a Mahomedan to be conversant with the rites and ceremonies of Islam but helps to make a man a worthy head of his family, a good citizen and a loyal subject. He deplored the decline of manners in the rising generation, for which the secular form of education was to blame. The attempts which had been made to promote religious teaching in State schools outside school hours had not hitherto been successful, but Government could regard with interest and approval institutions designed to keep the Mahomedan faithful to his own creed and to maintain the standard of manners for which the Muslims had made themselves renowned throughout the world.

INDIA (GENERAL).

THE Secretary of State for India has appointed Mr. H. Summersell Davis, B.A., of Corpus Christi College, Oxford, to be a member of the Indian Educational Service and to hold an appointment as Inspector of Schools in Burma.

IT is notified in the *Gazette* that up to, and during the year, 1911 the High School Final Examination will, when it is constituted, be regarded as equivalent to the Entrance or Matriculation examination of an Indian University, as the educational qualification required in the case of every appointment under the Government of Burma for which the University Entrance examination is now the prescribed qualification. On and after the 1st January 1912 the High School Final examination will take the place of the Entrance or Matriculation examination as the educational qualification required for every such appointment. But candidates for

Government service who have passed the Entrance or Matriculation examination before the 1st January 1912 will continue to be eligible for any such appointment on and after that date.

THE Secretary of State has appointed Mr. E. G. G. Kilroe, of St. John's College, Oxford, to be a member of the Indian Educational Service and to hold the appointment of Inspector of Schools in the Central Provinces.

THE Secretary of State has appointed Mr. F. B. Wilkins, B. A., of Jesus College, Oxford, to the Indian Educational Service as an Inspector of Schools in Eastern Bengal and Assam.

THE Secretary of State has appointed Mr. Henry Owen Kershaw, B A., of Christ Church, Oxford, to the Indian Educational Service as an Inspector of Schools in Madras.

THE Rev. W. G. Robertson, M.A., has entered on his duties as Principal of the Gujarat College.

THE Government has evinced neither justice nor generosity in regard to the terms under which it has sanctioned the grant of technical scholarships to Indian students. The Government of India assumes that no candidates should receive State support unless the requisite preliminary training has been acquired in this country, and on this assumption expresses considerable hesitation in the selection of the right stamp of candidates. In fact, it goes so far as to apprehend a dearth of eligible candidates, and doubts whether any Local Government is in a position to recommend confidently more than one candidate for the province. We can discover nothing but the financial question underlying these restrictions; for, what is there to prevent the Government from sending candidates to a foreign country to acquire a knowledge of the science and practice of a particular industry from the initial stage of instruction, except perhaps the reluctance or the inability to spend money? In the next place the purpose of the scholarships, which is to "assist in promoting existing native industries and developing new ones," would be inadequately served by selecting mechanical engineering as a subject of study for the ensuing year. Mechanical engineering is not an industry in itself and it cannot be developed as such; it can only assist a manufacturer in an indirect way. Mechanical engineering has no bearing on the development of any special industry, because a well-equipped mechanical engineer can be useful to any industry in the capacity of an employee and not as a manufacturer. What the Government should do is to fix upon some principal local industries and select one or two young men in each province with a strong industrial and scientific bias and send them to some foreign country to study them from the very initial stage. This would be a business-like proceeding and would commend itself to the country.

Foreign Notes.

GREAT BRITAIN.

AN experiment has been set on foot in some Schools in England with those boys who show no particular inclination for "book-learning" but are good at the use of their hands. For two hours a week they are taught type-setting and distributing, proof-reading and so on. The object is to stimulate an interest in spelling, punctuation and composition in boys who are backward in academic subjects for their own sake. Many a boy will quite unintentionally find the path to orthography in his rambles among the type. We congratulate the schools on the freshness and ingenuity of their enterprise.

THERE are 304 students on the books of the Association for the Education of women, and 290 of these are in residence. The corresponding figures of last year are 271 and 259 and this year's numbers are a record. The quality is equally well maintained: 51 students obtained honours, 7 in the first and 24 in the second class; and in the Examination for the Diploma in Anthropology, held in 1908 for the first time, the only candidate who obtained distinction was a woman student.

THE third centenary of the founding of the University of Oviedo, in Spain, was recently celebrated. It was on September 21, 1608, that Archbishop Fernando de Valdes founded the school at Oviedo, and now he is to be honoured with a statue. Oxford, Cambridge, The American Universities, and those of France and other European countries were represented at the Oviedo celebration. The University of Berlin celebrates its centenary next year and preparations are in progress for the celebration of the quincentenary of the University of St. Andrew's.

LAST August the Association of Assistant Masters arranged a course in Practical Physics at the Cavendish Laboratory, Cambridge. Those schoolmasters who attended the course expressed a wish that another might be held in August 1909. It is, therefore, intended to continue the course, and, if there is sufficient demand, to arrange others in Chemistry, History and Theory of Education, or such subjects as may be required.

THE December Cambridge local Examinations were held at 229 centres in the United Kingdom

and the Colonies. The total number of candidates 15,668 shows only a slight decrease as compared with the number entered in December 1907, notwithstanding the increase in the entry for the recently established July Examination. A falling off in the candidates for the Preliminary and Junior Examinations is about counterbalanced by an increase in the number of senior candidates.

THE University of Dublin has conferred the honorary degree of LL.D. upon Sir Robert Hart, and the honorary degree of D. Litt. upon Mr. Justice Madden (Vice-Chancellor).

THE University of Berne has conferred the honorary degree of Ph. D. upon the Rev. W. A. B. Coolidge, M.A., Fellow of Magdalen College, Oxford, in recognition of the value of his many works on Swiss Works and Geography.

A PLOT of ground has been presented by a number of subscribers to the University of Oxford for public use.

THE Delegates of the Common University Fund, Oxford, have voted a grant of £450 a year for seven years to provide for advanced history teaching. It is intended to organize a two years' course for students, either for research work or for the degree of B. Litt.

ONE Mr. William Knox, a grain merchant, recently left to the University of Aberdeen £5,000 for scholarships in Arts, Divinity and Medicine. The Arts scholarships over £60 a year, will go to the best student graduating in double honours.

MR. W. H. Lever, M.P., has made an offer to the School of Architecture, Liverpool University, to enable it to undertake a systematic study of town planning, including all Architectural aspects of civic design; £300 for a commission to collect information abroad, and £500 to £1,000 a year for three years for continued research and instruction.

THE University of Liverpool, following Manchester and Birmingham, has established the degree of Bachelor of Commercial Science.

AT the instance of an influential Committee of Oxford and Cambridge graduates Lord William Cecil is proceeding to China to study the means to establish an International University in China, with the co-operation of American Missions, thus replacing the numerous smaller missionary establishments, the idea being to train Chinese eventually to fill the chairs of the university and to replace foreigners in the various services.

AMERICA.

AN experiment recently took place in Pennsylvania with a view to the wider distribution of agricultural education. A train called the "Farmers' Special" was sent slowly through the eastern part of the State for several consecutive days, making stops at twenty-two different places for the purpose of enabling the six agricultural experts from the state college of Pennsylvania, whom it carried, to deliver short but helpful lectures on such subjects as corn-growing, dairying and the fertility and treatment of soils of various kinds. The work throughout was arranged with a foresight which was only equalled by the enthusiasm of those whom it was intended to benefit. Posters announcing the hours when the train might be expected to arrive at the different halting-places had been circulated in advance, and it must have been most encouraging to the lecturers to find their audience of farmers and others always ready and eager to hear them. The experiment, which was carried out jointly under the direction of the State College and the Railway Company, aroused so much interest that a recommendation is to be made for its continued repetition until the whole of the agricultural districts of Pennsylvania have been covered.

THE Annual Report of the Queensland Minister of Education, shows that the total number of schools open in Queensland is 1,067; the gross enrolment is 105,382 pupils—one-fifth of the population. The average daily attendance is 71 per cent. of the net enrolment. There are 2,396 teachers. The gross Educational expenditure in 1907 was £342,600. As to Technical Education there are sixteen Colleges in operation at different centres. It may be mentioned that the Paternal Education Department has under its charge eight orphanages, with 1,962 children under state control at a cost for 1907 of £22,722.

The Educational Review.

The School Museum.

If one of the aims of education is to make the child acquainted with the world in which he lives, he must be brought into personal contact with the world. Telling him or making him read about the earth, about the great changes wrought on its surface by the activity of nature and man, about the peoples that inhabit it, their life and work and their adjustment to their environment, all appealing only to his imagination, will not give the child vivid and lasting impressions nor develop in him the power to do his own exploring and discovering. The teachers in schools must be given opportunities to put their pupils in touch with the world around them. During a geography lesson the children, after a thorough study of the relief map, must be transported, as it were, into the country which is the subject of their lesson. They must have before them the typical representatives of the animal world, the minerals, the soil and the industrial products, which they should observe, study and discuss; or they must view through the stereoscope or on the screen the surface features, the natural advantages, the scenery, the large cities and their institutions, the people, their occupations, their homes, and their manner of life. Surrounded by carefully selected objects characteristic of the country, having access to all that is interesting in it by means of life-like pictorial illustrations, living, as it were, in the country while studying it, the children will receive vivid and lasting impressions of what is taught. The use of such illustrative material will satisfy the child's desire for the concrete, it will lend life and reality to the work and make the geography lessons enjoyable. The objects and pictures for the illustration of the work in geography, as well as for the lessons in nature study, history and art must be furnished by the school museum.

Such school museums are not utopian. In the Teachers' College of St. Louis there is such a museum. The Board of Education makes a liberal annual grant for the museum and for new purchases. The material in the museum is arranged and grouped in accordance with the course of study followed in the schools. The museum furnishes or loans to all the schools whatever they may need to illustrate their school work. There is nothing in the museum which cannot be used in direct connection with the work of the schools. The material is not simply shown to the children as new and extraordinary things to satisfy their curiosity. The specimens of mammals, birds, insects, etc., the minerals, the natural and manufactured products of a country, are placed before the children to verify what they themselves, carefully studying the relief map, have discovered by their own observation and reasoning as to animal and vegetable life, soil products, and occupations of the people. The objects are handled, observed, studied, compared with each other and with such as have been considered in connection with other countries, and generally discussed. The pupils determine how the products before them affect trade, commerce and civilization generally, and they decide lines of transport, ocean trade, &c. Each child in the class takes up one of these objects, and, by his own reading, gathers all the information he can regarding it and presents such information to the class.

For the illustration of elementary physics in the higher grades and of physical geo-

graphy, the museum furnishes the necessary apparatus to the schools. Iron, copper and platinum wire, glass tubes, spirit lamps and Bunsen burners, microscopes, sonometers, organpipes, magnets, dry batteries, force and lifting pumps, air-pumps, steam-engines, &c., for the illustration of elementary science, and compasses, whirling tables, tellurions, etc., for physical geography, are sent to the schools upon the requisition of the principal. The catalogue gives descriptions of easy experiments to be performed with the apparatus, experiments which enable the pupils to understand the facts, conditions and phenomena to be learned much better than the text-book or the teacher's description could do. The explanations of the catalogue are such as to convince the teacher that the propér use of the apparatus requires not an accomplished physicist, but an intelligent teacher.

Schools for vocational work.

In one of the debates in connection with the second annual convention of the National Society for the promotion of Industrial education held recently at Atalanta, the Director of the Mechanics' Institute of New York pointed out that training at night schools was the most practical form of trade teaching. He said: "In great Britain the evening vocational schools are welding so large an influence that all attempts at day training are almost eclipsed. In this country by far the larger amount of real vocational training that is definite and effective is being done in the evening schools. The reason is not far to seek. The evening school does not interfere with the pupil's present earning capacity, nor with his hours of labour. It asks for some of the time that would only otherwise be lost in idleness or in the pursuit of amusement. In vocational training the evening school has a decided advantage in that it does not have to force or urge a boy to select this or that trade, but finds him already employed as a plumber, a mason, or a carpenter, with his ambition aroused to excel in his trade. The mere fact that a lad elects to attend an evening school puts him in the select class of the actively ambitious. This is one reason why the tone of the evening trade schools and mechanics' institutes is pitched to a higher and truer key than obtains in a similar day school work. The earnestness and intensity of purpose of these students is a well-attested fact. There is heard much talk about the self-sacrifice and hardships in a boy attending evening school after eight hours' labour at his trade. Any one who has had to do with evening school work knows how misplaced is such sympathy. The school work is seldom a burden to the student, in most cases it is a real pleasure, as attest the faces of these students at their school work. This actual joy in their work is frequently reflected in the attitude and feelings of the teacher. The reaction upon him is not one of exhausting his nervous vitality, but quite the contrary." As the Government of Madras are contemplating to open trade schools, they would do well to consider the advantages of establishing evening schools.

Trade schools in Italy.

It is always interesting to compare notes with other countries. A trade school was established in Rome fifteen years ago with forty girls. In 1898 there were 800 girls in training and now there are 1,500 students and applications for admission have to be refused. The movement has spread throughout the country so that to-day over 7,000 girls are receiving systematic training in industries. Girls enter the trade schools at the age of twelve, when they leave the elementary schools, and for three, four, and sometimes five years, they give all their time from 8 A.M., to 3 P.M., to varied courses of training. Parents who can afford—about one half—pay 2*s.* 6*d.* per month to meet the cost. Municipalities make grants toward the upkeep of the schools; the school in Rome has endowments totalling over £30,000. The work produced is sold at something over market prices, thus providing additional income. The compulsory subjects taught are drawing and plain cooking. Among the optional subjects are languages with special attention to trade knowledge, lace work, fine washing and ironing, book-keeping, artificial flower-making, and, in some centres, nursing. A girl leaves school with two, three, or four trades at her finger-ends. Many go to take up posts as teachers at new centres, others obtain excellent places as ladies' maids, and in all sorts of trades skilled girls are eagerly sought after, as they are capable of earning just about double the amount the untrained worker can command.

Domestic Science

Among the schools of domestic economy in Great Britain the Battersea Training School of Domestic Science seems to occupy a unique place. The object of this institution is the treatment of domestic economics by methods which are closely akin to research. The teaching imparted is therefore of a high order and the students who have received their diplomas are really capable of teaching others in a thoroughly scientific manner. One of the subjects taught is laundry work. In a recently published report it is said that there are few industries which offer such a variety of occupations for female employment as the steam laundry. By the adoption of machinery drudgery has been entirely eliminated from the life of the laundress. The health of workers in an up-to-date laundry is reported to be good, and girls of delicate appearance when first engaged are reported to have in course of time grown into strong healthy women. One great advantage which the laundry worker has over workers in many other trades is that although there is a slack season, necessitating her shorter hours for a period, it is quite unusual for it to be sufficiently slack to necessitate any hands being paid off, and the slack season is thus found to be a period of relaxation. Another very great advantage of a thorough knowledge of laundry work is its usefulness in the domestic life of a girl after marriage.

Imagination and Education.

In his *Essai sur l' imagination* Prof. Ribot distinguishes four principal stages of the development of child imagination. At the beginning the imagination of the child is purely receptive. The child simply follows the images suggested to him by another person, as in listening to a nursery rhyme or a fairy tale. The next is the stage of animism, when the child attributes life to such things as stones, blocks, and other unlikely objects. This tendency is also characteristic of the primitive man. The third stage is that of play, in which the child unconsciously does what tends to help him to his own education. In the first place he gains by experiment vague notions of the nature and properties of things around him, and in the second place he creates by imitation. He imitates houses, boats, etc., and in his own person he imitates and acts the engine driver, the postman, the tram-conductor, and so forth. Froebel has used this instinct for imaginative play as a means of conscious development on the part of the educator. Froebel makes the child play in an organised fashion. Play is always the first and often the most subtle part of the education of the child. Through creating in play an ideal world, the child is prepared for

an ideal interpretation of the actual world. The fourth stage is that of romance, the stage of stories and legends, in which the child listens greedily and in many cases invents. All these forms of imagination are fundamental activities of the mind which play their part in after life in some æsthetic or practical direction. But a poor and mean environment or a dull mechanical school-course often arrests and atrophies these activities. Indian educationalists would do well to consider what might be done to develop the imaginative powers in the classes of the elementary school.

Teaching of History in Secondary Schools.

A helpful circular on the teaching of history in secondary schools has been issued by the Board of Education in England. It lays down no rigid rules as to the selection of history to be taught or as to the methods of teaching it, but forms a general guide to teachers showing the lines along which the teaching of history may best be done. School-life is divided into two stages, the first beginning on admission and ending at about the age of twelve, and the second from twelve to sixteen years of age. In the first stage the teaching of history will consist almost entirely of stories, and these will include not only those from the history of the mother-land, but also such world-famous tales as are descriptive of the siege of Troy, Alexander the Great, Roman history, Charlemagne, St. Francis of Assisi, Columbus and other explorers, Galileo, Washington, and such others as are calculated to arouse the interest of the pupils and engage their close attention. Naturally a certain amount of legend and tradition will be intermingled. In the later part of this junior stage general but accurate notions will begin to be given of the chronological sequence of events, so that the earliest ideas may be gained of time relations and of the successions of people and movements. In the more advanced stages of the secondary school work in history should, according to the circular, consist of a formal course covering the whole of the history of the mother-land, the course being divided into three parts, to be assigned in order to the first three years, while the last year will be devoted to a general revision of the whole. It is in this part of the work that the judgment and insight of the teacher has to come into play. As the amount of ground to be covered is large while the time available is short, the whole history cannot be treated in equal detail, and the teacher has to use his discretion in finding out what is to be omitted or merely glanced over with a casual reference. A separate section of the circular deals with "local history" and suggests how particular sites and buildings in the neighbourhood of the school may be made to serve as instruments in leading the young student to experience a sense of reality as he listens to his teacher in the history lesson. The circular also points out that in history much subsidiary teaching may be imparted in connection with some other subjects of the school curriculum, such as geography, literature and composition. These brief notes will serve to indicate the character of this stimulating memorandum on the teaching of history.

The Primary School.

A superstition in connection with the primary school is the assumption that the three R's must be taught very early. A child who could read and do sums at a preposterously early age is considered a triumph which all primary teachers should strive to achieve. This is quite in opposition to nature. The brain does not attain its full development till the age of seven or eight. Young children are normally long-sighted, and looking at objects close to the eye, such as the letters in a book, causes strain. The configuration of the child's body and its invincible restlessness indicate that nature means the child to be a player and a doer and not a seated student. Still in our primary schools the young ones are forced through the three R's under the pressure of the high school course and unenlightened supervision of the officers of a red-tape and rule-of-thumb department. For the good of the child manual work must be made compulsory in all our primary schools. Hand work is not merely a recreation but a means of culture. Nor is it intended as a means of teaching children how to get a livelihood later on. The aim is to develop the motor activities which are now known to be absolutely necessary to the full development of the mental powers. It may be said that the brain is built up by the hands. If the development of the individual is but a repetition on a small scale of the development of the race, the child must be brought up as a working animal. Biologists and psychologists are agreed as regards the significance of manual work. Our primary teachers are neither acquainted with the psychology of the child nor are they under the guidance of officers who have made a speciality of this subject.

Social education.

Of late there has been a good deal of talk and writing concerning the teaching of religion and morality in schools. The powers that be and the ultra-orthodox and conservative fear the spread of modern ideas and democratic aspirations. They assume that the growth of these aspirations could be controlled, if not checked, by a factitious system of ethical instruction in schools. We need not dilate upon the futility of such methods. But we believe that it is possible for schools to do something in the way of social education. Schools generally foster individual and competitive efforts. But they should endeavour to evoke that sympathy which results in social service. It cannot be denied that social service is the mainspring of most of the activities of the maturer life. An effort to encourage social service is all the more needed in a country like India, where the major part of the population profess a religion whose stronghold is caste, which fosters the spirit of exclusiveness. Caste has made it almost impossible for the growth of feelings of common interest and public spirit. Owing to caste it has not been possible for a Hindu nationality to grow up. Hindu society has fallen apart into disconnected atoms. Anarchy is the peculiar peril of a society that is organised on the basis of caste, and the dread of anarchy leads to monarchy as the strongest defence against it. The spirit of caste is entirely opposed to modern democratic aspirations. All thoughtful Indians, who have at heart the well-being of India, have laid stress upon social regeneration. In his convocation address Mr. Justice Sankaran Nair uttered a note of warning as to how progress in various directions had been rendered impossible by the existence of the institution of caste among the Hindus. It is gratifying to note that the Gaekwar of Baroda is striking a blow at the system of caste. His Highness is reported to have ordered that no one should be a member of his Council who considers himself polluted by touching one of another caste. Association in meals between members of different castes is practically enforced by the Gaekwar's own example. Schools, Colleges and Universities should directly work for the social regeneration of our country, and not be satisfied with the mere manufacture of graduates.

Educational work in the Philippines.

According to an American authority on education, the aim of the United States in the Philippines is that the instruction imparted in the schools should be such as touches the whole life of the people by dealing with all the departments of knowledge needed to further their material as well as the intellectual progress. The Honorable William H. Taft, the President-elect of the United States, declares that the educational policy of the American people in the Phillippines is entirely different from that of the British in India. He says :—

"The theory of this (the British) policy is that if people are left ignorant under a strong parental government, they are much less likely to become discontented with the restrictions of government and much more amenable to governmental influences in inducing them to labour and till the fields, than if they receive education enough to widen their horizon and inspire them to be something more than hewers of wood and haulers of water. Our view of this subject is that the benefit to be derived from the general system of education to all the people greatly outweighs the disadvantages from the over-education of a few who put their knowledge acquired through the system of public education to a bad purpose. It is not the purpose of the American Government in retaining control of the Phillippine Islands to secure a permanent government of an ignorant people, from whose industry and trade commercial benefits may be secured to the mother country, nor are the peace and tranquillity of the Islands and the subservience of the people to our Government to be our ultimate aim.....The chief difference between their policy and ours, in the treatment of a tropical people, arises from the fact that we are seeking to prepare the people under our guidance and control for popular self-government. We are attempting to do this, first, by primary and secondary education offered freely to all the Filipino people; and, second, by extending to the Filipino wider and wider practice in self-government, so that by actual experience they may learn the duties of the citizen, his proper sense of responsibility for the government, and the self-restraint absolutely necessary to a wise control of a minority by a majority."

Not infrequently it is asseverated in proclamations and durbars that exactly the same motives also underlie the policy of the British Government of India. But a tree is judged by its fruit. After one hundred and twenty-five years of British control only 1·37 per cent. of the total population of India are attending school, while, after four years of American administration of the Phillippine Islands 3·53 per cent. of the whole population is under instruction. Of the 2,000,000 Filipino children between 5 and 17 years of age about 400,000 are in the schools. Schools have been established throughout the Islands. Industrial and manual training form a part of the school work. The work of a corps of native teachers is supervised by one American teacher. As compared with the work accomplished by the Americans in the short period that the Phillippine Islands have been under their control the results achieved by the British in India are indeed very poor.

The location of our Colleges.

The question of the proper location of our colleges deserves serious consideration at the hands of all concerned in the education of our youth. At present many colleges are situated in unhealthy, dusty and noisy parts of cities. Most colleges are cramped for want of space and improperly lighted It would be very advantageous if all colleges

in a city were situated on a large open piece of land, within easy reach of one another and away from the din, bustle, excitement and temptations of a city life. Situated at convenient distance from one another they can work in combination in various ways. For example, thay can specialise in different subjects. At a minimum of cost to the colleges high efficiency in instruction can be attained. Among themselves they can provide for instruction in all the subjects included in the curricula of the various University examinations. At present there are several subjects in the curricula of the different examinations of a University which no college affiliated to it undertakes to teach. The system of inter-collegiate teaching can be extended to such subjects as are taken up only by a few students. For the use of the higher classes laboratories, museums, libraries may all be maintained in common. Inter-collegiate teaching will not only improve the efficiency of instruction without involving any considerable increase in expenditure, but it will also exert an immense influence for good on the character and social life of the students and through them upon the community at large.

Educational reform in Bombay.

A long letter has been addressed by the Government of Bombay to the University, stating that the munificent gifts made by leading citizens render it possible to make a beginning in the establishment in Bombay of a Central Institute for the teaching of science. There can be no question as to the urgency of the need of such an institute for the Presidency of Bombay. But before practical steps can be taken it is necessary to consider what should be taught, what classes of students should be provided for; and how sound teaching of science can be blended with a system of higher education under the direction of the University. His Excellency the Governor of Bombay thinks that radical changes are necessary. In the University curriculum at present there are too many examinations and too many subjects; in certain cases, there is no proper division into well ordered courses and no rational continuity of study, and the result is there is a marked want of thoroughness. Hence the results of higher education in Bombay have been sadly disappointing. The attainment of a high standard of excellence, either on the Arts side or on the Science side, is rare, and, with too few exceptions the University has not produced graduates who have evinced capacity for original work in the various branches of knowledge. The quest of marks in preference to the pursuit of knowledge may not be peculiar to India, but the University curricula should be so framed as to discourage the former. Of the various proposals submitted for the consideration of the Senate, the following are noteworthy. The student shall specialise after the first year at college, and there shall be two parallel courses of study—one humanistic and the other scientific, culminating in M.A. and M.Sc. degrees. The age of sixteen is regarded as too early for the commencement of University training, as the teaching power of colleges is often wasted on boys who should be at school. It is suggested that no degree should be conferred on any student who does not possess a sound knowledge of the broad outlines of Indian history from the beginning of the Moghul period to the establishment of British rule, and also of the principles of the British administration in the present day. To remove the many misconceptions prevalent a knowledge of the history of India from the earliest times is absolutely necessary. It must be possible during the three years following the bifurcation of studies to find time for the

necessary courses of lectures on Indian history and administration without any undue interference with the curriculum. It is also suggested that the University should organise courses of popular lectures to be delivered in the vernacular as well as in English in the large towns of the Presidency during the vacation period. This is a suggestion which all Indian Universities would do well to consider. The principles underlying Sir George Clarke's reform proposals are very sound and in perfect keeping with the modern spirit, and we can see no reason why the Senate should not adopt these reforms in their entirety.

Commercial education in Bombay.

The pioneer of commercial education in Bombay was Mr. P. N. Wadia. With the active support of Mr. Rustomjee Byramji Jeejeebhoy commercial education in an elementary form was introduced by Mr. Wadia in 1898 into the regular course of instruction imparted in the Byramji Jeejeebhoy Parsi Charitable Institution. Encouraged by the good results following this introduction, the Trustees converted the institution into an essentially Commercial School, teaching ordinary school subjects up to the Fifth Anglo-vernacular standard, and after that stage purely commercial subjects. The institution now turns out young men qualified for all the grades of commercial service. A few days ago Professor Lees-Smith of the London School of Economics delivered a lecture before the Senate of the Bombay University on the subject of founding a Faculty of Commerce in the University. He outlined the curriculum as follows: First year—English, Economics, Commercial Geography, Political institutions and Theory. Second and third years—A higher standard in all the subjects laid down for the first year together with Accountancy, Commercial Correspondence, Business Methods, Trade technique, Commercial Law, a foreign language, and a special course in science. Students might specialise in the origin and history of Book-keeping, history of foreign trade, the structure and origin of a selected industry (such as cotton). Subjects, such as Insurance, History of Transport, could be prescribed for advanced students. Professor Lees-Smith thinks that a staff consisting of a Principal and three Assistants would be ample enough at present. He suggests that all these men should have received their training in England. We believe that the Byramjee Jeejeebhoy College can be easily converted into an institution capable of carrying out the scheme sketched by Professor Lees-Smith. We cannot think of a better principal for the institution than Mr. Manohar Lall, M. A., of Cambridge, who has been recently appointed to the Minto Professorship in connection with the Calcutta University. Mr. Manohar Lall was a favourite pupil of Professor Marshall and won the Cobden medal for research in Economics at Cambridge, his competitors being some well-known English Professors. Since his return he has devoted himself to the study of Indian economic conditions. Since last year he has been University Lecturer on Economics in the Punjab University and his lectures are published in the Economic Journal of the Harvard University. If the unrighteous excise duty on cotton goods manufactured in India were abolished, Bombay would surely be able to command the necessary finances to establish a commercial institution of the highest class.

UNIVERSITY OF BOMBAY.

RS. A. P.

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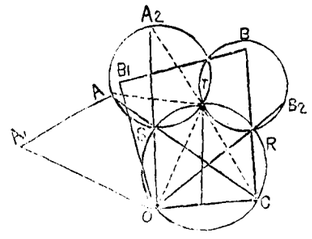
VOL. XV. MARCH 1909. No. 3.

MATHEMATICS.

[Conducted by B. KRISHNAMACHARI, M.A.]

31. [T. SUNDARA RAO, B.A.] On two concentric circles, arcs A_1A_2 and B_1B_2 are taken subtending equal angles (α) at the centre O. C is any point and parallelograms OA, OB are described with CO, OA_1 and CO, OB_1 for sides. Prove that the perpendicular bisectors of CO, AA_2, and BB_2 are concurrent and that CO, AA_2, and BB_2 subtend at the point of concurrency angles equal to α.

Solution by M. BHIMASENA RAO.



Let CA and OA_2 meet in S.

$OA_2 = OA = CA$.

Describe the circles ASA_2 and OSC meeting again in T.

Join OC, CT, AT and A_2T.

Angles CAT and TCA are equal to OA_2T and TOA_2 respectively, and $CA = OA_2$.

$\therefore$ The triangles CAT and OA_2T are equal in all respects. $\therefore$ CT = OT and AT = A_2T.

Therefore the perpendicular bisector of AA_2 meets the perpendicular bisector of OC on the circle OSC.

Let CB and OB_2 meet at R.

Since angle $A_1OA_2 = OSC$,

angle $B_1OB_2 = ORC$,

The angle $OSC = ORC$.

$\therefore$ The circle OSC passes through R.

Similarly $OB_2 = CB$. $\therefore$ The perpendicular bisector of BB_2 meets the perpendicular bisector of OC on the circle OSRC. Hence these bisectors meet at T.

And also angle $ATA_2 = ASA_2 = A_1OA_2 = \alpha$

$OTC = ASA_2 = \alpha$.

Similarly $BTB_2 = \alpha$.

37. [B. KRISHNAMACHARI, M.A.] If $a_1, a_2, \ldots a_n$ be real, and if

$(a_1^2+a_2^2+\ldots+a_{n-1}^2)^2(a_2^2+a_3^2+\ldots+a_n^2) = (a_1a_2+a_2a_3+\ldots+a_{n-1}a_n)^2$, then $a_1, a_2, \ldots, a_n$ are in G. P.

Solution by M. BHIMASENA RAO.

Let $(a_1^2+a_2^2+\ldots a_{n-1}^2)(x_1^2+x_2^2+\ldots x_{n-1}^2)^2 = (a_1x_1+a_2x_2+\ldots a_{n-1}x_{n-1}^2)+F$ where F is a function of the quantities a_1, a_2, x_1, etc.

Now $(a_1^2+a_2^2+\ldots a_{n-1}^2+a_n^2)(x_1^2+x_2^2+\ldots+x_{n-1}^2+x_n^2)$

$=(a_1^2+\ldots a_{n-1}^2)(x_1^2+\ldots+x_{n-1}^2)+a_n^2(x_1^2+\ldots x_{n-1}^2)+x_n^2(a_1^2+a_2^2+\ldots a_{n-1}^2)+a_n^2x_n^2$

$=(a_1x_1+\ldots a_{n-1}x_{n-1})^2+F+a_n^2(x_1^2+\ldots+x_{n-1}^2)+x_n^2(a_1^2+\ldots+a_{n-1}^2)+a_n^2x_n^2$

$=(a_1x_1+\ldots+a_nx_n)^2-2a_nx_n(a_1x_1+\ldots a_nx_n)$
$+a_n^2(x_1^2+\ldots+x_{n-1}^2)+x_n^2(a_1^2+\ldots+a_{n-1}^2)+F$
$=(a_1x_1+\ldots+a_nx_n)^2+a_n^2\left\{a_1^2\left(\frac{x_1}{a_1}-\frac{x_n}{a_n}\right)^2\right.$
$\left.+a_2^2\left(\frac{x_2}{a_2}-\frac{x_n}{a_n}\right)^2+\ldots+a_{n-1}^2\left(\frac{x_{n-1}}{a_{n-1}}-\frac{x_n}{a_n}\right)^2\right\}$
$+F.$

Again $(a_1^2+a_2^2)(x_1^2+x_2^2)=(a_1x_1+a_2x_2)^2$
$+a_2^2.a_1^2\left(\frac{x_1}{a_1}-\frac{x_2}{a_2}\right)^2.$

By the preceding result we have
$(a_1^2+a_2^2+a_3^2)(x_1^2+x_2^2+x_3^2)$
$=(a_1x_1+a_2x_2+a_3x_3)^2+a_2^2.a_1^2\left(\frac{x_1}{a_1}-\frac{x_2}{a_2}\right)^2$
$+a_3^2\left\{a_1^2\left(\frac{x_1}{a_1}-\frac{x_3}{a_3}\right)^2+a_2^2\left(\frac{x_2}{a_2}-\frac{x_3}{a_3}\right)^2\right\}.$

By similar reasoning we see that F can be expressed as the sum of

$1+2+3+\ldots n-2$ or $\frac{(n-2)(n-1)}{2}$ squares.

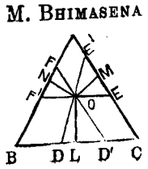
If $(a_1^2+a_2^2+\ldots+a_{n-1}^2)(x_1^2+x_2^2+\ldots$
$+x_{n-1}^2)=(a_1x_1+\ldots+a_{n-1}x_{n-1})^2$
F vanishes, and since the quantities a_1, a_2, x_1, x_2, etc are given to be real the $\frac{(n-2)(n-1)}{2}$ squares should separately vanish; and by the form of F we see that the vanishing of these squares does not lead to inconsistent results and that

$$\frac{x_1}{a_1}=\frac{x_2}{a_2}=\frac{x_3}{a_3}=\ldots=\frac{x_{n-1}}{a_{n-1}}.$$

By putting $x_1=a_2$, $x_2=a_3$ ... and $x_{n-1}=a_n$ the required result follows.

38. [B. KRISHNAMACHARI, M.A.] Find the locus of a point such that the triangle whose angular points are the foot of the perpendiculars from it on the three sides of a given triangle has a constant area.

Solutions by M. BHIMASENA RAO.



I. Let O be the point and L, M, N be the feet of the perpendiculars from O on the sides of the given triangle ABC. Through O draw DOE', EOF' and FOD' parallel to the sides AB, BC and CA.

Since angle OFN = BAC,
we have OF:ON = 2R : BC where R is the circumradius.

Similarly OD':OL = 2R:AB.
$\therefore$ OF . OD':ON . OL=$4R^2$:AB . BC ... (1)
Angles ABC and NOL are supplementary.
$\therefore$ $\triangle$ABC:$\triangle$ONL = AB . BC:ON . OL
By (1) we have $\triangle$ABC:$\triangle$ONL=$4R^2$:OF.OD'.
By similar reasoning we see that
$\triangle$ABC:$\triangle$LMN=$4R^2$:(FO.OD'+DO.OE'
+ED.OF') ... (2)

But FO . OD'+DO . OE'+EO . OF' is equal to R^2-SO^2 where S is the circumcentre of the triangle ABC. *Vide* question 43, page 51, Casey's Sequel to Euclid, VII Edition.

$\therefore$ by (2) SO^2 is constant since $\triangle$LMN is constant.

$\therefore$ O moves on the circumference of a circle whose centre is S.

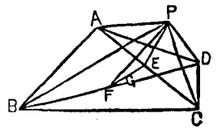
II. Let OL : OM : ON = $x : y : z$.
Then OL = Kx, OM = Ky and ON = Kz where $K=\frac{2\Delta}{ax+by+cz}$ and Δ is the area of the triangle ABC.

The area of the triangle LMN = $\frac{1}{2}K^2(xy\sin C$
$+yz\sin A+zx\sin B)$.
$\therefore$ $2\Delta^2(xy\sin C+yz\sin A+zx\sin B)$
$=\lambda(ax+by+cz)^2$ ... (1)
where λ is the area of the triangle LMN.

Equation (1) evidently represents a circle concentric with the circumcircle of the triangle ABC.

39. [B. KRISHNAMACHARI, M.A.] If with the middle point of the line joining the points of bisection of the diagonals of any quadrilateral as centre and any radius, a circle be described, prove that the sum of the square of the distances of any point on the circumference from the angular points of the quadrilateral is constant.

Solution by M. BHIMASENA RAO.



Let ABCD be a quadrilateral, E and F the middle points of AC and BD and G the middle point of EF. Let P be a point on a circumference of circle centre G.

$PA^2+PC^2=2PE^2+2AE^2$
and $PB^2+PD^2=2PF^2+2BF^2$.
$\therefore$ $PA^2+PB^2+PC^2+PD^2=2(PE^2+PF^2$
$+AE^2+BF^2)$.
But $PE^2+PF^2=2PG^2+2FG^2$.
$\therefore$ $PA^2+PB^2+PC^2+PD^2=4PG^2+4FG^2$
$+2(AE^2+BF^2)$.

Since FG, AE and BF are given and PG is constant, $PA^2+PB^2+PC^2+PD^2$ is constant. This theorem admits of generalisation. *Vide* Prop. 11, Corr. 1, page 27, Casey's Sequel to Euclid.

QUESTIONS FOR SOLUTION.

40. [M. BHIMASENA RAO.]

(1) Find the points of intersection of the curve, referred to in question 34, and any line passing through the circumcentre of the triangle ABC.

(2) Show that the tangent to the curve at the circumcentre of the triangle passes through the cosine centre of the triangle.

(3) Show that the rectangular hyperbola circumscribing the triangle and passing through the centroid has a contact of the second order with the curve.

41. [M. BHIMASENA RAO.] For what value of n is the number of solutions to the square referred to in question 35, *viz.*, the greatest integer in $\frac{n^2-16n+72}{36}=Kn$, K being an integer.

42. [M. BHIMASENA RAO.] The base and the vertical angle of a triangle being given, find the locus of the foot of the perpendicular from the middle point of the base on the axis of perspective of the triangle and its pedal triangle.

43. [M. BHIMASENA RAO.] From any point P, perpendiculars PD, PE and PF are dropped on the sides BC, CA and AB of a given triangle ABC. The circumcircle of the triangle DEF cuts again the sides BC, CA and AB in points D', E' and F'. Find the locus of the intersection of EF and E'F' if AD, BE and CF are concurrent.

44. [M. BHIMASENA RAO.] How many numbers can be formed with the digits 1, 2, 3, 4, 8, t and s, where t and s stand for 12 and 16 respectively, such that the sum of the digits of any number is equal to 16? This question in a different form is known as 'Kakapadaprastaram' (కాకపాదప్రస్తారం) in books on Hindu Music.

45. [M. BHIMASENA RAO.] If $x=a$, $y=b$, $z=c$ satisfy the equation
$px(y^2-z^2)+qy(z^2-x^2)+rz(x^2-y^2)=0$,
show that
$\frac{a^2x^2(qb-rc)(qy-rz)}{q^2-r^2}+\frac{b^2y^2(rc-pa)(rz-px)}{r^2-p^2}$
$+\frac{c^2z^2(pa-qb)(px-qy)}{p^2-q^2}+\frac{(pa-qb)(qb-rc)(rc-pa)}{(p^2-q^2)(q^2-r^2)(r^2-p^2)}$
$\times(px-qy)(qy-rz)(rz-px)=0$.

46. [M. BHIMASENA RAO.] Prove geometrically that $OI^2=2r^2-AO.OD$, where O is the orthocentre, I the in-centre, r the in-radius and D the point where the line AO meets the base BC of a given triangle ABC.

47. [M. BHIMASENA RAO.] Show how to describe the circles which cut three given circles at given angles.

SHELLEY'S *ADONAIS*: A CRITICISM.

OF all the instruments of self deception with which neglected poets revenge themselves on an unappreciative public, that which assails the intelligence of their readers and finds in their indifference an infallible criterion of their ignorance is at once the most pathetic and the least harmful. Of this kind of folly Shelley presents a notable instance. Referring to his *Adonais*, he says: "I know what to think of *Adonais*, but what to think of those who confound it with the many bad poems of the day I know not." Surely this hit is brilliant and telling. One cannot help wishing that the impression Shelley's poetry makes were at least half as effective as his turn for criticism displays. Fortunately the world is wiser than to take men, and least of all that dreamy and suspicious-looking fraternity called poets, at their own valuation. The trend of modern criticism has been to lift the veil from objects conceived as sacred and irreproachable, and to examine them ruthlessly in the clear light of reason. We owe much to a critic like Matthew Arnold who lays down the following pitiless course to be adopted in the treatment to be accorded to a poet: "If he is a dubious classic, let us sift him; if he is a false classic, let us explode him."

If we may not share Shelley's opinion regarding the ignorance of the public who did not feel interested,—much less warmed—by his poetical productions, we need not object to allowing him the choice of the best among his own compositions. His choice falls on *Adonais*. He says: "The *Adonais*, in spite of its mysticism, is the least imperfect of my compositions." It is therefore desirable to take the *Adonais* as representing Shelley at his best, and to examine how far this poem satisfies the laws of poetic truth and beauty.

The *Adonais* is not original in form. It is cast on a Greek mould. Imitation has its own place in the realm of art, but unless in the hands of a real artist, like Shakespeare, the imitation can never pass for a work of art. A work of imitation is like an exotic plant which needs the artificial stimulus of a hot-house to keep it from dying. That is the reason why the numerous imitations in every sphere of life and letters strike us with a sense of hollowness and insincerity. The real poet has no need to fall back on his Greek and Latin predecessors in order to insure his immortality. Besides, such an attempt is as futile as it is ambitious. It is as possible to be effective without imitation as it is to imitate without being effective. The work of imitation may, it is true, claim some attention from those with whom the original is highly esteemed. Even there the imitator suffers the disadvantage of having his work brought into sudden and striking contrast with the original. The poet whose thoughts are employed solely with fitting his ideas into ancient moulds, and who has not originality enough to clothe his work in a form all its own, cannot succeed as an artist. Shelley, in his *Adonais*, falls into the trap of imitation, so tempting, yet so ruinous.

The choice of the subject of the elegy is unfortunate. In spite of efforts to make a poet and a classic of Keats—efforts which are the outcome of the modern rage for 'artistic nature worship,' as it is called—the fact remains that Keats in his life (once for six weeks together he was hardly ever sober) and therefore in his work exhibits faults of a kind which are in no way calculated to inspire the normally constituted mind with any veneration for his productions. If there is anything

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to admire in Keats, it is the occasional glimpse he had of his own insignificance. A confession like the following which shows a lucid interval in this sense-bitten man is altogether absent in Shelley:

"I have done nothing, except for the amusement of a few people who refine upon their feelings till anything in the un-understandable way will go down with them. I have no cause to complain, because I am certain anything really fine will in these days be felt. I have no doubt that if I had written *Othello* I should have been cheered. I shall go on with patience."

But Keats is hardly the kind of material to arouse in us thoughts of the truth and beauty of which he sang so wildly and passionately, yet so ineffectively.

Shelley introduces Byron, Hunt, and Moore as mourners on the occasion of the death of Keats. One would have thought that this was a respectable number, as things went. But Shelley is not satisfied. He makes Chatterton welcome Keats. We can bear with this, for we do not object to a Chatterton welcoming a Keats. There is an apparent propriety in linking their names. But by what strange perversity of thought did Shelley introduce into this miserable set, the noble Sidney? One gets naturally impatient and uneasy at this audacity. This sort of introduction in a poem and in such company is, one imagines, a kind of immortality which Sidney himself would have discarded with contempt. The human mind is so constituted that it takes delight in what is noble, pure, lofty and true; and instead of attempting to rouse such thoughts in us, we are here presented with a spectacle that is nauseating, to say the least. It may be objected to this that the poet and the man should not be confused, but kept apart and distinct, and separately considered. But nothing is truer than that the poet can never rise above the man, and that the work of the poet never gets beyond the character of the man.

The purpose of an elegy is to body forth the sorrow which the death of a beloved object occasions, and in the nature of things, attention must be concentrated on the feelings which that sorrow evokes, and on the character of the departed. All reference to the personality of the mourner, and the attempt to bespeak part of the sympathy of the reader for the poet who bewails his loss weakens the effect intended to be produced. Shelley's reference to himself among the mourners extends over four stanzas and are of too prominent a character not to break the unity of the emotional effect. It is not the poetry of the passage which is questionable, but its relevancy. These stanzas give us a criticism of Shelley in language which not even his most malignant critic is capable of. He compares himself to "the last cloud of an expiring storm whose thunder is its knell." Even Arnold does not mend this with his "beautiful and ineffectual angel beating in the void his luminous wings in vain." This outburst of modesty on Shelley's part is so strangely out of keeping with his general attitude towards the world that one is surprised at it. But the reader's sympathy receives a rude shock when he sees Shelley referring to his "branded and ensanguined brow which was like Cain's or Christ's." Shelley's modesty is only a cloak after all, and his aspirations are so high as not to stick even at blasphemy.

The philosophy of the poem is unsatisfying, and offers no stay to the wearied spirit which is puzzled by the storm and stress of life The note of Pantheism which Shelley sounds

so clearly is but a return to the primitive notion of God as exemplified in the results of early human speculation on the Godhead. If modern philosophy has nothing better to offer us than this, we have no reason to congratulate ourselves on the progress of thought in this direction. Only a weak mind can take refuge in pantheism, as the pseudo-scientist finds his comfort in the following explanation of the universe which Tolstoi lightly ridicules :—

"Development is going on, and there are laws which guide it. You yourself are a part of the whole. Having come to understand the whole so far as is possible, and having comprehended the law of development, you will comprehend also your place in that whole, you will understand yourself."

Mr. Stopford Brooke says that a great modern poet necessarily comes to pantheism in the treatment of nature. Are Tennyson and Browning pantheists in their teaching? The fact is that a man's philosophy inevitably reacts on his work, and by "living in ideas of vague and indeterminate desire" nothing is gained; on the other hand, the man becomes miserable and helpless. Perhaps the low condition of Indian life and thought is attributable to its early philosophic teaching. Shelley's philosophy as well as his poetry are best described by an expressive phrase of his own making, "harmonious madness." His vagueness and indefiniteness are the cause of his obscurity. His sense for words must have been greater than that for such a trifling thing as thought. Truly with this man "speech created thought." One may feel thankful that the Skylark did not take him at his word and impart some of its mysterious powers to this already mystic poet. The poet never exists apart from the philosopher, and the end of poetry is not merely to give pleasure, but to offer us a haven and a refuge from the storms that rage round us in the voyage of life. It will never do to forget that there are ardours as well as pleasures of song, and the poet who ignores the former is destined to be ignored by mankind. What Shelley offers us by way of consolation for the death of a friend is this :

"Die
If thou wouldst be with that which thou dost seek."

This is a poor philosophy at the best, which does not face facts of life and try to explain them in a way enabling us to bear better the buffets on the world-wearied flesh; it is but a weak device to avoid the struggle of life by cowardly suicide.

True poetry is never illogical to the facts and experience of life, and when the poet's enthusiasm transcends logic, it must do so by appealing to that element in the human mind which is instinctive and above reason, namely, faith. But what superhuman contempt and disregard of all reasoning on common occurrences in nature is exhibited in a passage like the following :

"Oh woe is me, winter is come and gone
But grief returns with the revolving year."

The poet in his anxiety to find a contrast finds it everywhere, conveniently forgetting that "change and motion" affect grief as much as the seasons of the year. "Grief is mortal" in more senses than one. Again: "Thou can'st not soar where he is sitting now." This is not quite consistent with the easy remedy proposed by Shelley himself, namely, suicide.

The language in which Shelley abuses the critics whom he supposes to have been instrumental in the early death of Keats, is extremely inartistic and vulgar. A verse like "Live thou, whose infamy is not thy

fame" with its triteness of thought and redundancy of expression, and a pointless execration such as "like a beaten hound tremble thou shalt—*as now*" are surely not specimens of the highest poetic art. Shelley invariably uses "thou wert" for "thou wast." Is it that the former is discordant to a musical ear, or merely another instance of bold defiance of grammar as well as the other conventions of this dreary world? It cannot be the former as even Shakespeare condescends to use it.

The great poet never indulges in a free use of the figure of speech called 'Personification.' Personification is a veritable pitfall into which the unwary poet easily trips. The true artist is able to personify and give life to his abstract conceptions without dressing them up in capitals. An example or two from Shakespeare will make this clear :

"She never told her love
But let concealment, like a worm i' the bud
Feed on her damask cheek"

Again, a skilful use of personification which is expressive though not graceful:

"The never-surfeited sea
Hath caused to belch you up."

As in Gray we have Pain, Pleasure and similar beings, so in Shelley we have the Dawns, Splendours, Morning, Misery, Glooms, Echo, etc. When these deities—or are they only angels?—tread close on one another's steps in such rapid succession, with such overwhelming abundance and confusion, and with such effortless ease, one gets a little bored, and takes no more notice of these creations than of passing gusts of wind. This super-abundance of personification is, perhaps, the last refuge of the poet. It serves him when he is at his wit's end, and knows not how to infuse breath and life, where to find that Promethean heat with which to illumine his creations. He desperately tells us that they are alive and must be so conceived by the reader. But a matter of fact world refuses to take a corpse for a living personality, and turns disdainfully aside from the loathsome sight of a heap of lifeless carcasses.

Every great poet derives his beauty partly from the thoughts he commands, and partly from the power of expression he wields. The beauty of the thoughts presented in this poem is questionable. When we turn to look at the expression, we are still more troubled. Shelley uses twice in the course of this comparatively short poem, the simile of 'lending and borrowing' as if it is a beautiful idea and the poet wants to drive the image home to our minds. This single image is sufficient to prove that Shelley had no artistic sense for the significance of figurative language.

There is no art displayed in the reference to nature on Keats's death. Earth's splendour is contrasted with the grief of mortals. This is against the fundamental theory of art, and is falsified by human experience. In hours of grief, nature is dimmed and mellowed in our eyes, and the great poet will give us a description of the sympathy of nature with human grief instead of making a contrast.

There are poets whom passion and emotion impress and impress with a strength and vividness with which they do not impress other people, and there are also poets whom passion and emotion not only impress but overwhelm and consume. There are thoughts which "turn hounds and consume their father and their prey." Shelley evidently belongs to the latter class. The great poet does not die in his creative work as insects are said to die when they reproduce their species; he

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BOOKS—THEIR USE AND CHOICE.

SCARCELY an age passes without leaving behind it the legacy of some notable and marked achievement of its own, an achievement characteristic of the genius of the generation. But in the whole range of human history nothing can be compared with the marvellous influence wielded by the Printing Press alike in the extent and intensity of its action. In the dim misty past which we fondly call 'the golden days of yore,' knowledge was the monopoly of the privileged few, while the multitudes of the common people were the victims of perpetual ignorance. Knowledge was indeed a sealed book to those who had not the luck to be born within the initiated circle of the priestly classes. It was so all around the world. The sublimity of truth would be polluted by the profaned ear of the plebian! But to-day after the advent of that grand invention, Truth and Knowledge are as free and open to us all as any of the elements of nature. The sun and the moon shed their lustre of light and love on the rich and the poor, and know neither race nor creed, nor caste nor colour nor sex, but shine for all alike with impartial fairness and brilliancy. And so are *they* too the common property of all human souls that breathe upon this planet.

Surely then, we may venture to assert with some confidence that the expansive gulf that separates barbarity from civilization has been spanned by the bridge of books. At any rate it has been the principal passage from the one to the other. If as early as 1860 Emerson could have said :—

> We look over with a sigh the monumental Libraries of Paris, of the Vetican, and the British Museum. In 1858, the number of printed books in the Imperial Library at Paris was estimated at eight hundred thousand volumes; with an annual increase of twelve thousand volumes: so that the number of printed books extant to-day, may easily exceed a million :—

in what possible language can we adequately describe the enormous number of books now turned out of the steam presses, those mountainous volumes piled over one another 'dusky and huge enlarging on the sight'? The mind bewilders at the thought of the future. It is greatly to be feared that the flood of books, rather than nourishing the soil of our souls, would sweep us away in its overwhelming torrents.

Hence it is, that it would be prudent to keep some broad and general canons for the proper choice of books. Some have gone further: they have endeavoured to choose the best and eschew the rest, of the chaos of crowded books. The task, tremendous as it

is, has certainly been attempted with more or less success by men eminently qualified by their voracious scholarship and mature experience. They have felt the need and supplied the void according to the measure of the light within them. Foremost of the collections of books of general reading for universal study, may be mentioned Auguste Comte's *Catechism of Positive Philosophy;* Pycroft's *Course of English Reading;* Baldwin's *The Book Lover;* Perkin's *The Best Reading;* Ireland's *Books for General Readers;* Emerson's *Books;* and to satisfy the tender susceptibilities of the lovers of the enthusiastic prophet of Modern Painters, that curiously entitled volume of *Sesame and Lilies.* But most of these collection have been more or less one sided or scanty, each author eschewing these books opposed to his particular views of life and forms of faith. A surer trust can be placed in the admirable selections of two of the greatest of living authors—*The Hundred Best Books* of Lord Avebury and that excellent article on *The Choice of Books* of Mr. Fredrick Harrison, which, Lord Morley would most happily 'recommend rather than all the hundred and three books' he had been asked to select out of Universal Literature.

But our task is more humble and less difficult. We do not launch into such lofty themes. We shall be content with pointing out a few suggestions as to What to Read, slightly touching upon Why and How to Read (only so far as they bear upon the topic at issue.) But be it remembered, that the Why and How, need an elaborate treatment of their own, for which we can find no adequate space at present.

So then, Why, What and How to Read are the principle thoughts with which to approach a library. It may be observed that most of the writers on Books cannot refrain from alluding to the solace of friendship. Surely, nothing can be more precisely said of the use and choice of books than by an apt reference to the bliss and pleasures of friendship. Books like friends are a source of continual pleasure in life. We have only to recall the eloquent testimony of Cicero and Sir John Herschell on 'the taste for reading, only as a worldly advantage, and not in the slightest degree as superseding or derogating from the higher office and surer and stronger panopoly of religious principles—but as a taste, an instrument, and a source of pleasurable gratification.' But books are more than all these. With a little alteration in the current proverb we may perhaps say: 'tell me the books you read and I will tell you what you are.' Books shape our thoughts, mould our manners, and guide our lives. Good books contain in the stately language of Milton 'the precious life-blood of a master spirit, embalmed and treasured up on purpose to a life beyond life.' Hence 'as good almost to kill a Man as kill a good Book.' But what are those 'good books' about which we can justly say:

> Our never failing friends are they
> With whom we converse day by day;
> With them we take delight in weal
> And seek relief in woe;

and how to know them?

In this, as in every other respect, Nature is our most trustworthy guide. There is, as Lord Avebury observes "'a struggle for existence' and a 'survival of the fittest' among books, as well as among animals and plants." 'Nature is always clarifying her water and her wine. No filtration can be so perfect. She does the same thing by books as by her gases and plants.' So said the American transcendentalist. Only the very

best works of the wisest men remain for all time; while minor pieces of obscure authors 'have their days and cease to be.' But the best books of the wisest men of all times and all climes have an immortality all their own. Fame preserves the memory of the worthiest in the "Republic of Letters," untarnished by the lapse of years. They are visible to us as beacon lights that shine in all their glory and splendour. They have been weighed in the balance and not found wanting. Time testifies to it. Hence it is safe to read the 'famed books' of the greatest men of all ages, whose hallowed names are ever and anon ringing in our ears. There can be no question about the occupants of the highest row in the gallery of the worthies. They are there by right, their claims are just and we know who they are. For, have we not heard their names and songs praised a thousand times by our fathers and friends?

Most of these 'famed books' are the works of the mighty minds of old. It may seem paradoxical and yet it is only too true that the cultured men of this civilized century almost sink into insignificance before the wisdom of the ancient sages. We are pale before our fathers. We will not, however, venture to say that the increase of appliances and the multiplicity of books stun the free flow of our soul, encumber our originality and retard the progress of thought: for we fear to offend modern society. Our 'advanced' age can never produce a second Homer or another Valmiki. They were the products of their respective ages: they represented Nature in all her native purity. But to us, the leaves are withering with ugly soot: and we are 'stupified with smoke and stunned with steam-whistles.' It almost seems that the best thoughts were already thought out and recorded. No new 'Book' has been added to Euclid's Geometry. The six systems of Philosophy are eternally six and six only, not one more nor less one. The Vedas and the Koran, they say, contain all knowledge. Will it then be that the human mind has become extinct? We would be sorry to say 'aye' to it. But, for lack of originality we are busy in manufacturing criticism. It is the envied profession of a large class of the modern Men of Letters. For every tragedy of Shakespeare there is a library of criticism; and simpletons are not wanting who pour over five hundred volumes of criticism without ever so much as having smelt of the sweet perfume of a single flower of the original genius of Shakespeare. Verily, Emerson is right when he observes that 'The crowds and centuries of books are only commentary and elucidation, echoes and weakeners of these few great voices of Time.'

Now, we look upon the ancients and their religions as being too ceremonious and conventional and with a superior smile call them superstitious. We solace ourselves with the satisfaction—untrue as it is—that with the decay of much of their outward symbols we are progressing in spirit. But we fail to realize that the symbols are but the expressions of the spirit, the outer manifestations of the inner spirit. In one department of literature especially, our ceremonies and conventions are abominable. We cannot sing chorus with Matthew Arnold when he said, 'there is unbounded hope for poetry in the future', though we can sympathise with him in his pious hopes. Our modern poetry is a grand mosaic of stately columns and architrave with 'carefully calculated contrivance' of words, syllables and letters, but sadly wanting in that ring of the deeply religious fervour of the Gothic Cathedrals. In the place

of the romantic spirit of inspiration breathed by ancient poetry, we have to-day, neatly 'dressed up' pretty looking verses ornamented with trivialities, worthy of but the 'servile mechanics of the pen' and 'all the paraphernalia of the pseudo-picturesque.' And if we have any truth at all, it is once gain the dear old truth in many new forms. Alas! How ennobling and delightful it would be then, to sing 'the songs chanted forth at the sun-rise of human imagination' rather than plodding through these wordy verses!

Of course nothing so obviously untrue and uncharitable is meant as that this is an account of all modern poetry. We would gladly welcome anything which the gifted author of *In Memorium* might have chosen to give us. There is nothing absolutely good or absolutely bad in a world where there is no measure but is relative and comparative. But we rather choose to see our poetry redolent with more of *life* and less of *art*: and we prefer the ancients to the moderns.

(To be concluded in the next Number.)

B. NATESAN.

ON THE PROBLEM OF THE FAILED MATRICULATES.*

Problem stated.

If we think over the results of the Matriculation Examination for the past ten years, there is one appalling fact that stares us in the face. The lar number of failed matriculates reflects dis- cr u teachers and examiners alike. Take fo ple the year 1904. That year saw 8999 candidates sitting for the Matriculation Examination. Supposing that this number represents two-thirds of those who were under instruction in the Sixth Form, the total number of students in the Sixth Forms of the High Schools in the Madras Presidency, during that year alone, would be nearly 13498. The number of candidates who crossed the border line was only 2531. This means that more than 10,000 candidates were rejected by the University. Thus, during the last decade, nearly one lakh of students have been sent adrift into the world to struggle in the best way they can for finding means of livelihood. This, I say, is not a very desirable condition of things.

There is one other correlated fact that we have to bear in mind in the discussion of this question. Every one of these castaways must have, for nearly 10 or 12 years, been separated from their own natural environment and brought under the influence of western thoughts and western ideals. In 90 cases out of every hundred, the failed matriculate returns home with a dejected, discontented and self-conceited frame of mind. Manual labour is, of course, considered to be derogatory to his dignity. The Jewish *Rabbis* used to say that "he who taught not his son a trade, taught him to be a thief." But such notions are now relegated into the region of obsolete heresies. It is, indeed, a sad spectacle to see hundreds and thousands of failed matriculates walking up and down in search of employment.

> "Alas! regardless of their doom,
> The little victims play;
> No sense have they of ills to come
> Nor care beyond to day."

Remedies

Now, the question before us is one, the importance of which cannot be over-estimated. Should we not make an honest attempt to find useful walks of life for the many young men whom we are turning out, year after year, without the hall-mark of the University?

* ead at a meeting of the Travancore Teacher's M in the upper hall of the S. C. Seminary, Sch Mr. A. J. John, the Secretary for the author am, B.A., L.T. Headmaster, B. H. High

The "School Final" Committee has suggested a way out of the difficulty. It seems to me that, in case the Committee's recommendations meet with the approval of the Government, the seriousness of the situation will be greatly minimized. We are expected to co-operate with the Government in a sympathetic spirit.

Side by side with the move that the Government is making in the matter of examinations, we, schoolmasters, have to show our pupils that manual labour has a dignity of its own. I beg to suggest the opening of model farms in connection with every High School, and the introduction of farm work as an important part of physical education. The tennis and the badminton, however suitable they may be to people living in overcrowded cities, are not indispensable things in country parts. We should give due prominence to exercises prompted by nature and by local conditions.

Nowadays, technical education is supposed to be the panacea for all the evils existing in the Indian educational world. But few persons seem to have clear notions on the subject. Carpentry, and blacksmith's work are often suggested, without considering the fact, that the artisan classes are looked down upon by the high caste people of India. On the other hand, we see "how capital which came from England has benefited the people of India. There are many industries in cotton, tea, coffee, cinchona, jute, indigo, iron, coal, paper and silk which have in this way been opened to Indians by the aid of capital from Britain." Peermaad and Mundakayam have attracted many of our young men and they have rapidly become skilled labourers. The German Mission tile factories and weaving establishments have given work to many of our people. The fact is, trades are best learned by the *apprentice system*. "A single industry like cotton can do more to find work and profit for the population of India than Government can do with the whole of its public appointments." Indian capitalists instead of "risking their money in new and untried industries, can follow where English capitalists have shown them the way." This is the *swadeshi* movement that will open out to our failed matriculates "new ways of earning a livelihood and of obtaining wealth." It would seem that this is the only way in which the "problem of the failed matriculate" can be solved.

P. J. ABRAHAM.

THE PROPRIETY OF A PUBLIC TEST AT THE TERMINATION OF A SYSTEMATIC SECONDARY COURSE.*

In the first circular letter that was addressed to me by the Honorary Secretary, Teachers' Association, Bombay; it was suggested that I should read a paper before this Conference on the suitability or otherwise of the present Matriculation Examination as a public test at the termination of the secondary course, if such a test were deemed necessary, the ultimate decision, however, being left to my own choice. In my reply to this printed letter I promised to read a paper on the subject suggested; but when I actually began to collect my ideas about the subject, I found it necessary to range over larger fields in my paper so as to discuss at some length the desirability of having a public test at the end of the secondary course. I therefore decided to avail myself of the liberty of choice allowed to me and thus I propose in this paper to deal in some detail with the question of the propriety of such a public test at the end of a rational and systematic course of secondary education.

When so much is being said at present about the abolition of the Matriculation Examination as a University examination, and when so much prominence is being given and rightly given, to education as a means of developing and moulding the minds and characters of pupils, when, in

* A Paper submitted to the Educational Conference held at Bombay on 26th and 27th, March 1909. by Prof. V.G. Kale, M.A.

short, there are in the air proposals for radically reforming the system and courses of instruction in the Colleges, it seems necessary to say that this reform, to be beneficial, must reach the lower parts of the educational machinery also. No reforms in the University Curricula, however drastic and radical, will be effective and useful to education generally, so long as the system of instruction at present obtaining in the secondary schools remains what it now is. Necessary as University reform is, reform in the system of secondary education is more essential and more badly needed. It is here that the foundations of education are laid, and so long as these foundations are allowed to remain weak and defective, the superstucture raised upon them, however imposing and solid to the view, is also bound to be weak and defective. As I do not, however here, propose to say anything about the curriculum of studies in the secondary schools, I shall content myself with merely remarking that the question of school education ought to be taken up along with that of University education. It is because no attention is paid to this subject, and all pupils, whether they are fit for and intend the prosecution of the higher courses in College or wish to prepare themselves for the lower grades of Government and private service, the mechanical arts, commerce, business, the professions &c., are huddled up together in the same heterogeneous class and have to undergo the same course of instruction without any specialisation and bifurcation, that many students even after going through the Matriculation ordeal are found unfit for a College. It is also on account of this indiscriminate and heterogeneous education given in secondary schools irrespective of the pupil's natural tendencies, needs and capacities, physical and intellectual, that the school education, as at present given, is found inadequate and unsuited to the requirements of the courses and careers that scholars follow on leaving schools.

An examination is indeed essential at the termination of every course, whether primary, secondary, or collegiate, to measure the amount of knowledge gained and the mental and intellectual capacity developed in the scholars. But these examinations need not necessarily be public examinations. School examinations and school certificates ought to possess greater value and greater authority than the public tests. A public test, say at the end of the secondary course, would be a stamp imprinted on the successful candidate, guaranteeing that he contain's in him a stated definite quantity of knowledge and information and certyfying that he is fit to enter service, professions or business as he may desire. There is admittedly very little analogy between the precious metals stamped by the State testifying to a definite quantity and quality of the metals and the youthful humanity becoming the the stamp of a public examination, indicative of so much knowledge and training received. A rupee stamped with the effigy of the King Emperor passes as a coin current, serving all the purposes of a medium of exchange. No such uniformity can be attained in the human matinal, and even if attained, would be of little value in the various departments of human life. A public test at the termination of the secondary course would try to perform the impossible, and I may be allowed to say, the useless task of giving a uniformity of training and attainments where such a uniformity is the least needed. Human nature is complex, the tendencies and aptitudes of individuals vary, and the requirements of life are different in the case of different persons. Under these circumstances, what would be the use of putting all varieties of intellects, tastes and capacities in the same groove to bring about a homogeneous product? The education to be imparted to pupils who in early life show a tendency towards the mechanical arts ought, under a rational system of instruction, to be quite different from the education imparted to those, who from the first, discover a mental capacity adapted to the pursuit of the higher courses of study. Why should we force a carpenter's son, for instance, whose father wishes him to follow his own profession and who does not show any aptitude for literature and Mathematics, to bother

his head over English idioms and simultaneous equations? Of what earthly use is it to thrust down the throat of a boy who gives early promise of turning out a good artist, the details of English history and geography? A dead uniformity, such as is imposed by a public test besides entailing much waste of time and energy, is fatal to the healthy growth of the mind and the body. When a public test is imposed on every pupil leaving the High School, the whole course of education has naturally to be adapted to the requirements of the examination, which becomes the ideal of both the teachers and the taught. Other considerations are lost sight of in the pursuit of the all-absorbing problem of passing the examination. We see in actual life that pupils holding the Matriculation certificate have to pass special tests besides for entering service, business or profession. A pupil, who has gone through all the seven standards of his school, is required to pass a fresh test before he is admitted to the medical school, the office of a bank, or insurance company or the railway or postal services. This shows that the public test of the present is an inadequate qualification for a young man to enter into business or service. Many of those who pass the Matriculation examination are said to be unfit for the College course. Of course no bifurcation adopted in the school course would remove the necessity of a special test where the knowledge of certain technicalities and practice of some routine work are needed. But much waste of time and energy may certainly be prevented if pupils with different tendencies and capacities are not forced to go through the same course and if their courses are so arranged as to fit them for the particular careers they may be expected to take up in after—life. Under the present arrangments every scholar is made to pass through the same invariable course leading to the final examination as if the end and aim of the whole secondary course were to prepare pupils for the Matriculation examination. The University examination being the goal to be reached by every scholar, many a pupil, well up in Mathematics for instance, has to be detained in the lower standards simply because he does not find his depth in Sanskrit. Many pupils who take a high rank in the languages being plucked in the other subjects such as Mathematics, for which they have neither liking nor aptitude, are made to mark time in the same class for years. Boys are thus dragged from standard to standard through a variety of subjects, irrespective of any definite plan,—a distressing and disappointing journey—till at last in what is called the Candidate class they find they must call and betake themselves to something more congenial to their tests and capacities. Many have to look back with regret to the toilsome hours they spent or rather wasted in conning their Chemistry primer and mastering their Macmordie. It is, however, then too late to retrace his footsteps, and the disappointed youth looks about him for service or business much sadder, but perhaps little wiser, for his loss of precious time and energy. What Head Master has not every day to deal with cases of boys coming to a standstill at the threshold of the Matriculation examination, who have to be advised to give up the course as they were not meant for the same? Indeed a bifurcation is there even in the present course and boys have the choice of going to the Matriculation or the S. F. side. Many pupils disgusted with their Sanskrit or Geometry, are seen to avail themselves of this bifurcation, but it does not go a long way and a greater and more systematic variety and differentiation are needed. Up to a certain stage the course should be common to all and during this period the elements of the various necessary subjects such as the languages, Arithmetic, History, &c., should be taught. Where a pupil has reached say the fourth or the fifth standard, the bifurcation should begin and he should be allowed or made to take up a particular course suited to his needs and capacity. It is not here necessary to chalk out a detailed scheme of studies suited to the various branches into which the secondary course should be made to bifurcate. This will depend on a variety of circumstances, such as the locality of the school,

the class of pupils attracted, the needs of the people in the locality, and the equipment and the resources of the School itself. Thus there may be a special branch for pupils of the better sort who may wish to prosecute their studies in College and acquire superior culture, one for those who may wish to take to business, another for those who may have no higher ambition and aptitude than that of becoming petty clerks, another for boys of the artisan and the agriculture classes and so forth. It is not all schools that can undertake to cater to these various wants. They will be the speciality of different schools. No public test is needed at the end of the school course, except for those, perhaps, for the present, who may wish to enter College and have no College entrance examination. A leaving certificate from the school should suffice as a guarantee that the pupil has completed a particular course. No doubt at present even parents have no idea as to the inclinations, capacities and needs of their children whose education is allowed to take its own sweet course. It is only when their boys are detained in a class that they are roused only to blame the boys or the teachers. It is no use merely holding parents and guardians of boys to ridicule. These things are, in a way, new to them and to the teachers and both have to be made to understand their responsibility in the matter. They must be made to see that the policy of drift is disastrous and that it is the parents' duty to see that their children get the sort of education they are fit for and they would wish them to have.

All public tests are to be condemned on the ground that they tend to create a dead level of uniformity of instruction from beginning to end. The examiners who constitute a class by themselves, are seldom in close touch with the requirements of the examinees and instead of examinations being made to suit the needs and capacities of those examined, schools tend to become the slaves of the rigid system of examinations. Every thing is reduced to a dull uniformity, which is fatal to all real and useful education. The schools are in a better position to study the requirements of their pupils and are better fitted to pass a judgment on their attainments. The objection that the standards set up by different schools will vary, can be met by saying, that if a uniformity of standards is necessary, it can be easily secured by appointing a board of inspectors who will see that the various schools are properly equipped for the branches of instruction which they have selected and that their tests are fair and proper. It may again be argued that if this matter is left to the discretion of schools, there is the danger of injustice being done in some cases and even that of partiality if not of something worse. But I think schools ought to rise to the sense of their responsibility laid on them and that they ought to suffer in popular estimation if they show any irregularity or unfairness. Even heads of schools have to learn to discharge their duties and responsibilities in an honest and straightforward manner.

It may, perhaps, be said that the fourth or the fifth standard in the school is a stage too early for a bifurcation such as I have suggested above. It may, however, be borne in mind that when a pupil reaches that stage he has ordinarily spent already eight or nine years in the school, vernacular and English primary. He has, by that time, learnt, forgotten and relearnt, perhaps to forget again, his Arithmetic, Indian history, Geography and Vernacular. If the whole course is overhauled and such an overhauling is extremely necessary, if any reform is to be made in the system of secondary education—and insruction is imparted to pupils on sound and rational principles from the beginning, the boy who has reached his fourth or fifth standard, will have learnt enough and have undergone sufficient training, to enable him to take up a particular course further with advantage. I need not give here any definite scheme of these bifurcations. They may be so devised as to make the instruction in each case perfectly useful, suitable and beneficial.

This issue of the "School World" for the month March, which came to hand just when I was writing this, contains "an organised educational programme" being a report of the Education Committee of the British Service Guild. I make

a few extracts from this report, as they go to support the view of the subject I have taken in this paper. The extracts will, at least, give an idea as to what educationists in the other parts of the world are doing as regards secondary education, and they will show us how the problem of the public test may be dealt with in this country.

"Local Education authorities should be urged to establish or aid in establishing an adequate supply of secondary schools of a high educational type. These schools should have highly qualified staffs adequately paid, and should be administered by a board of governors or managers. No effort should be spared to make these schools thoroughly efficient, and to this end the curriculum followed should admit of some amount of variation. Where the majority of pupils remain to eighteen years of age, a higher standard on the purely academic side could be aimed at, than in the case of schools where the bulk of the pupils leave at sixteen years of age or thereabouts."

"A primary school certificate should be introduced which would serve as a passport to the craft school and the secondary school. School certificates should also be granted to pupils who work satisfactorily through the courses at the craft school or at the secondary school. *The certificates should be based not upon examinations, but chiefly upon reports by the teachers as to the ability of the pupils to profit by higher courses of instruction.*"

"The Matriculation examination of any British university, and the secondary school leaving certificate, certain requirements being satisfied, should qualify for entrance to any British university or technical college, and to the various professional courses, without further examination and in lieu of the present preliminary examinations."

"*School records and reports of teachers should at every stage supersede largely the present system of estimating ability by examinations*.....School leaving certificates should be awarded only to pupils in schools certified as efficient for that purpose by a responsible inspecting authority, and a list of these schools should be published. *Schools in which this privilege was abused should be removed from the list.* By placing upon the teachers the responsibility for nominating pupils for certificates or scholarships, the credit of the school would soon secure that only the most capable or promising pupils would have their passage facilitated to places of higher learning. *In all examinations the teacher should be associated with the external examiner.*"

"There should be established in all educational areas a sufficient number of craft schools with a two years' course for boys and girls between the ages of about fourteen and sixteen years. Due regard should be paid in these schools to the continuance of the general education of the pupils, *but special provision should be made for sound scientific and technical training in relation to the industries or requirements of the district.* The aim of these schools should be to provide preparatory training in handicraft *for pupils who propose afterwards to follow industrial or commercial careers or to manage households intelligently*,"

These rather long extracts will, I hope, furnish us with some useful hints in reorganising our secondary and even the primary course and will show us how a school leaving certificate, given under proper safeguards, will be better suited than a public test certificate, to the measuring of the pupil's abilities and attainments when they have completed a particular line of instruction. My conclusions then are :—

(1) There need be no public test at the termination of the secondary course.

(2) After properly overhauling the vernacular and the upper primary courses, there should be effected bifurcations when pupils have attained the fourth or the fifth standard of the high school.

(3) These branches should be so devised as to meet the various needs of pupils variously situated. Thus there should be a separate branch leading up to the Matriculation, whether taken by the University or the Colleges, in which a higher standard of culture should be aimed at. There may be other branches adapted to the

different careers pupils are expected to follow after leaving school.

(4) School leaving certificates should suffice as testifying to the proficiency of the holders in particular branches of study.

(5) School records and reports of teachers should supersede "the present system of estimating ability by examinations."

(6) The policy of drift should be checked as far as possible, and parents and teachers should be made to appreciate their responsibilities in the matter.

(7) The needs and capacities of the pupils rather than the needs and the caprices of examiners should be primarily attended to.

FREE EDUCATION FOR INDIA.

As is well known, the Government of India have been inquiring into the feasibility and desirability of making primary education free, and it is generally conceded that if at any time compulsory attendance at primary schools is enforced, the abolition of fees must follow. At present, however, compulsion is impossible, because schools are not available for all boys of school-going age; and until compulsory education is introduced, there is no logical plea for the discontinuance of fees. The question becomes, therefore, one of expediency, and the considerations on which the answer to it depends are, whether the fees levied, press hardly on the parents, whether they deter parents from sending children to school, and whether their abolition would lead to increased attendance in schools. Mr. ORANGE, in his Quinquennial Review, does not discuss this problem, but sets forth certain facts, from which we are left to draw our own conclusions. The levying of fees is, speaking generally, obligatory in all schools which receive grants-in-aid, but their amount is left to the discretion of the District Boards and local authorities. Except in Madras, the Punjab, and the Central Provinces, District Boards and Municipalities can fix the fees as low as they please, or refrain from levying any. It follows that the charge for primary education is determined by local bodies which are as thoroughly representative of the people as any which exist in this country; and it may fairly be assumed that, if there were any strong feeling against fees, they would be largely dispensed with. But this is not the case. Fees, though so largely under the control of popularly elected bodies, are almost universally levied. It is, of course, possible that this practice prevails on account of the very limited funds at the disposal of both District Boards and Municipalities. Still, the absence of any protest against fees has to be explained if they are represented as odious exactions, and until this is done the presumption is that they are not resented. In favour of this view may be urged the fact, that the charges are of a very trifling character. In the infant standard of lower grade schools in the Madras Presidency the fee is half-an-anna a month; in the first standard it is one anna a month, in the second two annas, and in the third $2\frac{1}{2}$ annas. In the United Provinces, the fees range from one pice to one anna monthly. In Bengal, the average amount of the fees paid by a pupil in a year is Re. 1-6. This is the highest average. In Bombay, the total is 10 annas, and in the Central Provinces, it sinks to two annas one pie. For India as a whole, the average annual fee is 14 annas 1 pie. This charge cannot be regarded as heavy, even in a poverty-stricken land; and it must be remembered, moreover, that fees are always remitted in the case of those who are unable to pay. This practice is so well established that the Bombay Education Department is able to state that in that Presidency "there is no case on record of a very "poor child seeking admission to a "school and failing to obtain it by "reason of inability to pay the fee." Not only have we this assurance from Bombay, where the conditions probably resemble those found in other parts of India, but we have the fact that some Local Boards in the United Provinces have tried the experiment of abolishing fees in primary schools. It might have been thought that the effect would be to improve school attendance, but the results showed that the number of children attending school in the free areas did not rise above the level of the rest of the Province. On the other hand, the imposition of a fee in certain districts where none had been previously levied was followed by a considerable improvement in school attendance. In the light of these facts, we see no reason to doubt the general soundness of the view expressed by the Government of India in 1854 when they wrote:—"It has been found by "experience, in this and in other "countries, that not only is an "entirely gratuitous education valued "far less by those who receive it "than one for which some payment, "however small, is made; but that the "payment induces a more regular "attendance and greater exertion on "the part of the pupils." It may be added that in India, parents attach sufficient value to education, not only to pay compulsory fees, but also to make considerable presents to the teachers. In these circumstances it can scarcely be urged that there is a clamant need for the abolition of fees. At any rate, a definite and detailed case has not yet been made out, and until fees can be shown to operate against the spread of primary education, the Government may well be reluctant to sacrifice a source of educational revenue which yields Rs. 32,04,000 a year, a sum equivalent to not far from one-fourth of the total income of the schools. The chief need at the present time is not so much the cheapening of education as its thorough improvement, and any loss of income must tend to render improvement more difficult.—*The Friend of India.*

SUGGESTIONS FOR TEACHERS.

PRINCIPLES OF EDUCATION.—"Suggestions for Teachers," Chap. VI., R. "Nature Study." This is intended to train observation, and the success depends upon the attitude of the teacher. *How* the subject is regarded is far more important than *what* may be learnt. The aim is that children may take an intelligent interest in the natural objects surrounding them: that through such interest an active mental state, leading to self-education, may be induced. The advantages of Nature study over Kindergarten are, (1) that it deals with natural objects, (2) that it can be continued with the older children. The teacher must himself be an inquirer, examining the objects with the children, suggesting and guiding inquiries, not an imparter of facts carefully prepared from a text-book. Text-books serve as guides to the teacher, but cannot take the place of his own research. Nature study is not science, although much useful knowledge of applied science is obtained. Nature study regards the actual and particular object, its measurements, its proportions, its decorative effect, its conditions; science regards general truths which may be illustrated in the specimen under examination.

Read also Rooper's "School and Home Life," Essay 4 (second half), "Object Teaching."

"A trained eye sees in a picture things that are quite invisible to the lay spectator." Comment on this.

What are the two principles which Rooper lays down for all object lessons? Show how you would apply them in a lesson on some common object.

Show sketches which you would use in a lesson on (*a*) a cow or swallow, (*b*) growth of a buttercup or oak.

NEEDLEWORK.—Cut out in paper (half size) and tack together a petticoat not gored; *or*, make up a piece of calico as the shaped band of a gored petticoat (half size). Measurement of waist (full size) = 24 in. Work a buttonhole.

It is advisable to obtain the Needlework Diagrams published by THE SCHOOL-MISTRESS. Flannel petticoats, 1s.; children's drawers, 1s.; chemises, 1s.; the two last sheets ordered together, 1s. 6d.; or the three sheets, 2s.

HISTORY.—1763-1815. Events in the war with France, Spain, and Holland in 1782-3. In 1782 Minorca was captured bp the united French and Spanish fleets; but Gibraltar continued to hold out against the close investment. The loss of the 'Royal George' during a sudden squall at Spithead seriously weakened the Navy, but Rodney defeated the hostile fleets in the West Indies and saved Jamaica. Negotiations for peace were delayed by the determination of Spain to capture

so clearly is but a return to the primitive notion of God as exemplified in the results of early human speculation on the Godhead. If modern philosophy has nothing better to offer us than this, we have no reason to congratulate ourselves on the progress of thought in this direction. Only a weak mind can take refuge in pantheism, as the pseudo-scientist finds his comfort in the following explanation of the universe which Tolstoi lightly ridicules :—

"Development is going on, and there are laws which guide it. You yourself are a part of the whole. Having come to understand the whole so far as is possible, and having comprehended the law of development, you will comprehend also your place in that whole, you will understand yourself."

Mr. Stopford Brooke says that a great modern poet necessarily comes to pantheism in the treatment of nature. Are Tennyson and Browning pantheists in their teaching? The fact is that a man's philosophy inevitably reacts on his work, and by "living in ideas of vague and indeterminate desire" nothing is gained; on the other hand, the man becomes miserable and helpless. Perhaps the low condition of Indian life and thought is attributable to its early philosophic teaching. Shelley's philosophy as well as his poetry are best described by an expressive phrase of his own making, "harmonious madness." His vagueness and indefiniteness are the cause of his obscurity. His sense for words must have been greater than that for such a trifling thing as thought. Truly with this man "speech created thought." One may feel thankful that the Skylark did not take him at his word and impart some of its mysterious powers to this already mystic poet. The poet never exists apart from the philosopher, and the end of poetry is not merely to give pleasure, but to offer us a haven and a refuge from the storms that rage round us in the voyage of life. It will never do to forget that there are ardours as well as pleasures of song, and the poet who ignores the former is destined to be ignored by mankind. What Shelley offers us by way of consolation for the death of a friend is this :

"Die
If thou wouldst be with that which thou dost seek."

This is a poor philosophy at the best, which does not face facts of life and try to explain them in a way enabling us to bear better the buffets on the world-wearied flesh; it is but a weak device to avoid the struggle of life by cowardly suicide.

True poetry is never illogical to the facts and experience of life, and when the poet's enthusiasm transcends logic, it must do so by appealing to that element in the human mind which is instinctive and above reason, namely, faith. But what superhuman contempt and disregard of all reasoning on common occurrences in nature is exhibited in a passage like the following :

"Oh woe is me, winter is come and gone
But grief returns with the revolving year."

The poet in his anxiety to find a contrast finds it everywhere, conveniently forgetting that "change and motion" affect grief as much as the seasons of the year. "Grief is mortal" in more senses than one. Again: "Thou can'st not soar where he is sitting now." This is not quite consistent with the easy remedy proposed by Shelley himself, namely, suicide.

The language in which Shelley abuses the critics whom he supposes to have been instrumental in the early death of Keats, is extremely inartistic and vulgar. A verse like "Live thou, whose infamy is not thy

fame" with its triteness of thought and redundancy of expression, and a pointless execration such as "like a beaten hound tremble thou shalt—*as now*" are surely not specimens of the highest poetic art. Shelley invariably uses "thou wert" for "thou wast." Is it that the former is discordant to a musical ear, or merely another instance of bold defiance of grammar as well as the other conventions of this dreary world? It cannot be the former as even Shakespeare condescends to use it.

The great poet never indulges in a free use of the figure of speech called 'Personification.' Personification is a veritable pitfall into which the unwary poet easily trips. The true artist is able to personify and give life to his abstract conceptions without dressing them up in capitals. An example or two from Shakespeare will make this clear :

"She never told her love
But let concealment, like a worm i' the bud
Feed on her damask cheek"

Again, a skilful use of personification which is expressive though not graceful:

"The never-surfeited sea
Hath caused to belch you up."

As in Gray we have Pain, Pleasure and similar beings, so in Shelley we have the Dawns, Splendours, Morning, Misery, Glooms, Echo, etc. When these deities—or are they only angels?—tread close on one another's steps in such rapid succession, with such overwhelming abundance and confusion, and with such effortless ease, one gets a little bored, and takes no more notice of these creations than of passing gusts of wind. This super-abundance of personification is, perhaps, the last refuge of the poet. It serves him when he is at his wit's end, and knows not how to infuse breath and life, where to find that Promethean heat with which to illumine his creations. He desperately tells us that they are alive and must be so conceived by the reader. But a matter of fact world refuses to take a corpse for a living personality, and turns disdainfully aside from the loathsome sight of a heap of lifeless carcasses.

Every great poet derives his beauty partly from the thoughts he commands, and partly from the power of expression he wields. The beauty of the thoughts presented in this poem is questionable. When we turn to look at the expression, we are still more troubled. Shelley uses twice in the course of this comparatively short poem, the simile of 'lending and borrowing' as if it is a beautiful idea and the poet wants to drive the image home to our minds. This single image is sufficient to prove that Shelley had no artistic sense for the significance of figurative language.

There is no art displayed in the reference to nature on Keats's death. Earth's splendour is contrasted with the grief of mortals. This is against the fundamental theory of art, and is falsified by human experience. In hours of grief, nature is dimmed and mellowed in our eyes, and the great poet will give us a description of the sympathy of nature with human grief instead of making a contrast.

There are poets whom passion and emotion impress and impress with a strength and vividness with which they do not impress other people, and there are also poets whom passion and emotion not only impress but overwhelm and consume. There are thoughts which "turn hounds and consume their father and their prey." Shelley evidently belongs to the latter class. The great poet does not die in his creative work as insects are said to die when they reproduce their species; he

thereby to train him in preseverance and self-restraint." Those who say this are perhaps thinking of the solitary child with too few (or too many) playthings, who becomes fractious and gets into mischief when left to himself. But it is a matter of common experience that children will "amuse themselves for hours" if they have something to do that interests them. As a matter of fact, the pre-occupation of the senses with some favourite toy or favourite occupation does hold the attention and train it to concentration, which is a necessary factor in the development of will-power. But a child seated on a gallery and either frightened or hypnotised into giving attention to something the teacher wants to say or to show is not exercising his own will. He can listen to a story or look at a picture for a quarter of an hour. But the time-table of a babies' or four-year-old room often breaks up a session into short periods which have to be rigidly observed, and while the children are still happily rolling clay or threading beads, the "lesson" must be changed and some other "subject" switched on. Will-power is trained by free selection of a task and of the means to accomplish it; under our present system this is not possible. The nervous system is over-stimulated by persistent and ever-changing appeals from a teacher whose anxiety is to keep all the little ones doing some one thing at the same time. Concentration is developed in children when, having begun an occupation, they wish to persist in it for its own sake; but a child who must drop his little task at a perpetually recurring signal from a "grown-up" has no chance of forming this habit.

MECHANICAL CHANGES NECESSARY.

It is evident that the reformed or "nursery schools" of the future will have to adopt new plans in order to secure that sense-impression may do all for the child that it might be expected to do. The chief of these are: (1) The substitution of light movable tables and chairs for a gallery or fixed desks. This will allow each group to see and handle objects, and to play with them more conveniently, as well as to have necessary change of position far more frequently. (2) The provision of suitable educational toys and material. (3) An elastic time-table, with recognised breaks for prayers, out-door play, and lunch, but with no fussy variation, say, from a building exercise to a Nature talk if the interest of the former is not exhausted.—*The School Guardian.*

OUR ENGLISH LETTER.

LIVERPOOL, *February* 1909.

The air is heavy with causes célèbres and dolorous Navy Estimates. The Cabinet Ministers are rousing themselves from their Christmas torpor and are out on the war-path. The Chancellor of the Exchequer has owned up to the weakness of his jest about hen-roosts and is explaining that the Budget will be manifested by no vindictive spirit: as a consequence the capitalists are feeling uneasy: even when bringing gifts Mr. Lloyd George is feared. The Budget and the Estimates will fill the first three months of the Session, and what remains is already allotted to Unemployment and Poor Law and the Welsh Church Question. There is no room for Educational Legislation if there was any desire for it. Past efforts and their result show little prospect of success as things are at present. Last night at Dewsbury Mr. Runciman made a noteworthy speech upon this matter. He had been accused of spoiling a party victory by his endeavours to arrive at a compromise. His reply is worth quoting. 'He serves his party most who serves his country best.' He assured his constituents that he would not set his hand again to any similar measure. Sooner or later the Church would have to give up some privileges to obtain a settlement. In the natural course of events (he would be no party to vindictive administration) the denominationalists' position would grow weaker, and the settlement would come upon national rather than denominational lines.

Blackwood's has an interesting article this month on Oxford Past and Present, by the Warden of Wadham. He treats in a convincing way of the modern transformation of Oxford. To the present-day Oxonian it seems strange indeed that thirty or forty years ago there was no North Oxford, and Dons lived in College and celibacy and the odour of port and learning. 'To some of them marriage was a liberal education, and the prime and formal Oxford Don became comparatively playful and happy under softening influences.' To-day Oxford is a suburb of London. On the matter of reform which is in the air the Warden writes—'The questions which will be raised in the discussion of any scheme of reform are more numerous and less simple than the enigmas which the Commissioners of 1854 and 1881 tried to unriddle: they had to deal only, or mainly, with gross abuses and to remove restrictions obviously harmful: the work of future reformers must be constructive. They will have to face problems which their predecessors knew not, or ignored or attempted to solve in a way which left them more difficult than before: the nature and methods of a liberal education: the claims of natural science: the relations between Colleges and the University, and between the Professorial and Tutorial systems; a new definition of the local limits of residence which reasonably qualify for membership of Congregation, for the present limits have come to be absurd; a new definition perhaps also of other qualifications for membership of what is, in the first instance, the legislative body in the University: to these problems for reformers must be added the admission of women to Degrees and of workingmen to the University. Who is sufficient for these things?' The Warden adds, and as we think wisely not only on general grounds but considering the present disposition in Oxford towards reform,—'All reforms—religious, political, social, and not the least academical—must come from within a commission of able persons, chosen with more regard to political considerations than to knowledge, intimate and personal, of our needs and problems, ought not to be let loose on the University unless and until it has been convicted of unwillingness or impotence to reform itself.'

As we intimated two or three months ago, a new movement is on foot, designed to bring Oxford and the working classes closer together, in fact to bring the working classes to Oxford. Classes have been formed in certain industrial centres and are being taught by Oxford men. The classes are to continue for three years, after which it is hoped that a goodly proportion of the students will be able to go to Oxford. There are now eight towns in which classes are being held, towns like Oldham, Glossop, and Rochdale. Local authorities are lending assistance, and much satisfaction is expressed at the quality of the work done. Among the students are railwaymen, window cleaners, shop assistants, etc., trade-union officials, so that it is obvious that a wide constituency is being served. The majority of the students are over 25 years of age. In all the classes women are to be found, and one of the best features of the movement is that classes are limited to thirty students so that the class room does not degenerate into a lecture room.

The Lancashire Education Committee has been considering the establishment of a training college. Sir Henry Hibbert, chairman of the Committee, brought forward a scheme for the erection of a residential training college for 150 female teachers. The cost of the building was to be £45,000, towards which the Government would give three-fourths. The cost of maintaining the college was to be practically nil, in view of the liberal grants that were made. But the scheme met with very vigorous opposition. It was thought that the cost of maintenance would prove to be considerable as the girls who would use the college would not be in a position to contribute anything to eke out the grants. There were already too many training colleges. No support for the scheme had come from the large centres like Liverpool and Manchester. Apparently the only county in the country that has ventured on a college of its own is Cheshire.

The motion was rejected, only 17 voting for as against 59 opposing the proposal.

As an antidote for bad trade education reform is being advocated almost as earnestly as fiscal reforms, and is winning converts on all hands. Here at any rate we have much to learn from foreign countries. Whatever may be said of their fiscal systems, their educational systems are in many respects far superior to ours. But we are learning. The day trade schools are a case in point. Adequate technical training must be provided for those who want to become masters of a trade. This is becoming no longer possible in the workshops. The pressure of competition and the prevalence of piece work render it impossible for time to be devoted to the instruction of beginners. It is much more profitable for the employer, and much less exacting on the beginner, that the new comer should be employed on one particular process and thus become a specialist before he has any general acquaintance with his trade. Accordingly day technical schools are increasingly becoming a necessity. France has given us a lead. In 1888 they had provided in Paris, accommodation for 3,600 young people. London has not yet a third of this accommodation. But to-day's *Morning Post*,—Friday's copy-always contains a well-written and well-informed article on educational matters—gives us some idea of the way in which the want is being supplied in London. The Paris schools have planned a three year's course to take the place of apprenticeship, but the idea in London is rather to prepare boys to enter a skilled trade or to reduce the time as learners. It is thought that they will thus be in a better position to acquire knowledge for themselves even if not receiving much definite instruction in the workshop and also that their appetite thus whetted, will drive them to the various evening technical courses. At the Borough Poly-Technic, boys can enter at twelve years of age for a three years' course, so naturally not much specialization is allowed, only 7½ hours per week, even in the 3rd year being devoted to the workshop. At the Stanley Trade School at Norwood, half the working hours are given up to the practical work. The need, perhaps all round, is for a better linking up of the schools and employers. There is a close co-operation at Paris: and the institution in London of a consultative committee of employers or foremen to advise on technical matters would keep school and workshop in touch, and obviate the feeling of suspicion that is often manifested in such cases on the part of the practical man towards the mere theorist. The movement is undoubtedly in the right direction. We shall improve our trade best by improving our tradesmen.

Reviews and Notices.

SELECTED POEMS OF MATTHEW ARNOLD. EDITED, WITH INTRODUCTION AND NOTES, BY HEREFORD B. GEORGE, FELLOW OF NEW COLLEGE, AND A. M. LEIGH, FORMERLY SCHOLAR OF SOMERVILLE COLLEGE. OXFORD, AT THE CLARENDON PRESS, 1909.

We are growing rather tired of hearing that Matthew Arnold defined poetry as 'a criticism of life.' Matthew Arnold said, indeed, that in poetry a criticism of life might be found, but he would have been the last person in the world to consider the phrase as anything like a *definition*. The sentence in which this much-quoted and little-understood phrase occurs, is in his introduction to ward's *English Poets*, where he says "In poetry, as a criticism of life under the conditions fixed for such a criticism by the laws of poetic truth and poetic beauty, the spirit of our race will find...as time goes on and as other helps fail, its consolation and its stay." He means that men who have failed to find consolation in religion and philosophy, will turn to poetry and find therein something which will compensate them for, and will partly explain "the weariness, the fever, and the fret" of the common and monotonous life of every day.

To imagine Arnold making such a blunder as is usually attributed to him is ludicrous; and it is therefore to be regretted that this error should have found its way into the last edition of Matthew Arnold's poems, especially since the edition is meant for school-children, and is in other way simple, clear, and unpretentious.

The volume, as has been said, is intended for use in schools; and therefore it should deal with simple notions, which boys at school can understand and appreciate; and if the editors introduce matters which lie rather within the province of a mature critic, they should be careful of accuracy.

In other ways the edition is a good one. Three objects have been kept in view by the editors: they have attempted in the selections to choose poems which exhibit Matthew Arnolds's special qualities, which are suitable for the young, and which are calculated to give the student something to think about apart from the poems themselves. On the whole the choice is a judicious one: the poems selected are "Sohrab and Rustum," "Balder Dead," "Memorial Verses," (on Goethe, Byron, and Wordsworth) "The Youth of Nature," "The Scholar Gipsy," and "Thyrsis." We should like to have seen "Rugby Chapel" included, and some of the later poems such as "Geist's Grave," which surely fulfils the conditions imposed upon themselves by the selectors, and "Kaiser Dead." Moreover, "Sohrab and Rustum" and "Balder Dead" between them occupy about 79 pages out of 102; whatever may be our opinion about the former work, there is hardly any reason for the inclusion of "Balder." One example of the episodic, quasi-epic poem would have been enough. The editors seem to have felt this, for they give it special notice (almost apologetically) in the preface; and in the introduction they positively condemn this unfortunate poem with their faint praise.

As regards the introduction it is, in the main, scholarly, discriminating, and illustrative; but there are certain points in Matthew Arnold's character which might well have been touched on. The first is the spirit of resignation and sadness which pervades all his work—what he himself, in an exquisite phrase, called "the sense of tears in mortal things." Throughout his poetry we find this "Vergilian Cry": it is certainly not pessimism, nor is it exactly fatalism: it is the gentle and scholarly melancholy of a man who saw the essential pathos of human nature, and who tried to console himself for this pathos by literature. The second (and at first sight it would seem hardly compatible with the first) is a brave spirit of enterprise and endeavour, the longing for a high ideal, a feeling which Arnold best exemplifies in the noble last lines of "Rugby Chapel" with its powerful reminiscence of Marcus Aurelius,

"Strengthen the wavering line,
'Stablish, continue our march,
On, to the bound of the waste,
On, to the city of God."

All students of Matthew Arnold's work must realize how much there is revealed in his poems of the man himself, touched as he was with the sense of sadnes and unsuccess of man's life, and yet determined, in spite of all odds, to face facts and to fight onward towards his ideal.

The notes, as a whole, are good, particularly the references to Homer, except that worst of all translations, by Messrs. Lang, Leaf, and Myers, is used. But, if references to Homer are to be given, why is there no such note on lines 155—8 of "Balder Dead"? The lines are almost a literal translation of Homer, Odyssey V, lines 273—275. Again in the same poem on line 298, there is a strange note on *Suttee*, which we are told was unknown to the Greeks. Seeing that the poem is about a Scandinavian subject it would be as suitable to have mentioned that aerial navigation is unknown to the Hottentots. There is also an unintelligible note on the last lines of "Sohrab and Rustum" (lines 879—92): the reference to the Greek tragedians and to the modern acting of Hamlet is, to our mind, inexplicable.

A map is given, by way of frontispiece, of Oxford and its environs, the important spots are pointed out, it is true; but the map is disfigured by too many lines and the roads and footpaths are not distinctly marked. The small dotted lines, for instance, might be anything; as a matter of fact, they are meant to represent foot paths; also the main roads, by-roads, and bridle-paths are not sufficiently distinquished.

These however are more or less small points: on the whole the edition is a good one: it is suited to its purpose, and the form at and print are worthy of the Clarendon Press.

SCHOOL ALGEBRA BY W.E. PATERSON, M.A., B.SC., OXFORD: THE CLARENDON PRESS. PARTS I AND II.

This is one of the best books on modern Algebra we have come across. As the author says in his preface "The early chapters are very full in explanation and are written in simple, colloquial language." The elementary parts of Algebra, which the student ordinarily finds most uninteresting, have been made as interesting as possible.

Authors on Algebra have sometimes an unfortunate habit of confining the problems only to such as to lead to equations. The author of the work before us has led the way to the introduction of simple problems thoughout the book.

Among the features of the book may be mentioned the introduction of Revision Chapters, which go through the early portions of the book over again, and the introduction of Horner's method of synthetic division, the brevity of which method does not seem to have been appreciated till now.

The printing and get up of the two volumes are excellent and do credit to the Clarendon Press.

THE ETON ALGEBRA, BY P. SCOONES, M.A., AND L. TODD, M.A MACMILLAN & CO., LIMITED.

This is a collection of examples in Algebra. There is no book work, but specimen examples have been inserted in the beginning to secure uniformity of method.

A NEW ALGEBRA BY S. BARNARD, M.A., AND T.M. CHILD, B.A., B.SC. MACMILLAN & CO., LTD. VOL. I.

This is another work on Algebra written on modern lines. The subject is fully and clearly treated and developed.

This volume is divided into three parts. Part I introduces the student to Algebra, in the form of generalised arithmetic. Parts II and III deal with negative numbers and fractions. The authors seem to have considered that negative numbers cannot be treated satisfactorily in the beginning.

The secondary importance of the long rule for the H. C. F. is just being widely recognised, and the authors have not introduced the same in this the first volume, though their reason for the same seems to be, that it is "undesirable for the student to be introduced to any processes until he is able to understand the justification for it." The historic method of finding the square root has for the same reason been excluded. The principle adopted by them is an excellent one; there is no doubt that the student derives a good deal of benefit from understanding what a process exactly aims at.

The exercises are numerous and possess great variety.

A FIRST ALGEBRA BY W. M. BAKER, M.A. AND A. A. BOURNE M.A., GEORGE BELL AND SONS.

Yet another work on Algebra treated according to modern lines. Negative quantities are introduced at a very early stage and illustrated with easy examples. Substitution in formula has been introduced for the purpose of showing the practical nature of the subject.

The connection of algebra with arithmetic and geometry is well emphasised and simple equations and easy problems are given the very early place now recognised to be necessary.

A large number of oral examples and sets of revision papers are introduced at various stages.

We are of opinion that the book will be found useful for the High School classes.

ELEMENTARY SOLID GEOMETRY BY T. SUNDARA RAO, B.A. PART III. POLYHEDRONS.

This is one of the series of Mr. Sundara Rao's, books on a little studied branch of mathematics. The author has treated the subject in a lucid manner, and we hope that the book will be the means of making this branch of the subject more popular than it now is. The book before us is by no means an 'Examination book' but this, we believe, is no reason why the same should not be studied.

"THE UNITY OF RELIGION AND THE VARIETY OF CREEDS," BY C. V. SWAMINATHA IYER, EDITOR OF THE *Viveka Chintamani*. PRICE 6 AS. OF ALL BOOKSELLERS.

We have received from Mr. C V Swaminathaiyar a copy of his Essay on "The Unity of Religion and the Variety of Creeds" read at the Ranade Hall, Mylapore in April last, which he has submitted to the Religious Parliament convened by the committee presided over by Babu Sarada Charan Mitter, with a specially written thesis on "Religion and Religions," which contends that the various religions so-called are but so many facets of the one only Religion which is the Religion of Truth. Mr. C. V. Swaminathaiyar clearly demonstrates the intensely practical nature of religion as a Science and concludes his thesis as follows:—"Thus religion is not a mere speculation of the intellect; but an understanding of the heart illumined by the multiform expression of the intellect. It is the most practical of all practical subjects and sciences, and demands and exacts a practical mastery of every detail even to the minutest point from its Votaries, even as the exact sciences of Mathematics or Chemistry do. So, I can but impress on this Congress of Religions, that the various religions so-called that prevail in this holy land of true knowledge—the Vedic Land of Ind—are nothing but so many aspects of the One Religion of which they are like so many facets. The perfect diamond shines the more for its being cut into so many facets that reflect the light in so many ways, making it shine far better than an uncut diamond. Even so, this Vedic land but shines the more brilliantly for having its one pure diamond of Vedic Truth cut into a perfect diamond of many facets, each reflecting the One Truth and the whole shining with greater brilliancy than if we had it all round without any facets." These remarks with which Mr. C. V. Swaminathaiyar proceeds to lay on the table of the Religious Parliament, his printed paper on "The Unity of Religion and the Variety of Creeds" sufficiently illustrates the clear grasp which he has possessed of the tangled subject of religion. We await with interest the publication of his thesis after it has been read at the forthcoming Session of the Convention of Religions to be held in the course of a week or so.

JUNIOR CHEMISTRY. BY R. H. ADIE, M.A., B.SC., LONDON: W. B. CLIVE, UNIVERSITY TUTORIAL PRESS LD., 1909.

The author tells us that he has embodied in this book what he has put to the test of experience during the last fifteen years. The method adopted is neither the historic nor the systematic. There are a series of short studies on various substances interspersed with a number of generalisations. There can be no doubt that by performing the experiments described in the book the student will acquire some skill in manipulation But we cannot say that we have been favourably impressed by the method pursued in the book.

Indian Educational Notes.

MADRAS.

MR. A. C. Pranatartihara Aiyar, Acting Deputy Director of Public Instruction, has privilege leave for twenty-eight days from or after the 4th March 1909.

THE unexpired portion, namely, three days, of the privilege leave already granted to the Hon'ble Mr. A.G. Bourne, C.I.E., D.Sc., F.R.S., is hereby cancelled.

THE following postings have been ordered:—

MR J.A. Yates, M.A., Inspector of Schools, to First Circle (Ganjam, Vizagapatam and Godavari).

MR. A.C. Pranatartihara Aiyar, B.A., on other duty; Mr. G. Venkatasubbarayudu Sastri, B.A., to act as Inspector of Schools Second Circle (Kistna, Guntur and Nellore).

MR. T.T. Logan, B.A., on leave; Mr. Herbert Champion, B.A., to act as Inspector of Schools, Third Circle (Bellary, Kurnool, Anantapur and Cuddapah).

MR. H.S Duncan, M.A., on leave; Mr. R.G. Grieve, M.A., to act as Inspector of Schools, Fourth Circle (Madras, Chingleput and Bangalore).

MR H.O. Kershaw, B Sc., Inspector of Schools, to Fifth Circle (Coimbatore, Salem, North Arcot and the Nilgiris).

MR. O J. Couldrey, Inspector of Schools, to Sixth Circle (South Arcot, Tanjore and Trichinopoly).

MR. L.C. Williams Pillai, B.A., Inspector of Schools, to Seventh Circle (Madura and Tinnevelly).

MR. P.P. Braithwaite, B.A., Inspector of Schools to Eighth Circle (Malabar, South Canara and Coorg).

THE above postings to have effect from the 1st March 1909.

MR. S. Subrahmanya Aiyar, B.A., First Assistant Teachers' College, Saidapet, is to act as Vice-Principal of the College during the employment of Mr. R.G. Grieve on other duty or until further orders. To have effect from the date of relief of Mr. H.O. Kershaw.

MR. S. Subramanya Aiyar, B.A., is to act in the Indian Educational Service.

MR. L.C. Williams Pillai, Inspector of Schools Seventh Circle, has privilege leave for three months with effect from 1st April 1909.

Dr. M.W. Travers, F.R.S., is to be an Ordinary Fellow of the Madras University.

MR. H.J. Allen, Professor of History, Presidency College, furlough for five months and eighteen days in continuation of the ensuing summer vacation of the College.

THE Director of Public Instruction is pleased to order the following postings of Sub-Assistants—

(1) Mr. S. Seshagiri Sastri B.A. L.T., Sub-Assistant Inspector of Schools, Namakkal Range to be Sub-Assistant Inspector of Schools, Tirumangalam Range, *vice* Mr. S.V. Devanayagam, B.A., L.T., transferred, without prejudice to his acting appointment in the Madrasa-i-Azam.

(2) Mr. K.S. Appaswami Aiyar, B.A., L.T., Sub-Assistant Inspector of Schools, Musiri Range acting in the East Srivaikuntam Range, to be Sub-Assistant Inspector of Schools, Namakkal Range—to join as soon as possible after handing over charge to the Supervisor at the head-quaters.

This cancels the posting of Mr. K.S. Appaswami Aiyar to the Tanjore Range and of Mr. V.C. Srinivasachari to the Tirumangalam Range.

THE annual general meeting of the Madras Shorthand Writers' Association for the year ending with February 1909 was held in the premises of the Church of Scotland Mission College on the 27th February 1909 at 5-45 P. M. under the presidency of Mr. C. Gopal Menon F.I.P.S., A.I.B., Vice-President of the Association. The proceedings opened with the reading of the annual report by the Secretary for adoption by the general body of the Association. The report was adopted after some slight verbal alterations. The next item of the business was the election of office-bearers for the year 1909-1910 and the following gentlemen were elected :—Honorory President, Mr. Alfred Pitman; Honorary Vice-Presidents, Messrs Bernard de Bear and E.A. Cope. President, The Hon'ble Mr. V. G. Lynn (President of the Chamber of Commerce); Vice-Presidents, Dewan Bahadur L.D Samikannu Pillai, M.A., B L., L.L.B., and Mr. C. Gopal Menon, F.I.P.S., A.I.B.,; Secretary Mr. V. Venkataramana Iyer, B A.,; Treasurer, Mr. T. Ramanadhier; Librarian, Mr. P. N. Krishnasami Iyer; Managing Committee, Messrs K. V. Venkatswara Iyer, T. Vidianatha Iyer, B.A., G Y. Appukannu Chetty, M. Sivananda Mudaliar, and K. Narasimha Iyer; Teachers, Messrs. T. Ramanadhier, M. Sivanandam Mudaliar, and K. G. Rangasawmy Iyengar. With a vote of thanks to the chair and to the authorities of the Church of Scotland Mission College the proceedings terminated.

THE Madras Government has issued an Order inviting applications from graduates in Chemistry who are natives of India for a Government of India Technical scholarship of the value of £150, tenable for two years for study of the Chemistry of soap-boiling and the use of native oils. No age limit is laid down; and the scholarship is tenable in Great Britain and with the approval of the Secretary of State in a foreign country.

A LECTURE was recently delivered before the Historical Society of Pachaivappa's College by Mr. F.A. de V. Robertson, B.A., Oxon. The Rev. E.M. Macphail, M.A., B.D., of the Chistian College, was in the chair. The subject of the lecture was "The Spartans," but the lecturer prefaced his address by some remarks on the use of history when properly taught as a medium of education. History, he said, should not consist merely of glowing pictures of the battle-field, though the dramatic features of history and the opportunities of character-study which it provided were not to be despised. The real importance of history did not lie in learning the actual facts of the past, but in considering the reasons which caused those facts to take place, and the effect of those facts on subsequent ages. He then dealt with the debt which the present day owes to the ancient Greeks, and particularly to the Athenians. He said, however, that their genius would have been of little use to the world had they always remained weak and divided into petty warring states. He spoke of the respect commanded by Sparta as the chief force which made for Hellenic unity, and then described briefly the customs of the Spartans and their national character, which had won them that respect. He sketched the attempt of Sparta to unify all Greece, a feat which was afterwards achieved by Philip and Alexander of Macedon. Then he described the part played by Sparta in repelling the Persian invasion, and the battles in which they proved their valour. He ended by explaining that accounts of the Spartans nearly all come from Athenian sources and where depreciatory must not be accepted at their face value.

THE following order of Government has just been issued :—

In G.O., No. 211, Public, dated the 10th March 1908, the Government offered certain prizes (*a*) for the best writer of a system of vernacular shorthand which can be used for writing the four vernaculars at a minimum speed of sixty words a minute, and (*b*) for the best system of vernacular shorthand which can be used for writing the four vernaculars. Mr. C. A. Souter, I.C.S., and Mr. Rao Bahadur L. D. Swamikannu Pillai, who were appointed to conduct the examinations which were held in October 1908, have submitted their report on the results and have offered suggestions for encouraging the study of vernacular shorthand. Thirty-one candidates in all appeared for the test examination. No candidate succeeded in passing the test in Telugu, Canarese or Malayalam, and the rewards offered in these languages have lapsed. In Tamil, only three candidates out of fourteen who appeared succeeded in attaining a speed of sixty words a minute. The remaining candidates were tried at lower speeds and one attained fifty words a minute and eight forty words a minute. But while the three candidates referred to attained the required speed, the Committee record that none of them can be said to have earned the prizes offered. The Government are however pleased to award a prize of Rs. 75 to A. Ramiah, who was the best of the three, a prize of Rs. 50 to N. S Rangasami Aiyangar clerk in the Madras Custom-house who has been placed second, and of Rs. 40 to S, Swaminatha Sastri of the Police Training School at Vellore, who stands third. The Committee report that the candidates followed mainly the systems devised by.—

(1) Mr. M. Srinivasa Rao, Shorthand Instructor, Vellore Police Training School, whose system was followed by the majority of the successful candidates.

(2) Mr. V. Krishnamachari, author of "Indian Phonography."

(3) The Rev. B. Luthi of the Basel Mission Mangalore.

The Committee have made the following suggestions for the encouragement of the study of vernacular shorthand :—

(1) that Government should assist in the publication in each vernacular of manuals of shorthand which have been proved to be of merit; and

(2) that experimental tests should be repeated until the study of vernacular shorthand is established on a firm footing. The Government do not consider that the time has yet arrived for the preparation of manuals. At present a speed of only sixty words a minute has been attained by the best of the candidates, which is insufficient for practical purposes. It is not as yet certain which system is in all respects the best for the purpose of a Dravidian language, and there is much to be done in the way of devising grammalogues, etc. Government accordingly consider it premature to authorize a manual until further experience has been gained. The Government approve of the proposal to hold another examination in vernacular shorthand: and it will take place in November 1909 on a date to be subsequently notified. The test will not be open to all comers, but will be confined to police officers and to other Government servants who have qualified in shorthand in English up to a minimum of 100 words per minute. The main factors in determining the merit of the candidate will be the speed at which passages dictated are written down and the examiners will subject to critical examination the symbols used and take the accuracy and clearness with which they are written into consideration. Three prizes of Rs. 40, Rs. 30 and Rs. 25 and three prizes of Rs. 15 will be awarded to the best of the successful candidates, provided they secure a minimum speed of sixty words a minute and otherwise satisfy the examiners. Mr. L. D. Swamikannu Pillai, Rao Bahadur, Secretary to the Commissioner of Revenue Settlement, will be requested to publish a scheme at an early date. Mr. V. Krishnamachari has incurred considerable expenditure in connection with the publication of his work on "Indian phonography" and the Government are pleased to sanction the payment to him of a sum of one hundred rupees towards his expenses. Mr. L. D. Swamikannu Pillai and Mr. C. A. Souter, I. C. S, will be thanked for their services in conducting these tests.

IN appointing Honorary Visitors to the Agricultural College and Research Institute, Coimbatore; the Government has issued the following order :—"His Excellency the Governor in Council considers it desirable to associate in an honorary and advisory capacity with the Agricultural College and Research Institute at Coimbatore, a certain number of non-official gentlemen who take a practical interest in Agriculture. His Excellency the Governor in Council is therefore pleased to appoint the undermentioned gentlemen as Honorary Visitors to the Institution :—(1) Maharaja Sir V. Ranga Rao Bahadur, K.C. I.E., Raja of Bobbili; (2) The Hon'ble Raja Vasudeva Raja Avergal Valiya Nambidi of Kollengod; (3) The Zemindar of Kangundi; (4) The Zemindar of Singampatti; (5) The Proprietor of Lokkavaram; (6) The Poligar of Uttukkuli, Coimbatore district. (7). The Mittadar of Chennappanáickenpálaivam, South Arcot district; (8) The Mittadar of Obilinayakkanahall and Bosinayakkanahalli, Salem district; (9) The Pattagar of Palayakottai, Coimbatore district; (10) Mr. Rao Bahadur C. Hanumantha Gowd of Hospet, Bellary district; (11) Mr. Rao Bahadur K. S. Srinivasa Pillai, Tanjore; (12) Mr. Rao Bahadur V. Ramabhadra Nayudu, Vadagarai, Madura district; (13) Mr. Rao Sahib N. Subba Rao, Mangalore; (14) Mr. M. Abraham Pandithar, Tanjore; (15) Mr. Vengayil Kunhi Raman Nayanar, Malabar district. The term of appointment of each Visitor will be two years. The following rules are sanctioned tentatively for the guidance of Honorary Visitors :—(1) The College and Farm will be open for the inspection of Honorary Visitors at any time except on Sundays and on Government Gazetted holidays, and an officer will be deputed to show them anything they may wish to see and to afford any information regarding the object of any experiments that may be in progress. Every Honorary Visitor intending to visit the College or Farm shall ordinarily give the Principal 24 hours' notice of such intention. (2) A Visitors' book shall be kept in the Principal's office in which the Visitors may enter any remarks and observations they may wish to record regarding the work in progress in the College or Farm. Copies of remarks recorded by Visitors should be forwarded by the Principal, once a quarter, to the Board of Revenue through the Director of Agriculture."

THE Government has sanctioned Rs. 85,480 as teaching grant for elementary boys' schools and Rs. 4,110 for girls' schools in Malabar district. S. Canara gets Rs. 26,569 for boys' schools and Rs. 1,030 for girls' schools.

THE report on the working of the St. Aloysius' College, Mangalore, during 1908, shows that remarkable progress was made by the institution in the year under review. It is satisfactory to note that the year saw a large increase in the strength of both the school and College Departments, the total strength of the institution being 880 as against 613 in the previous year. We are told that with the increase in numbers the efficiency of the institution has not suffered, a circumstance on which the conductors are to be congratulated. There was an improvement in the average daily attendance, and the tone and discipline were good throughout the

year. The classes of St. Joseph's School, Codialbail were amalgamated in the year with the College. It is pleasing to note that the College Hostel system has now been placed on a greatly improved basis. Two resident Fathers and two Lay-Brothers are in charge of the institution, and these gentlemen are said to be taking very great interest in its working. A new two-storied building was erected in the year to accommodate the boarders; and the popularity of the Hostel is evident from the fact that there has been a large influx of students asking for admission; and to meet the demand further extension of the existing building has already been taken in hand. The results at University Examinations have been exceedingly satisfactory and the authorities are making every effort to fully meet the requirements of the new University Regulations. New lecture rooms and laboratories have been added; and in the course of the review year a substantial addition of some 500 volumes was made to the Students' Library.

IN G Os., Nos. 46 and 630, dated respectively 23rd January and 26th September 1906, and G.O., No. 103, Educational, dated 10th February 1908, the attention of the pubic was invited to the scheme of technical scholarships instituted by the Government of India, and information was furnished regarding the object of the scholarships and the conditions under which they were offered. Since the introduction of the scheme in 1903, three scholarships have been awarded to candidates from this Presidency, one in 1906 to Mr. G.N. Dewal for the study of the weaving industry, one in 1907 to Mr. M.A. Ramunni-Panikkar for the study of the lecture industry and one in 1908 to Mr. V. Govindan Nair for the study of textile chemistry as applied to the dyeing, bleaching, finishing and printing of textile fabrics.

2. After consulting the Chamber of Commerce, the Trades' Association and some of the leading Commercial Firms in Madras; the Governor in Council considers that a scholarship may most advantageously be assigned in the current year for the study of the chemistry of soap-making and the use of native oils. The candidate for the scholarship should have taken the B A., degree with Advanced Chemistry (Branch II-B of the Madras University), as his optional subject, but the claims of candidates who have passed in Chemistry for the degree will also be considered. Candidates desirous of prosecuting the technical study of the chemistry of soap-making and the use of native oils should submit their applications to the Director of Public Instruction so as to reach him on or before the 25th March 1909.

3. Ordinarily the period for which these scholarships may be held is two years but in special cases, it may be increased to three years or reduced below two years. The value of the scholarships has been fixed at £150 sterling a year, but if in any particular case this amount is found insufficient, the Government will be prepared on good grounds to consider its enhancement. The scholarships are tenable in Great Britian and with the approval of the Secretary of State in a foreign country.

4. The holder of the scholarship will not be bound by any engagement to serve the Government on the completion of his course nor will the Government be bound to employ him. In selecting candidates, the Governor in Council will be guided by considerations of capacity, character and practical interest in the industry selected, and the assurance that the candidate will continue to devote himself to that industry on his return to India. No age limit is laid down for scholars. The course of study to be followed as well as the place in which it is to be prosecuted will be settled by the Secretary of State when a scholar arrives in England. Other conditions under which the scholarships are held are—

(1) that the candidate is a native of India as defined in section 6 of the Government of India Act, 1870, *viz*, "a person born and domiciled within the dominions of Her Majesty in India, of parents habitually resident in India, and not established there for temporary purposes only";

(2) that he has the consent of his family (*i.e.*, of his father, if alive; if deceased, of his guardian) to proceed to Europe or America;

(3) that his character is good;

(4) that he has sufficient knowledge of the English language; and

(5) that he is physically fit to undergo the course of life and study that he will have to follow.

5. The following rules for Indian Government Technical scholars in England will also be published for general information:—

(1) Every scholar shall, on reaching England, at once present himself to the Secretary, Judicial and Public Department, at the India Office, and report his arrival in writing.

(2) Every scholar shall, without any unnecessary delay, inform the Secretary of State to which University or College he is about to proceed, and shall at once take steps to enter himself thereat.

(3) Every scholar shall, within four weeks of reaching England, submit for the approval of the Secretary of State a statement showing the general course of study he proposes to follow; and the course approved shall not be changed without the sanction of the Secretary of State.

(4) Every scholar shall, at the end of each term of residence at a University or College, submit to the Secretary of State a certificate from the proper University or College authority, showing that his residence, conduct, and progress in study have been satisfactory during the term.

(5) Every scholar shall, at all times, obey such instructions as he may receive from the Secretary of State.

(6) Subject to a due compliance with the above conditions, the allowance, at the rate of 150*l.* a year for two years, or three years, if so determined, will be paid quarterly, in advance, by the India Office, commencing from the date of the scholar's reporting his arrival in England; but this allowance shall be reduced by the amount of any other sum which may become payable to him out of the revenues of India in respect of residence at a University or College during the same period or any part of it, but not in respect of University or College fees, the cost of which will be separately defrayed by the Secretary of State.

The necessary travelling expenses of scholars, by second class, or by third class if no second class be available, will also be separately defrayed by the Secretary of State; these should be claimed on forms obtainable from the Accountant-General, India Office, S. W.

Charges for hotel bills are not defrayed.

(7) Every scholar will forfeit his scholarship who, not being disabled by illness or prevented by any other cause which the Secretary of State may consider sufficient, fails to complete the required term of residence in England according to the terms and conditions approved by the Secretary of State under rule 3, or who if guilty of misconduct or disregard of the orders of the Secretary of State. If a scholarship be forfeited, the scholar will lose his claim to a free return passage to India, and will further become liable to refund the cost of his free passage to England.

(8) The scholars will be under the special supervision and charge of the Political Aide-de-Camp to the Secretary of State, through whom necessary orders will be given, and to whom all reports and other communications respecting them should be sent.

Additional Rules.

(*a*) Every scholar must give a written undertaking that he will devote himself exclusively, during the tenure of his scholarship, to the study of the subject for which his scholarship was granted, and that he will return to India on its termination, and there continue to devote himself to the industry which he has studied. Any scholar who neglects his studies, or tries to work for any other profession concurrently, will render himself liable to forfeiture of his scholarship.

(*b*) Every scholar will be required to keep a concise daily diary, to be certified by the authority under whom he is working, and to be submitted through that authority to the Secretary of State for transmission to India. He must also submit in the same way, from time to time, full notes of the work on which he is employed.

(*c*) Scholars will be expected to continue their studies during the summer vacations of the institutions where they are working, with the exception of three weeks in each year. Vacation study should, when possible, take the form of practical work.

As recommended by the Director of Public Instruction, a grant of Rs. 2,000 will be now sanctioned on behalf of the Stanes' High School, Coonoor, under article 57 of the Code of Regulations for European Schools, subject to the following conditions:—

(1) That in carrying out the work the suggestions of the Chief Engineer in his note communicated with G.O., No. 22, Educational, dated 12th January 1909, are adopted;

(2) that the work is completed before the 30th June 1909;

(3) that a certificate of the actual expenditure incurred on the work is submitted before the 31st July 1909;

(4) that the amount expended on the work does not fall short of Rs. 15,200 as actually verified;

(5) that a trust-deed is executed as required by article 56 of the Code;

(6) that all other conditions prescribed in the Code have been duly complied with.

2. On the above conditions being fulfilled, the grant will be paid as funds become available.

The proposals of the Director of Public Instruction for the amalgamation of the Government Mappilla Girls' schools at Talakkad and Tekkapalli are approved.

UNDER rules 36, 42 and 47 of the rules for the working of the College of Engineering, which were in force before 1st April 1907, fees were levied for the entrance examinations at the rates of Rs. 20, Rs. 15 and Rs. 10, respectively, for the several classes, while for the final examinations also similar fees were levied (rule 60). The final examinations as well as the term examinations for which no fees were levied were conducted by a Board of Examiners, while the entrance examination in respect of which fees were levied was conducted by the college staff.

2. UNDER the revised rules issued in G.O., No. 159, Educational, dated 20th March 1907, the entrance examination for which fees were levied has been abolished. The selection of candidates for the several classes is made by the Principal, registration fees of Rs. 5, Rs. 4 and Rs. 3, respectively, being levied from the candidates in the place of the old entrance examination fees. The fees for the final examinations are the same as before, namely, Rs. 20, Rs. 15 and Rs. 10, respectively. In view of the abolition of the entrance examinations, it was anticipated that there would be a considerable fall in the total receipts from fees and the Director of Public Instruction was requested to see that the remuneration to the examiners did not exceed the receipts from examination fees and to revise, if necessary, the scale of remuneration approved in G. O., No. 204, Educational, dated 9th April 1902. The Director of Public Instruction considers that it would be undesirable either to enhance the examination fees or to reduce the remuneration to the

examiners so as to make these examinations self-supporting. The Government will accordingly make no change in respect of the current examinations.

3. The Governor in Council after careful consideration is, however, of the opinion that for the future the system of external examiners now in force need no longer be maintained, the conduct of the examinations being left as in Bombay and Bengal to the College staff and the certificate of the Principal of the College of Engineering being accepted according to the prescribed standard as a qualification for the public service in this Presidency. For posts in which a University qualification is needed, there will be no change, as the University exacts its own standard, imposes its own examination, and appoints its own examiners. The Governor in Council accordingly resolves to direct, that for the future the special Board of Examiners for the College of Engineering be abolished and that the work hitherto done by the Board be undertaken by the College staff as part of their ordinary duties.

4. The Government further direct that the fees now charged for these examinations be abolished as separate fees and that they be added to the tuition fees which shall be raised by an equal amount. On this point the Director will report the scale which should for the future be fixed.

5. The plan of examinations at present in force in the college appears to be in some respects unnecessarily complicated, and the Director of Public Instruction will be requested to advise, after consultation with the Principal, in what directions he thinks it may be advantageously simplified or reorganized so that the work done by a student during his college course may be allowed its full weight in deciding whether he should be given a college certificate or not.

6. The Director of Public Instruction will be further requested to prepare and submit for the approval of Government a draft of the alterations in the rules of the college which are rendered necessary by these orders.

THE following will be substituted for rule 41 of the rules of the College of Engineering approved in G.O., No. 159, Educational, dated 20th March 1907, as modified by G.O., No. 514 Educational, dated 10th July 1908:—

"41. Non-commissioned officers and soldiers of His Majesty's British service will, to the number of five annually, be admitted to the College. They must hold a first-class Army School certificate. If more than five candidates apply, selection will be made by the Principal, who will give preference to those who have practised a trade. Candidates must be of thoroughly good character, well recommended by their commanding officers, and under 28 years of age on the 30th June of the year of admission. They must have had not less than two years' service prior to the date of admission to the College. Applications will be received by the Principal up to the last day of May. Each candidate's application shall be forwarded by his commanding officer to the Principal, and shall be accompanied by the following documents relating to the candidate:—

"(a) extract from regimental defaulter's and court-martial books for the whole period of service;

"(b) extract from company defaulter's book for the preceding two years;

"(c) statement of the trade followed by the candidate before enlistment;

"(d) statement that the candidate holds a first-class Army School certificate;

"(e) statement whether the candidate is married or unmarried;

"(f) certificate of good eye-sight, sound health and unimpaired constitution, signed by a Medical Officer in the following form:—

"I certify that I have carefully examined A.B., and that to the best of my belief his eye-sight is good and he has no disease, constitutional affection or bodily infirmity, unfitting him, or likely to unfit him, for outdoor employment as an Upper Subordinate in the Public Works Department,

"Name
"Designation."

THE Government are pleased to sanction a grant of Rs. 6,700 or one-half of the actual expenditure, whichever is less, towards the cost of extensions of and improvements to the building occupied by the St. Philomena's High School, Bellary, subject to the following conditions:—

(1) That in carrying out the work, the suggestions of the Chief Engineer in his note read above are adopted;

(2) that the work is completed before the 31st October 1909;

(3) that a certificate of the actual expenditure incurred on the work is submitted before the 31st December 1909;

(4) that the amount expended on the work does not fall short of Rs. 13,400 as actually verified;

(5) that all other conditions prescribed in the Code of Regulations for European schools have been duly complied with.

2. On the above conditions being fulfilled, the grant will be paid as funds become available.

THE Municipal Council of Salem estimates the cost of fitting up laboratories for the College and High School departments at Rs. 13,500. Towards the cost of this work a grant of Rs. 8,000 has already been sanctioned in G.O., No. 810, Educational, dated 3rd December 1907. The balance of Rs. 5,500 will now be paid as an additional grant. The Accountant-General will be requested to place this amount at the disposal of the Council out of the allotment of Rs. 1,05,000 under 22. EDUCATION—University in the budget for 1908-1909.

2. The Municipal Council must distinctly understand that it should not depend upon Government for any contribution towards the cost of maintaining the institution or for any further aid on its behalf and that it should make the College self-supporting.

BOMBAY.

THE Governor of Bombay tritely remarked at the prize distribution of the Victoria Jubilee Technical Institute, writes the *Times of India*, that appalling confusion exists with regard to the meaning of "technical" education. He then proceeded to a definition of the term, which will commend itself to all who have studied this question. The main object of a technical institute, he said, "should be to produce first class workmen whose skill is such that they are competent to direct others, and at the same time to teach as much theory as is required for the intelligent comprehension of the processes and the machines employed." It is by its approximation to this standard, and not by its capacity as a quasi-scientific college, that the Institute will be judged. At one time there was a tendency for the Institute to drift away from this standard and aim at development into a hybrid College of science. To this tendency, Government gave unwitting encouragement. It is a good thing that it has been brought back to its proper sphere, and His Excellency's speech may be regarded as evidence of the conversion of Government to this view. To the general record of progress at the Institute there was one unfortunate exception. The Mechanical Engineering Branch is losing its hold upon Bombay students, and the Chairman, the Hon'ble Mr. Dunn, attributes this to the exceptionally onerous conditions of the Bombay Boiler Act. We are all with His Excellency in his reluctance to lower standards, but if the standard places the Bombay student at an unfair disadvantage, then, it is certainly a case for careful inquiry. (*The Friend of India*)

AT the meeting of the Senate of the Bombay University held recently, it was resolved that the second LL. B. examination according to the old rules be held for the last time, in April 1909; and a committee of the Senate be appointed to consider the report on the proposal, on education put forward by Government.

THE Government of Bombay have sanctioned a sum of Rs. 31,600 for a hostel to be built in connection with the Dharwar High School. This grant, it is supposed, is in connection with the proposed hostel-system.

CALCUTTA.

THE Secretary of State has sanctioned proposals for raising the status of the second grade Government College at Chittagong, to that of a first grade College, with effect from June, 1909.

THE ceremony of distributing prizes to the Mahesh School, Serampur was held recently at Mahesh under the presidency of Mr. D. C. Patterson, I. C. S,. Sub-Divisional Officer of Serampore. It was held under a well decorated tent, and the President occupied a seat on a raised platform. Among those present were, Babu Mohendra Chandra Mitter, Babu Mohendra Chandra Lahiry of Serampore, Babu Satya Charan Sastri, and several European gentlemen. The meeting opened by the reading of the Annual Report, after which several gentlemen addressed the meeting. The authorities of the school are contemplating to construct several rooms, which are badly wanted, and they expect valuable help from several leading noblemen and from the neighbouring mills. After the distribution of prizes, the boys were treated with light refreshment by the Secretary.

ACCORDING to the "Englishman" commercial education is a failure in Calcutta. The Commercial Classes of the Presidency College have been more or less a failure.

IT is said that the gentleman who has promised to contribute Rs. 1,000,000 towards the building fund of the National Council of Education, is no other than, Babu Brajendra Kishore Roy Chaudhuri of Gouripur, who had already made a grant of Rs. 5,000,000 to the Council.

IT is not more than 7 weeks that Government opened its Central Weaving College at Serampore, but within so short a period, all the seats have been filled up by high-caste students. Of 70 students on the roll, the majority are Brahmins or sons of Zemindars. Some of the students held positions as clerks but they have left clerkship for learning the handloom.

Mr. Hoogwerf, the Principal, is a weaving expert who was appointed in England. He has some 15 years' experience in all the branches connected with cotton spinning and weaving. He has more than 7 years' experience on the commercial side of the industry. He says, in an interview with our reporter:—"The students are taking a keen interest in the various subjects taught at the school. Considering that the institution has been in existence since the 12th of January last, the boys have made rapid progress. Many of the students have grasped the subject quite thoroughly and gained insight into it although alien to them."

The Government building is under construction It will be completed in a year when 30 more boys will be taken in.

THE report on the working of the Bengal National Council of Education for 1908, affords interesting reading, and points out, that much good and patriotic work was done in the year under review. Eighteen secondary National Schools were affiliated in the review year to the Council which spent Rs. 12,000 as grants-in-aid to those schools. A pharmaceutical department and a department for applied chemistry was opened, and various additions were made to the scientific and technical departments. In the manufacturing section, articles of the value of Rs. 10,000 were turned out, including very delicate scientific instruments, One noteworthy feature of the instruments is, that their value is fifty per cent below the value of those imported, while the quality is superior. A pencil factory and a sugar factory were opened in the year. Turning to the financial side of the report, we find that last year the Council spent a sum of Rs. 88,000. Besides the income from endowments, equal to Rs. 34,000 per annum, the Council received Rs. 17,800 in subscriptions. Rs. 17,000 in special donations and more than Rs. 10,000 as representing the outturn of the Technical Department. The budget for the current year shows a prospective expenditure of Rs. 1·25 lakhs of which Rs. 28,500 are to be absorbed by the establishment. Rs. 5,000 is alloted to the Physical and Chemical department. Rs. 3,250 to the Biological Laboratory, Rs. 5,000 to pharmacy, Rs. 22,000 to the technical department. The report concludes with the encouraging announcement, that the Council has received the offer of a donation of rupees one lac for building a house of its own. This offer requires to be supplemented, and the Council appeals for help. Altogether, the work turned out in the year was substantial and encouraging; and it is to be hoped, that with the support so ungrudgingly placed at the disposal of the Council by the public of Bengal, in course of time, it will control the private educational agencies of the province.

WE understand that there is no foundation for the rumour published by a contemporary to the effect that the University Law College is to remain in abeyance for lack of funds. We are assured on excellent authority, that the Law College will be duly opened in July next.

THE Secretary of State has appointed Mr. George Findlay Shirras to the Professorship of Political Economy, Dacca College. Mr. Shirras will, accordingly, resign his post as Assistant District Commissioner for S. Nigeria to which he was appointed a month ago. He is a graduate of Aberdeen Univerity and afterwards studied in London. He has done much original work in labour economic, and is specially interested in the social and economic conditions of India.

MAHARAJA Manindra Chandra Nandi contemplates endowing a technical institution in Calcutta with a property yielding an annual income of Rs. 1,00,000. Negotiations are now being carried on with the Government of Bengal on the subject.

PUNJAB.

THE degree side of oriental learning of the Punjab University has never been popular for several years past, candidates competing for those degrees never exceeding a dozen, but the number appearing for oriental title examinations has been considerable. A proposal was put forward for their amalgamation, which, however, met a considerable opposition on the ground, that oriental titles are well known and valued and their abolition would discourage Sanskrit and Arabic studies. The Syndicate therefore recommended that examinations for oriental titles should remain as at present.

THE Punjab Education report states, that a preponderence of Mahomedans over Hindus and Sikhs combined is reported in the case of the Oriental College, the Mayo School of Art, and industrial schools generally, but among boys of the school-going age, 10 per cent attended public institutions compared with 15·8 for Hindus and 19·4 for Sikhs.

MR. Shiv Dial M.A., officiating Inspector of Schools on the Delci Division, attended a recent meeting of the Punjab Chamber of Commerce by invitation, to discuss the question of co-operation, as between the Chamber and the Education Department in the promotion of commercial education. Members of the Committee were agreed that the Chamber could probably be of assistance to the authorities in their endeavour to further commercial education in the province, by facilitation in obtaining appointments for young men, who had successfully passed the Clerical and Commercial examinations of the Punjab University.

THE Maharajah of Durbhanga has given Rs. 10,000 for the erection of a Hindu Temple in connection with the Aitchison Chiefs' College, Lahore.

AN Educational Conference is to be held in Lahore on the 13th and 14th of April, at which, besides Educationists, several Deputy Commissioners are expected to attend.

UNITED PROVINCES.

THE Director of Public Instruction, United Provinces, has directed, that only the following journals should be subscribed for by the principal schools under his control:—*Indian Nation* (Calcutta); *East and West* (Bombay); and *Students' World* (Lucknow).

COCHIN.

THE Cochin Sirkar has decided to grant two scholarships for training in the Dehra Dun College and two technical scholarships, one tenable in foreign countries and the other in any technical institute in India. These scholarships are open to F. A's from the Ernakulam College or graduates. One scholarship is to be given to girls only for a course of training in the Madras Medical College. Applications will be received by the Dewan not later than the 1st May. The scholarship-holders will have to bind themselves to serve the State at least for two years.

INDIA, GENERAL.

THE fifth Quinquennial Review of Education in India is issued by Mr. Orange, the Director-General. The period under review is from 1902 to 1908, and there are two volumes. The first consists of 338 pages with 16 Chapters which deal fully with the following subjects:—Universities, Arts Colleges, Secondary Schools, Primary Schools, Professional Schools and Colleges, Technical Schools, Training of Teachers, Education of Chiefs and Nobles, Education of Girls, Education of Europeans, Education of Mahamedans, Education of Backward Classes Education of Defectives, Reformatory Schools, Private Institutions and Education Department, The second volume which consists of 168 pages contains maps and statistics.

Foreign Notes.

GREAT BRITAIN.

THE 11th annual dinner of the Students' Union of the London School of Economics and Political Science was held recently at the Trocadero Restaurant. Mr. R. A. Robinson, Chairman of the London Country Council and President of the Union, occupied the chair, and the company included Mr. Herbert Samuel, M. P., Lady Betty Balfour, Mr. W. P. Reeves (Director of the School) Mr. Russell Rea, M. P., Lady Dyke, Mrs. A. S. Green, and Professor L. T. Hobhouse.

Mr. Herbert Samuel, in proposing "The School," said that Mr. Hewins, its first Director, had become one of the leading spirts of the Tariff Reform League; Mr. Mackinder no sooner resigned the office than he appeared as a candidate for Parliment in the same cause—both quite well-meaning men when they came there. He wished for their Successor, Mr. W. P. Reeves, a happier fate.

The work of the school was not merely that of giving a technical training in specified subjects; it helped students to obtain degrees, and more important than that, was the help that the school gave to its members through what John Morley called "The intellectual climate in which they are trained" —the spirit and the degree of knowledge with which it equipped them in dealing with the social problems with which our time had chiefly to cope. Year after year our system became more and more complex. The passing of legislation had doubled, compared with what it was a few years ago. The Home Office, for example, three years ago was dealing with 52,000 papers a year, the number now being 70,000. A society so complex as that in which we were living and towards which we were moving could not be managed by mere amateurs, and if they were able to give a professional training they ought to require from those who were engaged in the work of the State at least a liberal education in social subjects. Already the school was performing a duty of immense value. It was his task in the course of the year to go through some hundreds of papers of applicants for some units of vacancies on the Factories' Inspectors' Staff, and whenever a candidate declared that he or she had, a course of training at the school of Economics, that candidate, other things being equal, always got the preference. Even the Military authorities had recognized the value of the school. In training men who would in future become Officials of local authorities, Members of Parliament, perhaps, Ministers of the Crown, he felt sure that the school was rendering an invaluable service.

Mr. W. P. Reeves responded.

The toast of "The Union" was proposed by Mr. Russell Rea, M. P., and Mr. P Anstey, Chairman of the Students' Union, who responded, said that there has been a most satisfactory increase in the membership.

THE King has appointed a Royal Commission on the subject of University Education in London.

The terms of the reference are:—

To inquire into the working of the present organization of the University of London and into other facilities for advanced education (general, professional and technial) existing in London for persons of either sex above secondary school age; to consider what provision should exist in the Metropolis for University teaching and research; to make recommendations as to the relations which should in consequence subsist between the Universty of London, its incorporated Colleges, the Imperial College of Science and Technology, the other schools of the University, and the various public institutions and bodies concerned; and further to recommend as to any changes of constitution and organization which appear desirable. In considering these matters, regard should also be had to the facilities for education and research which the Metropolis should afford for specialists and advanced students in connexion with the provision existing in other parts of the United Kingdom and of His Majesty's Dominions beyond the Seas.

The Chairman of the Commission is the Right Hon. R B. Haldane, KC., M.P, and the Members are;—

The Right Hon. Viscount Milner, G.C.B., G.C.M., The Right Hon. Sir Robert Romer, G.C.B., Sir Robert L. Morant, K.C.B., Mr. Laurence Currie M.A., Mr. W. S. M. Cormick, M.A., LL.D., Mr. E. B. Sargant, M.A., and Mrs. Creighton.

The Joint Secretaries to the Commission are Mr. J. Kemp and Mr. H.F. Heath.

AMONGST those to whom the Senate of Edinburgh University has resolved to offer the degree of D.D., is, Principal Wann of the Scottish Churches College, Calcutta.

THE Recent Report of the Bristol University College shows that the educational activity of this Western institution is well maintained. Encouraging progress has been made in the direction of obtaining a Royal Charter for the incorporation of the proposed University of Bristol, and it should not be long before Bristol and the West of England are provided with a well-endowed, modern University. The development of the work of the Day Training Colleges in connection with the scheme has been very satisfactory. The number of certificated teachers in training is now 114 men and 125 women. We notice that for tutorial purposes on the men's side, the fine building of the deaf and dumb institution in the vicinity of the College has been procured. The Council of the College is hopeful also that the adjoining Counties will undertake the provision of hostels for teachers coming for the purposes of professional training. At the last meeting of the Committee of the University it was announced that Lord Winterstoke is prepared to give an additional £15.000 towards the University. This with the £ 20,000 he has already given, makes Lord Winterstoke's contribution to the fund £35,000. Mr. E. C. Wills has also just contributed £ 10,000 to the University Fund, which is thus raised to practically £ 200,000.—*The School World.*

AN optional paper in Elementary Arabic is to be set at the B. A. Honours Hebrew Examination at the London University.

A SYLLABUS in Chinese has been adopted for the Intermediate Arts Examination.

A WESTERN Australian University is the latest proposal. Dr. Hackett, a member of the Legislative Council is now on his way to England to make arrangements in connection with the foundation.

THE late Dr. Thomas Mackie, Advocate, Edinburgh, has left the residue of his estate, which is expected to amount to £ 80,000 to the University Court of Edinburgh University for the purpose of developing and encouraging scientific and medical research, and of extending the teaching and study of English and modern languages.

AMERICA.

THE Report of U. S. Commissioner of Education for the year ending June 30th, 1907 shows that remarkable progress has been made during the year under review. The Bureau of Education received returns from more than 10.000 different institutions, and an examination of these particulars leads to the conclusion that the number of secondary or high school pupils enrolled in all schools and colleges in the United States was 961, 786 for the year under review, representing a gain of 37, 787 over the total for the preceding year. The public high schools alone had an enrollment of 751,081—again of 28.389. The number of secondary school pupils in both public and private institutions in 1890 was 367,003, or about 5.900 to the million of population; in 1895 the number had increased to 539.712 or 7.900 to the million; in 1900 the number was 719.241 or 9,500 to the million; while for the year 1907 the number of secondary school pupils aggregated 961.786 or about 11,250 to the million population or more than 1 per cent. The percentage of secondary school pupils attending public schools continues to increase steadily, and the number attending private schools to decrease; while in 1890, 68·13 per cent of the total number of secondary school pupils attended public high schools, the proportion in 1907 was 88·55 per cent.

A NOVELTY in Educational endowments is reported from America. The Holophane Glass Co., has found a research fellowship in the University of Kanras, the emoluments being £ 300 a year for two years, together with ten per cent. of the profits that may arise from any discoveries made by the Researcher.

GERMANY.

THE increase in the number of foreign students at the German Universities, says *the University Correspondent*, over those of last Winter (from 3 869 to 4.077) is interesting to all, as the stricter regulations for Matriculation introduced in 1907 had led to a falling off. There were 1,584 Russians, 746 Austro-Hungarians, 303 Swiss, 333 Americans, 165 English, 61 French, 172 Asiatics (chiefly Japanese studying medicine), and 346 from Bulgaria, Servia, and Roumania. The most popular faculties are the medical and philosophical.

The Educational Review.

The Primary Teacher.

In his new book, entitled *The Teaching of Reading*, Professor Wyld has some interesting remarks about the training of the primary teacher. "From long experience of the primary teacher," says Professor Wyld, "I feel that the mother tongue should be the chief subject of his training, not the niceties of English grammar and analysis, nor the more specialised refinements of English philology, but a broad and humane study of English as a means of expression. The primary teacher in training does not read enough, does not write enough, does not speak enough. It would be well for him, and for those whom he is going to teach, if he were soaked in English literature, from Chaucer to Stevenson and Kipling. He should be induced to read, read, read, without the pretty distractions which too often beset the ordinary academic course, and without the fear of examination before his eyes. One is often horrified, in talking to training college students, to discover how little they know of English literature. Take them where you will—Milton, Pope, Gray, Shelley, Byron, Macaulay, Tennyson—they have never heard of anything you mention unless it happens to be a prescribed book. They have no time for anything else! If these students were allowed to browse about through English literature for two years, and do nothing else—of course, under competent direction and advice—would they not have a choice of gaining, like King Solomon, "a wise and understanding heart," which would be worth anything to the country which paid the expenses? As it is, with next to no time for reading or reflection, and but mutilated opportunities, the hard-working primary teacher has to struggle through a course of bewildering variety, and if he is successful he is launched forthwith upon his life's work. It is not easy, under such circumstances, for a man or woman to feel much of the joy of life, to be awake to the great thoughts and emotions which have shaken humanity, or, if dimly perceiving them, to have gained adequate means of their expression." These remarks of Professor Wyld apply with equal force to our primary teachers. Few of them have a good grounding in their mother tongue. In his impoverished state it is unlikely that the intellectual status of the average Indian primary teacher would find betterment.

Rivalry as a Factor in Education.

The Pedagogical Seminary of last December contains a valuable monograph on the part played by rivalry in education. An historical survey of the methods of education apparently reveals a definite sequence in the order of stimulants used to incite industry in learning. The oldest means of persuasion is the rod; the next higher step is the partial or complete substitution of rivalry for brute force; the final stage is the present system in which an appeal is made to many motives, rivalry playing a much less conscious part. Prior to the age of six the child craves for approbation and visible rewards justly appeal to his interests. The whole nature of the pre-adolescent organism being individualistic, real competition without too prolonged struggle or suspense accords with the pre-adolescent stage. The character changes with adolescence. New impulses, such as the desire for superiority and the love of greatness, come into operation. The boy desires to get into the crowd, not only because he is gregarious, but also because he is there-

by furnished with a standard with which to measure his whole self. Thus rivalry becomes a powerful social factor. As Francis Galton points out, one of the evil consequences of gregariousness is the lack of moral courage. "The vast majority of persons of our race have a natural tendency to shrink from the responsibility of standing and acting alone; they exalt the *vox populi* even when they know it to be the utterance of a mob of nobodies, into the *vox Dei*, and they are willing slaves to tradition, authority and custom." "Slavish instincts of man are a direct consequence of his gregarious nature, which in turn is a result of his previous form of civilization. Gregarious animals possess a want of self-reliance in a remarkable degree. We have inherited these slavish instincts to a remarkable degree, which under our civilization are becoming of more harm than good." As rivalry reacts against gregariousness, it is a means of ethical and moral adjustment. As it involves all the attributes of courage, it tends to inspire self-confidence and to rectify cowardice underlying gregariousness. Without destroying sociability it tends to place the individual on his own feet. Thus rivalry forms a fundamental impulse of life which cannot be neglected in education. It should not be looked upon as a means of discipline but as a means for fuller development. Hence, rivalry which shows itself in the form of self-emulation is always preferable to the more strenuous competitions seen in the contest for marks and places. The special place for rivalry is the field of action. Elsewhere it should be always looked upon with suspicion. This distinction is emphasised by Mrs. Boole in her *Preparation of the Child for Science*. "The element of competition has its place, and a very important one, in education; but its function is to stimulate to active exertion among known facts. Children may legitimately run races for a prize, or compete together as to speed and accuracy in working out sums by methods already quite familiar, but whenever the business on hand is revelation, whether by learning to understand a mental process, observing a natural fact, or turning the nervous system into harmony with Nature's rhythmic law, the idea and feeling of competition should be entirely absent. Too much stress cannot be laid on this point. The false crossing of influences, the applying of stimulus inappropriate to the particular function, especially this dragging of the element of competition into the wrong positions both of the educational life and the professional life, are responsible for more of insanity and vice than any one dreams of who has not given very special attention to the subject."

The Functions of Technical Colleges.

At the annual meeting of the Association of Technical Institutions Dr. George T. Beiby, F.R.S., President of the Association, delivered an address on the functions of technical colleges. The technical college has two functions to discharge: (1) the training of large numbers of competent craftsmen or professional men, and (2) the development of a smaller class of scientific pioneers. It has been suggested in certain quarters that the technical colleges should limit their functions to the training of craftsmen in the more obviously utilitarian applications of science and should leave to the universities the cultivation of the higher developments of science. This suggestion is altogether wrong. In the technical college there must be not only an atmosphere of practicality but also an atmosphere of intellectual enterprise and inquiry. These two atmospheres are not incompatible but stand to each other as complement and supplement in the circle of the educational functions of the technical college. There can be no doubt that research is not a necessary and desirable element in the training of all students. Many of the less successful students and graduates in science have been seriously injured through having been encouraged in the idea that the cultivation of original research is the duty of every student of science. Mediocre men can never do real pioneering work. But it is the duty of the technical college to provide for such men as are capable of developing into enthusiastic pioneers an environment in which they may breathe the vitalising air of intellectual inquiry and enterprise. This duty of the technical college is just the same as its duty to industry and therefore to the community, for every man who can be found and inspired in this way will become a substantial asset to the nation as well as industry. Money will help a great deal in creating an atmosphere of practicality but for the creation of the rarer atmosphere of original research, men are of far greater importance than money. No scheme of scientific research can be sure of success, merely, because it is splendidly financed. No great development of research ever took place except by a process which is analogous to organic growth. If the right kind of nucleus is placed in a suitable environment, we may rest assured that nature will do the rest by her process of cell division and multiplication.

Moslem Education in the Punjab.

The report of the Director of Public Instruction in the Punjab shows a steady progress in the education of Mahomedans in all directions. The number of Mahomedan boys in public institutions in the Punjab was 87,168 compared with 85,317 in 1906—07, showing an increase of 1851, that of Hindus was 101,529 being 4193 in excess of the previous year; and that of Sikhs 24,936, or 845 more than the former year. The increase in Mahomedan attendance was common to all classes of public institutions except the Medical College, the Normal Schools and other special institutions. There was a decrease of 17 in the Normal Schools but 18 more Mahomedans joined the Central Training College. There was a preponderance of Mahomedans over Hindus and Sikhs combined in the Oriental College, the Mayo School of Art and Industrial Schools generally. In private schools also the attendance of Mahomedans—31238—exceeded the number of Hindus and Sikh scholars combined by 14,904 but in such institutions the attendance is gradually declining. Among Mahomedan boys 10·1 per cent. of those of school-going age attended public institutions of all kinds compared with 15·8 per cent. for Hindus and 19·4 per cent. for Sikhs. Six thousand eight hundred and ninety-two Mahomedan girls attended public institutions, this being an increase of 492 on the previous year's record; Hindus increased to 12,299 or 1,478 more than in 1906-07, and Sikhs decreased to 3,881, or 30 less than in the preceding year. Here also there was a falling off (19) in attendance at Training Schools; but Medical Schools attracted 10 additional scholars. The attendance of Mahomedan girls at private schools decreased from 9,553 to 7,336. The total number of candidates who appeared at the University, School and Special Examinations was 23,802, of whom 17,721 passed. Of the latter:—5,577 were Mahomedans, 2,462 were Sikhs, 9336 were Hindus. The percent-

age of successes was 31·5, 13·9 and 52·7 respectively. Four Mahomedans took the M.A., degree, one the M.SC., 23 the B.A., one the B.O.L., two the B.T., 53 passed the Intermediate, 311 (one a girl) the Entrance and 4 Clerical and Commercial. In school examinations 394 boys and 14 girls passed the Vernacular Middle Test, 4,365 boys and 190 girls the Upper Primary and 294 girls the Lower Primary. On the whole these results differ little from those of the previous years. In the Delhi Circle 34 Victoria Scholarships were held by Mahomedan pupils in addition to 39 special scholarships and stipends awarded in the Anglo-Arabic High Schools, Delhi. The circle is well provided with institutions intended for the benefit of Mahomedans. In Delhi itself, there is the Anglo-Arabic High School and its branches maintained from the Nawab Ilmad-ud-Daula Fund. It had 221 on its rolls and was brought on the grant-in-aid list during the year.

Moral Education.

It is a wide spread assumption that morality depends on religion and cannot exist apart from it. In the second volume of his *Origin and development of moral ideas* Dr. Westermarck proves the contrary by a large number of instances. In some of the lowest tribes a high conception of morals coexists with an almost entire absence of religion. No ideas of morality appear to be connected with the religious belief of the Gonds of Central India. Among some African tribes the gods are presumed to have nothing to do with right and wrong in human life. The Indians of Guiana follow an admirable code of morality, entirely unconnected with their simple animistic form of religion. The reason of this separation is plain. All over the world religion has grown out of a belief in magical forces having no relation to ethical obligations. "I can find," says Dr. Westermarck, "no solid foundation for the statements made by recent writers that "the historical beginning of all morality is to be found in religion"; that even in the earliest period of human history "religion and morality are necessary correlates of each other"; that "all moral commandments originally have the character of religious commandments"; that in ancient society "all morality—as morality was then understood—was consecrated and enforced by religious motives and sanctions"; that the clan-god was the guardian of the tribal morality." (p. 696) Speaking of the moral influence of Christianity, Dr. Westermarck says: "In the present times there is a distinct tendency among Christian theologians to humanise somewhat the doctrines of the future life. But if Christianity is to be judged from the dogmas which, almost from its beginning until quite recent times, have been recognised by the immense majority of its adherents, it must be admitted that its conception of heavenly Father and Judge has been utterly inconsistent with all ordinary notions of goodness and justice." What kind of ideal the Christian Church deemed worthy in the days of its growing power is described by Dr. Westermarck as follows: "A Christian Bishop of the seventh century, who was canonised by the Church of Rome, described a good Christian as a man who comes frequently to Church; who presents the oblation which is offered to God upon the Altar; who doth not taste of the fruits of his own industry until he has consecrated a part of them to God; who when the holy festivals approach, lives chastely even with his own wife during several days, that, with a safe conscience, he may draw near the Altar of God; and who, in the last place, can repeat the Creed and the Lord's Prayer." A scruplous observance of external ceremonies—that is all which, in this description, is required of a good Christian."

Speaking at a Conference on Moral Education recently held in Manchester, Principal Graham denounced the doctrine of an everlasting hell as immoral and the story of the fall as untrue and absurd, and affirmed that "the Bible was not fit to be a moral text-book for children." The New Testament, he said, was silent upon drink, upon gambling, upon slavery, upon the social problems of a great city, and upon other matters of fundamental importance to the modern world, and "they could not regard the New Testament as completely fitted in all ways for their purposes." Principal Graham would not allow the clergy, who as a body were biassed in favour of their creeds, to control moral instruction in schools. He said that "moral teachers ought not to be held in any ancient traditions of this kind," and the school "teachers were the people to whom he should look in dealing with moral instruction."

Calcutta University Convocation.

The Annual Convocation of the Calcutta University for the purpose of conferring degrees was held in the Senate House on the 13th instant. At the close of the capping ceremony, the Vice-Chancellor delivered an address to the Convocation in which he made a survey of the work done by the University during the year. During the twelve months under review the University has endeavoured to promote post-graduate studies and research. Two important courses of post-graduate lectures were arranged, the one on an important branch of Mathematical Physics by Dr. Gilbert Walker, F.R S., one of the recognised authorities on that subject, and the other on the history of the Bengali language and literature by Babu Dinesh Chandra Sen. The regulations for the award of the Premchand Roychand Studentships have been revised so that they are now open to competition among all graduates who have taken the highest degree in any faculty, and are to be awarded solely for the promotion of original research and investigation. With a view to secure the efficiency of its affiliated colleges for the ultimate benefit of the students who receive instruction there, the University has striven hard to enforce the essential and fundamental condition that all colleges should be placed under governing bodies on which the teaching staff is represented. The complaint about the lack of discipline in schools and colleges seems to us to be exaggerated. As was pointed out by Professor Urquhart, in a recent speech he made at Aberdeen, the stories about the participation of students in Political movements are largely exaggerated, if not misrepresentations by Anglo-Indian Journals. One important matter for congratulation is the extension of the sphere of activity of existing institutions, and the establishment of new institutions for the promotion of different branches of knowledge. So far as the first class is concerned, there has been during the year under review a vigorous and sustained demand by existing institutions for affiliation in Science. It is a matter for rejoicing that the advantages of scientific culture are so widely appreciated and that Indian students are exhibiting such a marked preference for scientific studies. The Vice-Chancellor expresses the hope that their new ardour in the pursuit of scientific knowledge will survive the shock of searching practical tests by which their proficiency will be ascertained and that in the course of a few years there will be no lack of men possessed of a sound knowledge

of the physical and natural sciences and qualified for employment as teachers of science or as actual workers in various industries. In the second class there have been two notable cases. Two colleges have been established for the training of teachers; one of these will be maintainad by the Government and will prepare candidates for the Bachelor of Teaching, and the other will be maintained by the London Missionary Society and will prepare candidates for the newly-instituted Diploma of Licentiate in Teaching. In connection with the subject of the foundation of the new institutions the Vice-Chancellor brought forward various arguments for the establishment of a University Law College to serve as a model institution for the promotion of legal education. It may be wrong to suppose that the lawyer need be neither a scholar nor a thinker, but only a smart young man with no other equipment than the latest issue of the Reports and the most recent edition of the Digest and the Statutes. Still it is necessary that the legal examinations of Indian Universities are not made more difficult than the professional examinations connected with the Inns of Courts of England.

Trade Schools.

In an address delivered before the State Educational Association at Syracuse, Dr. Andrew Sloan Draper, the Commissioner of Education of the State of New York, has endeavoured to prove the need of trade schools, not only as a means of culture but as leading to a life work. He has shown the relationship of good citizenship to the good workman. "The good workman, successful workman, is a happier man and a more reliable citizen, a much larger factor in giving strength and balance to his country than the unsuccessful or the only half successful professional man." Dr. Draper is of opinion that the public "should supply to the children of wage-earners something equivalent to the literary and professional instruction provided for the children of the better-to-do classes in the high schools and colleges." He has viewed the subject from the standpoint of the tax-payer, the employer, the Federation of labour, the nation at large. The question is often asked, What can be done to bring into being the inspired captains of industry? We believe that Dr. Draper has offered a sensible solution. He says: "Have no fear for the future of the higher learning in the United States. Its only danger is in the inadequacy of the elementary and fundamental training...There need be no fear of any lack of generals. If we train and guide the crowd, the leadership will then take care of itself. If we undertake to favour only or mainly the materials of which leaders are made, we are likely to be fooled about it—for it is generally the unexpected that happens in the matter of leadership; and we then surely withhold from the masses what is theirs and the country's due. All experience shows that the real captains in all lines of human activity have come out of the crowd that worked with their hands. The love and the capacity for drudging work are the fundamental basis of leadership in all employments, whether of the head or of hand, and any educational system which fails to recognise the fact, which does not honour the blouse shirt and the clean smut of honest labour, is at once misleading the innocents and moving directly towards the defeat of its own ends." The address is a strong plea for the development of the workman rather than of the professional, and closes with a number of recommendations. One of these is: shorten the time in the elementary schools to seven years. Take out what is not vital to the child. Ask him that which he would learn and do on his own account, if he had the power, and give him the power and expect him to gain knowledge through it. Then push him along to have him finish the elementary school in his fourteenth year, and if he has finished it or not when he is fifteen, send him into the trades school. Put into the elementary schools from the beginning some form of industrial work.

Mining study at Sibpur College.

At this year's annual meeting of the Mining and Geological Institute of India, held on the 28th of January, Mr. E. H. Roberton, M.Sc., F.G.S., Professor of Mining Engineering at the C. E. College, Sibpur, read a paper on the recently added mining department at the Civil Engineering College, Sibpur. He pointed out that there was probably no profession which required such a varied and all round education in the allied sciences, as well as a very special knowledge of the subject itself as mining. For a mining engineer to reach the top of the tree he must not only have, thorough practical and theoretical knowledge of mining, geology and mineralogy, but should also possess a great deal more than a smattering of such Sciences as mathematics, physics, chemistry, mechanical, civil and electrical engineering, and in many cases, metallurgy. In drawing up a scheme for a mining course, it should be borne in mind that the dominant mining industry in the surrounding district, and the conditions governing it, should have the chief consideration. Hence in designing and equipping the mining laboratory at the Sibpur Engineering College special regard is being paid to the conditions of the chief mining industry in Bengal—coal mining—to which the College is most nearly situated, and into which the majority of passed candidates will probably be drafted. The mining department of the College will not be satisfied at being simply abreast of this industry. It will be a little in advance to promote research on the lines of washing, briquetting, coking, and the recovery of by-products.

Weaving School at Serampore

At the opening ceremony of the Serampore Central Government Weaving School Mr. E. Hoogewerf, the Principal, read a statement relating to the scheme as sanctined by Government for the revival of handloom weaving in Bengal. According to this scheme the Serampore Weaving School will be the centre, while five or six outlying schools of instruction will be established at selected places, where a less comprehensive course suited to the mass of weavers would be given. At the Central Weaving School two distinct classes of students will be taught, the first consisting of young men of the Sibpur apprentice type, who will he trained ultimately to become teachers and manufacturers, the second consisting of weavers and their sons from Serampore and its neighbourhood. As an encouragement the Government has offered twenty scholarships of Rs. 15 each, tenable for two years, to the student of higher class, and twenty scholarships of Rs. 6 and another twenty of Rs. 4 each, tenable for four months, to the low class of adult weavers and sons of weavers. Passed students will be provided with advances to purchase appliances as will enable them to turn their acquired knowledge to account. The advanced amounts will be recovered from them in easy instalments. Six different types of hand looms with the requisite preparatory machinery, consisting of pin and bobbin winders, beaming and slasher-sizing machines, have been purchased for the school. The course of instruction will extend over two years and at the end of the

second year certificates will be granted by the Director of Public Instruction. The report of the Principal shows that the classes have started with 17 scholarship students and 6 free students. In addition, ten teachers are undergoing a course of training. The Local Board of Chinsura has very generously offered 10 scholarships of Rs 6 each, as an encouragement to the local weavers of the division, who may desire to take advantage of learning the improved methods of weaving. We hope the Government of Madras will open a similar Central Weaving School or help the Industrial Association of Madras to do it. We are sorry to learn that the Government Weaving School at Salem has not been productive of much benefit to the weavers of the place. The matter needs the inquiry of the Government.

Madras University Convocation.

The convocation of the Madras University for conferring degrees was held this year on the 25th instant. The address to the graduates was delivered by the Chancellor. Though there is nothing remarkable or academic about the address, it breathes an air of sympathy for the aspirations of the educated Indian and sets forth a lofty ideal. His Excellency Sir Arthur Lawley admonished the new graduates as follows:

"You, I doubt not, hope to take part in the stir and the movement and to share in the shaping of the nation, in promoting its unity and building its happiness. The up-building of a nation's happiness is not the work of a day, nor of many a decade. It is a great work (so long as it be Heavenwards), and it is worthy of your best endeavour, but it can be only achieved by infinite labour, infinite sacrifice and subordination of self. And you?—Can you rise to the occasion? A nation can only be strong if its component parts are strong. Its conditions of life can only be healthy, if its manhood be upright, virile, loyal and true; for the character of the individual is the character of the nation. Each individual citizen is one of the blood corpuscles of the nation, and just as in the human frame, if the blood corpuscles are unhealthy or diseased, the energy of the whole body will languish and its capacity for good work be reduced; so the failure on the part of each one of you to rise to the responsibilities of citizenship, will be a clog on your country's progress and a hindrance to the happiness of your fellowmen."

MATRICULATION EXAMINATION, 1909.

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"Your writings breathe the highest sentiment of true religion and devotion."—Pandit S. M. NATESA SASTRI.
"Mr C V. Swaminatha Iyer is not a mere Theorist or Essayist; he has done much practical work."—Mr. H. K. BEAUCHAMP, Editor of the *Madras Mail*.

We have received from Mr. C. V. Swaminatha Iyer a copy of "the Unity of Religion and the Variety of Creeds".....which is to be read before the forthcoming Congress of Religions with a specially written thesis on "Religion and Religions" which maintains that the various religions of India are but so many facets of one true Religion—the Religion of Truth.—*The Madras Mail*.

"*The Unity of Religion and the Variety of Creeds* is the title of an excellent little brochure, comprising an Essay on the subject read by Mr. C. V. Swaminatha Iyer, the well-known Editor of the *Viveka Chintamani* at the Ranade Hall, Mylapore, in April last. Mr. Swaminatha Iyer is widely known for his religious piety and Vedantic culture, and in the present instance, he, with admirable spirit, sets forth the Vedantic Ideal of life in the light of modern principles of Science, defining the Laws of Life-governing Thought. The Essayist brings to his task all earnest and genuine study of comparative Religion, and in our opinion, he is rendering a real service to the complex religious Life of India by endeavouring to rise above disputes upon secondary matters, and focussing attention on those elements of absolute Truth which are of permanent validity and of universal application. Various quotations from the Bible and the writings of Western Savants, Emerson and Maeterlink, and of Indian Saints like *Tiruvalluvar* and *Thayumanavar*, have been set forth to point to the realisation of the Unity of Religion, though the number of Creeds in the World is legion, "each having a significance of its own and a relation to the whole The average Indian Reader will feel at home in the Author's line of Vedantic thought, while, we are sure, the attempt at reconciling Vedanta with the Western conception of Thought-Energy will afford mental food for him. And the Vedanta ideal Life which is most maligned though least understood by some of its Western critics, will, we are sure, attract to itself their thoughtful attention by the Author's spirited exposition of it. In short, the publication should be in the hands of every one who is disposed to inquire into the real Spirit of Universal Religion, although one cannot always travel with the author in his mystic wanderings in the regions of Yóga practice."—*The United India and Native States*.

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(Sd.) M. O. PARTHASARATHY AIYANGAR,
District Judge.

TRIPLICANE, MADRAS, 1st July 1908.

VELLORE LAKSHMIDAVAMMA has been known to me as a Lady Doctor for some time past. My son has been under her treatment for some time past on account of weak sight He has received benefit from her treatment. From what I hear of her I am able to state that she possesses a good reputation for skill in treatment of eye diseases.

(Sd) T. P. KODANDARAMA IYER, B.A., B.L,
High Court Vakil, Triplicane.

The Educational Review

A Monthly Record for India.

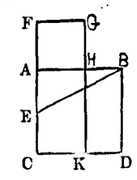
VOL. XV. APRIL 1909. NO. 4.

ON THE THREE UNSOLVED PROBLEMS OF ANTIQUITY.

BY B. KRISHNAMACHARI M.A.

The only figures with which the ancients were acquainted with are (i) the straight line (if I may be permitted to call that a figure), and (ii) the circle, and they tried to solve every problem they came across by means of these two *i.e.*, with the aid of a straight edge and a compass. There were three problems which they found impossible to solve with the aid of these two instruments only, (i) the trisection of an angle; (ii) the duplication of the cube *i.e.*, the construction of a cube equal in volume to twice the volume of a given cube; and (iii) the squaring of the circle *i e*, the construction of a square whose area will be equal to that of a circle.

Now from a perusal of the second book of Euclid, it is apparent that he is able *geometrically* to solve problems whose solution can be made to depend on quadratic equations. Thus the solution of proposition xi, 'To divide a straight line into two parts so that the rectangle contained by the whole and one of the parts shall be equal to the square on the other part' is the same as that of the quadratic equation $x^2+ax=a^2$. It is instructive to see how each step in the solution of the problem by Euclid follows the step in the algebraic solution of the problem. One of the values of



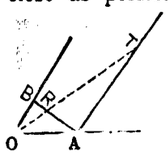
x satisfying the equation *i.e.*, the one for which the line is divided internally is $\frac{\sqrt{5}}{2}a - \frac{1}{2}a$, where the line AB measures a units of length. To solve the problem, therefore, Euclid constructs two lines EF = EB and EA equal to $\frac{\sqrt{5}}{2}a$ and $\frac{1}{2}a$, respectively. The difference between these lines, AF, is therefore one solution of the equation.

To proceed to the subject, these problems could be solved as proposed only if their solution could be made to depend upon that of a quadratic equation; and further, as there are certain classes of equations whose solution can be made to depend upon quadratics, it will suffice if we can make the solution depend at least on an equation of this kind.

(i) The first of these problems is the trisection of an angle. We know from Trigonometry that $4\cos^3\frac{\theta}{3} - 3\cos\frac{\theta}{3} = \cos\theta$ and hence the solution of this problem depends on the cubic equation $4x^3-3x=c$. This is not a quadratic nor is it possible for general values

of c to make the solution of this equation depend on that of a quadratic. Hence a general method for the trisection of an angle is not possible with the aid of a straight edge and a compass. It will be observed that in all cases in which we are able to trisect a special angle, the solution *must* depend on a quadratic. For instance when the angle is a right angle the equation reduces itself to $4x^2-3=0$.

If the restriction as to the solution be removed, we can trisect an angle by means of a hyperbola whose eccentricity is 2 or by means of the curve invented by Hippias. A method which is as close as possible to Euclid's



Geometry is the following. Let BOA be the given angle to be trisected. From any point A on one of the sides OA, draw AB and AT perpendicular and parallel to OB. With one point of a straight edge fixed at the vertex O, turn the edge until the intercept RT between the normal AB and the parallel AT equals 2 OA. Join OT. Then the angle BOT is one third the angle BOA.

This solution is not elementary geometric in the sense wanted, as it requires a *graduated* edge, which we are not given.

(ii) The second called the Delian problem is the duplication of the cube. The origin of this problem is involved in mythology. "The inhabitants of the little island of Delos, the miraculous birth place of Apollo, were the victims of a horrible plague and in their trouble had recourse to the shrine of their tutelary god. Apollo declared by this oracle that if the pestilence was to be stayed, his altar must be doubled." The altar was in the form of a cube, and hence the problem. To solve this, it is necessary to solve the cubic equation $x^3 = 2a^3$, and as we have already seen, this is not possible by *elementary geometry*. Lines more complex than the straight line and the circle, were essential if the problem was to have a solution. Archytus used a cylinder to solve the same.

The problem is virtually the same as the construction of two mean proportionals between two straight lines, one of which is twice as long as the other. For if $a:x::x:y::y:2a$, then $x^2 = ay$, and $y^2 = 2ax$, giving $x^3 = 2a^3$. As this also gives a cubic, solution by elementary geometry is not applicable in this method also. But as $x^2 = ay$, and $y^2 = 2ax$ represent parabolas, the problem can be solved by constructing two parabolas. The abscissa of the point of intersection of these two curves is the edge of the cube.

(iii) The last proposition of the second book of Euclid, 'to describe a square that shall be equal to a given rectilineal figure' suggested the most famous (notorious?) problem of the trio 'the description of a square equal to a given circle.' "This problem enjoys a great notoriety, because it is apparently so simple and really so difficult. It has been attacked or reconnoitred by all sorts and conditions of men, in all modes and manners, from Pythagoras the master down to "circle squaring James Smith." The ratio, area of the circle : the square on the radius is universally called *Pi* (π), where π is an obstinate arithmetic figure which does not "come out" when expressed as a decimal; it refuses to terminate and even to recur. About four thousand years ago *i.e.*, long before Pythagoras, Ahmes, an Egyptian writer put down the value as $3\frac{13}{81}$. Three thousand years ago, the Jews took it to be 3

[Vide 1 Kings vii 23. "He made the molten sea of ten cubits from brim to brim round in compass.....and a line of thirty cubits compassed it round about."] Our ancestors gave the neat figure $\sqrt{10}$, and it was only very recently that the impossibility of the solution by the mere use of ruler and compasses was proved.(?)

The first mathematician to attack the problem in a correct manner was Antiphon, the Sophist. He took a square with its corners on the circle, and chose four fresh points on the circle at equal distances from the nearest corners of the square. Joining all the eight points each to the next around the circle, he obtained a figure of eight equal sides. This figure would be nearer the area of the circle than the square; and if a figure of sixteen equal sides be constructed in the same manner, its area would be much nearer that of the circle than the eight-sided figure. Hence, Antiphon argued, as it is possible to describe a square equal to a given rectilineal figure, it is possible to describe a square equal in area to a circle. But he overlooks a crucial point. For the figure to exactly equal the circle in area, it must have an infinite number of sides, and so the construction of the square would involve *no end* of work with ruler and compasses. What Antiphon shows therefore is that it is possible to draw a square as nearly equal in area to a circle as we please. The method adopted by him is now usually called that of "exhaustion."

Archimedes improved the method of Antiphon considerably. He placed outside as well as inside the circle, regular polygons and so contrived to bring the area of a circle between the areas of two such figures. He did not fall into the error of thinking that the problem could be precisely solved but emphasised the fact that the circle could be squared to any required degree of exactitude. He found that π is less that $3\frac{1}{7}$ and greater than $3\frac{10}{71}$. Every school boy is aware of the former value. No advance on this method has yet been made.

Simply because π, does not "come out," being irrational, it cannot be argued that geometrically a square equal in area to a circle cannot be constructed. $\sqrt{2}$ is irrational; still it is possible to construct a line to represent $\sqrt{2}$, it being the diagonal of a square of side unity. If we can draw a straight line exactly equal to πr in length, where r is the radius of the circle, we can square the circle by the thirteenth proposition of the Sixth Book of Euclid. I think this can be done by adopting some such construction as the following Placing the needle end of the compass on the centre of the circle, attach a string to one extremity of the diameter. Pass the string through a slit on the other end of the compass and keeping the string tight, move the compass until the opposite extremity of the diameter is reached. The portion of the string intercepted between the two points will be πr. Constructing a straight line equal in length to this, we can draw a square exactly equal in area to the circle.

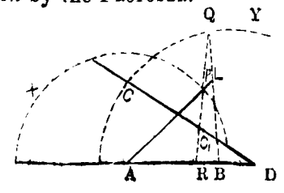
It may not be possible to precisely get the string equal to πr in length, but from similar considerations, I would presume to hope that the last word in this problem has not yet been said.

36. [B. KRISHNAMACHARI, M.A.] Solve graphically the equations

$$a\cos\theta + b\cos\phi = c, \quad \ldots\ldots\ldots\ldots (1)$$

$$p\cot\theta + q\cot\phi = r. \quad \ldots\ldots\ldots\ldots (2)$$

Solution by the PROPOSER.



Draw any straight line AB. With the points A and B as centres describe two circles X and Y of radii $\frac{a}{c}$ AB and $\frac{b}{c}$ AB respectively. Draw a common ordinate QPR meeting X in P, Y in Q, and AB in R. Let AP and BQ intersect in L. Then L is one point on the locus represented by (1)

For AR + RB = AB

or AP cos θ + BQ cos ϕ = AB, if BAP is θ and ABQ is ϕ

or $a \cos\theta + b \cos\phi = c$, the required equation.

The second equation represents a straight line which can be drawn as follows. Produce AB to D so that AB : BD = $q-p : p$ and draw DC so that cot CDB = $\frac{r}{q-p}$.

Let the line DC meet the curve represented by (1) in C and C_1. Then the angles CAB, C_1AB are the required values of θ, while the angles CBA, C_1BA are those of ϕ. [Vide *Eagle*, Constructive geometry of plane curves.]

QUESTIONS FOR SOLUTION.

48. [B. KRISHNAMACHARI, M.A.] If $a_1, a_2, \ldots\ldots a_n$ be in GP., then

$(a_1 + a_2 + a_3)^2 + (a_2 + a_3 + a_4)^2 + \ldots\ldots +$
$(a_{n-2} + a_{n-1} + a_n)^2$
$= (a_1^2 + a_1 a_2 + a_2^2)^2 (a_1^{2n-4} - a_2^{2n-4})$
$\div (a_1^2 - a_2^2) a_1^{2n-4}$.

49. [B. KRISHNAMACHARI M.A.] Find graphically θ and ϕ from the equations

$l \cos\theta + n \cos\phi = a - m \cos\alpha$,
$l \sin\theta - n \sin\phi = m \sin\alpha$.

where l, m, n, and α are constants.

50. [B. KRISHNAMACHARI, M.A.] Describe a square each of whose sides will pass through one of four given points.

51. [M. BHIMASENA RAO.] The inscribed circle of a given triangle ABC touches the sides BC, CA and AB at the points D, E and F. AD, BE and CF meet in a point P. Show that lines drawn from P parallel to the sides of the triangle DEF meet the sides of the given triangle in six concyclic points, and deduce that

$$IP^2 = r^2\left\{1 - \frac{3}{\left(\tan\frac{A}{2} + \tan\frac{B}{2} + \tan\frac{C}{2}\right)^2}\right\}$$

where I and r are the centre and radius of the in-circle.

52. [M. BHIMASENA RAO.] Place a line of given length on the circumferences of two circles so as to subtend a given angle at one of the points where the circles intersect.

53. [M. BHIMASENA RAO.]

(1) P is a point on the curve referred to in question 34. AP, BP and CP are joined and produced to meet the curve again in P_a, P_b and P_c. Show that the perpendiculars from the verticies of the triangle ABC on the sides of the triangle $P_aP_bP_c$ are concurrent.

(2) Through the ortho-centre of the triangle ABC any line is drawn cutting the curve of question 34 in two points P and Q. Tangents to the curve at P and Q meet the curve again at H and K. Show that line HK passes through a fixed point. If AH, BH and CH are produced to meet the curve in H_a, H_b and H_c as also AK, BK and CK to meet in K_a, K_b and K_c, shew that the triangles $H_aH_bH_c$ and $K_aK_bK_c$ are equal in all respects.

A SYLLABUS IN EXPERIMENTAL GEOMETRY.

(With hints on methods of procedure).

THE following tentative Syllabus in Experimental Geometry has been framed with a view to have a common course in the subject (after the necessary modifications that may suggest themselves) introduced in the Secondary Schools of this Presidency. It will be clearly seen that it follows more or less closely the "*Hints and Suggestions*", published by the Department. The course sketched out may be extended over the first three or four years of the Secondary School course, the exact period depending, of course, upon the ability of the teacher entrusted with the work, the age and capacity of the boys, the nature of the accommodation and furniture in the school-room, etc. Teachers interested in the cause of Mathematics are invited to kindly communicate to the Publishers all criticisms and suggestions that may tend to improve the syllabus and make it acceptable to a great majority of teachers of the subject. In this connection the writer begs to acknowledge his indebtedness to a syllabus in the same subject drawn by Mr. K. S. Appaswami Aiyar of the Inspectorate for valuable hints derived therefrom.

SECTION I.

1. Observation by boys of solid forms such as the cube, cuboid, prism, pyramid, cylinder, cone and sphere.

This leads them to the following ideas :—

(*a*) A solid is limited in all directions by *surfaces* or faces. These latter may be either *curved* or *plane*.

(*b*) While solids have *three* dimensions *viz.*, *length*, *breadth* and *thickness*, the surfaces limiting them have only two *viz*, *length* and *breadth*.

(*c*) The boundaries of these surfaces are *edges* or *lines*, and are formed where two of them *meet*. These edges or lines may be either *curved* or *straight*, (when are they curved and when straight ?)

(*d*) These edges (or *lines*) have *only length*, but no thickness or breadth.

(*e*) The edges (in many of the solids) meet at a place or *point* (corner) which has *no dimensions*, but has only *position*.

2. The position of a point on paper is marked in two ways:

(1) *A dot* . (the centre of the dot being considered as the position of the point) ;

(2) *A cross mark* × (the place where the two short lines *intersect* or *cut* each other being here taken as the position of the point.)

The latter method is always preferred as it is the more accurate.

For convenience of reference, a point is generally denoted by any letter of the alphabet (*capital letter* preferred) placed near it.

3. *Straight lines, and use of the straight edge.*

[That lines have no thickness is difficult to conceive ; and the nearest approximations to geometrical lines are the threads in a spider's web. For ordinary purposes, a thin piece of string may be used.]

(1) A piece of string held by the ends and stretched tight is *straight*. The edge of the foot-rule is *straight* (how can this be tested?), and can be used for drawing straight lines.

(2) Drawing of straight lines from a point in various directions.

(3) Take two points P and Q at random.—Draw a number of lines from P to Q. Each line is called PQ. Stretch a thin piece of string from P to Q. Is there any of the lines already drawn on which the string falls exactly ? Which is the shortest of these lines ? How many straight lines can be drawn from P to Q ?.

(4) Take a straight line AB. Mark a point C in it. Draw the straight lines BC, AC. Where do they lie? Why is this?

4. *Comparison of lengths.*

(*a*) *By superposition* :—Comparing the lengths of the edges of the common objects of the school-room. The same with pieces of broom-stick, wire, etc. (This method tells us nothing but that one edge or line is longer than or equal to or shorter than another).

(*b*) *By measuring with units*:—

Measurement of the edges of the table, bench, window frames, etc by using the ordinary units *viz*, cubit, span, finger-breadth etc; measuring the length and breadth of the class room with the foot. Comparison of such lengths.

The following truths are learnt :—

(1) Difference in the *unit* used leads to difference in the *measure*.

(2) *Measure* and *unit* vary inversely.

5. *Standard unit.*

To secure uniformity in the measures of lengths, a standard unit, accepted by all, becomes necessary. The *yard measure*. The *yard* is in many cases too long and inconvenient a unit; hence the necessity for smaller standard units, *viz.*, the *foot* and the *inch*.

6. *Division of straight lines and construction of Scales.*

(*a*) Take a piece of string and divide it into 2, 4, 8,..., 3, 5, 6,...equal parts by folding.

The same with long strips of paper; also mark the points of division in each case.

(*b*) Take any straight line AB on paper. Divide this into required number of equal parts, by taking its length on a piece of string or on a strip of paper. Place the latter on the straight line and mark the points of division.

(*c*) Divide the same straight line into a number of equal parts with the *dividers*.

(*d*) Divide the *yard-length* into 3 equal parts; each sub-length is a *foot*. Divide the *foot* into twelve equal parts; each sub-length is an *inch*. Divide the inch into 4 or 8 equal parts.

Take a narrow strip of cardboard divided as above. This is a convenient *scale* for measuring lengths. Exercise on the use of the scale thus constructed.

7. Explanation and *use of the scale on the foot-rule.*

Exercises in :

(1) Measuring given straight lines;

(2) Finding the distance between two points;

(3) Laying off given lengths along straight lines;

(4) Producing straight lines to required lengths:

(5) Division of straight lines into a given number of equal parts with *scale* and *dividers* (Numerical calculation proceeds).

[*Note*: Dividers are of great use in transferring lengths.]

Drawing given multiples and sub-multiples of any length.

(6) Estimation by eye of lengths of st. lines; of the distance between points; drawing required lengths from memory. Verification in each case by actual measurement. Tabulation of errors.

(*To be continued*)

S. BALAKRISHNA AIYAR.

ON BOOKS.

BY P. A. SUBRAMANIA IYER, B A., L.T.

It is one of the injunctions of the Brahmin religion that its Scripture--the Vedas—ought not to be committed to writing and should not be learnt from books but should be transmitted only by word of mouth from master to pupil. In Sanskrit even a dictionary of synonyms is given in verse—the Amarakosa—which every student has to study by heart. This may perhaps have been due to the great difficulty of committing things to writing in those days when it was composed and when there was neither paper nor the printing press. However, one very important result of the system was that every Brahmin then knew his Scripture exceedingly well and acted up to it and scholarship in Sanskrit was characterised by extreme thoroughness which is even now one of its distinguishing features.

In these days every child has his books. As soon as he is born in this world he opens his eyes on books. Unfortunately the Indian child labours under a peculiar disadvantage: He has to master a difficult foreign language. He never learns words from objects. As soon as a word—say, elephant,—is pronounced he does not immediately associate it with the animal but his mind at once runs to the page of his book and the line where he makes his first acquaintance with the word. What wonder then if, when a sentence is read out, his mind is almost blank and if he forms in his mind no correct image of the objects and ideas represented? Every teacher knows that if even an advanced boy is asked the meaning of a sentence which he is made to read he has to read it again once or twice more. If he is asked what an isosceles triangle is he will at once think not of its figure but of the page and the line where he has the words:—"An isosceles triangle is *that* which has its two sides equal"—whatever *that* may mean. If he is asked what the corollary to proposition 15 of Book I is, he will at once answer:—"From this it is manifest that &c, &c.,"the latter clause being often omitted in the answer. Should any one attend, for however short a time, to the way in which students prepare their lessons or observe however casually the absurd and pointless answers we often get in classes and in examinations, this divorce of thought from language can be very easily found out in young boys. As the boys get a little older the matter becomes more serious: Language, in their case, instead being a vehicle of thought, becomes an obstruction to it. It not only 'conceals' thought but confuses them too.

I should think that the over-use and abuse of books are to a great extent responsible for the above state of affairs and the consequent muddle headedness of students which seems now to besiege a teacher to whichever class he goes. I should have also added that the use of bad text-books in the lower classes has much to do with the above result. For example in very elementary classes text-books in English are often prescribed—which are suited only to English children and which contain words and ideas that cannot be realised even by those that teach those books. The result of this is that the boys are very early trained to think that words are separate entities having, if at all, only a very remote connection with ideas.

This reminds me of another thing: one of the important rules of teaching is that the vernacular must be used. So many teachers think that for every word in English its equivalent in the vernacular must be given. I am now giving you a short incident in my own case. When I was in the second class—corresponding to the present 4th standard—the word *slate* occurred in an English lesson. The slate was a thing which I, of course, knew very well. But the teacher told me it meant *kal palaka*. My idea of *kal* or stone was the kind of stone with which we are familiar in this country. *Palaka* ordinarily connotes a piece or small plank of wood on which we sit for meal. So I thought to myself that though the thing on which I was daily writing

was also called slate it was something different from the word *slate* in the Reader although the image I formed from *kal palaka* did not suit the text. I went on studying slate =*kal palaka* because the teacher told me so and I did not, of course, have then the boldness to ask the teacher to explain my difficulty. Four years after I had to learn the Geography of England in which it was given that slate was a kind of stone. It was only then I saw that the slate in the Second Class Reader was the same thing as the slate I was using daily! Atrocious is the result when words in Geometry are translated as is often done. The simple words angle, triangle, square, pentagon, &c, which can be easily understood from the figures are often given their equivalents in the vernacular—which are all words in difficult Sanskrit more incomprehensible than the original words.

Thus owing to various causes among which the bad use of books in the early classes is prominent we seem to be making maniacs of the students whose tender minds are entrusted to our charge. It is high time to think of curing the evil. Reforms in this direction are in the air. Let us work them out as well as possible.

Anything new is always best taught and best learned *orally* at first. In Sanskrit there is a maxim that for anything learnt to be of real value it must be learnt *Guru Mukéna*, *i.e.*, through the medium of a teacher This is particularly true in the case of young boys. They must be taught orally in the beginning and books must be made use of only to fix in mind what has been already learnt.

In teaching lessons in vernacular and English to elementary classes the transition must be from things and objects and their pictures to spoken words, from spoken words to written words and from written words to books. When sentences are learnt the teacher must always see that the student forms in his mind the pictures of the objects and ideas represented in every sentence. Whenever the teacher has reason to believe that the image formed in the mind of the student is wrong he must help him by questions in forming the correct one. In Arithmetic the relative magnitudes of numbers must be well impressed by means of objects and illustrations which should also be abundantly used in many other first lessons such as those on Fractions, Square and Cubic measure, &c. Practical Geometry and the drawing of neat geometrical figures and their experimental study must always precede the study of Theoretical Geometry. Algebra being a subject in which the ideas cannot be easily realised the study of it may come a little later on. Geography must always be learnt from objects, illustrations and maps. If funds allow it, tours to various places of interest by pupils with their masters will be a very good thing. History must always be learnt not merely from books but from the very places treated of in History and their maps and geography.

The curricula of studies in Science, say that in Form IV, it must be learnt merely from experiments and observation and no text-books ought to be used. But what obtains in many schools is that experiments are out of the question and notes are dictated to students who are thus enabled to learn mis-spelling and shabbiness very effectively in addition to their being subjected to all the evils of the abuse of books.

I have dwelt a little too long on this part of the subject because I strongly feel that something must be soon done to silt up the ever-widening gulf between words and their meanings in the minds of students and to enable them to realise readily and in full the whole meaning of what they talk and read. Otherwise the consequences—I need hardly add—will be disastrous.

If books are unnecessarily and obtrusively thrust upon the young Indian boys such that their weight almost suffocates them to death, they, in their turn, after passing their examinations and taking their degrees, very successfully manage to spend the rest of their lives without a single book by their side. It would appear as

though this were a reaction. Their relations with their books in Schools and Colleges have been so very friendly that they only wait for passing their examinations to make a bonfire of them! (You laugh). My friends, this is a very serious matter. At a time and at the age when books and libraries are of the greatest use to mankind you are flinging them away.

Let me quote here what James Baldwin—an American author—has said of books: which, *mutatis mutandis*, seems very applicable to the state of things here.

"A library is the scholar's work-shop. To the teacher or professional man, a collection of good books is as necessary as a kit of tools to a carpenter. And yet I am aware that many persons are engaged in teaching, who have neither a library of their own, nor access to any other collection of books suitable to their use. There are others who, having every opportunity to secure the best of books,—with a public library near at hand offering them the free use of works most valuable to them,—yet make no effort to profit by these advantages. They care nothing for any books save the text-books indispensable to their profession,"—[even this is not the case here]—"and for these only so far as necessity obliges them to do so. The libraries of many persons calling themselves teachers consist solely of school-books many of which have been presented them by accommodating book-agents, 'for examination with a view to introduction.' And yet we hear these teachers talk learnedly about the introduction of English literature into the common schools of the country, and the necessity of cultivating among the children a wholesome love and taste for reading. If inquiry were made, we might discover that such persons understand a study of English Literature to consist simply of some memoriter exercises in Shaw's "Manual" or Brooke's "Primer" and that, as to good reading, they are oftener entertained by the cheap slops of the news stands than by the English Classics. Talk not about directing and cultivating the reading tastes of your pupils until you have successfully directed and cultivated your own! And the first step towards doing this is the selection and purchase of a library for yourself, which shall be all your own. A very few books will do, if they are of the right kind; but they must be *yours*. A borrowed book is but a cheap pleasure, an unappreciated and unsatisfactory tool. To know the true value of books and to derive any real benefit from them, you must first feel the sweet delight of buying them,—you must know the preciousness of possession."

"You plead poverty,—the insufficiency of your income? But do you not spend for other things entirely unnecessary much more every year than the cost of a few books? The immediate outlay need not be large; the returns you will realize will be great in proportion to your good judgment and earnestness. Not only will the possession of a good library add to your means of enjoyment and increase your capacity for doing good, it may, if you are worldly-minded,—and we all are—put you in the way of occupying a more desirable position and earning a more satisfactory reward for your labours."

"I would urge upon every young man, as the beginning of his due and wise provision for his household," says John Ruskin, "to obtain as soon as he can, by the severest economy, a restricted, serviceable, and steadily—however slowly—increasing series of books for use through life; making his little library of all the furniture in his room, the most studied and decorative piece; every volume having its assigned place, like a little statue in its niche."

"A little library, growing larger every year"—says another—"is an honourable part of a man's history. It is a man's duty to have books. A library is not a luxury, but one of the necessaries of life."

"How much do you think we spend altogether on our libraries public or private, as compared with what we spend on our horses?" asks an enthusiastic lover of books. If a man spends

lavishly on his library you call him mad,—a bibliomaniac. But you never call any one a horsemaniac though men ruin themselves every day by their horses, and you *do not* hear of people ruining themselves by their books: We talk of food for the mind, as of food for the body: now a good book contains such food inexhaustibly; it is a provision for life; yet how long most people would look at the best book before they would give the price of a turbot for it!"

"Every man should have a library!" exclaims another. "The works of the grandest masters of literature may now be procured at prices that place them within the reach of almost the very poorest, and we may all put Parnassian singing birds into our chambers to cheer us with the sweetness of their songs. And when we have got our little library we may look proudly at Shakespeare and Bacon and Bunyan, as they stand in our bookcase with other noble spirits. These may cheer and enlighten us, may inspire us with higher aims and aspirations, may make us, if we use them rightly, wiser and better men."

John Bright has remarked: "You may have in your house costly pictures and costly ornaments and a great variety of decoration; yet so far as my judgment goes, I would prefer to have one comfortable room well stocked with books to all you can give me in the way of decoration which the highest art can supply. The only subject of lamentation is—one feels that always, I think, in the presence of a library—that life is too short, and I am afraid I must say also that our industry is so far deficient that we seem to have no hope of a full enjoyment of the ample repast that is spread before us. In the houses of the humble, a little library, in my opinion, is a most precious possession."

"A library may be regarded as the solemn chamber"—says a great man—"in which a man can take counsel of all that have been wise and great and good and glorious amongst the men that have gone before him. If we look at the bare and immediate utilities of a library, we find that here a man gets himself ready for his calling, arms himself for his profession, finds out the facts that are to determine his trade, and prepares himself for his examination. The utilities of it are endless and priceless. It is, too, a place of pastime; for man has no amusement more innocent, more sweet, more gracious, more elevating, and more fortifying than he can find in a library. If he be fond of books, his fondness will discipline him as well as amuse him. A library is the strengthener of all that is great in life, and the repeller of what is petty and mean; and half the gossip of society would perish if the books that are truly worth reading were read."

Gentlemen, I have taxed your patience, I am sure, with extracts. But one more I cannot help making. Here is an exciting discourse of an enthusiastic lover of books:—"I go into my library and all history unrolls before me. I breathe the morning air of the world while the scent of Eden's roses yet lingers in it, while it vibrates only to the world's first brood of nightingales and to the laugh of Eve. I see the pyramids building; I hear the shoutings of the armies of Alexander; I sit as in a theatre,—the stage is time; the play is play of the world. What a spectacle it is! What kingly pomp, what processions file past, what cities burn to heaven, what crowds of captives are dragged at the chariot wheels of conquerors! I hiss, or cry 'Bravo,' when the great actors come on shaking the stage. I am a Roman Emperor when I look at a Roman coin. I lift Homer, and I shout with Achilles in the trenches. The silence of the unpeopled Assyrian plains, the outcomings and ingoings of the patriarchs,—Abraham and Ishmael, Isaac in the fields at even tide, Rebekah at the well, Jacob's Guile, Esau's face reddened by desert sun heat, Joseph's splendid funeral procession,—all these things I find within the boards of my Old Testament. What a silence in these old books as of a half peopled world,—what bleating of flocks, what green pastoral rest, what indubitable human existence! Across brawling centuries of blood and war, I hear the bleating of Abraham's flocks, the tinkling of the bells of Rebekah's camels. O men and women so far separated yet so near, so strange yet so well-known, by what miraculous power do I know you all? Books are the true Elysian fields, where the spirits of the dead converse? And into these fields a mortal may venture unappalled. What king's court can boast such company? What school of philosophy such wisdom? The wit of the ancient world is glancing and flashing there. There is Pan's pipe, there are the songs of Apollo. Seated in my library at night, and looking on the silent faces of my books I am occasionally visited by a strange sense of the supernatural. They are not collections of printed pages, they are ghosts. I take one down and it speaks with me in a tongue not now heard on earth and of men and things of which it alone possesses knowledge. I call myself a solitary, but I sometimes think I misapply the term. No man sees more company than I do, I travel with mightier cohorts around me than did ever Timour or Chenkis Khan on their fiery marches. I am a sovereign in my library; but it is the dead, not the living that attend my levees."

"Books,"—says Goldsmith—"are sweet unreproaching companions to the miserable and if they cannot bring us to enjoy life they can at least teach us to endure it."

"Studies,"—says Bacon—"serve for delight, for ornament, for ability. Their chief use for delight is in privateness and retiring; for ornament, is in discourse; and for ability, is in the judgment and disposition of business; for expert men can execute, and perhaps judge of particulars, one by one: but the general counsels, and the plots and marshalling of affairs come best from those that are learned. Reading maketh a full man; conference, a ready man and writing, an exact man.

"A good book"—says Milton—"is the previous life-blood of a master spirit embalmed and treasured up on purpose to a life beyond life."

Wordsworth has said:

> And books, we know,
> Are a substantial world, both pure and good;
> Round these, with tendrils strong as flesh and blood
> Our pastime and our happiness will grow.

Is it not cruel, gentlemen, that we deny ourselves "the dainties that are bred in a book" at that time in our lives when we most require them? We, Indians, particularly are in need of the aid of books. By the time we are twenty-five years of age we have all the cares and family of men of forty-five. Poverty often stares us in the face. Owing to the unusually strong mental strain during our career as students on account of our having to master a very difficult foreign tongue and the extreme pressure of examinations, our mental energies—if they are not already dead—want a long repose. And if we are to shake ourselves from this lethargy and become equal to the hard task that awaits us in life whether we are teachers, or lawyers or medical men we must have the strongest stimulus that good books alone can give.

If we should feel inclined to collect books when we enter life a taste for reading must have been already formed when we are in Schools and Colleges. How is it possible to create in us the love of reading? The difficulties are great but they must be overcome.

It is hard, I know, for the High School student to make up his mind to read books of general literature. To understand and appreciate their beauties he will have to make large use of dictionaries and reference-books for which he generally has the greatest dread. So without some sort of pressure from without he generally reads nothing, at any rate to any purpose.

I may give you here a method which I have tried not, I believe, without success. All the students from Form IV upwards were made to buy once in two months some, well-chosen book—such as Lamb's Tales from Shakespeare, Robinson Crusoe, the Swiss Family Robinson, Evenings at Home, the Vicar of Wakefield, Rasselas, any of Jane Austin's novels or even novels of Scott and Dickens and Thackeray and many others that can be easily named. Then about half an hour was spent daily in a Reading Class. The portion expected to be gone through

daily was indicated before hand it being so arranged that a book would be finished in about two months. The work of the teacher would be to read a page or two as a model and get the boys to read the rest. Now and then the teacher should of course give some interesting illustrations, explain difficulties and notice beautiful terms of expression and secure the attention of pupils by questions on the context. At first it was not very easy to get the students to look up the meanings of difficult words, etc. But with a little of sympathetic pressure they began to take to the work later on.

In the College Classes, I believe, a little more freedom may be allowed. I should like however to draw the attention of you—the College Students—to what Luther has said about the choice of books. He advised all who proposed to study, in what art soever, to read some sure and certain books over and over again; for to read many sorts of books produces rather confusion than any distinct result; just as those that dwell everywhere and remain in no place, dwell nowhere and have no home. As we use not daily the community of all our friends, but of a select few, even so we ought to accustom ourselves to the best books to make them familiar unto us so as to have them, as we say, at our fingers' ends.

This does not mean that other books are to be rigorously avoided. Bacon has said that some books are to be tasted, others to be swallowed, and some few to be chewed and digested; that is, some books are to be read only in parts, others to be read but not very closely; and some few to be read wholly and with diligence and attention. Some books also may be read by deputy, and extracts made of them by others; but that would only be in the less important arguments and the meaner sort of books; else distilled books are like common distilled waters, insipid things.

Students must particularly guard themselves against ephemeral literature. Newspapers and magazines instruct us, it is true, in the current topics of the day. But those who read them must be persons whose minds are already developed, whose powers of judgment are already formed, whose passions cannot be easily excited and who need not depend upon others for modes of expression of their thoughts. It is sad to reflect that many young students are almost ruined by wasting their time over silly newspapers which always distract their attention from their legitimate duties and disorganize their powers of expression.

Young men must keep themselves entirely aloof from bad books. Very often 'vile matter' is found in books though fairly bound. Deceit often dwells in gorgeous palaces. Students in Schools and Colleges are in a critical period of their existence. Whether they are to become good men and great or are to be hurled down to utter destruction is determined by the bent given to their minds and character at this time, and bad books—such as Reynold's novels—never fail to poison their tender minds. So let them be very careful to read only such books as are certified to be good and wholesome by their masters.

By the time students leave College they must have developed their love of reading, settled what books please them most and must have prepared their way towards making their own collection of them. "The truest owner of a library" says a great man, "is he who has bought each book for the love he bears to it,—who is happy and content to say, 'here are my jewels, my choicest material possessions!'—who is proud to crown such assertion thus: 'I am content that this library shall represent the use of the talents given me by Heaven!" That man's library, though not commensurate with his love for books, will demonstrate what he has been able to accomplish with his resources; it will denote economy of living, eagerness to possess the particles that compose his library, and quick watchfulness to seize them when means and opportunities serve. Such a man has built a temple, of which each brick has been the subject of curious and acute intelligent examination and appreciation before it has been placed in the sacred building."

It may be added here that there are three sorts of books which a man should collect in his library. First professional books—which are the tools of his craft, 2nd those which belong to his chosen department of literature and are to be regarded as his friends companions and counsellors, 3rd books treating of his own religion and the other great religions of the world to which alone every one would have to look at some time or other for comfort and guidance.

Let me give here a word of caution. However good may be the books you collect, they contain, after all, only other men's thoughts. If they should become your property it is not enough if you only passively read them; but you must think out things for yourselves. Unless you learn to do this all your energy spent on reading is ill-spent. Schopenhaver has said: "Much reading deprives the mind of all elasticity, as a weight continually pressing upon it does a spring, and the most certain means of never having any original thoughts is to take a book in hand at once, at every spare moment." So you must be very careful in regulating your reading properly. Reading and self-thinking must always be harmoniously combined.

To conclude—We have seen how it is that young children are often spoiled by the over-use and abuse of books, how men throw away all their books and keep themselves entirely aloof from them as soon as they pass their examinations and take their degrees and at a time when good books ought to be most welcome. It was shown how necessary it is for a man to have a collection of books of his own and what things he must bear in mind in making such a collection. It was lastly indicated that though good books are extremely useful in their own ways yet care must be taken to season reading with a fair amount of thinking for oneself.

CHILD STUDY IN RELATION TO ELEMENTARY ART EDUCATION.

BY EARL BARNES.

The study of a passive child can produce little that is of value for educational practice. It is only when he expresses himself that we catch glimpses of his inner life. Hence his art impulses must be studied through things that he makes. Drawings probably give us our best approach to the development of these art interests, and in this study we shall confine ourselves mainly to drawing and color, entirely neglecting music and stories.

In drawing, we have a form of self-expression that yields itself to study better than any other, except written speech. This is because it is self-recording, and so becomes a permanent photograph of the child's mind which the student can refer to, again and again, for purposes of comparison or generalization. It can even be claimed that drawing has one advantage over written speech, since it can be used with children some years before they begin to write.

In consequence of the availability of drawings for study, we have a wealth of investigations dealing with the subject from almost every point of view. The latest and most comprehensive study is that by Dr. George Kerschensteiner, which appeared in 1905. During a period of seven years as School Inspector in Munich, the author worked over three hundred thousand children's drawings. Many of these were subjected to careful examination, and from time to time special test exercises were set and the results were analyzed and tabulated. The work indicates only slight acquaintance with earlier studies in the field, but its independent conclusions are even more valuable on this account. Many hundreds of the children's drawings are reproduced in the volume, both in black and white and in colors.

Just before this work was printed Dr. Siegfried Levinstein brought out his extended study on drawings made by school children. With the support of Professor Lamprecht, the author has collected a great number of drawings made by school children, to illustrate the story of "Hans-Guckin-die-Luft," and he has also summarized earlier studies. The volume is richly illustrated with reproductions of the children's drawings, and there is an extended bibliography.

Among earlier German works, Professor Wilhelm Preyer's well-known study on his son is still useful, especially in connection with the

development of interest in color. There are less important studies in German by Gotze and Pappenheim.

Among the works by French students Perez's "L'Art et la Poesie chez l'Enfant" still remains a classic. Unlike the German works, this is based on the careful study of a few children, and deals rather with art appreciation than with creative work. In his "First Three Years of Childhood" the same author has recorded valuable observations from the same field. In various articles and reviews Alfred Binet has given us the benefit of his interesting and suggestive ways of thinking about children's drawings. Compayre, in his "L'Evolution Intellectuelle et Morale de l'Enfant," offers many suggestions of value for this chapter. Passy has also given us some valuable notes. One of the earliest quantitative study made on children's drawings was that by Ricci in Italy.

In England one of the closest students of children's drawings has been Ebenezer Cooke. He has spoken and written extensively on the subject, and his views have largely influenced work in the schools. Professor James Sully's chapters on art development in his "Studies of Childhood" have been widely read and copied. A little volume by the late Inspector of Schools, T. G. Rooper, reprinted in America as "Drawing in Primary Schools," is based directly on the study of children, and has also had large influence in the teaching of drawing in England. Miss Drury's study on what children think pretty, Miss Sophie Partridge's extended study on children's picture writing, and Miss Lena Partridge's examination of the way children draw men and women are well known. In various issues of "Child Life" during 1906-1907, Miss M. E. Findlay discussed "Design in the Art Training of Young Children from the Point of View of Childrens' Tastes."

In America we have a geeat number of studies on this subject. Dr. Frederick Burk's "The Genetic versus the Logical Order in Drawing" is an admirable summary of work done, and gives a definite application to teaching. Professor J. Mark Baldwin has analyzed certain steps in the development of drawing with his usual philosophical thoroughness. Dr. Herman T. Lukens in "A Study of Children's Drawings in Early Years" has given us one of the best sum-

common distin Mrs. Maitland has investigat-

Students must part subjects school children against ephemeral liter B. Clark has examined magazines instruct us, it perspective problems. Drawings," Professor Elmer E. Brown has published and interpreted four rather extended studies on individual children.

One of the earliest attempts to interpret large groups of children's drawings was made by the writer in 1893. In his "Studies in Education," he has analyzed an extended collection of pictures made by children and has printed another version of Miss Drury's study on what children think pretty. Professor M. V. O'Shea has an analytical study in the Proceedings of the National Education Association. The records of infancy kept by Shinn, Moore and Hogan devote much space to the efforts made by children to express themselves in drawing and to the development of art appreciation. In "A Little Girl Among the Old Masters," William Dean Howells has recorded the steps in the development of a child living in the midst of European art galleries.

These varied studies show beyond all question that children pass through successive stages in their appreciation of art and in their relation to artistic creation. Fragmentary and incomplete as the results are, they have already had a large influence on art instruction, especially with little children; and in the future the more perfect study of children must inevitably determine the ways in which we shall help them to an understanding and an expression of the beautiful.

From an examination of the many studies that have been made on infancy it seems clear that the first few months of a child's life are distinguished above all else by extreme activity and by fragmentariness of interest. A baby's waking hours are fully occupied and he turns restlessly from one thing to another, eagerly gathering a mass of unrelated experience. All observers agree in noting a broken interest at this time in striking sensory impressions, beginning when the child is but a few days old. He turns with evident pleasure towards rays of light, brightly colored objects and glittering things. Mobility and glitter seem more attractive to him than color; and objects of daily life, such as a mother's dress, seem to exercise a more compelling power than any other artistic products.

White is probably the most attractive color at this time, and a piece of newspaper will hold the attention as well as a handsomely colored toy, especially if the baby is allowed to do something with it. By the time they are a year old, many children show an interest in looking at pictures, and six months later they can pick out animals they know or photographs of father or mother. Hence by this time visual images must be pretty well formed in their minds. The whole subjective life is, however, so undifferentiated that admiration can hardly exist aside from the general mass of pleasurable feelings.

Thus until the age of two years there is little in the way of art activity to record. If the child is given pencil and paper he may rub them together as he might rub any articles together that are handed to him. When he seems to be drawing he is probably imitating the action of his elders, just as he does when he plays at writing letters. If meaning appears, well and good; but he is merely imitating the action that he sees and not the representative effort that lies behind it. His interest is in the art, not in the product.

About the age of two, however, the child begins to have a distinct pleasure in the products of his rubbing. His drawing is still only a scrawl, but he has a creative rather than a merely imitative attitude towards it. Professor Baldwin has analyzed the steps in scribble development with great thoroughness. The angular straight lines give way about the age of two years to curves, lateral movements being preferred to vertical movements. About the twenty-seventh month a sense of connection between what was visually in the child's own consciousness and the movement of his own hand or pencil springs into existence. Tracery imitation begins. Ebenezer Cooke finds in these early scribbles a tendency toward elliptical forms on which he bases far-reaching educational conclusions. Professor Brown has also pointed out the predominance of motor impulses in his early work, though recognizing the steady attempt to relate motor and visual images; and Professor Sully speaks of drawing at this period as largely "imitative play action."

All students of childhood agree in recognizing that the images which the child seeks to express at this early age are already within his mind when the drawing begins. The operation is from within outward and is hence often spoken of as conceptual drawing. Passy, Miss Partridge and Kerschensteiner all report experiments where they posed before a class and found that even elementary school children were as liable to draw them standing as sitting, or with hats as without. The difficulties of execution are so great with little children that there is little desire to look at other drawings, or at an object, even if the child be nominally copying it. Possibly if this motor difficulty did not exist the result would be the same, for one cannot help feeling that the aim at this time is self-expression rather than representation. In fact, drawing for a very young child is so thoroughly a language that we may be wrong in considering it as in any degree an art expression. One is startled to see how easily a child at this age declares a mass of meaningless lines to be a man, a horse, or an engine. Whatever may be true of adults, "art for art's sake" has no place in a child's world.

So thoroughly is all drawing conceptual at this period that if a child is drawing a complex whole he is content to put down, one after the other, the parts he knows and happens to think about. Thus, if he is drawing a cow, he makes a scrawl of some kind to stand for the cow as a whole; on one side of this he scratches some horns, on the other side some legs and a tail, while a smudge some inches away is declared to be the hair. If he draws a man on horseback, you see both of his legs; in drawing a woman he may draw her body, then put on her clothes, one garment after another, and even draw her pocket, a purse in the pocket and a penny in the purse. This tendency to work out a detail at a time has led some students to speak of this stage as the cataloguing period in drawing

Nothing is more striking in the drawings made by children at this period than the way in which they universally invent or adopt diagramatic forms. They do not draw the outline of men, or trees or houses; they make symbols or signs to stand for them. Thus they make a straight line for a leg, a little circle for an eye; a vertical line with a few horizontal lines on the sides represents a tree. Many people are led by this fact to assume that children tend to abstract form from things, and that they are interested in such form abstractions and hence should be given work with lines and plane surfaces. A little observation, however, will show any one that these diagrams are due, not to the child's having abstracted the form from the object, but to his inability to co-ordinate visual and motor images and to his slight power over muscular direction. With developing power his growth is not from objects to more abstract forms, but from his first crude diagrams he moves steadily to real objects. The pictorial evolution of a man illustrates these steps.

The correctness of this position is further shown by the fact that all of a child's spontaneous drawings before he is six years old are pictorial. Mrs. Maitland found only five per cent of the children at this age drawing geometrical designs, and only three per cent. using ornament. In illustrating stories, Barnes found less than one per cent. using ornamental forms. Lukens found but two per cent. using geometrical designs and decoration combined. As we have repeatedly

said, drawing is for these young children a language closely akin to speech. It grows up by the same alternating analysis and synthesis that we find accompanying the mastery of speech. From the tangle of lines that stands for a man emerges, as it were by accident, some circumscribed part that is recognized as the head; arms and legs spring out from it; eyes find their place; and then a nose follows. A body evolves below the head, often by uniting the legs with a line; ears linger until later. These early figures of men are almost invariably drawn full-face, possibly because only a full-face figure gives the child a chance to enumerate all the features. Since throughout childhood the motor impulses tend to concentrate, now in one direction, now in another, the interest in drawing is very spasmodic. Sometimes it continues strong for several days, and then entirely disappears for several weeks or even months.

The objects that a child is especially interested in drawing at this time are those related to his own daily life and needs. Men and women are most attractive; babies, domesticated animals, objects of daily use, and playthings are the objects which he must portray if he is to draw with avidity. His standards are so low that he has no fear of being unable to realize them. He feels as secure in drawing a man as in drawing a vertical line.

Whether children tend to draw mass or outline before they are six has attracted much attention. Mrs. A. H. Putnam provided in her kindergarten, water colors, colored crayons, slates, paper and pencils and the sand table, and then encouraged her children to make representations of a ball. There was no direction given, but eighty-seven out of ninety-seven children who had been in the kindergarten but a few days drew outlines with pencils. It may be said that this is what they had always been accustomed to do, but the line seems best to correspond with what we have found to be the children's aim in drawing at this period.

Any thoughtful observer who watches a child's drawing from the time he is two until he is six must be deeply impressed with the great aid it furnishes to all of his processes of thought. It relates visual and motor impulses, thereby perfecting visual judgments, the great majority of which rest on motor experiences, and at the same time it directs and cultivates motor activity. By recording images and thus holding them before the mind for consideration such drawing forms one of the most effective agencies in organizing a body of correct ideas or concepts on which all intelligent thinking must finally rest.—*The Kindergarten Magazine.*

ADVANTAGES OF KINDERGARTEN TRAINING.

It is my conviction that a child who has kindergarten training possesses an inestimable advantage over the one who lacks it.

His superior ability asserts itself almost as soon as he enters school. He is ready to learn. His senses—gates of his mind—are open, and the acquiring of knowledge becomes an easy task.

The fact that a great many children without kindergarten training are not ready to learn on first entering school, is apparent to any worker in a primary room. Before learning can take place, the eye must be taught to see, and the ear be trained to hear.

When a pupil correctly sounds such a word as "c-at" and pronounces it "hen," he exemplifies the advisability of ear training. The vision of a five-year-old in a vain attempt to select words like his sample, speaks for the need of the training of eye.

Lack of fundamental sense training is a serious drawback which often appears as stupidity in the pupil, and not only necessitates waste of time in September, but hinders progress all along the way.

Besides this preliminary sense-training which so quickens and awakens the mind, the kindergarten child possesses a fund of real knowledge in contrast to his less fortunate class-mate. For two years he has been mastering problems with hand and brain which would puzzle the skill of his parents. He knows quantity and form and color. He has an enlarged vocabulary, and is correspondingly capable of receiving ideas. To his list of acquisitions must be added his training of hand. This last asset will be appreciated by the teacher who has sometime had the task of teaching chubby fingers to grasp the pencil, not like a spear—not like a hammer—and to direct its point toward the vicinity of an obstinate base line.

Last, but not least, since all this development has been brought about in that spirit of play which is genius, he comes to us with a school attitude that is golden—a happy expectancy which is fit substitute for voluntary attention

Seven years of experience with mixed primary classes convince me that the value of kindergarten training cannot easily be over estimated.—*The Kindergarten Magazine.*

THE EDUCATION QUESTION.

At a drawing-room meeting held in connection with the London Centre of the Church Schools Emergency League at the Manor House, High Street, Brentwood, on Tuesday, 30th ultimo, the Rev. E. J. Gallop, M. A. (Chaplain of St. Margaret's School, Bushey), in the course of an able and eloquent address, said that religious education was essential to stability and nobility of character. Religious instruction must form part of the education of the child, and if that instruction was to be of any value it must be definite, and in accordance with the religious bodies to which the school belonged. Their Church schools and training colleges must retain their definite character. The education of the child would be incomplete if religious instruction was left out of the curriculum. The whole being must be trained in due proportion. The physical and mental training of the child was duly attended to, and the question for them was to insist that the religious training should be also equally well cared for. The religious teaching must be definite and dogmatic. They must demand that religious teaching shall form part of the regular education of the child, and that teaching in Church of England schools should be in accordance with the tenets of the Church of England. This instruction must be given by teachers who by their faith and knowledge were competent to teach it. They were quite content that the schools should be under public control, but the religious instruction should be under the direction of the denomination to which the school belonged. The Rev. J. Thomas proposed, and Mr. F. W. Silvester seconded, the following Resolution: "That this meeting of the Church Schools Emergency League refuses to accept any settlement of the education question which does not accord perfect equality of treatment as between denominational and undenominational schools, teaching, and teachers." The Resolution was carried unanimously.—*The School Guardian.*

OUR ENGLISH LETTER.

LIVERPOOL, *March* 1909.

A Deputation of Members of the Parliamentary Committee of the Trades Union Congress has waited upon Mr. Runciman to ask for the abolition of fees in Secondary Schools. Mr. Shackleton, the chief spokesman, reminded Mr. Runciman of the promise given by Mr. Mckenna in 1907, that 25 % of the places in Secondary Schools receiving Government grants should be free. This promise had satisfied them, but as yet no such provision had come into operation. He pleaded for moderate fees in all such schools, and announced that the aims at which the Trades Unionists were aiming is, that as soon as possible secondary education should be made free. Mr. Runciman received the representations very sympathetically. He pointed out, that the difficulties arose out of the present unsatisfactory condition of Local and Municipal finance. He agreed that the working man's child had a right to a place in the Secondary School and promised to do what he could, to supply free places.

In these days when elementary education is absorbing so much attention and provoking so much controversy, we may well ask ourselves, what is being done to promote secondary education? The need of reform in this connection was keenly recognised eight or ten years ago. But the Balfour Act of 1902, undoubtedly, gave secondary education a set-back. In 1905-6, the grant was only a matter of £300,000, in 1906-7 it was roughly £500,000, in 1907-8 £700,000, in 1908-9 it is £800,000. But what must be done by those concerned in the administration of Secondary Schools before Government aid can be secured? All idea of profit-making for directors or shareholders must be abandoned. In many cases much structural alteration and improvement at great cost has to be undertaken before the Education Authorities are satisfied: Governors, already in straits to provide money for the adequate staffing of the school, have to make an additional outlay on bricks and mortar. They then have to admit a majority of Governors from the Local Authority on their Board, and will have further to comply with the Board of Education's requirement to admit one-fourth of their pupils free with the prospect of the door being further opened and what is their gain to be? Taking the suggested £5 per head grant, we see that, when the amount lost by the forfeiture of one pupil's fee is set over against the amount gained by the grant, the net gain to the school cannot amount to much more than £1 per head. But the State grant to Elementary Schools is about £2-5/- per head, and secondary education is much more costly than elementary. Accordingly until the Board of Education is prepared to treat the Secondary Schools in a much more generous way, we cannot expect much progress to be made.

Several writers have recently given us an opportunity of contrasting the systems of education prevailing in different countries with our own, generally, to the disadvantage of the latter.

America and Germany have both been used as whips to lash our antiquated systems and to bring our Home Authorities to their sense. It may be in some cases that the Foreigner has won undue praise: the merits of a novel system can be soon pointed out by an enthusiastic adherent, it may take years to learn by experience its defects from the unsatisfactoriness of the results. Every variation is not necessarily an improvement; we may need to change our system, but we want to change it for the better. Longmans have just published "Impressions of American Education in 1908" by Sarah Burstall. Miss Burstall is the Head-Mistress of the Manchester High School for Girls, a lady of wide experience who has achieved no little success in her work. But while her book is not stocked with indiscriminate approval of American methods it does seem faulty in its failure to make clear the fact that the difference in their methods is largely accounted for by the difference in their aims. 'Education' from the American standpoint fits men for commerce, ours fits them for citizenship. We submit that this is not an overstatement of the case. If 'graft' flourishes as it is does in America it is due to the fact that certain instincts have been atrophied, and for this the schools are to blame. The American Educationists may not so intend, but their system seems fitted to make millionaires rather than men. If their pupils set out to gain the whole world, it is small wonder they lose themselves. We cannot follow Miss Burstall in her commendation of co-education, but upon that matter we have already written more than once.

To revert to Mr. Runciman, the Trades Union Deputation is not the only one he has received recently. The National Union of Teachers has also fallen upon him. The burden of their woe was the over-supply and under-equipment of teachers for Elementary Schools. They desired that there should be no further recognition of additional supplementary teachers, that a time-limit should be fixed for the recognition of future uncertificated teachers, that a date be fixed after which no teacher should be certificated who had not been trained in a College and that certificated teachers only should be considered eligible for Head-Teachers' posts. Quite enough for one Deputation to demand at one sitting. The Deputation drew from Mr. Runciman the remark, that Elementary Schools existed for the sake of the children and not of the teachers. Student-Teachers could not be removed at one fellswoop, but their proportions are to be reduced: these suggestions as to banting are to be made by the Board to the Local Authorities. The Board could not accept the suggestion that the classes in Elementary Schools should be as small as in Secondary Schools: that apparently is a standard of perfection that is unreachable. Unemployment among teachers is now a serious matter. A few years ago the demand for trained teachers considerably exceeded the supply. Now, apparently, at least 20% are unemployed. As far as firing out the fools went, Mr. Runciman promised to make it to the monetary disadvantage of Education Authorities to employ the untrained. It is obvious that henceforth training is to be an essential, and, so far as the more coveted positions go, a degree almost a necessity. And there really is no question as to the vast strides that are being made in our elementary education. The teaching is more efficient and the work made much more congenial to the scholars. A small friend of ours, of the mature age of five, is loud in her praises of school: the pill is heavily coated with sugar, but the pill is being swallowed, and that after all, is the main point with pills. The reform of Oxford and Cambridge is much in the air. Mr. Dale, the Vice-Chancellor of Liverpool University has just been delivering his soul on the matter. It is easy to sweep out other people's houses. But perhaps he is right in thinking that the crux of the matter lies in the relation of the Colleges to the University. For some time now Colleges have been uniting themselves into groups for examination and tutorial purposes, but as yet no adequate remedy has been forthcoming. The whole tutorial system is being weighed in the balance. In some respects undoubtedly the undergraduate at Oxford or Cambridge labours under serious disadvantages as compared with a student of Edinburgh. The Oxford man most certainly does not come under the influence of such masterful personalities as will always be found upon the staff of a University which concentrates its teaching force in a few Professors to whom adequate remuneration is given. College Tutor can hardly challenge comparison with a University Professor, and we in Oxford were hardly aware of the existence of Professors. They lectured at odd times on out-of-the-way subjects. But if the University proper is to assert itself and become more than an examining body, in the present absence of other means of securing the money, it must draw upon the Colleges for funds. Some change in this direction seems bound to come, for things at Cambridge are even in a worse condition as regards the isolation, and so the weakening of the Colleges. At Cambridge too the University does not even possess a building in which to conduct its examinations. It is a secret joy to the Oxonian to see the Cantab creeping to weird lurking places in which to grapple with his Tripos papers. The chief clause in the new Reform Bill must be one that establishes the practical, as well as the theoretical, pre-eminence of the University over the Colleges. But, as we insisted last month, let the reform come from within and not from without.

The most recent effort of the Reformers in Oxford has not been crowned with success. A resolution restricting the M. A. degree to those who had taken an honour's school or had proceeded to some further degree after the B.A., was submitted to Convocation this week. It was defeated by some thirty votes in a moderately large poll. This reverse was hardly unexpected by the Reformers; they must be fairly satisfied with having come so near to achieving their end. To the impartial observer—if such beings exist—the change seems certainly a rational one. At present the M. A. has only a sentimental value: it looks better. But with this change it would really stand for something. And the University Exchequer would not suffer. The number of pass men, who would thus be prevented from taking the M. A., would be more than balanced by the additional number of honours men, who would be induced to proceed to the M. A. It would be worth taking then. We hope that the recently formed Reform Committee will not allow this matter to drop.

Reviews and Notices.

PRACTICAL PHYSICS BY L. M. JONES. MESSRS. LONGMANS GREEN & CO:—

The author has embodied in his book what he has himself put to the test of experience for several years in his school. We have no hesitation in saying that the author has succeeded in his endeavour to present an intelligent survey and give a complete grip of the essential principles of Heat, Light and Electricity. The book will doubtless prove useful to students of the new Intermediate Course of this University, but the sphere of its utility is restricted by the fact, that the book does not provide for a course of work in Hydrostatics, Mechanics, etc. Throughout the book the aim of the author has obviously been to couple accuracy with simplicity, a feature not very common with the generality of books of this type. The graphical method has been freely employed, and this is one of the marked features of the book. The use of such a method serves not only to illustrate the principles involved, but also to elucidate and fix them on the mind. Among the other features of the book may be mentioned the general revision papers appended at the end of the book, and the exercises at the end of each chapter. Choice and few as they are, they will serve as a healthy stimulant for the worker. We concur with the author in his opinion that almost all the exercises can be easily performed by pupils between fourteen and seventeen years of age.

GEOGRAPHY OF THE MADRAS PRESIDENCY FOR BOYS AND GIRLS. (TELUGU EDITION). BY K. A. VIRARAGHAVA CHARI, B.A., PACHAIYAPPA'S COLLEGE, MADRAS. LONGMANS, GREEN & CO. 4½ ANNAS.

We are glad to be able to accord a sincere welcome to this book. As the author observes in the preface, the reform in the method of geographical teaching to be effective, must begin in the lower stages of the school course, and hence, there exists at present a real necessity for geography books in the Vernaculars written on thoroughly scientific lines. The aim of the author is to supply this want. The book is intended to serve the double purpose of object lessons and a text-book. In less than twenty pages he has set out in language at once simple and accurate, the main facts regarding the solar system and the shape, size and movements of the earth. The second part treats of the physical features of the earth and furnishes illustrations of the leading geographical terms. The next part treats of the situation of the continents and oceans, and then follows a brief general view of the Indian continent. The portions mentioned above take up little less than half the book, and the rest is devoted to the Geography of the Madras Presidency. A coloured map of the Presidency is attached to the book, and there are numerous illustrations interspersed through it. We congratulate the author and the publishers on this excellent production.

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(1) HIGH-ROADS OF HISTORY-EIGHTH BOOK. BY E. M. WILMOT-BUXTON. 1*s.* 6*d.*

(2) FINGER-POSTS TO BRITISH HISTORY. BY R. S. RAIT AND J. E. PARROTT. 2*s.* T. NELSON AND SONS.

(1) The first of the above books forms a part of a series most of the previous volumes of which we have already noticed in these columns. In

about 250 pages, the present instalment entitled "Highroads of Empire History" traces the progress of the British Empire from its lowly beginnings in the sixteenth century to its greatness at the end of the nineteenth. The book is divided into four sections entitled respectively "The Time of Preparation," "Active Colonization", "The Empire grows by Conquest", and "Empire-making in the Nineteenth Century." The book is a model in the art of compression as will be seen from the fact that in less than fifty pages the author has managed to give a rapid but adequate bird's-eye-view of the formation and growth of the Indian Empire. The book, it is hardly necessary to add, is printed in good type on sumptuous paper and well-bound, and the numerous illustrations enhance its attractiveness and interest.

(2) The other book noted above is a summary with notes of the chief events in British History from the earliest times to the last year and is intended to be used as a supplement for the purposes of revision and preparation for examinations to the same publishers "High-roads of History" or any other text-book on the subject covering the same ground. The relative importance of events is exhibited by variations of type and colour in the chronological summaries, references being furnished in a parallel column to leading contemporary foreign events. The main topics of each reign or section of a reign are dealt with in brief notes, and diagrams and maps are freely introduced. The chief writers of each period with their works are noted at the end of each section. A glossary of technical and other terms occurring in the book and a series of brief biographical notices arranged in alphabetical order, which the authors have appended to the book, enhance, not a little, its usefulness. The summary and notes, so for as we have been able to test them, are as accurate as they are concise, and we strongly recommend the publication to the notice of our High-School and College-Students who have got to master English History for their examinations.

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(1) DOORS OF GOLD. 10*d.* (2) FAIRY FAVOURS. 1*s.* (3) TALES THAT ARE TOLD 1*s.* 6*d.* T. NELSON AND SONS.

These three books form respectively the first, second and sixth parts of the *Royal Treasury of Story and Song*, a series of literary reading books designed to form a ladder to literature. We have recently spoken in terms of high but well deserved praise of the fourth and fifth parts of the series, namely, "Golden Gifts" and "Enchanted Garden". The same merits characterise the instalments now before us, and it will suffice to observe that the excellence of the selections, the copious illustrations and the attractive get up of the books make them a real delight to the eye and a feast to the soul.

CAMEOS FROM THE PLAYS OF SHAKESPEARE. SELECTED BY K. B. MARZBAN B.A., JOINT PRINCIPAL, NEW HIGH-SCHOOL, BOMBAY. *Second Edition.*

The book is intended for Indian students to whom, as the compiler observes, Shakespeare remains only a great name in case any of the plays is not prescribed as a text-book for his higher examinations. The aim of the compiler is by means of these selections, to introduce the student to Shakespeare while still at school and thus to instil in him a desire for a thorough acquaintance with Shakespeare's masterpieces. The selections are arranged in the chronological order of the plays from which they are extracted, and each piece is prepared with a very brief introduction giving a general drift of it. The selections are well-chosen, but we think the editor could have found room for the caskets-scene between Portia and Bassanio in the *Merchant of Venice* and the moonlight scene, a passage of transcendant beauty, as Dr. Courthope characterizes it, occurring later on in the same play.

A portrait of Shakespeare forms the frontispiece and a few pictures depicting scenes from his plays, as acted by Indian students, are included in the book. We must add that we should like to have seen the book printed in better type and paper and furnished with a more substantial cover, but apparently considerations of economy have militated against this course.

Indian Educational Notes.

MADRAS.

Mrs. M. Engler, M.A., L.T., Sub-Assistant Inspectress of Schools, Ceded District Girls Range, to act as Assistant Inspectress of Schools, Madras Girls' Range, during the absence of Miss P.F. Parsons, B.A., L.T., on leave or until further orders.

Mr. H. J. Allen, M.A., Professor of History, Presidency College, is to act as Principal of the College during the absence of Mr. J. H. Stone on leave or until further orders.

Mr. O. J. Couldrey, B.A., Inspector of Schools, Sixth Circle, is to act as Professor of English, Presidency College, during Mr. Stone's absence on leave or until further orders.

Mr. G. V. Subbarayudu Sastri, B.A., acting Inspector of Schools, Second Circle, is to act in the Indian Educational Service, *vice* Mr. O. J. Couldrey.

Mr. V. R. Venkatarama Aiyar, B.A., L.T., Assistant Inspector of Schools, Coimbatore, is to act as Inspector of Schools, 6th Circle, *vice* Mr. O. J. Couldrey on other duty, until further orders.

Mr. T. Shaik Muhammad Hussain Sahib, B.A., Assistant Inspector of Schools, Kistna (subordinate service) is to act in the 9th grade of the Provincial Educational Service, *vice* Mr. V. R. Venkatarama Aiyar.

M. J. Vittal Pant, Assistant Inspector of Schools, Anantapur (subordinate service) to act in the 9th grade of the Provincial Educational Service during the employment of Khaja Khan Sahib Bahadur on other duty. To have effect from the date of relief of M.R.Ry. M. Ramaswami Aiyangar from Madura.

Miss P. F. Parsons, Assistant Inspectress of Girls' Schools, Madras Girls' Range, has combined privilege leave and leave on private affairs for six months from or after the 1st April 1909.

Mr. W. H. James, Principal, College of Engineering, Madras, has furlough for eight months in continuation of the ensuing Summer vacation of the College.

The Hon'ble Mr. A. E. C. Stuart, I.C.S., is to be the President of the Victoria Technical Institute, *vice* Mr. J. N. Atkinson, C.S.I.

Mr. A. I. Mayhew, B.A., Deputy Director of Public Instruction, is to act as Inspector of European and Training Schools during the absence of Mr. E. W. Middlemast on leave or until further orders.

Mr. A. C. Pranatartihara Aiyar, B.A., Inspector of Schools, Second Circle, on leave, is to act as Deputy Director of Public Instruction, *vice* Mr. A. I. Mayhew. To join on the expiry of his privilege leave. He is also to act in the Indian Educational Service.

Mr. A. S. Vaidyanatha Aiyar, B.A. Lecturer, Kumbakonam College, is to act as Inspector of Schools, Seventh Circle, during the absence of Mr. L. C. Williams Pillai, B.A., on leave or until further orders.

Mr. A. Arulanandam, B.A., Assistant Lecturer, Kumbakonam College, is to act as Lecturer, Kumbakonam College, *vice* Mr. A. S. Vaidyanatha Aiyar.

Mr. C. A. Wilkinson, B.A., Assistant Inspector of Schools, Bellary, is to act as Lecturer, Rajahmundry College, *vice* Mr. T. V. Sivakumara Sastri on other duty or until further orders.

Mr. T. V. Sivakumara Sastri B.A., L.T., Lecturer, Rajahmundry College, is to act as Assistant Inspector of Schools, Bellary, *vice* Mr. C. A. Wilkinson.

Mr. A. Arulanandam, B.A., is to act in the 9th grade of the Provincial Educational Service.

Mr. J. H. Stone, Principal, Presidency College, Madras, has privilege leave for 2 months and twenty-one days in continuation of the ensuing Easter holidays and the Tamil New Year's day.

Mr. C. E. Odgers, Acting Principal of the Madras Law College, has special leave on urgent private affairs in combination with the ensuing Summer vacation of the College for a total period of six months.

Mr. B. S. B. Palit, B.A., is transfered from the ninth to the eighth grade.

Mr. C. Bhagavanulu Pantulu, B.A., is to be a member of the Provincial Educational Service in the ninth grade.

The promotion of Mr. B. S. B. Palit, is to have effect from the 18th January 1909, the date of the vacancy caused by the death of Mr. T. Janikiram Aiyar, and that of Mr. C. Bhagavanulu Pantulu from the date of his taking charge of the office of Assistant Inspector of Schools, Vizagapatam District.

Mr. M. Ramaswami Aiyangar, B.A., L.T. is to act in the ninth grade of the Provincial Educational Service.

Mr. K. Rangachariyar, M.A., L.T., Lecturer, Kumbakonam College, and acting Second Assistant Teacher's College, Saidapet, is to be Second Assistant in the latter College, *vice* Moulavi Muhammed Azam Sahib Bahadur, transferred.

Mr. K. R. Doraswami Aiyar, B.A., Assistant Inspector of Schools, late Tinnevelly division, and acting Lecturer, Kumbakonam College, is to be Lecturer in the latter College, *vice* Mr. K. Rangachariar.

Mr. K. Rangachariar, M.A., L.T., Second Assistant Teachers College, Saidapet, is to act as First Assistant in the same College *vice* Mr. S. Subramanya Aiyar, B.A., on other duty or until further orders.

Mr. M. Ramaswami Aiyangar, B.A., L.T., Third Assistant, Teacher's College, Saidapet, and acting Assistant Inspector of Schools, Madura, is to act as Second Assistant in the Teachers' College, Saidapet, *vice* Mr. K. Rangachariyar.

Mrs. M. A. Srinivasa, Assistant Inspectress of Girls' Schools, Kistna-Guntur Girls' Range, will be granted privilege leave for two months from or after the 14th April 1909.

THE Government of India has sanctioned the proposal of the Madras Government that Sub-Assistant Inspectors of Schools who are placed in charge of districts shall be allowed to draw travelling allowance according to the ordinary rules of the C. S. R. instead of the fixed permanent monthly allowance of Rs. 25.

THE High School Examination for European Schools will in future be recognised as equivalent to the Matriculation Examination of the Madras University, in so far as it is a qualifying test for admission to Government service.

THE Madras Government have sanctioned the distribution of Rs. 11,45,924 among the various DistrictBoards for educational purposes.

LADY BENSON has visited the Mylapore Girls' School and left the following note:—"I visited the school for the first time since its completion on Wednesday, the 24th March, 1909, with my niece Miss Holland. The building is a very good one, the rooms airy and clean, and the arrangement of screens and painting on the walls of letters and figures specially to be commended. There was a good attendance of girls, and we were much pleased with their singing, drilling, drawing, needle-work and reading.

LAGUDUVA TULASIRAM, a graduate in arts and law and Soursatra dye merchant of Madura, left on April 10 for London, on an industrial mission, and to study foreign arts and industries. The send off was a grand affair.

THE Committee appointed by Government in January last to select a site for the new College of Engineering having reported that the land which lies on the upper side of the Kottur tank between Guindy Park and the Adyar river, measuring about 200 acres, is the most suitable, the Government have accepted the recommendation of the Committee and directed that very early steps should be taken to acquire the land.

THE Government of Travancore has sanctioned a grant of Rs. 80,000 for the construction of the Law College in Trivandram.

THE Government has published a notification vesting the Thompson prize Endowment in the Treasurer of Charitable Endowments and another settling a scheme for the administration of the trust. The following is the scheme:—"(1) The Treasurer of Charitable Endowments shall stand possessed of the securities and moneys to the credit of the Thompson Prize Endowment subscribed by the officers of the late Madras Railway Company upon trust to permit the same to be administered by the Chief Engineer for the time being of the Madras section of the Madras and Southern Mahratta Railway Company, Limited, and the Principal for the time being of the College of Engineering, Madras. (2) From the interest accruing on the said endowment shall be provided annually a prize which shall be called the "Thompson Prize."(3)The said prize,which shall take the form of books, shall be awarded annually to the student of the senior division of the Upper Subordinate Class of the College of Engineering, Madras, who shall stand first in the grouped subjects of Construction, Building-Drawing and Estimating at the Final Examination of the said College of Engineering and who, judged by the work done during his college course, shall be considered by the Chief Engineer for the time being of the Madras section of the Madras and Southern Mahratta Railway Company,Limited, and the Principal for the time being of the College of Engineering, Madras, to be of sufficient merit. (4) All interest on the said endowment that may not be required or utilized for the said "Thompson Prize "shall be accumulated and such accumulation shall when possible from time to time be invested in securities of the Government of India and be added to the principal amount."

THE Presidency Training School for Mistresses under the superintendence of Miss Bernard, is to be congratulated on the excellent results obtained in the recent preliminary examination for Teachers' Certificates. Nine English students of the Secondary Grade out of ten presented passed —Miss Watt standing second in the Presidency. All six English students of the Higher Elementary Grade passed—Miss Slynn heading the list in the Presidency. The Vernacular students also passed very creditably. One Telugu student presented for the Secondary Grade and eleven higher Elementary passed out of thirteen presented.

THE interesting ceremony of the dedication of the spacious hall of the Hindu High School, Triplicane, to the memory of the late Rao Bahadur M. A. Singara Chariar, who nursed the institute in its infancy with fostering care and unflagging zeal equalled by a few and surpassed by none, and the pleasing function of the giving away of prizes to the successful winners thereof came off recently under the distinguished presidency of the Hon'ble Mr. Justice J. E. P. Wallis, M.A., Bar-at-Law, and the Vice-Chancellor of the Madras University. The *élite* of the locality assembled in numbers, and the hall was filled to overflowing. The proceedings opened with the reading of the report on the working of the A. V. Primary School, Triplicane, during the year 1908 by the Headmaster at the bidding of the chair. This was followed by the report on the working of the High School by the Headmaster to whose untiring efforts and able teaching the record work of the High School during the year under report is mainly, if not solely, due. Then on behalf of the committee, Professor M. Ranga Chariar read the report of the committee of management for the year 1908. The next item in the programme the distribution of prizes by the Hon'ble J. E. P. Wallis to the pupils of the institute that had distinguished themselves by topping the list of successful candidates was gone through.

Though this is a feature common to all schools, still the ceremony was unique in this respect, namely, that of the prize-winners, there were two pupils, Sundararaja Row and C. Ananda Rao, (son of C. Krishnaswamy Row, Esq., one of the distinguished visitors) who stood as the 1st and 4th in the Presidency in the Matriculation Examination in spite of the double ordeal to which they were subject. After an instructive address by the Chairman, the Hon'ble Mr. Justice Wallis was garlanded by Dewan Bahadur Krishnaswami Row who thanked the Chairman for his kindness in having presided that evening and for his felicitous and interesting remarks.

THE seventy-first anniversary of the S. P. G. High School, Vepery, Madras, took place in the compound of the school recently in the presence of a large number of the friends and well wishers of the Institution, under the presidency of His Excellency the Governor. The proceedings opened with the singing of a hymn, followed by the offering of a prayer. An interesting programme of entertainment was then gone through consisting of gymnastic feats by senior boys, recitations in English, a recitation of a scene from a Tamil Drama and drill by youngsters. The Headmaster then read the report of the school for the past year, which showed that the number of boys on the rolls at the end of 1908 was 498, of whom 154 were Christians, 10 Mahomedans, 28 Brahmans, 299 other caste Hindus and 8 Panchamas. The prizes consisting of books, were then distributed. His Excellency delivered an address with which the proceedings came to a close.

THE premises of the Girls' School, Tirupapuliyoor, presented a lively and enthusiastic appearance, the occasion being the distribution of prizes to the students of the school. Mrs. Moberly, the wife of the District and Sessions Judge, presided at the function. The *élite* of the town attended. The programme, which was varied and interesting, was gone through in quick succession, the girls playing their part well. The Kolattam dance, conversazione, and sundry recitations were much appreciated. Mrs. Nery, the Headmistress then read the report of the institution for 1908. This over, Mrs. Moberly gave away the prizes to the pupils, and with this the proceedings terminated.

AN annual meeting of the Madras Teachers' Guild was held recently in the Hindu High School, Triplicane, when many of the members of the Guild were present. After the minutes of the meeting were read, the Secretary read the annual report for 1908. The Secretary moved the adoption of the report by the members, and this was seconded by Mr. Lukshminarasu and the report was adopted *nemem*. The next item of business in the agenda paper, namely, the election of office-bearers, was then taken up. The Secretary then moved that the proposition with regard to requesting the Syndicate for the postponement of Matriculation Examination, might be considered. Mr. Viraraghava Chariar, who was asked to announce the proposition, said that in view of the fact that the ensuing Matriculation Examination was to be held in December, 1909, and that there was a very short time to prepare students for the examination under the new curriculum, it was suggested that the teachers of the Guild might move the Syndicate in the matter and see that the Matriculation Examination was postponed till April next. The results of the Matriculation Examination were announced nearly 7 weeks after the due date. Taking into consideration that only 23 per cent of those that went up for the Examination in 1908 came out successful, there was a large number of those who had been studying under the old curriculum that had to be prepared under the new curriculum. The University had given them a very elaborate syllabus in Physics and Chemistry. Practical Geometry had to be taught for the first time, and they were called upon to do very great practical work. Four text books were prescribed for non-detailed study. The teachers did not know what to do. They were now called upon as per the new Geographical syllabus, to teach the continent as a whole. With reference to the large number of students who had failed in the Matriculation Examination, it was very difficult to prepare them for the next examination within the limited time at the disposal of teachers. As the Principals of Colleges would protest against the postponement of the examination till the month of April (for in that case they would have no students in the first term in the Junior F. A. Class and the inevitable result of it would be that they would lose the income which they would otherwise be getting) he, the speaker, thought it was not possible to move the Syndicate for the postponement of the examination. The best thing under the circumstances would be, as was suggested to to him by the Rev. Mr. Meston, to approach the Syndicate with a prayer that strict instructions be issued to the Examiners not to make the new examination too much of a departure from the old examination and to set alternative questions, some on the old lines, for the benefit of those who had been trained under the old cirriculum, and some on the new lines for those who had undergone training under the new curriculum. He thought that suggestion was on the whole of a practical character. It was therefore resolved at the meeting, that a small Committee consisting of the members of the Guild, be formed to draft a memorial to the Syndicate in the spirit of the suggestion made. The meeting then dissolved and the members then adjourned to a social gathering, and light refreshments were served to them.

A GRANT of Rs. 27,000 will be sanctioned to the Pachaiyappa's College, Madras, out of the special grant placed at the disposal of this Government by the Government of India in aid of University and Collegiate Education.

2. The charge will be met from the allotment of Rs. 1,05,000 under "22. Education—University" in the current year's budget.

IN modification of G.O., No. 814, Educational, dated 12th December 1908, the Government direct that the dates of closing of the undermentioned Government Colleges for the Summer vacation of 1909 shall be as follow :—

Name of College.	Date of closing.
Presidency College ...	30th April 1909 (Friday) inclusive.
Kumbakonam College ...	Do.
Rajahmundry College ...	Do.
Rajahmundry Training College ...	Do.
Teachers' College, Saidapet ...	7th May 1909 (Friday) inclusive.
Law College ...	... 23rd April 1909

2. The Easter holidays for Government Colleges will, with effect from the current year, be reduced to four days, that is, from Friday (the 9th April) to Monday (the 12th), both days inclusive, as in the case of Government offices.

THE attention of the Chief Presidency Magistrate, Madras, and of all District Magistrates will be drawn to the definition of the term "scholar" in article 2 of the Code of Regulations for European schools. In certifying under article 41 (a) of the Code that a scholar, on whose account a grant is claimed, "destitute", the Magistrates should also certify that the scholar is a "European" as defined in article 2 of the Code.

THE Government are pleased to sanction, as a special case, a grant not exceeding one-third of the actual expenditure nor exceeding Rs. 2,600 towards the cost of constructing a building for the Hindu Incomplete Secondary School, Palacole. This grant is sanctioned on the understanding that every endeavour will be made to convert the school at an early date into a complete elementary school, if it is found impracticable to convert it into a complete secondary school.

2. The grant will be subject to the following further conditions :—

(1) That in carrying out the work the suggestions of the Chief Engineer in his note read above are adopted ;

(2) that the work is completed before the 31st. August 1909 ;

(3) that a certificate of the actual expenditure incurred on the work is submitted before the 30th November 1909 ;

(4) that all other conditions prescribed in the Grant-in-Aid Code have been duly complied with.

3. On the above conditions being fulfilled, the grant will be paid as funds become available.

THE Government are pleased to sanction a grant of one-third of the actual expenditure but not exceeding Rs. 6,700 towards the cost of providing additional accommodation required for the Madura College, subject to the following conditions :—

* * * * *

(2) that the work is completed before the 30th November 1909 ;

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(3) that a certificate of the actual expenditure incurred on the work is submitted before the 31st. December 1909 ;

(4) that the amount expended on the work does not fall short of Rs. 20,200 as actually verified ;

(5) that all other conditions prescribed in the Grant-in-Aid Code have been duly complied with; and

(6) that in the event of the resumption of the building by Government the management shall have no claim of any kind to or in respect of the buildings which it is now proposed to add.

2. On the above conditions being fulfilled the grant will be paid as funds become available.

THE Government sanction the appointment for a period of six months of two temporary Lecturers on a salary of Rs. 200 each per mensem, one for the Kumbakonám College and the other for the Rajamundry College. The appointments will be outside the cadre of the Provincial Educational Service.

2. The Director of Public Instruction will be requested to submit a proposition statement for the sanction of Government.

CALCUTTA.

A MEETING was held in the Calcutta University Institute under the presidency of Dr. P. K. Roy to express sorrow at the death of Mr. F. G. Rowe, formerly Professor and Principal of the Calcutta Presidency College.

MAHARJAH D b Samshere Jung, late Prime Minister and Commander-in-Chief of Nepal, has endowed and established a Gurkha Orphan School in Benares, to consist of 54 Gurkha boys with a staff of six teachers.

BABU Ashutosh Jana, an inhabitant of the Birulia Sub-Division, Tamluk, established a library at his own expense, for promoting universal knowledge among the public. The library, with all scientific and technical books in every branch of science, medical and surgical instruments and Hindu religious books worth nearly Rs. 7,000, was destroyed by fire recently. Besides this, his big manuscript on electrial science, in which several valuable and interesting articles on recent discoveries of science were collected from some brilliant scholars of America has been lost. This was the second library in this District. The news has created profound sorrow.

THE Intermediate Examination in Arts and Science, the B A., the B SC., and the M.B, and L M.S., Examinations of the Calcutta University under the new regulation commenced. The University authorities had intimated the Mofussil Colleges that candidates coming to Calcutta should get vaccinated. For the first time in the history of the University, the Utterpara College has been made a centre of the Intermediate Examination.

FRENCH and Uriya have been accepted as second language for the examination of Female candidates both in the compulsory and additional papers at the Matriculation Examination in 1910, 1911, and 1912.

IT is understood to be practically settled, that Colonel Lukes, Principal of the Medical College, Calcutta, officiates as Director-General, I. M. S., when General Sir G. Bamford proceeds on leave in May.

THE following circular has been issued by the members of the Asiatic Society of Bengal :—"In consequence of the acknowledged position of the Society as the senior of the learned Societies in India, a proposal has been made to create a distinction among its members and of obtaining official recognition for the Society as a metroplitan institution. The Society would probably do well if its membership involved some recognised qualification in Science or Literature. Obviously no standard can now be defined for ordinary membership of the Society, and from a financial point of view it would not be practicable to limit its membership in any way that would result in definition of a high standard of work. At the same time if the Society took advantage of its eminent position to create a distinction such as a Fellowship limited in such a way that election thereto would be recognised as a distinction of great value, and if at the same time only ordinary members of the Society were eligible for the distinction of Fellowship there would be an incentive to workers in all parts of India to make themselves eligible for the Fellowship by application in the first instance for Membership. The Society consequently would then acquire not only an increase in the ordinary membership, but would include a large number of Indians who have joined or will otherwise join local institutions. It is probable that any simple attempt to declare the Asiatic Society of Bengal as the official metropolitan society of India would meet with the opposition of other smaller local Societies, we should not be justified therefore in asking for a charter for similar recognition by Government without first establishing in a natural way the pre-eminent position of the Society itself." The proposal will be laid before the meeting on 7th April and will be voted for at the meeting of May 5th. The report of the sub-committee appointed to consider the proposal and accepted by the Council states that a limited number of fellowships will be created within the Society ; that Fellowships be given solely in recognition of literary or scientific work done; that the maximum number of Fellowships at one time be 50; that the Fellowships be open to ordinary members only, and that a Fellow on ceasing to be an ordinary member ceases to be a Fellow; that not more than twenty names shall be included in the first list; that not more than ten Fellows be elected in the second and third year, and not more than five in any subsequent year; that the first list shall be prepared by the Council, and that the annual elections shall be made at the annual general meeting of the Society on the recommendations of the Council; and that all subsequent elections be upon the nomination of Fellows, duly considered by the Council, and laid before the annual general meeting.

THE sixth annual meeting of the Central Council of the Association for the Advancement of Scientific and Industrial Education of Indians was held in the Town Hall, Calcutta, and was attended by representatives of many districts of Bengal, Behar, Orissa and Assam. In the course of a very lengthy address in which he reviewed the Association's work during the past year, the President said :—"During the past four years, about 236 students have been sent abroad, and this year we are about to send another batch of 100 ; so the total now comes up to about 336. Of these, 23 have already returned to the country, and not one of them has had occasion to repent of his choice of an industrial career. The lowest salary secured by any of them is Rs. 150 per mensem, while some have obtained posts on Rs. 550, some on Rs. 300, and some on Rs. 200 ; and a few have started industrial concerns on their own account. The Association is utilising the services of two—one being employed as the Principal of the Deoghar Agricultural Institute, and the other in the Small Industries Development Company. The remuneration secured by our students is not perhaps proportionate to their attainments, but better things may be looked for with the expansion of our Industries. The students who are now prosecuting their studies in foreign countries, are giving the utmost satisfaction. Indeed, the report of their progress, to which I desire to call your attention, reads almost like romance. One thing which deserves special mention is that not a single case has come to notice in which a slur has been cast upon the good name of the Association by any of its students You are, of course, aware that our students are placed under proper guardianship in foreign countries, and this accounts for their excellent moral conduct and their satisfactory progress in their work.

The annual report and accounts, which had been printed and circulated, were unanimously adopted, after which resolutions expressing the opinion of the Council that Government should take active measures to encourage the starting of and foster local industries, that the time had arrived when young men of the middle classes of this country should adopt agriculture as a means of livelihood in real earnest, recommending that Government

should encourage in its institutions the study of French, German, and Japanese, that the *ryots* of Bengal should be encouraged and given facilities to learn simple spinning and weaving and to make their own wearing apparel at home as in Assam, and further recommending that Government should take steps to train up a better class of Indian carpenters and shoemakers and employ them, so as to prevent Chinese workmen wholly supplanting Indian, were also adopted and the meeting terminated.

THE annual prize day of the Mahakali Patsala came off recently under the presidency of the Hon. Maharaja of Darbhanga.

The Secretary, Babu Jogendra Nath Mukerjee, read his annual report, which amongst other things stated that the present number of the girls was 436. The report thanked a large number of gentlemen who rendered services in one shape or other to the Patsala.

The prizes were next distributed by the President, which consisted of books, articles of stationery, boxes, perfumes, hair oils, medals, puja accessories and sundries.

This was followed by a charming Sanscrit sloka, recited by three smaller girls, and the President's speech.

Rai Narendra Nath Sen Bahadur gave a few words of instruction to the girls and with the usual vote of thanks, the meeting separated.

BOMBAY.

A MAHOMEDAN Society of Bombay has decided to start a school for girls in memory of the late Miss Clarke.

WITH a view to popularise primary education the Government of Bombay have decided that in future vernacular text books should be in two kinds of binding, namely, existing one and a cheaper one. Parents will thus have choice of buying books according to their means.

SWAMI Gnyanananda of the Sanatan Dharma Mahamandala paid a visit to Poona which has resulted in the formation of a committee to establish a Vedic school and an *Ashram* for *Brahmacharis*.

AT Baroda recently a school has been started for the education of the deaf and dumb. Oral methods are followed and instruction is given in the mother tongue. Pupils from seven to twelve years of age are admitted.

PUNJAUB.

THE Faridkot Council has sanctioned a grant of Rs. 100 a month, and the Maharani of Patiala has donated a sum of Rs. 1100, to the Sikh Kanya Mahavidyalay of Ferozepur in the Punjab. There was a lengthy discussion at the meeting of the Senate of the Punjab University recently regarding certain amendments proposed by the Syndicate to be made in the regulations of the Oriental Faculty. Some of the gentlemen present, whilst not opposed to the proposed changes, thought there ought to be further investigation into the whole matter, and were in favour of the *status quo* being maintained until the University could see its way to resolve upon something really satisfactory. Mr. Justice Robertson considered the present proposals should not be thrown out because something better could be and would be suggested in the future. After some further discussion, the proposals made by the Syndicate were formally laid before the meeting. These were (*i*) that the regulations for the Matriculation, Intermediate examination and the B O L and M. O. L. examinations be amended as formerly proposed by the Syndicate with the omission of amendment 21 providing for Diplomas of Visharda or Maulvi Alam to candidates who pass the B. O. L. examination and retaining Regulation 7 of the M. O. L. examination. (This change of the Oriental degree Regulations is based on the change proposed by the Oriental Faculty (*ii*) That the examinations for Oriental Literary Titles and examinations in Indian Vernaculars remain as at present." These were carried by 16 votes to 15 after an amendment proposed by Rai Sahib Kunj Behari Thapar had been lost.

AT the annual Anniversary of the D. A. V. College, Lala Lajpat Rai made a powerful speech, urging the uplifting of the depressed and submerged classes. "Unless the classes are raised and educated," he said, "the Hindoo Social organisation will remain weakened and impaired and less potent to resist the aggressive machinations of other communities."

A SPECIAL Convocation of the Panjab University was held recently, when the Degree of Doctor of Literature was conferred upon the Viceroy.

Dr. ALLAH Jawaya, of Lahore, Principal-elect of the proposed Habibiya Medical College at Kabul, has sent in his resignation to the Amir. The cause of his resignation is unknown, but it may be the almost impossible situation for Indians in Afghanistan at present. The Amir showed Dr. Jawaya several marks of royal favour, and as recently as February, gave him a gold watch as a mark of approbation.

FROM July next, a Training College, to prepare students for the Departmental Teachers' Certificate, will be opened at Lucknow. Matriculates and Intermediate passed men of the Allahabad University and only the latter of the other Universities with special permission from the Director of these Provinces, will be admitted on the recommendation of the Inspector of the candidates, Residential Division. The Allahabad College is reserved for Graduates. Thirty stipends of Rs. 15 each will be available in the higher grade College, 24 of 12 each for Intermediate passed men and 24 of 10 each for Matriculates in the lower.

THE second Sikh Educational Conference met recently in the Punjab University Hall. The President, Sardar Jogindra Singh, was received at the station by Sardar Gurcharn Singh, President of the Reception Committee, and the Hon'ble Lala Harkishan Lal and other leading gentlemen of Lahore. A procession was formed and marched through the city. It was an impressive scene, for Sikh ladies and gentlemen from all parts of India had gathered at the railway station to welcome the President. Eight hundred Delegates, three hundred Fellows, six hundred Visitors and over two hundred Ladies attended, at the sessions. Sardar Gurcharn Singh, the President of the Reception Committee, welcomed the President-elect, the delegates and visitors. Then the President was formally elected and delivered his address. He dealt with the distinctive features of Sikhism, primary education in the Punjab, female education, the training of teachers, and preparatory model schools worked on modern lines. He concluded with mention of the loyalty of the Sikhs to the British Government. After the Presidential address, a paper was read by Mr. Lala Bishen Dass, M A., on the Punjabi language and literature, pointing out the absurdity of trying to educate Punjabi villagers through the medium of Urdu. The Tikka Sahib of Nabha and Sir Protul Chadder Chatterjee attended the meetings as visitors. More than twenty resolutions were moved and passed with acclamation, a prominent place being given to a resolution dealing with the Punjabi language. The meeting closed with a vote of thanks to the chair and cheers for the Emperor.

THE differences between the European staff and the Trustees of the Aligarh College have been amicably settled, and Mr. Archibald has withdrawn his resignation.

SIR John Hewett recently laid the Foundation Stone of the new Canning College here in Badshahbag, an old walled in and fortified garden containing the remains of some fine buildings. The plans of the College have been prepared by Sir Swinton Jacob. It will be in the Indo-Saracenic style, 420 feet high with double-storied wings sixty feet in breadth. The College was founded by the Taluqdars forty-five years ago in memory of Lord Canning. The old College was condemned as having insufficient accomodation in 1878, and the present site was bought by the Local Government and leased to Trustees by Sir James LaTouche for a nominal fee. In his speech, Sir John Hewett congratulated the Taluqdars on their public spirit in agreeing to provide half the enhanced cost of maintaining the College, and on behalf of the Government he promised to provide the remaining half. The Maharajah of Balrampur has given three lakhs of rupees towards the new College.

THE Syndicate of the Punjab University has carefully distributed grants after considering the number of applications. The Hindu College at Delhi applied for a grant of Rs. 20,000 for purchasing the house of the College, and the Syndicate allotted Rs 5 000 to that College. St. Stephen's College, Delhi asked for a contribution of Rs. 10,000 towards completing the improvements in the building and got Rs. 5,000. The Gordon Mission College, Rawalpindi, wanted the modest sum of Rs.1,170 and got it in full. The Scotch Mission College, Sialkot asked for Rs. 3,000 and got Rs. 1,330. The Islamia College, Lahore, applied for Rs. 16,500 and got Rs. 5,000 and the Khalsa College, Amristar, applied for Rs. 5,000 and got Rs. 2,500.

LADY MINTO recently visited the Victoria Girls' High School. This institution, which has not long been opened, owes its existence to the desire of the Princess of Wales, and in it an education is given to Hindu and Mussalman girls. On Her Excellency's arrival a song of welcome, given in the vernacular, was sung by one of the pupils, while a procession of children welcomed her. The recitation in Urdu was delivered by another pupil, and Her Excellency was garlanded. Lady Minto was then conducted to the main Hall, where two pictures of the Prince and Princess of Wales were unveiled by Her Excellency. The Principal then read her report, and the following ladies were introduced to Her Excellency: Malikana Sahiba of Malik Umar Hyat Khan (of Tiwan, a clan of Shahpur), Mrs. Harkishen Lal, Begum Sahib O. R. Nawab Zali Khan (Maler Kotla), Mrs. Lal Chand, Mrs. Shah Din, Mrs. Ram. Bahaj Dutt Chowdhuri, Miss Bose, and Mrs. Parker. The School than saluted Her Excellency and an address was read, to which Lady Minto replied. The inspection of the school-rooms concluded the visit.

UNITED PROVINCE.

MR C. F. De La Fosse, Director of Public Instruction, United Provinces, has been granted ten months' leave from the 10th April. Mr. A. Venis, Principal, Queen's College, Benares, will officiate for Mr. De La Fosse.

Foreign Notes.

GREAT BRITAIN.

PROFESSOR ARNOLD has been appointed Adviser to Indian students in England. He will be assisted by a Committee consisting mainly of Indian residents. Lord Ampthill is President, and Mr. Theodore Morison is one of the members.

THE Senate of Glasgow University has decided to confer the Honorary D. D. on the Rev. Robert Kilgour, late of Darjeeling.

THE Board of Education has just published a list of thirty holiday courses, which will be held on the Continent at different times during the present year, but mostly in the Summer months. Seven of the courses are in German speaking countries, viz., at Grielswald, Jena, Marburg, Neuwied, Lübeck Kaiserslautern, and Salzburg; three in French Switzerland at Geneva, Lausanne, and Neuchâtel; one in Spain, at Santander; one in Italy, at Florence; and the rest in France, at Besancon, Dijon, Grenoble Nancy, Boulogne-sur-Mer, St. Servan, St. Malo Paris, Versailles, St. Valery sur-Somme, Tours, Honfleur, Bayeux, Granville, Caen, Lisieux, and Villerville. The list 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 tointending students.

BY the will of Mr. James Duncan, of Jordanstone Scotland, the residue of his estate, amounting to about £60,000, is bequeathed to Dundee, for the purpose of Founding there a school of industrial art. One of the aims of the school will be to give a thorough training in all that relates to the art side of textile manufacture. In connection with the institution it is proposed that there shall be a women's department for giving instruction in such subjects as, household thrift and management, cookery and laundry work. The Testator very wisely provided thatnot more than half of the bequest shall be utilised in buildings, the remainder going to form an endowment fund. In order to prevent overlapping, the new school is to be managed by Trustees representative of Dundee University College and Technical Institution

JUST READY.

MATTHEW ARNOLD:

SOHRAB AND RUSTUM

WITH INTRODUCTION AND NOTES

BY

T. O. HODGES Esq., B.A.,

Principal and Professor of English,

KUMBAKONAM COLLEGE.

PRICE Re. 1.

Srinivasa Varadachari & Co, Triplicane, Madras.

The Educational Review.

Technical Education in Bengal.

The Bengal National College is doing very meritorious work. The Exhibition of students' work that was held last year won golden opinions from competent authorities like Professor Paul Bruhl of the Sibpur Engineering College, Sir Charles Allan and J. G. Cumming, I.C.S. All testified to the high quality of the things that were turned out. This year's Exhibition was opened by the Maharaja Manindra Chandra of Cossimbazar. The exhibits of this year satisfy all anticipations about the progress of the Institution. The exhibits are superior to those of last year not only in quality and quantity but also in variety. They include engineering models, as well as finished goods and machinery like scroll saws, parallel vices, letter-copying presses and even lathis which have all been turned out by the Technical Department of the College. The scientific appliances and instruments, such as balances, optical lenses, spirometers, microscope stands, turned out by the students of the College, compare very favourably with the imported articles. The exhibits of glass apparatus and chemicals evince great practical ability and skill. Among the exhibits are also found many biological models and specimens as well as drawings and paintings. One other attractive and encouraging feature of the Exhibition is that it includes the things turned out in some of the Mofussil Institutions affiliated to the National Council, which are pursuing the same courses of study. The success achieved by the National Council of Education is due to the scheme of education adopted by it. Manual training is regarded as an integral part of every liberal education. As the Gaekwar of Baroda pointed out to the National Industrial Conference of 1906, manual training forms one of the best means of bringing about the industrial revival of India, for industrial aptitude must be developed in our young men from the very beginning of their education if it is to be developed at all. But the success of the National Council is not merely due to its scheme of studies but also to the devotion of the men, young and old, who work in the Bengal National College and form its most valuable asset. There can be no doubt of the future success of the Institution so long it follows right lines of education and is able to enlist on its behalf the services and sacrifices of such great sons of India as Sir Gurudas Bannerjee and Babu B. K. Roy Choudhury of Gouripore. The Bengal National College is a unique institution and a monumental proof of what can be achieved by Indians by sheer self-help and sacrifice without any aid from a foreign Government which does not see eye to eye in matters educational and industrial with the people it is ruling.

Functions of a University.

At a recent meeting of the University College Society, Bristol, Prof. C. Lloyd Morgan, F.R.S. delivered an interesting speech on the functions of a University. Some of his remarks will be found to be very opportune in connection with the development of Indian Universities. A University is a corporate body of learners. Though teachers help to make a University of the first rank, the learners constitute the University, and when teachers cease to be learners they ought also to cease to be teachers. All should be welcome in the University who desire to learn and who have given evidence of adequate breadth of pre-

vious education, and the requisite ability to learn at the relatively high level which ought to characterise University work. This is the real and only value of the Matriculation work. The University is not, and cannot be, a place for all; it must be a place for the selected few who are capable and willing to do University work. No doubt there shall be equal opportunities for all without distinction of creed or country, riches or poverty. But the University must select the material on which time and labour is to be bestowed. From the national standpoint it is far more economical to spend a thousand pounds on the highest training of the best student than to spend the same sum in giving a smattering of education to a thousand evening students. As Huxley puts it, if the nation could purchase a potential Watt, Davy, or Faraday at the cost of a hundred thousand pounds down, he would be dirt cheap at the money. The chief thing that should be learnt in a University is, how the problems which arise in all serious work are to be approached, to be grappled with, and, if possible, to be solved. The University is not a place for the mere imparting of knowledge, but also for the making of knowledge. The University should form the natural centre of research in all matters. The University should be regarded as a factory where the future of a nation is being forged. The Professors of a University ought to be the experts of the country. The nation should get all its ideas from its Professors. Every University must have a double aim—on the one hand, pure culture, the doing of what is fine, as Aristottle said, and on the other, the application of the highest knowledge to practical purposes. None of the Indian Universities can be regarded as striving to attain this ideal. We ardently hope for the day when India would have at least one University satisfying the conditions laid down by Dr. Lloyd Morgan.

Industrial Education.

At a meeting held last month in London of the East India Association there was a discussion about the need of Industrial Education in India. Lord Reay, the chairman of the meeting, referred to the success of the Technical College at Bombay, established during his Governorship as a Memorial of the Jubilee of Queen Victoria, and pointed out that there was nothing in the intellectual construction of the Indian mind which stood in the way of participation in the industrial progress of the country. The Indian workman possesses an innate artistic genius, and there is a fertile soil only awaiting watering for further development. It is lamentable to think of the large number of articles now imported into India which could be made and better made in the country. In Great Britain the importance of scientific and industrial training is adequately recognised. In the Universities there the number of students in the scientific courses is larger than in the arts faculties. But in India public opinion has not yet awakened to the immense loss resulting from the neglect of technical study. Nor has the benign British Government endeavoured to stimulate the development of scientific studies. The education in India has been too literary to fit the young men of the country for industrial leadership. Only by adding technical and scientific training to literary education can any noteworthy development of Indian resources ensue. Manual training ought to be introduced into High Schools; special schools of industrial art should be established in the chief towns of the several districts; and a large Technical College, well equipped, should be founded in the capital of every province. Had all this been done by the powers that be, would there be any need for the employment of a hundred foreign engineers in the iron works which are being opened up in the Central Provinces under the scheme of the late Mr. T. N. Tata?

In this connection we are glad to note the valuable work that is being done by the Association for the Advancement of Scientific and Industrial Education of Indians. It has selected this year 100 students for industrial education in foreign countries. Twenty scholarships, ranging from Rs. 100 to Rs. 25 per month with free passage, have been granted, and eighty students have been granted free passages only. The scholars include some of the most brilliant graduates of the Calcutta University. One of them stood first in physics and chemistry, another obtained triple honours in the B.A., examination; two are Masters of Arts; one B.Sc. Four students of the Sibpur Engineering College have got scholarships Nearly every qualified candidate seems to have been given a scholarship, and this year's list includes more brilliant graduates than the lists of the last four years. Compared with the work of the Scientific and Industrial Association of Bengal the achievements of the Industrial Association of Madras dwindle into nothing.

Modelling.

The Report of the Consultative Committee on the School Education of children under five, makes certain recommendations concerning occupations suitable for young children, which deserve the attention of all teachers of young children. We cannot say that we quite endorse all the recommendations of the Committee. While agreeing with the Committee in regarding "ravelling" as unsuitable, we think that the children need not be debarred from the use of clay. Children of four and five delight to make "mud pies," and this appears to be due to an inherited tendency. If the development of the individual is a repetition on a short scale of the development of the race, it is but natural that certain ancestral industries should show themselves in the form of play in children. No doubt it is difficult to control clay modelling except in small classes; it necessitates the wearing of overalls and the protection of the tables and other furniture. But this objection cannot apply to damp sand. Sand is often used in kindergartens for drawing, but we think that children enjoy modelling with damp sand much more than drawing on sand. Who has not seen children filling small moulds with damp sand and thus obtain excellent representations of solid forms? If encouraged to obtain various forms with damp sand, children will have an excellent training in the perception of solid forms. They may be made to shape damp sand with their hands into forms such as they see before them. Damp sand can be made to afford useful training in various other ways. But in all these kindergarten exercises the cleverness of the teacher consists in getting children to do things of their own accord. Only when children are interested in their work, there will be no feeling of monotony and weariness, no fatigue. It is this aspect of kindergarten that makes it impossible for the ordinary teacher to achieve very beneficial results.

Indians in English Universities.

Both at Oxford and Cambridge there seems to be a strong movement on foot for closing the Colleges to Indians. The way in which opinion is moving is indicated by the following extract from a communication

to the London *Athenaeum* by its Cambridge Correspondent.

"Our trouble is with the native of India, who is multiplying, and with whom the University authorities confess themselves unable to deal to their satisfaction. The question is really one of great difficulty. The Colleges in many cases hesitate to take natives of India, and therefore the latter tend to form coteries of their own, and appear to gain little or nothing of the spirit of the University. At first they did not isolate themselves so much, and the movement seemed a success; now every one is disposed to admit that it is a failure. There seems an impression abroad that we do not get the right sort of men, and that the best Indian natives are deterred from coming in consequence. That many who do come return with no friendly feelings to the country is certain. Nor can one withhold sympathy for the men themselves. They have little understanding of the conditions of University life. They have no where to go to in vacation, and many, I fancy, come to England with inadequate means."

Since this passage was written, Lord Morley has appointed Mr. Arnold of the India Office Library as Educational Adviser in connection with Indian Students in England. The exact nature of his work is not yet known. It is not unlikely that he would have to look after the Indian Students at English Universities and to see that they are provided for in vacation time. We think that this sort of surveillance over students who are of sufficient age to take care of themselves and look after their own interests is not worthy of a nation which loves to have its own young men grow in an atmosphere of liberty. It is unfortunate that questions relating to India are not viewed even by Englishmen connected with Universities in that spirit of culture and liberality which are supposed to be natural to University life. Perhaps, University life in England means nothing more than boating and racing and learning to underrate the coloured races of the world.

The Madras University.

We have often doubted whether the Madras University has been wise in all its resolutions. One of its recent resolutions is, we regret to say, not likely to raise it in the estimation of thoughtful men. The Syndicate of the Madras University had hitherto accepted the Cambridge and Oxford Senior Local Examinations as equivalent to the Madras Matriculation. In those examinations the students have a wide field in the choice of subjects. Unlike the Madras Matriculation the subjects are divided into two classes: compulsory and optional. Candidates are examined only in the subjects they choose, but are subjected to severe tests. The absence of option in the Madras Matriculation is felt as a difficulty by some students. Consequently a number of students all over the Presidency would seem to have decided on preparing for either the Oxford or Cambridge Local Examinations. Meanwhile, the Syndicate resolves not to accept the Oxford or Cambridge Senior Local Examination Certificates as the equivalents of the Matriculation Certificates of this University, except in the case of students who pass the Oxford or Cambridge Senior Local Examinations at centres outside the limits of India and Ceylon. The reason of this move on the part of the Syndicate is said to be certain representations from the authorities of a Second Grade College, whose Matriculation classes fell off in numbers owing to its small success in the recent re-examination. It has also been alleged that the University cannot assure itself of the character of students who do not belong to any of its affiliated institutions. None of these reasons seem to us to be sound. Whatever guarantees the Syndicate would have concerning the character of those that pass the Cambridge or Oxford Senior Local Examination at centres outside the limits of India and Ceylon, the same guarantees it can take from those that pass these examinations within India or Ceylon. We have always thought that the matriculation test should merely serve to find out the possession of certain breadth of previous education and the requisite ability to profit by higher study. No body will deny that the Cambridge and Oxford Senior Local Examinations are sufficient tests in this direction. If that be so, what need has the University to lay down restrictions based on colour or country?

Report of the United States Commissioner of Education.

From the report of the United States Commissioner of Education for 1908, one may gain a clear idea of the excellent and very useful work of the Bureau. The Commissioner points out that for the year 1906-7 the educational institutions of the United States, public and private, contained about 19 millions of pupils of all grades and classes. About 20 per cent. of the total population of the country attended the common schools for a longer or a shorter period. This percentage appears to have been pretty nearly stationary for the past thirty years. In the meantime, however, the average length of the common school year has advanced from 130 days to more than 150 days, and the percentage of those enrolled who were, on the average, in actual attendance each day of this longer school year, has increased from 62 per cent to 70 per cent. While the proportion of the school-going population has not at all increased, the attendance at High Schools has been remarkably increasing and now reaches about 1·13 per cent. of the whole population. Speaking generally, one in every ninety of the population of the United States is attending a secondary school, and one in every three hundred is attending a college or other institution of higher education. In the common schools there are about 475000 teachers, of whom less than 22½ per cent. are men. Not only the percentage but the actual number of men teachers has steadily declined for ten years or more. Meanwhile the average monthly salary of both male and female teachers, has slowly risen, but so slowly that it has failed to keep pace with other expenditures for educational purposes, a fact which reminds us largely of what has happened in our own country. The Commissioner discusses also the various steps that are being taken to standardize American education, the advance of the movement for industrial education, the effective work of the recently organised voluntary educational boards, and the steady progress of the movement toward internationalism in education. The statistics contained in the report are full of interest and instruction.

The Medium of Instruction.

At the present day instruction is imparted in our High Schools through the medium of English which is a foreign language to the majority of the students. The results have been disastrous. The standard of attainment in English of the average matriculation candidate is acknowledged on all hands to be low. Text-Books written in the simplest English present to the Indian student enormous difficulties. Teachers

of history, mathematics and science have to spend time in teaching the intricacies of the language which forms the medium of instruction. Subjects like history, geography and science which ought to attract students have become veritable bugbears which frighten and disgust them. The teachers, instead of making their lessons interesting, merely thrust down the throats of the pupils the alloted portions which are not digested and assimilated. The teaching is incapable of rousing up juvenile curiosity and there is an entire lack of enthusiasm. The students have become mere cramming machines, and there is much waste of time and energy. If the medium of instruction were changed and education imparted through the vernaculars, the High School course could be reduced by at least three years. It may be said that if English is not the medium of instruction the study of English will be neglected. We do not think so. The English language will form a compulsary subject of study in all High Schools. Two hours or an hour and a half devoted to the study of English every day for a period of three or four years should enable a student who has a fair grasp of his own mother tongue to attain the standard needed for entrance into the college. Such considerations, as the complication of examinations and the necessity of a larger number of teachers, are secondary and are not of much significance compared with the beneficial results that will follow from giving instruction through the vernaculars. Why should not the candidates for the matriculation examination be allowed to answer in the vernaculars the question papers in all other subjects than English? This matter deserves the serious consideration of the University and the Government. If the vernaculars became the media of instruction in our schools, it would form a natural fillip to the growth of our vernaculars and their adaptation to our advancing needs.

Foreign languages in the High School.

The New York *Educational Review* for March has an interesting article on the teaching of foreign languages in the High School. The writer points out that the objects to be gained are mainly two: the power to use it in reading, writing, speaking; and a more perfect command of the mother tongue, of which the latter is the more important. In fact the supreme aim in the study of any foreign language in a High School should be a better understanding of, and a more finished and efficient use of, the vernacular. Judged from these standards, the teaching of foreign languages in our country has not been productive of much good. No one will venture to assert that the study of the English language in our High Schools has led to a better understanding of the mother tongue. On other hand it is the bitter experience of all that the undue importance attached to the mastery of the English language in Indian schools has tended to a thorough neglect of the vernaculars of the country by the so-called educated classes. The reason of it is not far to seek. The foreign language, except being the language of the foreign administrators of India, has no kind of kinship with the vernaculars of the country. It is not so with the foreign languages studied in European or American countries. In English schools the foreign languages studied are Greek, Latin, German and French. Each one of them has some relationship to the English language. Each one of them has contributed its quota to the making of the English language. A study of Latin gives not only the best linguistic training but also the most thorough understanding of English. Sanskrit or Pali would serve the same purpose in India. A thorough learning of a vocabulary of Sanskrit or Pali words is found highly helpful to a more finished and efficient use of the Indian vernaculars, but the same cannot be said of the English language. The great majority of the pupils in our High Schools cannot be said to know English. They cannot read it aloud intelligently or intelligibly. Its study has not helped their pronunciation of their mother tongue. The translations offered by the great majority of them are neither English nor vernacular; they are helpless before even an easy passage not previously studied, recognising neither meanings nor constructions. This sad plight is the result of endeavouring to teach a foreign language as if it were the mother tongue.

Sports in Public Schools.

The subject of sports in public schools, came up for earnest and serious discussion at a recent meeting of the Medical Officers' Association, an association of great value and importance. The result is a condemnation of long-distance races, coupled with a warning to parents and a severe criticism of anything in the shape of violent athletics. We cannot afford to overlook the warning given by men of long experience and with undoubted expert and scientific skill. They are all unanimous that long-distance racing is not only inadvisable but fraught with dangerous possibilities. The nervous effect of these long races is felt by boys in after life. They may pass through them, perhaps, without sign of heart or other organic trouble, but their nerves may, notwithstanding, be played out. "They are like engines", observed one speaker graphically, "that have exhausted their supply of petrol", and there can be no doubt that these nervous effects are the result of over-exertion. An important distinction should be made between the physical condition of youths and men. While in both cases a severe athletic overstrain might result in collapse, in the case of the youth it might be productive of a fatal result. Physiology ought to be recognised in a consideration of this question, as it conclusively proves that if the heart be once badly dilated it can never really get right again. One distinguished medical expert boldly affirmed that the "brutal insistence of mistresses in Girls' Schools in inducing girls to take part in games when they were unfit to do so constituted a very grave and widely spread danger". Mr. C. B. Fry, an experienced athlete, spoke in a similar strain about long-distance running races at the distribution of prizes to the successful competitors in the sports in connection with St. George's School at Harpenden. He considered it a great mistake to include, as some schools did, races of two or three miles in their programme. He did not think that an athlete was really capable of the severe efforts required in the longer races, until he had finished growing and was well set. He regarded games as of great value but deprecated the false hero-worship of cricketers and footballers. In regard to physical exercise the danger of schools is that boys are forced to play particular games. Applied physiology warns us of the danger of growing mechanical. Absolute freedom alone can lead to joyousness, spontaneity and self-initiative.

High Schools for Peasants.

While in other countries small farmers are sinking into poverty, they are rising in intelligence and growing richer in Denmark. In the second quarter of the nineteenth century Denmark was in the category of dying nations and her present prosperity is credited to the Peasant's High Schools. From their fatal lethargy the Danes were roused by the Poet-Bishop, Nicolai Grundtvig, who wrote stirring national hymns recounting the great deeds of their fore-

fathers. He led the roused peasants to educate themselves by means of the Peasant's High School. All teaching was *viva voce*, and no one was to leave school until he was eighteen. Other volunteers soon followed the example of the Bishop, defraying the cost. Then the work was taken up by the communal authorities. At the present day nearly one-fourth of the whole agricultural population contrives to go to a High School for the five months from November 1 to March 1 which constitute a term. In these five months are given all the matters of instruction which are to last for a life time. Although most, of the students are peasants, farmers, or agricultural labourers, the subjects dealt with are not technical. The founders have insisted that what the people most need is mental, not technical, training. The favourite subjects are history and literature, especially of their own country. As much attention is paid to the development of the body in the gymnasium as is paid to the development of the mind in the classes. In the evenings poetry is read to them or music played. The result of this mental training is claimed to be that Denmark, with a climate none too good, with a soil none too fertile, and with no great landlords to render help, has built up her present prosperity and is growing richer day by day. Can India walk in the footsteps of Denmark to make herself as prosperous and richer? But Denmark has autonomy, and the absence of it in India thwarts her progress in various directions.

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"*The Unity of Religion and the Variety of Creeds* is the title of an excellent little brochure, comprising an Essay on the subject read by Mr. C. V. Swaminatha Iyer, the well-known Editor of the *Viveka Chintamani* at the Ranade Hall, Mylapore, in April last. Mr. Swaminatha Iyer is widely known for his religious piety and Vedantic culture, and in the present instance, he, with admirable spirit, sets forth the Vedantic Ideal of life in the light of modern principles of Science, defining the Laws of Life governing Thought. The Essayist brings to his task all earnest and genuine study of comparative Religion, and in our opinion, he is rendering a real service to the complex religious Life of India by endeavouring to rise above disputes upon secondary matters, and focussing attention on those elements of absolute Truth which are of permanent validity and of universal application. Various quotations from the Bible and the writings of Western Savants, Emerson and Maeterlink, and of Indian Saints like *Tiruvalluvar* and *Thayumanavar*, have been set forth to point to the realisation of the Unity of Religion, though the number of Creeds in the World is legion, "each having a significance of its own and a relation to the whole. The average Indian Reader will feel at home in the Author's line of Vedantic thought, while, we are sure, the attempt at reconciling Vedanta with the Western conception of Thought-Energy will afford mental food for him. And the Vedanta ideal Life which is most maligned though least understood by some of its Western critics, will, we are sure, attract to itself their thoughtful attention by the Author's spirited exposition of it. In short, the publication should be in the hands of every one who is disposed to inquire into the real Spirit of Universal Religion, although one cannot always travel with the author in his mystic wanderings in the regions of Yóga practice."—*The United India and Native States*.

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I have known Sowbhagyavati LAKSHMIDAVAMMA for some time. I consider she is a respectable lady of good manners and amiable disposition. She has reputation as a Native eye doctor, some of her patients were exhibited to me and they admitted that they had been successfully cured by her of obstinate cases of eye disease.

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VELLORE LAKSHMIDAVAMMA has been known to me as a Lady Doctor for some time past. My son has been under her treatment for some time past on account of weak sight He has received benefit from her treatment. From what I hear of her I am able to state that she possesses a good reputation for skill in treatment of eye diseases.

(Sd) T. P. KODANDARAMA IYER, B.A., B.L.,
High Court Vakil, Triplicane.

The Educational Review

A Monthly Record for India.

VOL. XV. MAY 1909. No. 5.

MATHEMATICS.

[Conducted by B. KRISHNAMACHARI, M.A.]

The following additional note on the problem of squaring the circle has been kindly sent to me by Mr. T. Sundara Rao, B.A.

It has been shown that π is a transcendental number and cannot be the root of an algebraical equation with integral coefficients. It is, therefore, impossible to solve the problem not only in the sense understood by the ancients but in a far more general manner. It is not only impossible to construct π with straight edge and compasses, but there is not even a curve of higher order defined by an integral algebraic equation for which π is the ordinate corresponding to a rational value of the abscissa. An actual construction of π can then be effected only by the aid of a transcendental curve. Besides the straight edge and compasses, we must have a "transcendental" apparatus which shall trace the curve by continuous motion. Such an apparatus called the *integraph* has been invented by a Russian Engineer. This instrument enables us to trace the integral curve $y = F(x) = \int f(x)dx$ when we have given the differential curve $y = f(x)$.

As the *guiding point* of the instruments follows the differential curve, in the present case a circle, the *tracing point* describes the integral curve. The equation of the circle being $x^2 + y^2 = r^2$, that of the integral curve is $y = \frac{r^2}{2}\sin^{-1}\frac{x}{r} + \frac{x}{2}\sqrt{r^2 - x^2}$. This curve consists of a series of congruent branches. The points where it meets the axis of y are 0, $\pm\frac{r^2\pi}{2}$.

48. [B. KRISHNAMACHARI, M.A.] If $a_1, a_2, a_3 \ldots\ldots a_n$ be in G.P., then

$$(a_1 + a_2 + a_3)^2 + (a_2 + a_3 + a_4)^2 + \ldots\ldots\ldots + (a_{n-2} + a_{n-1} + a_n)^2$$
$$= (a_1^2 + a_1a_2 + a_2^2)^2 (a_1^{2n-4} - a_2^{2n-4}) \div (a_1^2 - a_2^2) a_1^{2n-4}.$$

Solution by M. BHIMASENA RAO.

The given expression

$$= \sum_{p=1}^{p=n-2} (a_p + a_{p+1} + a_{p+2})^2$$

$$= \sum_{p=1}^{p=n-2} a^2_p (1 + r + r^2)^2, \text{ if } r \text{ is the common ratio}$$

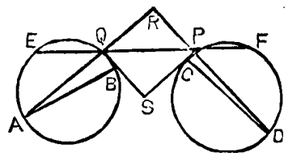
$$= (1 + r + r^2)^2 \{ a_1^2 + a_2^2 + \ldots\ldots a^2_{n-2} \}$$

$$= (1 + r + r^2)^2 a_1^2 \{ 1 + r^2 + r^4 + \ldots\ldots r^{2(n-3)} \}$$

$$= (1 + r + r^2)^2 a_1^2 \cdot \frac{1 - r^{2(n-2)}}{1 - r^2} \quad \ldots (1)$$

Substituting $\frac{a_2}{a_1}$ for r in (1), the required result follows.

50. [B. KRISHNAMACHARI, M.A.] Describe a square each of whose sides will pass through one of four given points.



Solution by M. BHIMASENA RAO.

Let A, B, C and D be the given points. On AB and CD as diameters describe circles. Bisect arcs AB and CD at E and F. Join EF meeting the circles again in Q and P. Produce the lines QA, QB, PC and PD forming the quadrilateral PRQS.

Angles AQB and CPD are right angles.

∴ Angles RQS and RPS are right angles.

Since arc AE = EB and CF = FD, the line EF bisects the angles AQB and CPD.

∴ Angle RQP = SQB = RPQ = SPQ = ½ a right angle.

Hence the figure PRQS is a square and its sides pass the given points.

[The following construction is perhaps simpler. Join AB. Through C draw CF perpendicular to AB and equal to it. Join DF. Then DF is one side of the square in position.

It will be seen that the square has four positions.—*B.K.*]

QUESTIONS FOR SOLUTION.

54. [B. KRISHNAMACHARI, M.A.]

Show that the product of the series

$$1 + \frac{x}{1.2} + \frac{x^2}{(1.2)^2} + \frac{x^3}{(1.2.3)^2} + \ldots\ldots$$

and $1 - \frac{x}{1.2} + \frac{x^2}{(1.2)^2} - \frac{x^3}{(1.2.3)^2} + \ldots\ldots$

is $1 - \frac{x^2}{1^2.2!} + \frac{x^4}{(1.2)^2.4!} - \frac{x^6}{(1.2.3)^2.6!} + \ldots\ldots$

55. [B. KRISHNAMACHARI, M.A.]

Concurrent rays through the vertices A, B, C of a triangle cut the sides at P, Q, R; show that the intersections I, J, K of AB and PQ, BC and QR, CA and RP are collinear; also that if BJ and CK, CK and AI, AI and BJ meet in S, T, V, then AS, BT, CV are concurrent.

56. [M. BHIMASENA RAO.] Given that

$A = x(x\cos\alpha - y\cos\beta - z\cos\gamma) - yz.$

$B = y(y\cos\beta - z\cos\gamma - x\cos\alpha) - zx.$

$C = z(z\cos\gamma - x\cos\alpha - y\cos\beta) - xy.$

$D = x^2(1+\cos^2\alpha) + y^2(1+\cos^2\beta) + z^2(1+\cos^2\gamma) - 2xy\cos\alpha.\cos\beta - 2yz\cos\beta\cos\gamma - 2zx\cos\gamma\cos\alpha$

and $\alpha+\beta+\gamma = 2$ right angles, find the value of

$$A^2B^2 + B^2C^2 + C^2A^2 - ABCD.$$

57. [M. BHIMASENA RAO.] Show that the circumcentre of the diagonal triangle of any quadrilateral lies on the line of collinearity of the orthocentres of the four triangles which can be formed by the sides of the quadrilateral, and that the common point of intersection of the circumcircles of these four triangles lies on the nine point circle of the diagonal triangle.

58. [M. BHIMASENA RAO] Show that the foci of the three parabolas each touching two out of the three sides of any triangle and also the join of their mid points at the point where this join is intersected by the corresponding side of the pedal triangle, are collinear.

59. [M. BHIMASENA RAO.] Show that the director circles of the four conics which can be inscribed in a given triangle so as to pass through two given points on the line at infinity are touched by six circles.

60. [M. BHIMASENA RAO.] Find two points P and Q on a conic inscribed in a given triangle ABC, such that AB, AC and AP, AQ are conjugate lines of a given pencil in involution, and BA, BC and BP, BQ are conjugate lines of another given pencil in involution.

61. [M. BHIMASENA RAO.] The circle which passes through the feet of the perpendiculars from a point on the sides of a triangle being termed, for the sake of brevity, the pedal circle of the point with respect to the triangle, show that the cubic curve which is the locus of a point whose pedal circle with respect to a given triangle passes through a given point P circumscribes the given triangle and cuts the sides again in three points which are collinear. When the cubic breaks up into a conic and a line, show that the conic passes through certain fixed points, and find the locus of the point P. Prove that the pedal circles of the points of intersection of the conic and the line into which the cubic breaks up touches the locus of the point P.

62. [M. BHIMASENA RAO.] A variable line through a given point cuts the sides of a given triangle in points P, Q and R. Show that the quartic curve which is the locus of the points of intersection of the pedal circles of P, Q and R touches the director circles of the in-conics of the given triangle which pass through the given point. Find the condition under which the quartic breaks up into two circles.

63. [M. BHIMASENA RAO.] D, E and F are the feet of the perpendiculars from a point P on the sides of a given triangle ABC. AD, BE and CF meet in a point Q. The pedal circle of the point P with respect to the triangle cuts the sides again in D', E' and F'. DE and D'E' intersect in N, EF and E'F' in L and FD and F'D' in M. Show that AL, BM and CN are parallel and perpendicular to PQ.

A SYLLABUS IN EXPERIMENTAL GEOMETRY.

(*With Hints on Methods of Procedure*).

(Continued from page 152).

SECTION II.

8. *Angles.*

(1) An *angle* is *formed* where two lines meet. (Observe the place where edges of solids or of sheets of paper meet; also the dividers with their legs pointing in different directions, and the hands of a clock).

(2) It is the *inclination* of one line to another.

(3) The two lines are the *arms* of the angle; and the point where they meet the *vertex* of the angle or the *angular point.*

(4) The angle is *not* the vertex, the two arms or the area or space between the arms, but merely *the difference in the directions* of the two arms.

(5) The two arms are said to *contain* or *include* the angle they form.

9. The *size* or *magnitude* of an angle is *independent of the lengths of its arms.* (Illustrated with two pieces of stick etc., varying their lengths).

10. *Naming of angles.* Two straight lines BA, BC contain the angle (AB, BC), or more shortly ABC (or CBA).

11. *Angles of different magnitudes.*

(1) Observe the hands of a clock. As time passes, the angle between them becomes wider and wider, *i.e.*, it *increases* in value.

(2) Fix one leg of the dividers on the table and rotate the other in the same plane, getting angles of various sizes.

(3) *The straight angle* (when the arms are in the *same straight line* in opposite directions)

(4) The *reflex angle* (greater than a straight angle).

(5) The *circum-angle* (formed by a complete revolution of a straight line about one of its ends kept fixed); it is equal to two straight angles.

12. *Comparison of the magnitudes of angles.*

(1) By cutting out the angles and superposition;

(2) Judging by eye and verification by superposition.

This kind of comparison, as in the case of straight lines, tells us nothing but that one angle is greater than, equal to, or less than another.

13. *Kinds of angles.*

(1) *A right angle*:—(*a*) Fold a straight edge of a sheet of paper back on itself. Mark the line of the fold or crease. Two *equal* (why?) angles are obtained, each of which is a *right angle.*

(*b*) The line of the crease is *perpendicular* or *at right angles* to the edge of the paper.

(*c*) Right angles of *set squares* and other objects of the school room; *equality of all right angles* (by superposition).

(*d*) Construction of a perpendicular to a given straight line at a given point in it or from a given point outside it (by folding first along the given line and then through the given point).

(*e*) *Horizontal* and *vertical* lines. The free surface of liquids and the plumb line.

(2) *Oblique angles*

(*a*) *obtuse* (greater than a right angle, but less than a straight angle);

(*b*) *acute* (less than a right angle);

(*c*) *reflex* (greater than a straight angle).

14. *Use of the set squares* (*No. 1*).

(1) Perpendiculars (drawing of) to a given straight line from a given point (i) *in it* and (ii) *outside it.*

(2) Distance of a point from a given straight line is the *perpendicular* on it from the point.

15. *Angles at a point.*

(1) Drawing a number of angles at a point; addition and subtraction.

(2) *Complementary angles.* Two angles are the *complements* of each other, when they are together equal to a right angle. (cut the angles off, put them side by side with a common arm and test with set square), *e g.*, the two acute angles of the set square.

(3) *Supplementary angles.*

(*a*) A straight line standing on another straight line makes with the latter two *adjacent* angles.

(*b*) Take an angle and produce one of its arms through the vertex: two adjacent angles are obtained.

The two angles, in each case, make up a straight angle. Such angles are said to be *supplementary* to each other.

(4) *Vertically opposite angles.*

If two straight lines intersect, two pairs of *vertically opposite angles* are formed. (Account for the name.)

Their equality—Euclid, I. 15—by paper-cutting and superposition.

(5) All the angles at a point are together equal to two straight angles, *i.e.*, 4 right angles. They may be regarded as generated successively in a complete revolution of a straight line about one of its ends coinciding with the common vertex of the angles.

SECTION III.

16. *The circle.*

(1) A cow tethered to a peg and moving round it with the rope kept fully stretched; the bullocks of an oil-mill (ఎద్దుతో); the free extremity of the revolving straight line of 15, (5) above; all these trace a curved path.

(2) The *area* enclosed is a *circle*, the path (or the *boundary*) is the *circumference*, and the fixed point round which the motions take place is the *centre.*

(3) Description of circles (*a*) with pin, thread and pencil; (*b*) with a piece of string and chalk.

(4) All points on the circumference are equidistant from the centre. *Equality of radii* (plural of *radius*).

(5) Description, with compasses, of circles with given centres and radii.

Concentric circles.

(6) Easy problems on the above.

(7) *Diameter* = 2 × radius (cut out a circle and fold it, so that the crease passes through the centre).

17. *The circumference and the diameter.*

(1) Cut out a circle of card-board (a large one for good results); measure the diameter and the circumference (by passing a fine piece of string round it). Deduce the ratio (= $3\frac{1}{7}$ approximately) of the length of the circumference to that of the diameter.

(2) Problems on the above ratio: given one, find the other; etc.

18. The terms *arc* (a portion of the circumference), *chord* (the join of any two points on the circumference), *segment* of a circle (the area enclosed by a chord and the arc it cuts off), *semi-circle* (a special case of the segment) and *sector* (the area enclosed by two radii and the arc intercepted between them).

19. *Chords in a circle.*

(1) Placing a chord of given length in a circle (infinite number of solutions).

(2) Diameter, the greatest chord in a circle (illustrated by the motion of a piece of string across a circle): Induction by measurement.

(3) Two chords only of given length can be placed in a circle with a common end.

(4) Laying off successively equal chords in a circle.

(5) *Equal chords* in a circle cut off *equal arcs*, and *subtend equal angles at the centre* (by paper-cutting and superposition). Addition and subtraction.

(6) *Multiples of given angle.* Describe an arc with the vertex as centre and any radius, and set off the required number of arcs equal to the intercepted portion.

20. *Division of angles and the construction of protractor.*

(1) Division of the circumference of a circle into 2, 4, 8,.....equal parts by folding through the centre. The angles formed at the centre are equal; and they stand on equal arcs, or are *subtended* at the centre by equal arcs.

(2) Obtain required submultiples of a given angle (*a*) by paper-cutting and folding; (*b*) by division (*trial*) of the subtending arc into the number of parts denoted by the submultiple (*with dividers*).

(3) Obtain required fractions of a given angle (proceeding as before).

(4) Construction of a cardboard protractor with a *quadrant* of a circle, by dividing the central angle to show $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$, $\frac{1}{16}$ of a right angle.

(5) Exercises on the use of the protractor thus constructed (first, with angles cut out of paper; then with angles drawn on paper).

21. *Explanation and use of the semi-circular protractor.*

(1) For greater accuracy of measurement, a right angle is divided into 90 equal parts, called each a *degree*. 180° in 2 right angles.

(2) Values in degrees of easy fractions of a right angle.

(3) Classification of angles of given magnitudes under the heads *obtuse, right* and *acute*.

(4) Exercises in drawing angles of given magnitude.

(5) Measuring given angles with protractor, [as in 20, (5)].

(6) Estimation, by eye, of the values of angles and verification and correction by measurement. Tabulation of errors.

22. *Exercises with protractor (continued).*

(1) Drawing a given angle at a given point in a given straight line.

(2) Setting off angles of given sizes at a point; addition and subtraction; checking results.

(3) Drawing required multiples and submultiples of given angles.

(4) *Bisection* of an angle; the *bisector*.

(5) Drawing of 45°, 60°, 30°, 15°, etc., from memory, and testing with protractor.

(6) Induction of Euclid I. 13, 15, by measurement.

(7) Construction of angles of 60°, 30°, 15°, 45°, 75°, 120°, 135°, 150°, 105°, *by using the two set squares.*

(8) The *points of the Mariner's Compass,* and the angles between the several directions.

(9) The *bearing* of an object with reference to another.

SECTION IV.

23. *Rectilineal figures.*

(1) Examine the faces of the solids, *viz.*, the cube, pyramid, cuboid, prism, tetrahedron, etc.

(2) The faces of these solids are bounded by straight edges.

(3) Put the solids on the black-board or the floor and trace the edges of the faces. A *plane rectilineal figure* is obtained. *Rectilineal* =bounded by *straight lines.*

(4) The least number of straight lines to *enclose* a figure is *three.*

(5) These bounding lines are the *sides* of the figures.

(6) There are as many angles in the figure as there are sides. Each angular point is also known as a *vertex* of the figure.

24. *Triangle.*

(1) The simplest of all rectilineal figures.

(2) Take any angle, and join the free ends of the arms: a *triangle* is formed. The meaning of the name '*triangle.*'

(3) Naming of a triangle and its parts (*elements*).

(4) Draw a number of triangles on paper, measure the sides and angles and note down the measurements. The *perimeter* (= sum of the sides).

25. *Elementary properties of triangles (sides).*

The following properties of triangles are to be induced by measurement, paper-cutting and superposition, or by paper-folding.

(*a*) *The sum of any two sides of a triangle is greater than the third.*

(1) In a triangle ABC, which is the shorter path from B to C—along BC, or along BA and AC?

(2) Measure the sides and verify the answer to (1). Hence, etc.

(*b*) *The difference between any two sides is less than the third side.*

(*c*) From (*a*) and (*b*) above, deduce the following important result:—

If x and y are the lengths of any two sides of a triangle, the third side must have its length between $x + y$ and $x - y$. These are the two *limits* to the third side.

26. *Elementary properties of triangles continued (angles).*

(*a*) *The sum of the three angles of a triangle is equal to two right angles.*

(1) By measurement with protractor and addition.

(2) By cutting the angles off and placing them side by side.

(*b*) *Any two angles of a triangle are together less than two right angles.*

(i) By measurement.

(2) From (*a*) above.

(*c*) *Exterior and interior angles. Producing the sides in succession or order.*

(1) *Any exterior angle is equal to the sum of the corresponding interior opposite angles.*

(i) By measurement.

(ii) From 26 (*a*) and 15 (3).

(2) *Any exterior angle is greater than either of its interior opposite angles.*

(3) *An exterior angle and its interior adjacent angle are supplementary.*

(4) *The sum of the three exterior angles formed by producing the sides in order is equal to four right angles.*

(i) By measurement.

(ii) From 26 (*a*) and 15 (3).

(iii) By noting that a piece of stick, after it has moved along the sides in order without turning back, resumes its original direction.

27. *Elementary properties of triangles continued (sides and angles opposite to them.)*

(*a*) If one side of a triangle is greater than another, the angles opposite to them are connected by the same inequality, and *converse.*

(*b*) If two sides of a triangle are equal, the angles opposite to them are also equal, and *converse* (by paper-folding).

28. *Kinds of triangles:*—

(1) Right-angled,

(2) Obtuse-angled, and

(3) Acute-angled triangles.

Note.—In (3), *all* the three angles are acute.

29. *On the properties of triangles:*—

(1) Given two of the angles, find the value and nature of the third.

(2) If one angle is right, the other two are *complementary.*

(3) If one of the angles of a triangle is (i) *right;* (ii) *obtuse* and (iii) *acute,* find the nature of the other two; hence draw the conclusion, *viz.*, "*In every triangle, two of the angles at least must be acute.*"

(To be continued.)

S. BALAKRISHNA AIYAR.

DRAWING IN ELEMENTARY SCHOOLS.

THE importance of drawing has been recognised and the subject has now therefore found a place in the compulsory subjects to be taught in elementary schools.

Drawing trains observation and quickens the power of perception. It improves the inventive faculties. "It is the handmaid of all the industrial arts." If the object of education is complete living, none can be said to have learnt to live well whose eyes and hands have not been properly trained. Draw-

ing gives exercise to the muscles of the fingers and helps the free movements of hands and arms. It gives exercise to the spontaneous activity of the pupils. Æsthetic faculties are also developed. "Drawing multiplies the power of the eye to see and that of the hand to produce." The other subjects of the school-curriculum give much exercise to the head and little to the hand. Drawing remedies this defect and gives a variety to school-work.

In all ages it has been observed that children have a liking for drawing and who, that has seen a child draw on sand with his fingers or on books with a pencil of which he has stealthily come into possession, will deny to that child the advantages to be derived from a systematic teaching of drawing? Even in adult life, there are not a few who have an extreme fondness for scribbling.

Drawing should therefore be taught in all the classes and to all children. But the teacher should remember that drawing is not an end in itself but should be considered as a means to educate the pupils by training their hands and eyes. Drawing is a universal language and the object of teaching drawing should be to enable pupils to give expression on paper to what they have seen with their eyes or to the mental images formed in their minds. The teacher should therefore be a guide to them in their drawing classes and not be a dictator. He should create opportunities for them to use their eyes properly and should help them by gentle guidance when their observation happens to be defective. Many teachers are disappointed when their children's drawings are defective. This is a sad mistake. We must not expect perfect drawings at first from our pupils. Continued practice coupled with accurate observation and gentle guidance is sure to remedy all the defects.

Drawing is of two kinds. (1) Free-hand and free-arm (2) Mechanical. The first implies the free movements of the hands and the arms and the second necessitates the use of some special apparatus like chequered paper, foot-rule, set squares &c.

FREE-HAND AND FREE-ARM DRAWING.

For *free-arm drawing* every pupil should have his own board or the school wall may be painted black so as to serve as a continuous board for all the school children. Any of the following two ways for preparing the walls as boards may be adopted :—

(THE OLCOTT FREE SCHOOLS' RECIPE).

(1) For a new wall, the usual two coatings of chunam plastering are followed by two further coatings and two rubbings, as follows :—

1st. Mortar plaster in the usual proportions of about 1 chunam to 3 of sand.

2nd. Mortar plaster in the usual proportions of about 2 chunam to 1 of sand.

3rd. A wash of 'mutton soup.' (heads and feet of sheep boiled in water).

4th. Cocoanut shells burnt black and finely powdered, mixed with water into a fairly thick mixture applied to the walls and at once thoroughly rubbed with a smooth stone until dry.

5th. Cocoanut burnt black and dry, rubbed over the wall.

6th. Rubbing the walls, first with a cloth and then with the hand to give a polish.

The wall should be left thoroughly to dry after each process.

Almost any walls may be turned into black boards by first filling up cracks and rubbing smooth and then applying the 3rd, 4th, 5th and 6th processes as above.

(THE TEACHERS' COLLEGE RECIPE.)

(2) Take for 10 square feet—

1st.

2 measures dry sifted slaked lime ;

1 measure charred cocoanut powder ; and

1 measure sifted sand.

2nd. Prepare water.——

Gum	1 pollam	to one big pot of water.
Mirabolam	2 do.	
Jaggherry	4 do.	

Break mirabolam and put in with the rest in water in the previous night. This water alone to be used all through.

3rd. Take the mixture as in the 1st ; moisten with this water and grind fairly fine on a flat stone.

4th. Scrape the wall one-fourth inch deep, moisten the surface with this water. Apply the plaster and press it down with the trowel.

5th. Smooth the plaster with the trowel.

6th. Wipe off the exudation of water particles (from the second day to till the surface is dry) both morning and evening with a clean towel.

Country chalk or colored crayons may be used as writing materials.

For *free-arm drawing* every pupil may be provided with a small drawing board which can be placed vertically in the slot of his desk. The pupil may draw with chalk or crayon on the painted board or on rough white or brown paper pinned on to the board. A big slate kept in the proper position will equally serve the purpose.

Free arm drawing involves movements of the arm either from the shoulder or from the elbow and of the wrist, while in free hand drawing, the arm is at rest, the strokes being made by movements of the wrists and fingers.

Drawing which is the result of much scratching and rubbing is a waste of time and of the medium employed and gives no proper exercise to the arms and hands and should therefore be discouraged.

Drawing with both the hands facilitates the easy execution of symmetrical patterns and may be encouraged.

The following kinds of drawing are all included under 'free-hand and free-arm drawing.'

A. Nature drawing. This is drawing from nature itself. Pupils may be taken out on an excursion and asked to observe for themselves and then draw. Where each pupil is provided with a leaf, flower etc. in the class and asked to draw, this becomes object drawing. Nature drawing is a great help to nature study and it is through it we are able to record accurate impressions of objects in nature seen by us. Proper attention will have to be paid to this kind of drawing in all elementary schools.

B. Object drawing or model drawing. Here the object to be drawn is placed before the pupils and after the teacher guides the pupils in the method of drawing, the pupils begin their work. It goes without saying that simple objects and objects of familiar interest to children should at first be presented. Those with a clear outline should be chosen first. Children may be seated round the model so that they may get different views and may be thrown on their own resources.

C. Drawing from copy. In this, a card or thick paper on which a figure is printed or drawn is given to the pupils and the latter are asked to draw from it. This kind is no doubt necessary but should not replace drawing from the object itself. In the higher classes, it would be a wholesome practice if

pupils are accustomed to make their figures twice, thrice, one-half, or one-third etc., of the original. In drawing from copies written by the teacher on the black board, the whole figure should at the beginning alone be drawn. Before the pupils are asked to draw, it is advisable that the teacher should by means of a few intelligent questions lead the pupils to observe the proportions of the different parts, the prominent features in the outline etc. In difficult cases, the figure may be blocked out but the making up of every figure by the slow drawing of innumerable straight lines and curves should be discouraged.

D. Observation drawing. Though every kind of drawing is dependent on accurate observation, still this name is given to that kind of drawing in which pupils are asked to draw an object or objects which they have been previously asked to specially observe. Pupils coming to school may be asked on the previous day to observe carefully the plants on the wayside and to draw in the class one of them on the next day. This would induce pupils to look carefully about them.

E. Memory drawing. In this, a copy of the drawing to be made is exhibited to the pupils for a time and then removed. They are then asked to reproduce the same from memory, or pupils may be asked to draw from the object and after the object is removed they are asked to draw afresh. Drawings which convey the significance of abstract nouns and classified as 'mental drawing,' by Miss Gillingham may well be brought under 'memory drawing.'

F. Story illustration. Pupils produce on slates or on paper a picture or pictures relating a story previously told. Different pictures may represent the succession of events. Too much should not be expected from pupils. This kind of drawing may be taken up in the higher classes.

In all free-hand and free-arm drawing the method adopted should take into account the psychological condition of childhood and proceed from simple to complex and known to unknown. In many schools the first drawing lesson is on straight lines. This procedure is not right. "Nature does not exist in straight lines. A straight line is a meaningless abstraction to a little child." The first lessons may be on curved lines and curve-lined objects or figures. Circles and objects with a round outline may next be taken up. Exercises on horizontal and oblique lines and on combinations of them may then follow. Ovals in different positions, ellipses and spiral forms may come last.

A few precautions, however, the teacher should bear in mind. The drawings should be of as large a size as possible. Every curve, oval, ellipse or circle should be drawn at one sweep of the arm and if found wrong in any part, the whole should be rubbed out and a fresh attempt made. Rubbing out of portions or scratching with the rubber should not be permitted. An early start will have to be made and a taste for drawing cultivated in early age. Too much should not be attempted in one lesson. Regular practice is essential. Before attempting to draw, preliminary sweeps of the arm in the air may be found sometimes beneficial. Let pupils observe correctly and then begin to draw. An upright position of the body permitting a free movement of the arm is helpful in drawing. When the drawings are found defective, the teacher will have to help the pupils in observing the defects for themselves and remedying them. Teachers should not attempt to make their pupils mere imitators. The drawing of original designs may now and

then be encouraged. The drawing work should not be relegated to a specialist. Every teacher will have to attempt to become his class drawing-master. It is a mistake to suppose that drawing cannot be learnt by all. It may not be possible for all the teachers to become artists but it is given for every one to learn to draw and give expression on paper, in some way or other, to his mental images. It is only when every class teacher begins to teach drawing to his class that justice can be done to the principle of correlation. The reader lessons give interesting matter for memory and story drawing. Object teaching and nature study which are dependent on accurate observation afford much scope for drawing. Drawing helps writing and the writing of vernacular alphabet may be based on the combination of curves, ovals, circles etc. etc.

When brush and colour are used for drawing purposes, the drawing is called brush drawing. The brush is a flexible medium and with it may be easily produced forms other than lines. Colour heightens the pleasure. Exercises of graduated difficulty will have to be given, beginning with simple strokes and culminating in design patterns executed in two or more colours. Brush books published by Messrs. Macmillan and Co. or by E. J. Arnold and Sons may be used. In brush drawing no preliminary pencil sketching should be allowed, the only help being a ruled outline of the space to be covered. Drawings from nature may very well be done with the brush. Brush drawing may be begun after the pupils acquire some control over their finger muscles.

To train pupils to accurate observation and precision and to give them a control over their finger muscles is our main object in teaching drawing and therefore it is a mistake to regard work with different media as separate subjects. The brush may be used as well for object drawing as for nature drawing. Objects seen by pupils may be subjects for free-arm drawing on black board with chalk or mass drawing with brush and colour. Practice in drawing should at no time be limited to a stereotyped set of exercises. Cheap and natural colour may be used wherever necessary.

The following syllabus in free-hand and free-arm drawing is suggested for use in elementary schools. It is not meant to be regularly followed; the managers being at liberty to modify the syllabus, so as to suit it to the requirements of their schools and pupils.

MECHANICAL DRAWING.

This trains pupils to precision and neatness and corrects the inaccuracies of free drawing. Mechanical drawing may be begun after pupils have obtained some control over their finger muscles.

(*a*) In *chequred* drawing, slates or papers ruled in squares are given to the pupils and after a few hints by the teacher on the lesson, the pupils are given the exercise. It is undesirable that the chequers should be less than a quarter of an inch square.

(*b*) *Ruler drawing.* After the pupils get a little practice in drawing straight lines with the help of the ruler, and in measuring them, lessons on combinations of lines may be given. The children may afterwards be exercised in making their own designs.

(*c*) In *geometrical drawing* the foot rule, compasses, dividers, set squares and the protractor may be used, and with their help geometrical truths may be taught in a practical way. An intelligent teacher will utilise 'paper-folding' for explaining some principles.

With a student's set of geometrical apparatus, the following may be illustrated:—test of a straight line, intersection of two lines, notion of a point, measurement of a length, estimation of the second place of decimals of inches, use of set squares for drawing parallel lines, construction and measurement of angles by the use of the protractor, limits of error in setting off angles, test of a right angle, test for accuracy of set squares, the drawing of perpendiculars, the bisection of angles and straight lines, construction of triangles from given dimensions, similar triangles, test of equality of angles, construction of rectangles and parallelograms and quadrilaterals from data, notion of a tangent line, construction of tangents and properties of circles.

(*d*) *Drawing to scale.* The idea of scale may be explained in the lower classes and pupils helped to draw plans of school and other buildings, garden plots, and fields. The village map may also be got constructed. The printed maps of countries may be studied and they may be got drawn to different scales.

M. SUBRAHMANYAM.

BOOKS—THEIR USE AND CHOICE.

(Concluded from the last Number).

IT is by no means supposed that we have entirely fallen down from the precipices of intellectual eminence which our fathers so gloriously occupied in times gone by. Fallen indeed we have in some respects but we have scaled heights in some *other* departments of practical and utilitarian achievements which more than counterbalance the glory of the golden days. If we have lost the natural intuition of our souls, the effusion of the Platonic genius, the lofty imagination of the Homeric bards, the inspiring ethical fervour of the Socratic temper and aye, certainly the sublime piety and the devotion of the 'incarnate' Jesus and Gouthama together with their 'vision and faculty divine,' we may yet congratulate ourselves that the dark days that witnessed the blood-thirsty spectators of the gladiatorial shows in the forums of Rome are also dead and gone—never more to return. There is an age for everything: and this is the age of science.

But in literature, the Novel is the latest product of the human mind. The most abstract truth and ethereal philosophy are delineated in the form of dramatic episodes so as to give sustained human interest to the readers. The Lockian psychology formed a most worthy interpretor in George Elliot. The follies and blunders of the domestic circle and the mild adventures 'from the blue bed to the brown' are drawn with all the perspicuity of a master painter in the idyllic graces of *The Vicar of Wakefield*. The chivalry and the wild and romantic adventures of the medievial Europe are vividly portrayed with all the strokes of the rainbow colours by the picturesque imagination of Sir Walter Scott—which any great historian might profitably glean from. Sparkling with wit and humour and satire, the novel is the best vehicle for instructing the man in the street and engaging his attention with a delightful laughter. 'For' surely does Horace observe, 'why should not any one promulgate truth with a smile on his countenance?'

But to-day novels have become so dangerously numerous as almost to hide the more serious books in obscurity from the public eye. The public devour with an insatiate thirst any new novel with a coloured cover, a curious title and a fascinating frontice-piece. The author may be a non-entity: enough that

it is sold in a railway stall: a book is a book for a' that; such is the notion of an idle reader. But such a reading which leaves no lasting impression in his mind, and if at all, leaves but a scandalous rubbish of absolutely no use in life, here or hereafter, spoils the judiciousness of his taste, detracts him from the stability of his concentration, loosens the solidity of his moral calibre, deadens his aesthetic faculty and blinds his vision with the rust of information while the free flame of his spirit is dulled with futile forms and names. Years ago John Morley deplored the abnormal increase in the percentage of novel readers in England and America and congratulated Scotland on her choice of the grave and serious classics. What a sad taste to have libraries of books, but loaded alas, with six penny sensational novels?

Instead of learning the lives of those who never lived at all and the 'memoirs of the unmemorable' it would be wise indeed to know the lives and careers of great men who from time to time appear upon the stage of this world as beacon lights to guide the footsteps of the weak and erring humanity. A study of the real lives of great men is sure to profit us in many ways. For do not

> Lives of great men all remind us
> We can make our lives sublime;
> And departing leave behind us
> Foot-prints on the sands of time?

Biographies of eminent men are both interesting and instructive, being the records of real events experienced in life. We emulate their proceedings in their triumphant success. Their failures present us with marvellous lessons denied to them, alas! but immediately useful for our own success by a sensible application to the actualities of our own situations and surroundings. Great men are the gifts of the Gods. Their *life* is worth our aspiring. They are the makers of history. Surely as the Scottish sage observes 'universal history, the history of what man has accomplished in this world, is at bottom the history of the great men who have worked here...great men, taken up in any way are profitable company. We cannot look, however imperfectly, upon a great man, without gaining something by him.' To study the lives of such great men, to appreciate their thoughts and doings, to imbibe their qualities of head and heart, to transform our wisdom of virtue into a daily habit, to uplift our soul within and the world without—*that* is to become great ourselves: that is to have *lived* and lived *rightly*.

But history itself abounds in the display of the genius of many a great man. For the general reader history is one of the most delightful studies. Apart from the entertaining anecdotes and the romantic exploits of the haughty warrior and his hair-breadth escapes, the bloody conflagration of the dreaded fields resultant on the deadly enmity of the revenging foes, the turbulent democracy excited to madness by the violent harangs of the headlong pedagogues, the ruthless massacres, the savage butcheries of many a tyrranical sovereign, the battle of the *self* against the *not* self—the legitimate consequence of commercialism and the worship of Mammon—deeper, deeper still behind them all, there is a brighter and happier prospect to the picture, illustrating the triumph of truth, the eternal unity and continuity of the historical manifestation of the human society, the growing solidarity of humanity at large consequent upon that widening horizon of 'sympathy and goodwill' among nations which is 'broadening slowly down from precedent to precedent.' Evidently then history is a delightful and useful study; delightful to those who read it for mere amusement;

and useful to those who study it for proficiency in the subject. It can suit all types of mind. Bacon was surely expressing the same sentiment when in his characteristic pithy aphorism he declared, 'history make men wise.'

It has long been the firm conviction of the present writer that no man, of whatsoever rank and position in the social circle, leaves his last fleeting breath and bids good bye to the joys and woes of earthly existence, without at some period or other of his life, being a little bit of a philosopher. The wonder of the world around suggests to him a philosophy of his own; the shadow of Death reminds him of its solace; disappointments drive him to its rescue; the cultivated intellect goes in search of its gratification. Most often it is even the victim of idleness and cant. Whether as a sure panacea for the meloncholy, or as a stern disciplinarian of the gay and the merry, philosophy is often the receptacle of the wise and the old. By this, it is not however meant that every man becomes a consistent and systematic thinker like a Bacon or a Descartes but that he gets a turn to muse over the tangled problems of life and death, the unseen and the unknown, in his own way however crude it may be. The tendency to theorize and to generalize is the natural and legitimate consequence of life experience. Such a natural tendency must be developed and perfected by an incessent pursuit of philosophical study. Patient reader! Do not for a moment imagine that it is a fruitless labour that ends in a vapourizing of words, a discussion that bears no definite decision. The discussion is its own reward. The human mind cannot be quiet. After all, the final goal, the end and aim of all study and knowledge of World and Nature is but to 'Know Thyself.' The problem of Life is the grandest question that humanity has tackled with for all eternity. Various have been the solutions. But not until every soul realizes the truth for itself will the problem cease to be asked and solved on earth. The so-called utilitarians may laugh at it: but they cannot laugh it out of the world and human hearts. Buddha's 'stars roll and question not' has met with the failure that sixteen centuries of human history confirms with one emphatic voice. Even in this materialistic age the Puritanist's 'indifference' has effected little to remove the great craving. Philosophy is requisite and we cannot leave it out of the programme of life-study.

But as the aptitudes of different individuals vary according to the nature of the influences of their surroundings and the methods of their up-bringing, so is there also a natural difference in the temperaments of the various nations of the world. Without applying the maxim with over-much rigidity we may perhaps observe that the countrymen of Macaulay are utilitarians in their enterprises while the nations of the oriental countries are rather spiritual in their aspirations. Indeed each nation has its own peculiar characteristics which are embodied in the classical literature of its own. Before introducing any foreign element in our nature (which more often does michief being at variance with the ingrafted soil) it would be far better to revel in the spiritual treasures of the respective nations which are the outcome of ages of ancestral experience. The seeds must be conducive to the soils. On this head we shall once more invite Emerson to give us his warning counsel. 'I might as well not have begun' says the scholar 'as to leave out a class of books which are the best: I mean the Bibles of the world, or the sacred books of each nation, which express for each, the supreme result of their experience.' Alike as literature and as religion, the sacred books of the world are of supreme excellence and as much of their immortality as of their originality entitles the more orthodox among mankind to claim for them a divine revelation. But whatever may be the verdict of posterity as to the origin of the Holy Books (human or super-human)—and we may rest assured that even the far off future historians will divide their opinions among either sides—no doubt as yet has arisen as to the unparallelled excellence of their contents surely 'it takes millenniums to make a Bible.'

"All these books are the majestic expressions of the universal conscience.....But they are for the closet and to be read on the bended knee. Their communications are not to be given or taken with the lips and the end of the tongue, but out of the glow of the cheek and with the throbbing heart."

But from the sublime silence and solemnity of the solitudes where 'we hold high converse' with them with all the rapturous ecstasy of our soul, 'the journalistic trumpets and rolls of newspaper drums' drag our meditations to the pursuits of the all around world. Politics, novels and journalism are not altogether friends to 'polite literature.' They pollute the pure fountain of literature with their incidental cants. Permanent books must be differentiated from the books of the hour. We need both. But the former are like the solid and substantial dinner full of nourishment and all the 'complex compounds' of all food-stuffs whose compliments are within our bodies incorporated; while the latter are like the stray crumbs of cakes or bread which we occasionally take by fits and starts to satisfy the passion of our palates. There is indeed no crusade against newspaper reading. Far from it. What can we do better to amuse and instruct ourselves while softly reposing in a sofa after evening tea than to peruse some of these periodicals which supply as with the daily history of the world? But to take to newspapers for literary or solid study is surely to mistake sand for sugar.

We talked of supplying foodstuffs of 'complex compound' materials to the physical body as complements to the constituents of our corporal constitution. Similarly has our mental nature a few aspects, each of which demand equal nourishment. Human nature is many sided: and all the sides must be looked after. Any one of them neglected, human nature becomes maimed, narrowed and constricted. We may say with Mr. Frederick Harrison that Imagination, Reflection, and Memory are the principal features of the operations of the mind. Each of them must be developed and perfected. But the last of the three seems to be more fortunate than the rest. We have been famous for our traditional strength of memory, though the dry cramming of an Indian schoolboy is much to be depreciated and deplored. The other two have been mercilessly left to take care of themselves and the youth finds no necessity, to them! 'I put the poetic and emotional (*imaginative*) side of literature' says the disciple of Auguste Comte 'as the most needed for daily use.' And for *reflection* we allot no time in this busy hum of life. We are always catching trains and there is no time to think! To save the labour of reflection charitable men take upon themselves the trouble of manufacturing notes and annotations and supply the students with the dainty dish. Generous men! They ruin the students' brain with the cloak of relieving their labour, while in truth they live upon the

spoil of their sales which makes mechanical machines of students! Alas! How much of the reflective vigour of the youthful brain is marred by these artificial accumulation of information!

But one more aspect of the mind has been totally discarded. In these days of dry scientific knowledge, feeling is considered to be rather a weakness and defect of the brain than a healthy supplement to Reason. If Carlyle and Ruskin and Tolstoy felt intensely in the goodness of their pious souls the atrocities of modern commercialism and materialism, the horrors of war and the savage game of *la chase* and in the agony of their hearts gave vent to tears of despair, it is at once understood that they suffer from a cerebral disease which we in our superior sense and judgment should carefully guard against! What a ludicrous logic! Is not Feeling the father of Thought, as thought itself is the spring of all Action?

It is incumbent on us therefore to study books that can appeal to all our fundamental natures—Imagination and Reflection, Memory and Feeling; and in their happy and harmonious development depends the perfection of the human nature.

It must also be noted that we must have a wide survey of the world and men. Some are apt to be like the little frog of the well, moving in its own narrow grooves, and scarcely believing the vast expanse of the ocean beyond. Others again are book trotters who have read a hundred books without remembering the plots and characters of one. Both are equally unwise. Our range of knowledge must cover a large area of men and things, art and nature, and we must also be masters in some special department of technical or intellectual calling. Lord Brougham's dictum of 'something of everything and everything of something' should as clearly be adopted in practice as it is certainly understood in theory. This is an age of specialization: and we would do well to chop out a path of knowledge according to the aptitudes of our natural inclinations and be masters of the field. The breadth and depth of knowledge are abundant. The littleness of man and the limitations of his capability have to be realized. A classical scholar may not be a scientist. But woe to the scholar when he begins to arrogate all truth to the Classics and scorns at the inventive genius of Science. Classics and Science, Philosophy and Religion, Literature and Mathematics, Art and Nature—each of them is not the whole of knowledge but all of them combined make up the grand sphere. For, neither the blood-red tinge that surrounds the morning sun as slowly he springs forth from out the bosom of the sea, nor the brilliant light that dazzles overhead at noon-time, nor even the many coloured orbs of the falling sun arrayed in all the glory of the golden hews, makes up the horizon each by itself; but it is all of them and the stars and the moon, the dark clouds and white, the arched rainbow, the crash of thunder and the flash of lightning and a multitude of other phenomena that comprise the expansive region of the sky.

But 'some books are to be tasted' remarks one of the greatest of aphorism writers, 'others to be swallowed and some few to be chewed and digested.....Reading maketh a full man.' Our brain is not a miscellaneous waste paper basket. We must not only read but study, analyse and systematise our knowledge: use it for the good of ourselves and the ever-needy society around. And what do we study for? The same writer whom we are never tired of quoting continues, 'Read not to contradict or to confute; nor to believe and take for granted; nor to find talk and discourse; but to weigh and consider.' This is wisdom surely. Yes! Let us read to 'weigh and consider.'

Hence more depends on our meditation. Socrates and Plato, Newton and Galeleo were far wiser than all the most learned men of our own day. Books will be destructive rather than useful if they encumber our natural vision. Study must be but a stepping stone to self-culture and self-realization. Books are but interpreters of nature. But we must learn to stand face to face with nature herself and realize the secrets of her bosom by a reverent contemplation of her beauties, her laws and her truths. We must have direct and personal communion with Nature. There are sermons in stones; wisdom in the babbling brook. *He* only knows, who takes the pains to know. But alas! we have eyes but see not, ears but hear not, and our understanding is not applied to the permanent *essentials* of things but to the passing, fleeting and transitory surface matters of *ephemeral existence*. Be it borne in mind that life is short but art is long. Too short indeed is the span of earthly life to leave us time to know the wonders of nature in full. Our life seems to be but a huge avalanche of snow piled on the mountain pinnacles of Himalay for a time, only to be melted and hurled down by the torrid Summer of Time into the deep ocean of Eternity. When, as Dr. Johnson said, we deduct the great portion of our life-time that is lost in the innocence of infancy, in the imbecility of age, in sleep, in slumber and in sloth, and those irrevocable hours wasted on the inevitable intercourse of social life, in idleness and langour, we can painfully realize of how little of our time we are really masters. Every setting sun announces the death of a day of our life. Each wind that blows from far off Southern sea steals the secret scent of life and spirit from out of us. Let not the precious hours of youth be spoiled. 'Life is real, life is earnest, and the grave is not its goal,' Work is worship. Let us therefore utilize our little life-time in the acquisition of Truth and Knowledge and cheerfully face the last day of our doom with the secret satisfaction that we have not lived in vain but that we leave the world better than we found it. Such a 'secret satisfaction' in the recollection of a pure, noble and useful life, at the sunset of one's earthly career, is worth all the seraphic rejoicings of bliss and happiness everlasting, which the pious Christian pilgrim yearns to enjoy in the 'Kingdom of Heaven.'

B. NATESAN.

OUR ENGLISH LETTER.

LIVERPOOL, *April* 1909.

Two important Deputations have recently waited on Ministers, and both were sent empty away. Mr. Asquith disclaimed any immediate intention to put upon the Exchequer charges that are now proving too heavy for the local authorities. The education rate is now a very serious matter for the Municipalities, and the local authorities are beginning actively to resist. Mr. Asquith somewhat unkindly pointed out that the increased charges were due to Mr. Balfour's Act of 1902 which put the voluntary schools on the rates, and that the recent Government Bill which was providing a million or more out of the national funds was summarily rejected. Mr. Runciman promised that last year's grant of £200,000 to necessitous school districts will be renewed this year, but further than that, he would not go. Neither Deputation was satisfied with the Ministerial statement, and tempers were not in the least improved by the publication two days' later of the School Staffing Circular. So far from Mr. Runciman laying aside the whip, he is taking up the scorpion. The publication was in fact rather untimely: it was adding insult to

injury, to demand further money from men who had just turned out their pockets to show their emptiness. Educationally, there is nothing to be said against Mr. Runciman's Circular. The restriction of classes to 60 scholars is, by no means, the setting up of too high an ideal, seeing that 35 is the maximum in secondary schools and that lower figure means more pupils than can be satisfactorily taught by even a competent teacher. But, perhaps, he would have been better advised to have let a little time elapse before stirring up wrath afresh. The Annual Meeting of the Association of Municipal Corporation meeting a week after the issue of the Circular felt constrained to instruct their Parliamentary Committee to take steps to prevent the Circular coming into operation. For the rub comes in the fact, that while the "qualified" teacher is allowed a class of 60 the "unqualified" is only allowed 35, and the pupil teacher 20, and thus a large increase in staff will be necessary in those ill-equipped schools that have been largely relying on the services of the uncertificated teacher. But we are coming to recognise that our educational fleet must consist of Dreadnoughts, and the pre-Dreadnoughts will have to be written off as useless in the fight. The modern war-ship costs vastly more than its predecessor, but we must have it: and we can build and equip 150 schools at the cost of one modern battle-ship. That is astonishing, but it is a fact. They are no true patriots who are not concerned about the efficiency of the navy, but the efficiency of our schools is surely at least equally important.

Mr. Runciman is showing no signs that he appreciates the case for Registration. He seems as opposed to it as is Sir Robert Morant whose approaching departure from the Permanent Secretaryship will not be viewed in certain quarters as an unmixed evil. But what about the money that was beguiled out of those who proudly saw their names in Column B. Mr. Birrell twice pledged himself that all registration moneys should be returned. Now Mr. Runciman tells us, that most of the money has been spent, but he is willing to return the balance if an equitable mode of distribution can be suggested. No doubt, it is a great consolation to the unregistered men who paid for registration to think that their contributions have been employed to the advantage of some educational scheme or other, but there will be some few who would prefer to give voluntary rather than involuntary subscriptions to unknown causes. Some claim really ought to be officially made for the return of all the money, so that Mr. Birrell's pledge may be redeemed and no injustice done to those who were foolish enough to accept the assurances of the Education office in the first instance.

Another matter in which Mr. Runciman has failed to give satisfaction is the question of Women Inspectors. Their stipends are only half that of the Men Inspectors, and they have no security of tenure. Whereas, a man is appointed for life, and his salary rises apparently with automatic regularity to the maximum, whatever his incompetence, a woman's appointment is at most for five years. We have not had the pleasure of the acquaintance of any Women Inspectors, but we have known certain men who held that office, and we are certainly of the opinion, that there is a *primâ facie* case for equality of treatment: else, Heaven help the women! We may say, to rebut possible comment on this paragraph, we have never personally applied for an Inspectorship and suffered in consequence.

Would it be too much to ask you in an Indian climate—we were not furnished with much information on that subject at school but we have read Kipling on the Solar myth—to ask you to read of yet another Deputation to Mr. Runciman. Inasmuch as it had reference to Agricultural Education—which does not mean rustic education, most of our supply at present is after that pattern—we had better be discreet and say nothing about it. But it is perhaps worth while mentioning that 150 Affiliated Chambers of Agriculture were unanimous in demanding more facilities for education in the principles of Agriculture. When the farmers desire change we are on the verge of a Revolution. Mr. Runciman plaintively remarked that the Deputation asked, as every deputation asked, for more money, but on that subject he could say nothing. But your Correspondent can say that it has since transpired that Mr Lloyd George has to face a deficit of 8 or 9 millions, and suppliants far treasury grants, whether they be Chambers of Agriculture or Associations of Municipal Corporations are likely to get short shrift for some time to come.

Cambridge was never the home of lost causes. And the month which sees Oxford stand by the obsolete conditions governing the conferment of the M.A., degree sees the fall of the General at Cambridge at the first assault. There was no very heated controversy, though one pamphleteer wrote of the 'sciolococcus malevolens,' and the 'optimistic viridescence' of the budding undergraduate who proceeds to specialize on a couple of subjects before he has reached his eighteenth birthday. The idea of the innovation is that instead of the General two specials shall be substituted. Subjects are to be divided up into 9 groups and the candidate takes two out of separate groups. This is of course an approximation to "Groups" at Oxford. This is a pronounced step; whether it is a step forward or not, opinions will differ. But no one can dispute Cambridge's readiness to reform, as it is not a couple of years since sentence was pronounced upon the Senior Wrangler.

Cambridge has also decided that women shall immediately be admitted to degrees. The majority was a substantial one, almost a three to one majority. But it ought to be stated that this was in the Union and not in the Senate. The motion was proposed by Mr. J. R. M. Butler. It does not seem so long ago as this since Dr. Butler took to himself a wife in the person of a Senior Classic. But from the sons of such a Union something ought to be forthcoming, and there is every reason to believe that they will go far to justify themselves. For J. R. M. is not the only scion of the house. Your Correspondent used to see them disporting themselves on the cricket field of their Preparatory School at Cambridge and though they were creditable enough performers, there was something in the shape of their heads that seemed to promise something.

Dr. J. Hutchison Stirling has died, leaving an honoured name behind him. He is chiefly known for his "Secret of Hegel," a great book, though Dr. Hastings Rashdall once remarked to us that the secret had been well-kept: trust a Scot to keep a secret.

If the New York *Nation* speaks truth on the matter, things are not well with the American Universities. Scholarship is of no account. The Yale *Courant* is quoted as saying: "Here at Yale scholarship *per se* has no social attractions, is hardly known, and rarely discussed." Another Yale paper says.—"Probably only a handful of the undergraduates of any one class could name their chief scholarship or prize-winner." The last statement hardly seems to carry much with it. How many men reading, Greats at Oxford, could tell the list of the Craven scholars for the year? And yet that hardly meant they didn't mean to get whatever class was in their own reach. Why should we lesser lights droop in wondering admiration of our great stars? But what is more serious is, the assertion that many of the Professors encourage a contempt for learning. This does mean something. We did not expect that from the most sporting of Dons. No doubt, there will be a counterblast to this, for it hardly seems altogether credible. We had better not say too much when it is really impossible to arrive at the facts of the case.

Reviews and Notices.

THE "VIVEKACHINTAMANI," FOR APRIL 1909. PUBLISHED BY THE DIFFUSION OF KNOWLEDGE AGENCY, LALITALAYA, MYLAPORE, MADRAS. (YEARLY SUBSCRIPTION, RS. 4.)

The "Vivekachintamani," that old and excellently conducted Tamil Magazine opens with a thoughtful article on the "Up-building of a Nation's Happiness" taking for its text the speech of the Chancellor of the Madras University on the same subject. The way in which the high thoughts and beautiful ideas of the Chancellor are presented to the Tamil Reader are highly instructive, and shows how the highest ideal of the development of nations can be presented to the public in language highly artistic and at the same time quite simple, because familiar to the reader as the outcome of the highly developed indigenous thought in which science and religion stand rather inter-related to each other than the attitude of antagonism in which they are often made to stand in Western culture. The same high purpose of reconciliation is evident in other articles also, of which we may mention the short dissertation on "the magnetic relation between Water and Air" as an excellent instance.

NATURE STUDY, BY PROFESSOR AINSWORTH DAVIES. (PRICE 2*s*. 6*d*.)

This is a new book on Botany and Zoology. Here the author has treated the subjects in an attractive way with numerous beautiful nature photographs. The language is quite simple and free from much of technical words. The book ought to create in the minds of the young readers alone for nature in general and also an interest for the scientific side of the subjects, Botany and Zoology. After a perusal of the book, the young reader will find his walks more interesting by meeting with so many things which will catch his attention and will have a new meaning to him thereafter. In Botany, the author has treated in an extremely simple way the mosphology and physiology of plants, and gives the reader an insight into the interesting theories of cross-fertilisation by means of insects, the distribution of plants, the struggle for existence, natural selection, etc. In treating about animals, he has classified them in a very instructive way. He gives an account of all the main types of them, as if he is giving the readers simple and interesting stories of them. He quite imperceptably takes the reader into the subjects of Evolution and Natural Selection, and treats about Protective Coloration and Mimicry. On the whole the reader will find the book extremely interesting and at the same time instructive. The get up is excellent and the price is very moderate. The book will be found very useful for the Intermediate Class students as well as for those who are studying for B.A. in Botany or Zoology.

Indian Educational Notes.

MADRAS.

THE Government have sanctioned a grant not exceeding one-third of the actual expenditure nor exceeding Rs. 6,000 towards the cost of the improvements to the accommodation of the school department of the Madras Chirstian College.

MR. H. Dodwell, M.A., is to act as Professor of History, Presidency College, Madras, during the absence of Mr. Allen on leave or until further orders.

The above appointment will have effect from the 5th July, 1909, the date of the re-opening of the Presidency College after the ensuing Summer vacation.

MISS T.M. Mergler, B.A., Sub-Assistant Inspectress, North Arcot-Salem Girls' Range, is to act as Assistant Inspectress, Kistna Guntur Girls' Range, during the absence of Mrs. M.A. Shrinivasa on leave or until further orders.

MR. F.E., Morgan, Covenanted Engineer, Public Works Department, is to act as Principal, College of Engineering, Madras, during the absence of Mr. James on leave or until further orders. The above appointment will have effect from the 15th July 1909, the date of the reopening of the College of Engineering after the Summer vacation.

MR. M. Hunter, M A, having resigned his office as an Ordinary Fellow of the Madras University, is to be an Honorary Fellow.

THE Syndicate of the University of Madras have resolved to treat the certificate of having passed the High School examination under the Code of Regulations for European schools, as an "accepted certificate" under University Regulation 180.

COL. H. St. Clair Carruthers, I.M.S., has been nominated an Ordinary Fellow of the Madras University.

THE Cocanada College has been handed over to the Raja of Pithapuram by the College Council. The Raja recently made an endowment of Rs. 1½ lakhs, apart from building and other equipments costing Rs. 50,000. A public meeting of the Citizens have thanked the Raja for his munificence and generosity in taking over the management of the College.

MR. P. R. Sundara Iyer, Vakil; has been elected a Trustee of the Madras Pachaippa's Charities.

THE Government have sanctioned, as a special case, a grant not exceeding one-third of the actual expenditure nor exceeding Rs. 2,600 towards the cost of constructing a building for the Hindu Incomplete Secondary School, Palacole. This grant is sanctioned on the understanding, that every endeavour will be made to convert the school at an early date into a complete elementary school, if it is found impracticabie to convert it into a complete secondary school.

A CORRESPONDENT writes:—Miss V. V. Janaky Amall, a Malayalee lady, has recently passed the final examination for Apothecary's grade from the Madras Medical College. This is the first time that a Hindu lady student belonging to this Presidency passes this examination from the local College. The course of studies required for the Apothecary's Grade is in no way interior to that of the L.M. and S. degree examination, and it is very creditable that Miss Janaky Amall has been able to undergo this highly practical course of training, and qualified herself as a Medical Practitioner.

A MEETING of the Mathematics-Science section of the Madras Teachers' Guild was held recently at the Mahajana Sabha Hall, Mount Road, when there was a discussion on the "the Syllabus of Science for higher forms of High Schools." The chair was was occupied by Mr. P. Laxminarasu Naidu.

It will be remembered that at the Educational Conference held last year, it was resolved that the Association should have two sides, one of pure pedagogy, for the improvement of methods of teaching, and the other of administration. It was further suggested that teachers devoted to particular subjects should form sections and organise lectures, lessons, libraries, &c. Accordingly, an English section was formed last year, and encouraged by the success of that section, two new sections of the guild were formed this year; the one Mathematics-Science Section and the other History-Geography Section, with Mr. P. V. Sesha Iyer and Mr. K. A. Veeraraghava Chariar, respectively, as Secretaries.

Mr. S. Krishnama Chariar led the discussion on the appointment of the syllabus in elementary schools in the three higher forms. In doing so, he said, that the factors that generally went to fix the syllabus of any class in any subject were (1) the capabilities of students considered with reference to their age and attainments, (2) the psychological order of the teaching of subjects, (3) the logical order. The general outcome of all the factors considered could be summed up in the following manner. The syllabus to be adopted according to the powers of the child's mind and the line of least resistence followed. If anything was found difficult and beyond the comprehension of the student, they should drop that for a time. In a later stage the student would not find so much difficulty in that direction. He then asked them to follow the logical order in the main, and proceed from the simple to the complex. He concluded his discussion by saying, that they ought to proceed from the concrete to the abstract and from examples to principles.

Mr. Adikesbavalu Naidu said the centric system ought to be followed and that magnetism and electricity might be taken up in the fourth form.

Mr. P. V. Sesha Iyer said that he agreed with the last speaker and that magnetism and electricity might be treated qualitatively in the fourth form.

The Chairman said, that in teaching, they should start with something connected with the life. They must try as much as possible to create interest in the minds of the students in the subject.

Mr. S. Krishnama Chariar, in reply to the observations made, said, that his friends had omitted to consider that elementary science was begun in the first and second forms. The simple properties of the magnet and something about the rainbow might be taught earlier than in the fourth form. Further, they should begin the subject in earnest in the fourth form.

MR. K. N. Vishweshwar Rau, Sub-Assistant Inspector of Schools, Udipi Range, has arranged Summer vacation classes for the benefit of the Primary Schoolmasters, particularly, those trained under the old curriculum. Mr. Vishweshwar Rau himself is giving very interesting lectures on the methods of teaching and general properties of matter in Elementary Science. And Mr. Raghunatha Rao, Supervisor, is giving very instructive lectures on elements of human physiology, as applied to Hygiene. Some more classes of this sort will enlighten the teachers on the up-to-date methods they have to employ in their schools.

THE Vice-Chancellor of the Madras University has selected Sonti Venkatramamurthi, B A., as the Scholar for the Government of India Scholarship for England. He is a Mathematics Graduate.

As the Nizam College (Hyderabad, Deccan) owing to its disaffiliation from the Madras University, does not provide for instruction in Natural Science, Physics and Chemistry for the Degree of Bachelor of Arts; Mr. Kutbaddin has, subject to the approval of the Financial Department, been granted a scholarship of Rs. 30 per mensem, to enable him to proceed to Madras and there to take his Degree.

THE following Government Order has just been issued:—"The Government are not prepared to accept the contribution of Rs. 5,000, offered by the Saraswath community towards the establishment of a hostel in connection with the Government College, Mangalore, subject to the condition specified by that community; namely, that a certain number of Saraswath students should be allowed to live in the hostel, rent free, the rent foregone being equal to the amount of interest on Rs. 5,000 at 3½ per cent. The Government are also not prepared to provide a hostel, in a comparatively wealthy town like Mangalore, entirely at the cost of Provincial funds, unless the Director of Public Instruction can show, that the rents to be charged for accommodation will give a return to Government on the initial cost of the hostel, equivalent to the rate charged by the Public Works Department for official buildings.

A Correspondent writes:—15th May, 1909, is a very important day, and should be written in golden letters, in the history of "Muslim Female Education"; as it records the ceremony of the opening of the Government Muhammadan Girls' School at premises No. 38 Bazar Road, Mylapore, by Mrs. A. Firth, who is always deeply interested in the general welfare of the Muslim Community and a most warm friend of female education, and Mrs. M. Engler M.A., L.T., Acting Inspectress of Girls' Schools, Madras Girls' Range. These ladies were garlanded by Mrs. Muhammad Habibulla Sahib Quraishi, on behalf of her father, Maulavi Hakim Sultan Mahmud Sahib, through whose exertions the said School has now become an accomplished fact. Thirty-two girls were registered at the time, for admission, and this number increased to 44 on the 1st working day, and to 48 on the day following. It is confidently hoped that the latter number will still increase. Before the ceremony was brought to a close, sweets, fruits, etc., were distributed to the girls and the staff of the School. It needs no mention that a Muhammadan Girls' School was badly needed at Mylapore, and the above Institution, therefore, undoubtedly, supplies a long felt want. The Muslim Community may, therefore, justly congratulate Sultan Mahmud Sahib on his success in his attempts. It, however, now rests with the Muslim public to make the School a thorough success.

THE following G. O., just issued, will be read with interest:—

"In G. O., No. 1541 M., dated 16th September, 1908, the proposals of the Municipal Council of Palghat for the reorganisation of the staff of the Victoria College were approved with a certain modification, and, as the reorganisation thus approved was expected to result in conversion of the ordinary annual surplus of about Rs. 1,500 in the receipts over the charges of the College into a deficit of about Rs. 3,800; the Council was requested to enhance the rate of fees levied in the several classes to such an extent, as might be necessary to make the College self-supporting.

The Council now observes, that any enhancement of fees will prove most prejudicial to the interests of the College, unless a general enhancement of fees in all the Colleges and High Schools in Malabar and adjacent districts is ordered by Government, and it accordingly requests that a grant of at least Rs. 4000, per annum, may be paid from Provincial Funds in aid of the Institution.

2. The view that the Council should look for aid from Provincial Funds in order to support the College, cannot be accepted by Government. The people of Malabar are in a far better position to pay for secondary and collegiate education than the inhabitants of most districts in this Presidency, and it must be clearly understood that Government expect the College to be made self-supporting in a short while. The institution has received a large allotment recently from the grant for University education, and it is reasonable and proper to require the payment of higher fees in return for the improvements in equipment and staff which have lately been made—improvements which give the College a great and distinct advantage over other Colleges, which have not been so subsidised.

3. The Government recognise that it may not be possible to raise fees at once to the extent necessary to cover the additional cost of maintaining the Institution, and they will be satisfied for the present, if the fees in the College classes are now raised by Rs. 3 per term (for the College classes). If this is done without delay, the Government will be prepared to make in 1909-1910 a grant, not exceeding Rs. 3.000 towards meeting the excess of charges over receipts.

4. It is observed that the College provides instruction for boys from the Native States of Travancore and Cochin and the Council may therefore consider it has some grounds for asking those States to make some contribution towards the cost of maintaining the Institution."

AT the Kellett Hall Madras recently, in the presence of a good number of students, the Rev. H. Ashcroft delivered an interesting lecture on "Life in Cambridge University." After referring to the various branches of learning at the University during the three years' course, the lecturer observed, that from a casual observer's point of view everything looked charming. The graduates of the University had all sorts of sports and amusements to go through, and had to go through three gates before they came out successfully, *i.e.*, the gate of Humility, the gate of Virtue and the gate of Honour. The lectures delivered at the University were not at first inspiring but as the students proceeded with them, the advantages were apparent, in spite of the fact that there existed in the students a lack of reverence to the Professors. Special attention was paid to sports in the life of the College student in all the different forms thereof, and the best man in each of the Colleges was selected for the University to fight against its sister University and attain a much

coveted honour. Thus, the students had a jolly good time of it, and had further the opportunity of meeting men of all shades of thought, thus enabling him to judge all the four sides of a thing. That was in itself a very valuable acquisition. University life was an important factor in the moulding of the character of the student, who, at the utmost left the public school, where he had a fair amount of discipline, at 19. But when the student entered the University he was his own master, subject to certain reservations, and it must be remembered that when a man got his liberty there were dangers facing him and there were bound to be temptations in his way. So there was also a serious side of University life. But as against this, there was the chance of developing the powers of the student enormously, thus enabling the student to become a true and real gentleman. In addition to all these, there was also the chance—the great chance—of forming true and lasting friendship, and there was no saying, how much such friendship would contribute to the future happiness of the student.

A debate followed on the subject, and the meeting then terminated.

THE forty-second Anniversary of Mrs. Sathianadhan's Schools and Zenanas was held last evening in the Sathianadhan Memorial Hall, under the presidency of Mrs. Andrew.

The programme commenced with a Tamil lyric well sung by a few pupils belonging to the Komaleeswaranpet School and was followed by a short prayer by the Rev. W. D. Clarke. The two other schools at New Town and Napier Park in connection with the above also took part in various action songs and drills. The Komaleeswaranpet School gave very good exhibitions of the May Pole drill, Kolattam, and different kinds of marching. The New Town were equally energetic in their Dumbbell drill, and Kolattam. The girls from the Napier Park School did great credit to their teachers and themselves in their Pole drill, Pinnal Kolattam and a dialogue carried on completely in English, every word of which could be distinctly heard by the audience.

The Rev. W. D. Clark, the Manager of the Schools, then read a brief report of the work done and the condition of the schools during the previous year. He mentioned, that when the Schools had been founded forty-two years ago by the late Mrs. Hannah Satthianadhan, there were only ten pupils, the strength of the schools now being four hundred and twenty-eight pupils. The attendance suffered a good deal through the lack of enthusiasm on the part of the Hindu parents who kept their girls from attending school on the slightest pretext, *e.g.*, on the occasion of a marriage or funeral. In the time of the late Mrs. Satthianadhan, the circumstances were far worse. She had to buy the children slates, books, other necessary articles and even sweets; all at her own expense, in order to persuade the parents to get their children educated. Lady Napier appreciated this good lady's noble efforts to promote the cause of education among her Indian sisters and gave her, as a gift, a building situated near Napier Park and now called "Napier Park School." The work is now being carried on by her two daughters; Mrs. Clarke being in charge of the schools and Mrs. Hensman looking after the Zenanas.

After the reading of the report Mrs. Andrew gave away the prizes to the various children. The Hon'ble Mr. Andrew, on behalf of Mrs. Andrew and himself, then expressed his pleasure at being able to be present there that afternoon. He was very pleased with all that he witnessed and hoped that the many difficulties mentioned in the report of the year's work would soon be surmounted. The schools seemed to be flourishing under such able management, and he wished them every success in the future.

Cheers were then called for Mr. and Mrs. Andrew, who were garlanded by a few children, with a lavish sprinkling of sweet-scented rose-water. The singing of the National Anthem brought the proceedings to a close.

Among those present were Miss Grover, Miss Parker, Mrs. Lazarus, Mrs. Koman, Mrs. Swamikunnu Pillay and several other ladies.

THE Governor in Council directs that the High School examination held under the Code of Regulations for European schools shall in future be recognized as equivalent to the Matriculation examination of the Madras University, in so far as it is a qualifying test for admission to Government Service and for entrance to any school of professional or technical training which is not under the control of the University.

2. The Public Service Notification will be amended with reference to these orders. The following notification will be published in the *Fort St. George Gazette*:—

In the note to article 2 of the Public Service Notification published at pages 610—618 of Part I-B of the *Fort St. George Gazette*, dated 22nd December 1908, the following shall be added as clause (8), namely:—

"(8) The High School examination for Europeans under the Code of Regulations for "European schools."

3. The inference drawn by the Director of Public Instruction in paragraph 2 of his letter that the Government intend that European schools should not in future be allowed to prepare pupils for the Matriculation examination, but should prepare only for the High School examination, is not correct. Under article 18 of the Code of Regulations for European schools, the question of permitting these schools to prepare for the Matriculation examination is one for the decision of the Inspector with reference to the circumstances of each case, and the Government have no present intention of interfering with the Inspector's discretion in the matter.

4. The Director of Public Instruction will be requested to report to Government the result of his reference to the Syndicate, on the subject of the acceptance by the University of Madras of the High School examination as a substitute for the Matriculation examination.

THE Typewriting examination, Advanced and Intermediate grades, will, in the case of typists who are already permanently employed by Government, be treated as obligatory departmental examinations for the purposes of article 1116 of the Civil Service Regulations.

THE Government agree with the High Court that the Code of Civil Procedure which is prescribed as one of the subjects for the Civil Judicial Test, must be limited to the Civil Procedure Code as now in force, *i.e.*, Act V of 1908, and that the examination in the Civil Rules of Practice should for the present be confined to the schedules appended thereto. The Provincial Insolvency Act III of 1907 will be added to the curriculum for the Civil Judicial Test, but District Registrars will not be required to pass in this subject.

2. The Commissioner for Government Examinations will be requested to submit a draft of the alterations to be made in the Public Service and Special Test Notifications with reference to these orders.

THE Director of Public Instruction submits proposals for the establishment of training schools for higher elementary teachers and for the complete reorganization of the existing Government training institutions in this Presidency.

2. The Government at present maintain two training colleges, including secondary departments, at Saidapet and Rajahmundry, and three secondary (or, under the former classification, Upper secondary) training schools at Calicut, Coimbatore and Tanjore. There are also 15 secondary schools of the old lower secondary class and 11 primary training schools which are distributed all over the Presidency.

3. The Director of Public Instruction considers that a single Training College at Saidapet should suffice, and suggests that it should be enlarged by transferring to it, the College department of the Training College at Rajahmundry. He proposes that the secondary classes attached to the Teachers' College at Saidapet should be removed from the College and should form a distinct institution, and that, in addition to this, secondary training schools proper should be maintained at Rajahmundry, Salem, Tanjore and Calicut. He further proposes that in the place of the existing fifteen "lower" secondary and eleven primary training schools, there should be established six higher elementary and twenty elementary training schools in all.

4. It is proposed that the new secondary training schools should contain two separate sections—one for the training of teachers for the lower forms of secondary schools and the other for the training of higher elementary teachers—and that higher elementary training schools should provide instruction for elementary students also.

5. The proposals of the Director of Public Instruction, as regards the classification and distribution of the training institutions, are approved generally by the Government.

6. The Government agree with Dr. Bourne that the Headmasters of the secondary and the higher elementary training schools should be members of the Provincial Educational Service; and, subject to the sanction of the Secretary of State, accept generally his proposals as regards the staff required for the training and the model sections of the several classes of training institutions. The Director of Public Instruction will be requested to submit at a very early date proposition statements embodying the various proposals.

7. The proposals in regard to stipends are also approved.

8. The Director anticipates that thirteen new buildings will have to be constructed in connection with this scheme, one of them being for the proposed secondary training school at Saidapet. The Government, however, consider that the buildings at Saidapet recently in the occupation of the College of Agriculture should be utilized for this purpose. The Director of Public Instruction will place himself in communication with the Public Works Department with regard to the improvement of existing buildings and the provision of new buildings for the several training schools.

THE Government accept the proposals of the Director of Public Instruction regarding the revised rates of fees and the revised scheme of examination including the redistribution of marks in the College of Engineering. The alterations in the rules of the College proposed by the Director of Public Instruction are also approved.

2. The following notification will be published in the *Fort St. George Gazette*:—

The Governor in Council is pleased to sanction, in supersession of all rules previously prescribed, the following revised rules for the College of Engineering, Madras:—

Object.

1. The College, which is affiliated to the Madras University, affords theoretical and practical instruction in subjects qualifying for the professions and callings of civil engineer, mechanical engineer, upper subordinate engineer, lower subordinate engineer, surveyor and draftsman, in view of fitting persons for employment in such capacities by Government, by Local Boards and Municipalities, and by other agencies.

2. Students of the higher course in engineering are, at the same time, prepared for the B.E. Degree examination of the Madras University.

Control.

3. The responsibility for the discipline and management of the College is vested in the Principal, under the control of the Director of Public Instruction.

Board of Visitors.

4. A Board of Visitors, consisting of a President and three Members, shall for the present be constituted to advice the Director of Public Instruction and the Government. The Board shall be composed as follows:—

President—The Chief Engineer, Public Works Department.

Members—The Chief Engineer, Madras Railway Company; the Chief Engineer, Madras Port Trust; the President of the Faculty of Engineering of the Madras University; or a Member of the Faculty to be nominated by the Syndicate if the President of the Faculty is already included in the Board under any of the foregoing designations.

Secretary—The Principal of the College.

Staff.

5. The staff shall consist of a Principal, two professors of engineering, a professor of mathematics and science, and an adequate number of lecturers and demonstrators. There shall also be a workshop instructor with foremen assistants, and an instructor in drill and gymnastics. Special lecturers may also, when necessary, be employed with the sanction of Government.

College Year, Vacations and Holidays.

6. The College year shall consist of—

(*a*) A first term extending from about the 15th July to about the 10th October. The last ten days of the term shall be devoted to inspection tours.

(*b*) A second term extending from about the 11th October to about the end of April. A Survey camp lasting about a month shall be formed immediately after the Christmas holidays.

(*c*) A vacation extending from about the 1st May to about the 14th July as may be notified by Government.

7. When any of the above term dates fall on a Saturday or Sunday they may be varied at the discretion of the Principal to an extent not exceeding two days.

8. The Gazetted holidays for Christmas and Easter shall be enjoyed, and the casual holidays allowed by Chapter VII of the Educational Rules, Fifth Edition, shall apply as far as the special character of the College may permit.

9. The first and second terms together constitute a College Session.

Classes

10. The College shall contain the following classes:—

(i) *Engineer Class*—for the training of (*a*) civil engineers, and (*b*) mechanical engineers.

(ii) *Upper Subordinate Class*—for the training of upper subordinates for the Public Works Department, Local Boards and Municipalities.

(iii) *Lower Subordinate Class*—for the training of lower subordinates, surveyors and draftsmen for the Public Works Department, the Survey Department, Revenue Department, Local Boards, Municipalities, Railways, etc.

CALCUTTA.

AN Extraordinary Meeting of the Beharee Students' Association was held recently in the College Hall, under the Presidentship of Mr. Deep Narayan Sinha. Babu Sri Krishna Prashad delivered an interesting lecture for over an hour upon the "Problem of Life." The attendance was fair and the meeting was a success. Mr. Sinha also visited the Association premises and was much pleased with what he saw.

THE Annual Prize Distribution of the Hindu Girls' School, organized by a few Bengali residents of Cawnpore, came off lately. Mr. W. E. M. Campbell the Magistrate and Collector, presided. After recitation of a few well-known pieces in English and Sanskrit by the pupils, the prizes, which comprised of useful books and pretty toys, were distributed by Mr. Campbell to meritorious pupils. Two suitable prizes were given for the best Cooking and Knitting. The School being held in a rented house, an appeal was made to raise funds for its building. Rs. 2,000 was subscribed by Dr. Sen, a local Medical Practitioner. Mr. Campbell promised Rs. 100, other donations were also promised. After presentation of a large bouquet to the Collector by Miss Sen, the gathering dispersed with a vote of thanks to the Chair.

THE Lieutenant-Governor's thanks have been conveyed for a donation of Rs. 1,750 made by Mahant Govinda Ramanuj Das of the Utterparsa Math, for the creation of a Scholarship to be named after his Honour. The amount will be invested in 3½ per cent. Goverment Securities, and a Trust Fund opened, and known as the "Baker Scholarship Fund." The interest will be utilised for the award of a Scholarship, of Rs. 5 a month, to a student of the Puri Zilla School who passes the Matriculation Examination of the Calcutta University, subject to certain conditions.

THE prize distribution of the Banwarilal High School at Sirajganj, came off recently under the presidency of Mr. G. T. Lloyd, the Sub-Divisional Officer. Mrs. Lloyd gave away the prizes. The school premises were elegantly decorated with garlands and festoons. There was a large gathering of the local gentry and the whole Ceremony was performed with great *eclat*. When the Secretary had read the report of the school for the year 1908-09. The boys very nicely recited some well-chosen

Poems and Dialogues in English Sanskrit, Bengalee and Persian. The Gentlemen present then addressed the boys. The ceremony began and ended with two songs, sung by a pupil of the school. Both the teachers and the boys were highly pleased with the kindly and affable manners of the Sub-Divisional Officer and his wife. The School, though a very useful institution of nearly half a century standing, has of late been labouring under pecuniary difficulties. The East Bengal Government has been approached for a substantial recurring grant and a capital grant for the extension of the school buildings. If the Government fail to meet the demand, it is hoped that public sympathy, particularly that of the benevolent and high minded Zemindar Rajarshi Rai Banamalai, Rao Bahadur of Banwarinagar, the Patron of the school, will not be found wanting.

THE *Calcutta Gazette* publishes the following resolution :—

THE College will be opened on Monday, the 5th July, 1909. It will be under the direct management of a Governing body, consisting of the Vice-Chancellor, three Judges of the Calcutta High Court, the Advocate-General of Bengal, the Senior Government Pleader of the High Court, the Director of Public Instruction of Bengal, the Legal Remembrancer to the Government of Bengal, three Representatives of the Faculty of Law, one Representative of the Incorporated Law Society, the Principal of the College and two Representatives of the College staff.

COLLEGE STAFF.

The following Gentlemen have been appointed:—

PRINCIPAL.

Dr. Satischandra Bagchi, B.A., (Cantab), L.L.D, (Dublin) Bar-at-Law

PROFESSORS.

Babu Golapchandra Sarkar, Sastri, M.A., B.L., Dean of the Faculty of Law.

Babu Haradhan Nag, M.A., B.L., late Law Lecturer Berhampore College.

ASSISTANT PROFESSORS.

Mr. Harendranath Sen, M.A., B.L., Bar-at-Law; Mr. Subodhchandra Ray, B.A., LL.B, (Cantab), Bar-at-Law; Mr. Nirmalchandra Sen M.A., Bar-at-Law; Dr. Abdullah-al-Mamun Suhrawardy, M.A., PH.D., D. LT., L.L.D., Bar-at-Law; Babu Jyotiprasad Sarbadhikari, M.A., B.L., Vakil, High Court; Babu Haraprasad Chatterjee, M.A., B.L., Vakil High Court; Babu Asutosh Mukherjee, M.A., B.L., Vakil High Court; Babu Birajmohan Majumdar M.A., B.L., Vakil, High Court.

Arrangements will be made for a systematic course of Lectures, Moot Courts, and regular Exercises. Facility will also be given to students to read in the College Library after the College hours under the supervision of the Principal or a member of the staff.

The College fees will be Rs. 6 per month.

Eight Scholarships of Rs. 10 a month tenable for one year, have been established. Four of these will be open to competition among students of the first-year class, and the other four among the students of the second year class. The Scholarships will be awarded towards the end of September upon the result of a College test to be held at that time. They will take effect retrospectively from July. In future years, the Scholarships tenable by second year students will be awarded upon the result of a College test to be held at the end of the first year.

Two Scholarships of Rs. 32 a month, each tenable for two years, have been established to be open to competition among students who have prosecuted their studies in the University Law College not less than a year. The award will be made upon the result of the Final Examination in Law and on condition that the recipients do prosecute a course of study for the M. L. Examination under the direction of the Principal.

Provision will also be made for the residence of students who do not reside with their parents or guardians. Such students must apply on or before the 15th June, 1909.

Students are recommended in all cases to take their admission before the 1st July, 1909.

The first-year class and the second year class will be opened simultaneously.

The College classes will be held ordinarily from 9 A.M., to 12-30 P. M.

All applications for admission are to be addressed to the Registrar, Senate House, Calcutta, to whom any application for further information may be sent.

WE are glad to learn that the Nadia College of Pandits, the President of which is the Honorable Mr. Justice Ashutosh Mukherjee, has conferred upon Babu Panchanan Mukherjee the title of "Vidyabhusan." Babu Panchanan Mukherjee is a son of the late Rai Radhika Prosono Mukherjee Bahadur, C.I.E., Inspector of Schools, Presidency Circle. He is an orthodox Hindu and a good English and Sanskrit scholar. He has taken great interest in education and advancement of literature. He is a member of the Asiatic Society of Bengal, and the only native member of Numismatic Committee for seven years from 1898. He is a Life Member of the Indian Association for the Cultivation of Science, and also a member of the "Bangiya Sahitya Parishad" and "Sahitya Sava."

IT has been settled that Col. Harris I M S. will officiate for Col. Lukis, as Principal of the Calcutta Medical College, but as a senior member he will shortly be promoted to an administrative appointment. Col. Drury succeeds Col. Harris as Second Physician,

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COLONEL Lukis, Principal, Calcutta Medical College, has been appointed Director-General of the Indian Medical Service.

FIVE Indian lady candidates have passed the First Preliminary and Scientific Examination of Calcutta University under the new regulations. Indian ladies have always taken kindly to medicine, the first batch of Bengali lady graduates being Miss Candra Mukhi Bose and Mrs. Kadamboni Ganguli who passed their M.B. with great credit.

IT is stated that Mr. Bepin Behary Gupta, Principal of the Ravenshaw College, Cuttack, has been appointed Principal of Hooghly College in place of Mr. J.N. Das Gupta, who is expected to join the Calcutta Presidency College.

IT is understood that landed property, valued at Rs. 4,00,000, has been bequeathed in Trust for the establishment of a Hindu Free School in Calcutta and for other charities by the late Babu Gobin Chand Dhur, Colootollah, Calcutta.

THE post of Superintendent of Industrial and Technical Institutions recently sanctioned for Bengal by the Secretary of State, will be filled up by an Officer selected in England.

A HOSTEL for 108 boys is going to be constructed in connection with the Ranchodlal Chhotalal High School, Ahmedabad. The cost of the hostel is roughly estimated at Rs. 67000 and out of this Rs.35000 are promised by Mr. Chinubhai Madhavlal, C.I.E., on conditon that the hostel be named after the name of his deceased father. The balance of the cost will be borne by Government.

THE Tejnarain Jubilee College, Bhagalpur, is to be raised to the status of a first-grade College.

PANJAUB.

A HOSTEL for Hindu and Mahomedan girls and widows has been established in connection with the Isabla Thoburn College. The hostel is enclosed with high walls and strict *pardah* is observed. The Course includes Cooking, House-keeping, Gardening, Urdu, Hindi accounts, History, Geography and Drawing.

THE Punjaub University B. A. examination result is out. Out of some 400 candidates only 161 are declared successful, the number of non-Hindus being below 40. Lala Budhu Ram of the D A.V. College stands first, securing 319 marks. Another D.A.V., student Lala Lekh Raj stands fourth, the students standing second and third belonging to the F. C. College.

THE following telegram has been received from Haji Abdul Karim Jamal of Rangoon, on behalf of the Muslim community of Burma:—"I have pleasure in forwarding an invitation to the members of the All India Mahomedan Educational Conference to hold their next annual meeting in Rangoon, and trust that the committee will be pleased to accept this invitation, as we think it will tend to create general interest in education."

LALA Ganesh Datta, B.A., late student of the D.A.V. College, Lahore, and son of Lala Jhinda Ram, Pleader, D. I. Khan, has successfully passed the Final Examination of the Royal Agricultural College, Cirencester (England) and has been awarded the Honours Degree, M.R.A.C., in Agricultural Forestry. The Principal, when awarding him the Diploma in open meeting, we are told, spoke very highly of him and praised the enormous amount of hard work he had done. Mrs. Ganesh Datta, the wife of Mr. Ganesh Datta, B.A., M R A C., who is in England with her husband, has qualified herself in Midwifery after receiving regular training for several months in a Midwifery Institution. She has passed the Final Examination of the Central Midwifery Board, London, and has been awarded the Diploma C.M.B.

IN order to encourage propagation of good and useful literature in vernaculars, the Punjab Text Book Committee have spent over Rs. 2,500 in purchasing thirty one different works of various kinds for distribution among schools. The Committee have decided, as experimental measure, to publish a list of translation into vernaculars of healthy and useful publications approved by them. This will enable the public to know what books are worth reading.

THE death at Lahore from cholera is reported of Mr. Wyatt James, Professor, Government College, Lahore.

A SUB-committee of the Syndicate of the Punjab University consisting of five members, one from each of the faculties of arts, law, science, medicine and oriental learning, has been appointed to consider and report on the whole question of the remuneration to be paid to Exminers. In order to retrench expenditure incurred on inspection and travelling allowances, it has been decided that ordinarily the Committee of Inspection should consist of not more than three Members, including the Registrar, and that the Fellows of the University coming to Lahore to attend meetings of the University, should be paid actual railway fare expended by them up to the maximun of first class railway fare each way, and actual expenses incurred in Lahore up to the maximum of Rs. 5 a day.

THE annual report of the Board of Scientific Advice for the year 1907-08 is published, describing the work accomplished in the various Scientific Departments of Government.

Dr. Leather and Mr. Hooper give particulars of the number of analyses of oil seeds, indigo and excisable articles. Mr. Purna Singh has a paper on

the investigations in connection with the improvement of cutch as a dyeing agent and its preparation from *Acacia catechu*.

Dr. Gilbert Walker discusses astronomical and meteorological inquiries conducted by his department during the year, including some highly ingenious experiments with balloons for ascertaining the conditions obtaining in the higher strata of the atmosphere.

Sir Thomas Holland summarises the results of a number of economic and other investigations conducted by members of his staff during the year, including inquiries connected with iron, manganese, mica, copper, coal, gold, petroleum, silver, lead and tin.

Colonel Burrard discusses the work of the Survey of India Department, including Dr. Stein's explorations in Turkestan.

Mr. W. W. Smith discusses the work of the botanical survey, and Messrs. A. Howard, E. J. Butler, R. S. Hole, A. M. Caccia, A. J. Gibson, N. Annandale, H. Maxwell Lefroy, E. B. Stebbing, Colonel H. T. Pease and Mr. W. R. Dunstan give particulars of the investigations upon which they and their co-adjutors have been engaged during the the year.

The report also contains details of the programme for the year, which is now passed as approved in May last.

IN replying to the address of the Chief Khalsa Diwan at the prize distribution of the Khalsa Orphange at Amritsar, Sir Louis Dane dealt with the controversy of Punjabi *v.* Urdu and pointed out the difficulties of standardizing the Punjabi language for educational purposes. He sympatnised, as, having spent so much of his district life in the Central Punjab, he was of course bound so to sympathise, with the Chief Khalsa Diwan's desire to improve their language and enrich its literature. "It has," he said, "strong vitality, or it would have been crushed out of existence ere this, and therefore you may succeed in making it the dominant language of the Province for all purposes. But the time is hardly ripe for declaring that it shall be the medium of instruction throughout all schools, if by that is meant that all school books shall be written in some standardized form of the language." He was afraid that Government must adhere to Urdu as the vehicle of general higher education, but that Urdu, he considered, should be made as simple as possible and should approximate as closely as might be to the spoken language of the people. While not wishing to dogmatise, His Honour's inclinations were in favour of classical Urdu. At the same time he was quite prepared to believe that a well-thought-out linguistic combination of Urdu and Punjabi was an attainable ideal if only the leaders of thought would combine their efforts for the common good of the whole of the people.

Referring to the Sikhs and the reforms he said: "As to this I can only say that the importance of the Sikhs in this Province in spite of the relative smallness of their numbers has never been lost sight of, and due representation will be secured for them on the new Legislative Councils. On district and municipal committees, to the best of my belief, they have already secured a reasonable voice, and as the number of educated Sikhs increases so will their influence grow on all these representative bodies. I thank you for your expressions of royalty to the British Raj, and of good-will to myself, and I wish the Chief Khalsa Diwan all success in his task of educating and improving the condition of the Sikhs, whose interest the British Government must always have at heart."

ALLAHABAD.

THE *Observer*, the 'Allahabad Mahomedan Weekly,' writes, that there has been no perceptible improvement in the situation at the Aligarh College, and relations between the trustees and the staff do not appear to have arrived at a satisfactory stage at all. The issues involved are plain and simple, viz., which is to be the ultimate authority of the College affairs, trustees or staff? The Moslems cannot allow the College to drift, in however disguised a form, into the control of any, but non-moslems, and if the staff cannot see eye to eye with this basal principle of the administration at the M. A. O. College, then the sooner they bid good bye to Aligarh the better for themselves, as well as for smooth working of the College itself.

TRAVANCORE.

His Highness' Government resolve to issue for public information the report of the Committee appointed in G.O. No. E. 1205, dated 27th March 1908, for the revision of the Curricula of Studies &c. Orders have already been issued directing the adoption, during 1909, in all Sirkar English Schools, of the revised curricula recommended by the Committee for Forms IV, V and VI. The other suggestions of the Committee are under the consideration of the Director and Dr. Mitchell has been informed that His Highness' Government look to him to recommend such further action as may appear necessary. The Director has been instructed to convey the thanks of Government to the Chairman, Mr. Hodgson, and to the other members of the Committee, for their excellent report.

INDIA: GENERAL.

THE future of high education appears to be very gloomy. There are ominous indications on all sides that higher education is in danger of being placed beyond the reach of the general population. Lord Curzon characterised high education as a luxury for the rich and so the recent University regulations are making it with a vengeance as costly as could be. These measures are not only calculated to endanger high education, but even to put secondary education at considerable disadvantage. Thus while the University instead of facilitating the spread of education in the country is placing obstacles in its way the Government is also seriously hampering it by withdrawing its support which at one time it so lavishly bestowed. It had been a rule with the Government to maintain a first grade college in every Division of the Lower Province. The Hugli College, the Krishnaghur College, Ravenshaw College, Patna College are all evidences of the desire of the Government in giving effect to the historical promises of Macaulay and fostering high education as befitting an enlightened Government like that of the English. There were instances when some of the Divisions possessed more than one college, as the Midnapore College in the Burdwan Division and the Berhampore College in the Presidency Division over and above the Colleges at Hughly and Krishnaghur. But the former education policy has now changed and retrenchment is being made in the direction where more expenditure is certainly needed.—"The Hindoo Patriot."

A MOVEMENT is now on foot to establish a University in Ceylon. A deputation of the Singalese members of the Legislative Council and others interested in the matter was to wait on the Colonial Secretary after the Easter holidays to discuss the question.

THE Maharaja of Mysore has sanctioned a special scholarship of £200 a year, tenable for three years, to Mir Basit Ali Khan, the second son of Mr. T. N. Mir Kamalude Ali Khan, retired Assistant Commissioner and Huzur Musahib, in order to continue his studies in England to qualify for the Bar. The young man is a scion of Tippu Sultan's family and he was formerly a student at the Aligarh College.

Foreign Notes.

GREAT BRITAIN.

THE Syndics of the Cambridge University Press will publish this spring a volume of essays in commemoration of the centenary of the birth of Darwin and of the fiftieth anniversary of the publication of *The Origin of Species*. The volume, which is meant for the educated layman rather than for the expert will be entitled *Darwin and Modern Science* and will contain two portraits of Darwin. The essays will be preceded by an introductory letter from Sir Joseph Hooker to Professor Seward, the editor, and by a short biographical epitome including the dates of publication of Darwin's books and of the principal events in his life.

A LECTURERSHIP for teaching Japanese is being created at Oxford.

WITH reference to the memorial for the return of the Spencer lectureship endowment of Krishna Varma, the Hebdomadal Council of Oxford has consulted Counsel, who have replied that no such action can be taken under the constitution of the Trust, but the object of the memorialists may be attained through the reluctance of distinguished men to accept the lectureship endowed by Krishnavarma.

SIR M. M. Bhownaggree and Messrs. Dube, Latif, Major, Ameer Ali, and Sinha will be the members of the Advisory Committee for Indian students, with which the Bureau for supply of information will co-operate.

LORD Curzon's scheme of reforms of Oxford University has been published. It proposes the establishment of a more representative Council, the strengthening of Convocation, increased facilities for poor artisans and professionals, reforms in connection with scholarships and finances, and the abolition of compulsory Greek in Responsions.

MR. Andrew Carnegie has given £ 400,000 to Hamilton College, Clinton, New York, to commemorate Mr. Root's services in the cause of international peace.

READY SHORTLY

POPE:

RAPE OF THE LOCK

WITH INTRODUCTION AND NOTES

BY

E. E. KELLETT ESQ., M.A.

SRINIVASA VARADACHARI & CO., TRIPLICANE & ESPLANADE, MADRAS.

The Educational Review.

Bombay Educational Conference.

Under the auspices of the Teachers' Association of Bombay an educational Conference was recently held for the discussion of certain questions relating to secondary education. Of these questions the most important appears to be that of having a public test at the end of the secondary course. Mr. Wren, Principal of the Government Teachers' College, characterised all examinations as a curse and advocated the abolition of examinations from the village school to the university. He put forward for the consideration of the Conference the following questions: Do teachers exist for the betterment of children or for the placation, glorification, and in fact, apotheosis of the examiner? Is the end and aim of education the development of the characters, minds and bodies of the rising generation, or the sweating of unfortunate children by unfortunate teachers for examination, to their actual detriment in mind and body? Are examinations made for man or is man made for examinations? Has not the time arrived when educationists should turn their attention to education, and leave examination to such people as voluntarily sought it? We agree with Principal Wren in considering public examinations to be an unmitigated evil. But we do not regard all examinations as a curse. Examinations are good servants but bad masters. They are not capable of testing the powers of thinking. Yet they furnish us a means of testing the possession of a certain amount of knowledge. Examinations properly conducted by the teachers themselves, assisted if necessary by outside examiners, will prove helpful to progress, but examinations, conducted by outside examiners wholly unconnected with teaching, are not likely to lead to any beneficial results. They naturally lead to mere memory-training, a discipline which alone pays in public examinations. It is not so much public examinations that have proved injurious to the best interests of education in India as the holding of these examinations in the English language which is entirely foreign to most Indians. If public examinations were conducted in all subjects except English in the vernaculars of the candidates, much of the evil connected with these examinations would disappear.

Practical Work and Class Instruction.

A man's knowledge is of two kinds. Some of it he has obtained by experience, and the rest is not so much knowledge as belief. The first is absolutely necessary in order to accept or reject the statements of others. Hence, in the imparting of knowledge the student should be made to acquire certain facts at first hand and then these should be amplified and extended by the teacher. This brings out clearly what should be the relation between practical work and class instruction. The aim of the former is to provide that small nucleus of practical experience which will enable the student to assimilate the information derived from the teacher or text-book. Class teaching without any laboratory work and laboratory work without any class teaching are equally bad. Though there is a peculiar permanence about knowledge obtained in the laboratory, yet the isolated facts, to which most of the experiments in the laboratory lead, do not constitute useful knowledge. Knowledge, which is capable of growth and which is of value in intelligent pratice, consists not of isolated facts but of facts logically related to one another. Only those broad generalizations which connect and explain a large number of facts prove to be of real value. Conclusions drawn from simple laboratory work rest on insecure basis. There is not enough time for each student to carry out anything like a complete investigation. But the class lesson will enable the student to grasp the extension of the facts he has found out for himself in the laboratory. Without the class lesson there is always the danger of the practical exercise proving to be a waste of time. The younger and more elementary the students, the greater is the necessity for practical work, but as the students become older and more advanced, the less is the necessity for individual work in the laboratory. Increase of practical work beyond a certain stage does not necessarily imply increase of efficiency of instruction but it means slower progress. Further, there are many experiments which on the ground of expense or manual dexterity cannot be left to individual students, but which the teacher can perform with the aid of apparatus simple and large enough to enable the students to see the results as clearly as though they were performing the experiments themselves. A good teacher will always be in a position to decide for himself the relative amounts of practical work and class teaching.

The function of the Text Book in the Teaching of English.

It is a mistake to suppose that a textbook is indispensable for the teaching of English. A good teacher, might under suitable conditions, successfully conduct a class in English through the whole course of the primary and secondary schools without any text book whatever. Still the text book has its uses. It economizes the time and energy of the teacher by bringing together materials, such as selections exercises, pictures, and principles, which the teacher himself could not bring together without great labour and expense. It also economizes the pupil's time and energy, since it places in his hands in compact, convenient and permanent form, what otherwise would be scattered in his mind, in his notebook, in the library, or on the blackboard. The teacher should regard the textbook as a friend and ally, but not as a dictator or tyrant to be slavishly followed. A good textbook in English ought to supplement and fortify the teacher's work in two respects. In the first place it should make the practice of writing and speaking seem natural and necessary to the child. In the second place it should cultivate in the child a sense for the idiom and traditions of the English language. A textbook in English ought to set before the pupil choice specimens of prose and poetry adapted to his stage of development, to ask live, pointed and thought-provoking questions about his reading, his ideas, his observations and his experiences; to provide an abundance of novel exercises in composition, touching a great variety of youthful interests and so framed as to awaken in the pupil to express his own ideas and communicate them to others; to call his attention gradually and progressively to the recognised forms and formalities of speech and to disclose to him, when he is ready for them, the principles that underlie the effective use of the English language. The final test of a good textbook in English is its effect upon the thoughts and character of the pupil. If with a good teacher behind it, a textbook, as Professor John Dewey puts it, "removes friction, frees activity, economizes effort, makes for richer results", it is good; otherwise, it is bad and should be rejected.

How to teach Geometry.

The Board of Education in England has published a circular on the teaching of geometry and graphic algebra in sec[illegible]

ary schools. In it are embodied the experiences gained by the officers of the Board during the seven years since the adoption in English secondary schools of the recommendations of the Committee of the Mathematical Association on the teaching of elementary geometry. While admitting that the general effect of the adoption of these recommendations has been beneficial as regards the teaching of geometry, the circular points out the error of those who "in thinking practical work everything, have sacrificed the training in rigid deduction which is an essential element in school geometry." The introduction of practical work with instruments, which is a distinguishing feature of most modern schemes, has led to a plethora of aimless constructional work. Though a whole year, sometimes even two, is given to such practical work, the results, says the circular, are seldom or never good, and the time may be regarded as pretty nearly wasted. The circular therefore lays stress on the close interdependence between practice and theory. Practical work must mean something more than mere manipulation of compasses and set squares. The first part of the circular deals with the teaching of geometry, while the second part deals with graphs. The work in geometry is divided into three stages. The first stage consists in gaining familiarity with and clearness of perception of fundamental geometrical concepts by means of observation of the common facts of life and practical work. The scope and accuracy of this practical work should be strictly limited to this end. The concepts to be dealt with in this stage are solid, surface, line, point, volume, area, length, direction, angle, parallelism. Practical work on shapes of plane figures, &c. should be omitted here; pr[illegible] outsid[illegible] constructions will be acquired in later stages as they arise naturally. Definitions should be avoided, but emphasis should be laid on the right use of words. Axioms and postulates should not be learnt, or even mentioned. In the second stage a knowledge should be required of certain fundamental propositions on angles, parallels and congruence of triangles as a broader basis of "axiom and postulate" than that adopted by Euclid on which to build deductive geometry. These should be based on intuition and reinforced by practical work, and the enunciations should be accurately learnt. Neatness of drawing must be further practised, and its accuracy checked numerically. Riders should not be introduced at this stage. The third stage consists of a logical course of deductive geometry, based on the fundamental concepts and propositions. This deductive course must be approached by original work, new propositions being presented as riders and practical work increased when a new idea has to be assimilated. Practical work must never form an end in itself; it should generally be in advance of previous knowledge, and may with advantage go beyond what is intended to be dealt with theoretically. The student must become capable of solving problems and riders. Graphs should be taught not as an introduction to analytical geometry but as an introduction to elementary algebra. Graphic work should not be treated as an end in itself. After the usual plotting of discontinuous statistics, the graphical work should deal with explicit non-linear functions which illustrate the general nature of algebraic expressions. The graphic solution of equations should follow with arithmetical verification of results. The above summary of the circular will prove the necessity of a thoughtful study of it by every one interested in the teaching of mathematics.

Teaching in Our Colleges.

It is a lamentable truth that much of the teaching done in our colleges is in entire violation of all pedagogical principles. Many of the college instructors, who proudly call themselves professors, are not real teachers. Whether their inefficiency is due to indifference, indolence, or conceit, it is indeed surprising that while in primary and secondary education there is a feverish activity in developing new and better methods of instruction, those who are engaged in collegiate education are clinging to a relic of medievalism. They either take up some prescribed textbooks and interpret them, or dictate notes from their manuscripts as to an amanuensis, reading so slowly that it is easy to obtain a verbatim report in longhand. A good teacher will no doubt mention good text-books and recommend their use; he will repeatedly refer to them and base his own expositions on them. But he will not make himself absolutely dependent on them. Absolute dependence on a textbook has a tendency to degenerate into too great a regard for non-essentials and utter disregard of essentials. It is only when the teacher and student are together constructing the science, as it were, in the course of the teaching there will be real pleasure and profit in the work. The method of dictating contradicts the very purpose of teaching. The aim of all collegiate teaching is the spontaneous communication of thought followed by its spontaneous comprehension. This is rendered impossible by the method of dictating notes or lectures. This plan may put the student in possession of a manuscript book, containing the full text of the lectures, but this is a ridiculously small item of profit to be placed over against the waste of time and effort and other disadvantages. It is in these days of the printing press a reversion to the medieval process. It can create only a mechanical activity but no inner interest on the part of either the student or the teacher. What holds the students in lecture courses employing the dictation-method is an external compulsion, either obedience to certain rules imposed by the Universities or the satisfaction of a professor-examiner. No wonder that the teaching in our colleges, except in a few cases, has degenerated into mere unintelligent cram.

The teaching of Arithmetic.

The January number of *Teachers' College Record* published by the University of Columbia, New York, contains a valuable monograph on the teaching of arithmetic by Professor David Eugene Smith of the Teachers' College, Columbia University. The monograph extends over nearly hundred pages and deals with all aspects of the subject of teaching arithmetic in secondary schools. To the question, what arithmetic should include, the professor gives the following answer:

"If we taught arithmetic only for its utilitarian value, to fit a person for the computations that the average man needs to perform or know about in daily life, the range of subject matter would not be great. Addition particularly of money, but not involving very large or numerous amounts is probably the most important topic. Perhaps, for it is difficult to say with certainty, the simple fractions $\frac{1}{2}$ and $\frac{1}{4}$ are next in line of relative importance, including $\frac{1}{2}$ of a sum of money, $\frac{1}{4}$ of a length or weight, and so on. Very likely the making of change, one of the forms of subtraction, is next in frequency of use. Then may come easy multiplications, to find the cost of 5lbs of sugar, or of 16yds. of cloth, gi-

mining and mental industries; (3) international economy and colonial politics; (4) banks and banking; (5) science of finance; (6) life insurance; (7) protection of labourers. Special lectures will be given on state and private railway systems; the economical workings of railways and railway traffic; fundamental principles of political economy; securities; and exchange and settlement of accounts, &c. The hours of instruction are mostly in the evening, as the school is intended for those who cannot devote their whole time thereto. The course consists of four terms of six months each. The school is supported by the City of Mannheim and is under the direction of the minister of justice and public instruction of the Duchy of Baden. The students of the school have the privilege of attending lectures at the University of Heidelberg, which can be reached by train in twenty minutes.

The Public Library and the School.

We have few public libraries in India and much less any co-operation between the existing libraries and schools. Nevertheless it is interesting to note what is being done elsewhere in this direction. Mr. Albert E. Roberts of Islington Training College has contributed to the *Journal of Education* a paper containing useful and suggestive hints on the subject of co-operation between the school and the public library. If the public library is to become a powerful instrument for good, then it must be made attractive and inviting, access to its shelves must be easy, and competent guidance and assistance must be provided for all those who are willing to become readers; but its influence will not be wide and far reaching unless it caters for readers of all ages and of all ranks. In America these ideas have been realized and put steadily into practice. The books belonging to the libraries are conveyed in cases to establishments of almost every kind—to orphan asylums, workhouses, and police stations, and even to the detention rooms of the juvenile courts. In the various libraries there are separate rooms set apart for children, and the books contained in them are the subject of careful and judicious selection. On Saturday mornings the story-hour for the children is held in the libraries of most large towns, when they hear once more the tales of folklore and mythology, stories of American pioneers, and stories from Chaucer, Spenser and Shakespeare. As the anniversaries of national statesmen, writers, explorers, and philanthropists come round, special care is taken to make the libraries into vehicles of instructive and stimulating information on the lives of those who are being successively commemorated. Another point to which Mr. Roberts directs attention is the utilisation of the books of the libraries outside the buildings themselves. If there are certain sections of the public to whom reading would be beneficial and yet will not resort to public libraries, some means must be found for circulating the books among them, and in no grade of public life will this be attended with better results than among the school-going population. Hence every public library in the United States contains a children's department by means of which books may be distributed to the schools of the neighbourhood. In the United States the teacher can obtain the books he wants for his pupils either personally or by written application, and in some places there is communication by telephone between the public library and all the city schools. Again at some of the public libraries portraits of authors, pictures, of scenes in various parts of the world, and reproductions of the works of great artists, the whole of

which are obtained from such waste material as old magazines, are mounted on manilla board, labelled, classified, and lent to the schools, and it is reported that in one city some thirty thousand sets of such illustrations were sent out to the schools during last year alone.

Education in China.

The Chinese Board of Education has recently issued ten regulations governing educational matters throughout the empire. Some of them are the following:

"Every capital city must have at least one hundred primary schools and minimum of five thousand students. All prefectures and districts must have at least forty schools and a minimum of two thousand students.

"Every child at the age of seven years shall be compelled to attend school.

"Any official succeeding in persuading gentry to found schools shall be rewarded.

"The parents of any child of seven years of age or over shall be held responsible for the attendance at school of such child, and will be punished in the event of its failure to attend.

"All prefects and magistrates who fail to obtain the stipulated number of schools and students in their respective districts will be punished."

Would that such things were possible in India?

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We have received from Mr. C. V. Swaminatha Iyer a copy of "the Unity of Religion and the Variety of Creeds".....which is to be read before the forthcoming Congress of Religions with a specially written thesis on "Religion and Religions" which maintains that the various religions of India are but so many facets of one true Religion—the Religion of Truth.—*The Madras Mail*.

"*The Unity of Religion and the Variety of Creeds* is the title of an excellent little brochure, comprising an Essay on the subject read by Mr. C. V. Swaminatha Iyer, the well-known Editor of the *Viveka Chintamani* at the Ranade Hall, Mylapore, in April last. Mr. Swaminatha Iyer is widely known for his religious piety and Vedantic culture, and in the present instance, he, with admirable spirit, sets forth the Vedantic Ideal of life in the light of modern principles of Science, defining the Laws of Life-governing Thought. The Essayist brings to his task all earnest and genuine study of comparative Religion, and in our opinion, he is rendering a real service to the complex religious Life of India by endeavouring to rise above disputes upon secondary matters, and focussing attention on those elements of absolute Truth which are of permaneat validity and of universal application. Various quotations from the Bible and the writings of Western Savants, Emerson and Mæterlink, and of Indian Saints like *Tiruvalluvar* and *Thyumanavar*, have been set forth to point to the realisation of the Unity of Religion, though the number of Creeds in the World is legion, "each having a significance of its own and a relation to the whole. The average Indian Reader will feel at home in the Author's line of Vedantic thought, while, we are sure, the attempt at reconciling Vedanta with the Western conception of Thought-Energy will afford mental food for him. And the Vedanta ideal Life which is most maligned though least understood by some of its Western critics, will, we are sure, attract to itself their thoughtful attention by the Author's spirited exposition of it. In short, the publication should be in the hands of every one who is disposed to inquire into the real Spirit of Universal Religion, although one cannot always travel with the author in his mystic wanderings in the regions of Yóga practice."—*The United India and Native States*.

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I have known Sowbhagyavati LAKSHMIDAVAMMA for some time. I consider she is a respectable lady of good manners and amiable disposition. She has reputation as a Native eye doctor, some of her patients were exhibited to me and they admitted that they had been successfully cured by her of obstinate cases of eye disease.

(Sd.) M. O. PARTHASARATHY AIYANGAR,
District Judge.

TRIPLICANE, MADRAS, 1st July 1908.

VELLORE LAKSHMIDAVAMMA has been known to me as a Lady Doctor for some time past. My son has been under her treatment for some time past on account of weak sight He has received benefit from her treatment. From what I hear of her I am able to state that she possesses a good reputation for skill in treatment of eye diseases.

(Sd) T. P. KODANDARAMA IYER, B.A., B.L.,
High Court Vakil, Triplicane.

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ON THE TEACHING OF MATHEMATICS.

AT present it is the practice to make a rigid differentiation between any two parts of mathematics in its elementary stages. This, I consider to be useless and deteriorating the value of that subject. Thus, a student is prohibited from doing a question in Arithmetic by Algebra, a problem in Geometry by Trigonometry, or one in Geometrical conics by Analytical conics. The fact that the Algebraic, Trigonometric, or Analytic method is simpler, more elegant and easier understood by the student than the Arithmetic or Geometric one goes for nothing. This course, which I may call a bigoted one, is, I venture to think, most harmful and pernicious to any advanced progress in the subject. Further the educational value of these tactics is also somewhat problematic. In many cases the solution of a question in Arithmetic can be clearly understood only if the Algebraic method is known; and in the case of some difficult problems in Arithmetic, I am not wide of the mark when I say that the Arithmetic method is, in most cases, *a translation or expansion* of the Algebraic one. For x, the symbol we use for the unknown quantity in Algebra, the full name of the quantity to be found is given; in other respects the method is the same. I will give some examples.

Ex. 1. The cost of 3 cows and 2 sheep is Rs. 145 while that of 1 cow and 1 sheep is Rs. 50. Find the cost of a cow and a sheep.

The student is, if I am not mistaken, asked to work this as follows.

The cost of 3 cows and 2 sheep is Rs. 145.
That of 1 cow and 1 sheep is Rs. 50.
Multiplying this by 2,

the cost of 2 cows and 2 sheep is Rs. 100.
Subtracting this from the first, we get the cost of a cow to be Rs. 45.

$\therefore$ the cost of a sheep is Rs. 5.

whereas, denoting the cost of a cow by c Rs. and that of a sheep by s Rs., this could have been worked as follows.

$$3c+2s=145.$$
$$c+s=50.$$

Multplying by 2, $2c+2s=100.$
Subtracting from (1), $c=45.$
$\therefore s=5.$

Thus the costs of a cow and a sheep are Rs. 45 and Rs. 5 respectively.

I would now ask in what the excellence of the first method consists. I could think of nothing but the valuable time lost in putting down on paper so many words that could have been omitted with advantage. And further look at the absurdity of this. A boy is not, I believe, supposed to know anything of simultaneous equations until he is in the

sixth form and yet in the first form, (the sum I have given above is set to be worked in that form), he is asked to solve a question which depends on a knowledge of this. Probably, the fact that the student does not know what a simultaneous equation is, may make a difference, and as Gray says "where ignorance is bliss, it is folly to be wise."

The objection that may be advanced for the working by Algebra will be, that the student's mind cannot at this stage, be made to adapt itself to calling a cow by *c* and a sheep by *s*. If this be so, I think that it is based on a profound ignorance of the psychology of children's minds. I have seen youngsters and girls of 5 or 6 playing, making some such convention like this, *i.e.*, that they would call any object by some letter.

Ex. 2. Take again this example which is worked out as follows on p. 246 of 'the Lower Secondary Arithmetic' by Mr. J. S. Devasahayam.

"*A gentleman distributed in charity 100 shillings among 100 women and children giving to each woman 14 d. and each child 9d. How many women and how many children were there?*

If all were women, he would have to give $100 \times 14d.$ or $1400d.$

But he had only $100s$ or $1200d.$

∴ He would require $1400d.$ $1200d.$ or $200d.$ more.

Since $14d - 9d.$ or $5d.$ is saved on 1 child,

$1d.$ ... ... $\frac{1}{5}$ child,

∴ $200d.$ ... ... $\frac{200}{5}$ or 40 children.

∴ There were 40 children and (100—40) or 60 women."

Compare this with the working by Algebra. Denote the number of women by w; then the number of children is $100 - w$.

Each woman gets $14d.$

∴ w women get $14w\,d.$ [I don't anticipate any difficulty in making a child understand this]

Each child gets $9d.$

∴ $(100 - w)$ children get $900 - 9w\,d.$

∴ the women and children both get $14w + 900 - 9w$ or $900 + 5w\,d.$

But they get $100s.$ or $1200d.$

∴ $900 + 5w = 1200.$

∴ $5w = 300$, subtracting 900.

∴ $w = 60.$

∴ the number of women is 60 and the children 40.

I think the steps in the second method can be more easily understood than those in the first one. I am sure that the student will be non-plussed, if he be required to *explain* his method.

The solutions given in Arithmetic, for that class of problems which should properly be done by Algebra, will not convey any meaning to the students for whom they are intended. The algebraic method is much simpler and more comprehensible than the arithmetic one, and I don't see any reason why this should be sacrificed just to satisfy a flimsy objection. We don't tolerate official red-tapism but we see no objection to this mathematical red-tapism, for this deserves no better name.

The consequence of the prohibition now being put is, that the average student never attempts those sums in arithmetic which appear to him difficult to be worked arithmetically. This should certainly be regretted. The only way to meet this difficulty is to remove the line of demarcation between Arithmetic and Algebra, which, as I have stated already, is fraught with mischievous results. Till the third form, the pupils' attention *may* be confined to arithmetic *provided he is not made to work sums which could be done easier by Algebra.* In the High school classes, each problem should be worked only by the simplest method, Algebra or Arithmetic. Cumbrous working by Arithmetic for Arithmetic's sake is the most unprofitable kind of brain work that I know of. The method I consider best is for these subjects to be taught hand in hand, each process in Arithmetic being exemplified by the corresponding one in Algebra. Thus when the pupil has learnt the elements of addition and is able to say that 3 apples and 5 apples make 8 apples, he may be asked to represent an apple by its initial letter a and told that $3a + 5a = 8a$.

This may be developed by conversation as follows.

Teacher. You have 5 apples and 3 plantains. I give you 6 apples and 7 plantains. How many fruits have you now?

Pupil. 11 apples and 10 plantains.

Teacher. That is, the sum of 5 apples and 3 plantains and 6 apples and 7 plantains is 11 apples and 10 plantains.

Now, let us call an apple a and a plantain p. How would you then represent this result?

Pupil. The sum of $5a$, $3p$ and $6a$, $7p$ is $11a$, $10p$.

At this stage, the sign + can be introduced and the pupil told that this can be written as

$$5a + 3p + 6a + 7p = 11a + 10p.$$

The process of addition in Algebra could be derived from such examples. This will make the transition from Arithmetic to Algebra as easy as possible, at the same time removing the dryness almost always associated with the elementary portions of Algebra.

Under the new curriculum, Graphs have been introduced as an integral part of Algebra. They should also, I think, be made part of Arithmetic, no opportunity being lost for giving a graphical representation in all possible cases. At the same time, a clear idea of the *use* and *advantages* of the graph should be given to the pupil. I will illustrate a practical illustration in Algebra with reference to the simple formula.

$$(a+b)^2 = a^2 + b^2 + 2ab.$$

I know a number of students who believe that $(a+b)^2 = a^2 + b^2$. If a square be made of cardboard and the impossibility of dividing it into two other squares without leaving two equal rectangular pieces, the division being of course made as in Euc. II. 4., shown to the pupil, the absurdity of this result will be made quite evident to him.

In Geometry also, practical measurements have been introduced but I think that the work of the teacher should not cease with this. No pupil, however skilful, can be expected to measure angles quite correctly and some times in consequence of errors in measurement, erroneous ideas of the relations between angles may result. In these cases something more practical than mere measurements seems called for. Thus in the proposition [Euc. I. 32] that the sum of the three angles of any triangle is equal to two right angles, a practical illustration similar to the following may be used with advantage. Make a triangle of card board and cut the angles. [The student should be shown that the value of an angle is the same whatever the length of the containing sides may be]. Show that they could be placed on a straight line so as to cover the whole of it. As the pupil, at this stage, knows that the angles which one straight line makes with another straight

line on one side of it are together equal to two right angles, he may be asked to infer the truth of the proposition from this. On the other hand, if he be asked to measure each of the angles in degrees, minutes etc., and add them together, there will of course be a small difference between the total arrived at by him and 180°. This is likely to instil an idea of the falsity of Euclid's result in the too impressionable minds of youngsters, while the very suspicion of such an idea would be fatal from the standpoint of mathematics.

In all propositions in which it may be possible, practical demonstrations by means of figures made of card board may be given with advantage, the results being inferred from things proved to the eye. Thus Euc. I. 4 may be demonstrated with two triangles of an exactly similar shape cut from card board. By placing the two triangles on one another, the student may be asked to note the significance of the words "each to each" in the general enunciation. By taking other triangles, it should also be shown that, unless two sides are equal each to each and the angles contained by those sides are equal, the triangles will not coincide. Again the dissection proof of Euc. I. 47, which is now unworthily consigned to oblivion to the generality of students, may first be demonstrated before Euclid's proof is taught. This will enable him to grasp the details of the latter at once. The proof of the theorem that the angles in any segment of a circle are equal may be left to be inferred by the student, if he is provided with circular segments of card boards of the same size. He should be asked to cut triangles out of them in any manner, and by super-imposing the angles in the segment, he will be in a position to infer that they are equal.

An elementary idea of trigonometry seems indispensable for the better understanding of some of Euclid's propositions. Definitions of the trigonometrical ratios and their values for simple angles may probably be taught as soon as the student has a definite idea of a right angled triangle. The relations between the ratios which follow from Euclid I. 47 may also be taught as corollaries of that proposition. Theorems in concurrency may also, if the teacher thinks fit, be deduced by trigonometry, the student being asked to assume that the sides of a triangle are proportional to the sides of the opposite angles.

In connection with right angled triangles, simple problems on heights and distances may also be taught. This will not only give the student a clearer idea of the practical nature of geometry but will also, I think, heighten his interest in the subject. It must be admitted, though we should do it with regret, that students now-a-days take very little interest in Euclid's propositions, excepting, to use their favourite phrase "for the purpose of mugging up for examinations" and little or no interest in problems. Consequently whatever may tend to increase the interest, even by a little, should not be despised.

It is a well known fact that the beginnings of any subject, and especially so of mathematics are the hardest to master. Not only this but they are also the least interesting. All of us recognise that the proportion of Indian students having any *gusto* for mathematics is a very small one, and though remotely, this must be due to the fact that they don't find it as interesting as the other subjects. To compensate for the loss of interest, it seems advisable to introduce the motion of a particle as well as that of falling bodies in the High School Curriculum. From the student's stand point, I would welcome this

introduction. Anything that has a tinge of the natural in it, interests a child more than any problem, however important its results may be.

In conclusion, I would like to say that a teacher of mathematics should not think that his responsibility has ceased as soon as he has worked a sum on the black board. He must also see if the students have *understood* every step in his solution. A teacher who does not care to do this, I may compare to one holding a similar position in an oriental story. He was teaching his *chela* some subject, but his manner of doing that seems to have been so very interesting and impressive that the *chela* instead of attending to his *guru*, busied himself with watching the antics of a rat near by. When asked how much he had understood (how much of the subject had entered his head), the *chela* replied "Everything but the tail!" of course meaning that everything of the rat excepting its tail had entered its hole.

B. KRISHNAMACHARI.

A SYLLABUS IN EXPERIMENTAL GEOMETRY.

(Continued from page 191.)

SECTION V.

30. *Locus* as the path of a point moving so as to satisfy certain given conditions.

(1) Find a number of points at a given distance from a given fixed point. These lie on a circle; hence *circle as locus.*

(2) Find a number of points in a given direction with reference to a given point. They lie on a straight line, which is therefore the locus of such points.

31. *Applications of 30.*

(1) Find a point whose distances from two given points are given [from 30, (1)].

(2) Find a point whose directions with reference to two given points are known [from 30, (2)].

(3) Easy problems on the above.

32. *Angles of elevation and depression.*

If A and B are two points at different heights, the angle of elevation of A as seen from B is the same as the angle of depression of B as seen from A (by measurement).

Easy problems on the above.

SECTION VI.

On the Construction of Triangles.

33. *Construct a triangle, given an angle and the sides containing it.*

(1) Take the given angle and cut off lengths along the arms equal respectively to the given sides; join the points of section.

(2) Draw a number of triangles with the same measurements.

(3) Induction (by cutting out the triangles and superposition) of the Theorem, Euclid, I. 4.

34. *Construct a triangle with the three sides given.*

(1) Examine the lengths of the three sides in the light of 25.

(2) Then proceed as in 31, (1). Two solutions.

(3) Examine, by drawing figures, the possibility of the construction in cases where the conditions of 25 are not satisfied, *viz.*,

(*a*) when the sum of two sides = the third side;

(*b*) when the sum of two sides is less than the third side.

In either of these cases the construction fails. Why?

(4) Construct a number of triangles with the same set of lengths for the sides.

(5) Induction as in 33, (3) of Theorem. Euclid, I. 8.

35. *Equilateral triangles.*

A special case of 34.

(1) Construction of an equilateral triangle.

(2) Measure the angles. They are equal (each 60°). Hence *an equilateral triangle is also equiangular.*

36. *Isosceles triangles.*

(1) Construction of triangles when two of the given sides are equal; and explanation of the term *isosceles.*

(2) Induction (by measurement) of some theorems regarding isosceles triangles, *e.g.*,

(*a*) See 27, above;

(*b*) The bisector of the vertical angle bisects the base at right angles, and converse;

(*c*) The perpendicular from the vertex to the base bisects the vertical angle and the base;

(*d*) The *median* to the base bisects the vertical angle and is perp. to the base; etc.

37. *Construction of an angle equal to a given angle at a point in a given straight line* —To be deduced from 34.

Note:—This method is more accurate than those that precede.

38. (*a*) Construction of a triangle, given a side and the two adjacent angles [see 31,(2)] —two solutions.

(*b*) Construction of a triangle, given a side and two angles, one of which is opposite to the given side. This is easily reduced to case (*a*).

(*c*) Induction, as in 33, (3), of Theorem, Euclid, I. 26.

39. Easy problems on the construction of triangles.

SECTION VII.

40. *Isosceles triangles on the same base.*

(1) *The locus of their vertices*—Construct a number of isosceles triangles on the same base, on both sides of it. Their vertices lie on the perpendicular bisector of the base. Hence the locus, etc.

Note:—This locus also bisects each of the vertical angles.

(2) The locus of *points equidistant from two given points* is the perpendicular bisector of the line joining them—a modified form of (1).

Applications follow.

41. *Bisection of a given finite straight line* (the most accurate of all methods).

The following construction is easily deduced from 40, (1):—

With each extremity of the given straight line as centre and a *convenient radius* (Why convenient? What is the limit of its length?) describe two circles; the join of their points of intersection bisects the given straight line.

Note:—The pupils should early learn to avoid describing complete circles.

42. *Bisection of a given angle.*

See note under 40, (1) and deduce the following construction:—

Cut off equal lengths along the arms and join the points of section. Describe an isosceles triangle on the join (*preferably on the side remote from the given angle*). The join of the vertex to the given angle bisects the latter.

Note:—The construction is much simplified by having the side of the isosceles triangle equal to the length cut off from the arms of the angle. Hence the *usual construction* (see any book on Experimental Geometry).

43. *Bisection of a given arc.*

Draw the chord of the arc and its perpendicular bisector. The latter bisects the arc also. Clear from 19, (5) and 40, (2). Hence the construction reduces to that of 41.

44. *To draw a perpendicular to a straight line at a given point in it.*

Deduce the following construction from 36, (2) *d*:—

Mark off on the given straight line two equal lengths, one on each side of the given point. Describe an isosceles triangle on the whole portion thus marked off, and join its vertex with the given point. This join is the required perpendicular.

45. *To draw a perpendicular to a given straight line from a given point outside it.*

Deduce the following construction from 36, (2) *b* or *d*:—

With the given point as centre describe an arc of a circle to cut the given straight line in two points. The radii to the points of section give an isosceles triangle. Then draw *the bisector of the vertical angle*, or *the median to the base*. Either of these is the required perpendicular.

SECTION VIII.

46. *Concurrence (simple cases).*

(1) Explanation of the term.

(2) Draw the three medians of a triangle. They are concurrent.

Draw the medians of a cardboard triangle and support it at their point of intersection on the point of a needle. What is observed?

Note:—This point is the *Centre of Gravity* of the triangle.

(3) Draw the perpendicular bisectors of the sides of a triangle. These also are concurrent. Compare the distances of the point of concurrence from the vertices of the triangle.

(4) Draw the bisectors of the angles of a triangle. What is observed? Compare the distances of their point of concurrence from the sides of the triangle.

(5) *Altitude* (= height): the distance of any vertex of a triangle from the opposite side.

The three altitudes of a triangle are concurrent.

47. *Collinearity.*

(1) Explanation of terms *collinear* and *collinearity of points*;

(2) Refer to instances of collinear points already met with.

(*To be continued.*)

S. BALAKRISHNA AIYAR.

A SYLLABUS IN ELEMENTARY BOTANY.

(1) PLANT-LIFE IN GENERAL.

Plants are stationary. Still they resemble animals in many respects and are living things.

The necessity of air, food, moisture and light.

Distribution of plants.

Uses of plants.

Pests of plants and their remedies.

The door-ways of plants; their messengers to carry food to the kitchens; kitchens where food is prepared; their dining-rooms and how the prepared food is carried to them; store rooms and drainage channels.

The physiology of plants:—Nutrition (water, air and soluble organic salts); assimilation (depending on transpiration, respiration and evolution of oxygen); and reproduction. Annuals, biennials and perennials. Habits of growth in plants and how plants generally adopt themselves to their surroundings.

Stages in plant life.

(*a*) *Cellular plants*:

Germs floating in the air:—Green stains on trunks of trees, jelly-like substance form-

ed in ink bottles, fermentation, &c. The dangers from microbes.

Water weeds:—No necessity for special conducting vessels.

Fungi—mode of growth.

Lichens—mode of growth.

Mosses—mode of growth.

(*b*) *Vascular plants:—*

Ferns, their spores and mode of growth.

Flowering plants consisting of naked-seeded plants and fruit-bearing plants. Monocotyledons and dicotyledons and their division into a number of families. Examples of each.

(2) ROOTS.

Germination and the necessity for warmth, moisture and air.

Seed-coats.

The appearance of the radicle and its growth downwards.

Tap-roots, fibrous roots and branching roots. Examples of each.

Root-hairs and absorption of water and soluble salts.

Root-caps and their use.

Manuring and its uses. Green manuring. The uses of thorough drainage and ploughing.

Weeds and their removal.

Fleshy roots — eatable roots — nodular roots.

The uses of roots.

Air-roots and climbing-roots.

Parasitic-roots—absence of root-hairs and root-caps.

How roots adapt themselves to their surroundings?

Practical Work.

Take four small but wide-mouthed bottles A, B, C, D. See that A is perfectly dry, throw a few bean seeds into it and cork and seal the bottle. In B put in layers of moist blotting paper and a few bean seeds in the upper layer, cork and seal as before. Treat C exactly as B but leave the bottle open. Place seeds in D, fill the bottle completely with water which has been well boiled and allowed to cool to drive out the air it contains and cork and seal as before. Put the bottles preferably side by side in a dark place and examine day by day. You will thus be able to prove the necessity of water and air for plants. The influence of warmth may similarly be demonstrated.

The radicle always grows downward. Turn a seedling upside down and observe.

Sow beans, mustard, poppy, cress, peas, coriander, date, castor-oil and a few other common seeds in prepared boxes or seed beds and observe the growth of the seedlings day by day and record the observations. Illustrate your observations by drawings.

It is not your object to raise crops at this stage and therefore your observation should determine the method of emergence of the young plants, the curves assumed, the manner in which the seed-leaves are dispersed, how the plant food is obtained by the growing plant, the special contrivances to enable the young plant to escape from the seed-coats and the existence of means whereby the seed-coat is held down by the soil while the plant is being withdrawn. The period of germination in each case should be noted.

Observe that plants with two seed leaves put out a primary root which soon forms rootlets and that plants with one seed leaf form a number of fine roots more or less in size. Make sketches of two or three seedlings of different ages showing the position of the root-hairs.

With the help of a magnifying glass examine the root-cap and ascertain how the root grows. Devise a simple experiment to prove that the greatest amount of growth is not at the apex but some little way behind it.

Take a small bottle with a narrow neck and fill it with water. Add a few drops of red ink to the water to colour it very red. Fix a seedling in the bottle so that its roots alone are immersed in the water. After a couple of days remove the seedling and wash it clean and when you cut it you will observe the red colour inside. This proves that soluble salts are taken in by roots.

Seeds may be sown in specially prepared pots and the effect of the important manures on plants studied.

Search for air-roots, climbing-roots and parasitic-roots and their characteristic differences.

How roots adapt themselves to water and land and to different kinds of soil and how they avoid obstacles while spreading can be ascertained by frequent observations.

(3) STEMS.

How stems differ from roots; uses of stems.

Underground stems, tubers and bulbs.

Structure of the stem of a dicotyledonous plant examined by a miscroscope:—pith, hardwood, a cellular thin tissue called the cambium, and a fibrous layer with bark.

Rings:—how formed. Estimate the age of a tree by its rings.

Structure of the stem of a monocotolydonous plant:—soft tissue and interspersed fibres.

Plants which walk.

Climbing stems—clock-wise and counter-clock-wise.

Climbing organs:—rootlets, hooks and tendrils.

Grafting:—its uses.

Things obtained from stems:—gums, sago, turpentine, quinine, camphor, tannin, &c. &c.

Practical Work.

Examine the potato and the onion and ascertain the difference between a bulb and a tuber. Observe the 'eyes' of a potato.

Examine the stems of the tamarind tree and the date palm with the help of a magnifying glass and note the structure in each Draw sketches of the rings.

Observe that the internodes get shorter as you approach the top of the stem.

Get examples of plants which walk and of climbing stems. Make out the direction in which the twining plants twine.

Get examples of trees which split their barks and ascertain the reason in each case.

Observe the rootlets of the pumpkin, the tendrils of the snake-gourd and the hook of the common bramble.

Buy a grafting knife and make experiments in grafting. The plants grafted should belong to the same family as those on which they are grafted. The portion where the grafting takes place may be covered with wax to prevent evaporation.

Show the things formed in stems and explain how they are formed.

(4) BUDS AND LEAVES.

Buds.

Leaf-buds and flower-buds.

Terminal buds and axillary buds and examples of each.

Budding and its uses. Adventitious buds.

Colours of different buds.

The uses of buds.

Practical Work.

Search for examples of the different kinds of buds.

With the help of the grafting knife make experiments in budding.

Observe the different colours of buds and make a note of them.

Break open a few buds and look into their structure. See how carefully flower leaves are packed in buds and are kept warm in Winter.

Leaves.

Blades and leaf stalks.

Shapes of leaves :—egg, heart, spear, arrow, fingers, &c.

Sizes :—different.

Veins :—parallel and branching.

Margins :—toothed, lobed and entire.

Arrangement :—alternate, opposite and whorled.

Structure of a leaf.

Simple leaves and compound leaves.

The presence of Chlorophyl and its action in sunlight. Assimilation.

The formation of starch during the day.

Respiration.

Transpiration.

Uses of leaves.

Change of colour and fall of leaves in Autumn.

Evergreens.

Insectivorous plants.

How leaves adapt themselves :—shape in water and in air, hairs, closure of openings in Summer, relationship of the drainage system of leaves with the spread of rootlets, &c.

Practical Work.

See how the blades are joined to leaf stalks. Notice which of the leaves have leaf stalks and which of them have not. Observe the different shapes of blades and make drawings.

Observe the stems of trees as you pass along and see whether the leaves are alternate, opposite, and whorled, simple or compound.

Collect a few leaves, examine their edges and state to which class—toothed, lobed or entire—they belong.

Draw sketches of the veinings of different leaves, and collect dry leaves which illustrate the veining and preserve them.

Examine the structure of a leaf with the help of a magnifying glass and record observations.

Devise a simple experiment to show the necessity of sunlight. Prove that carbon is found in leaves.

With the help of iodine the presence of starch may be indicated.

The evolution of oxygen may be proved by keeping in sunlight a few fresh green leaves in a bottle full of spring water.

Pass a leaf of a growing plant through a well fitted cork into a dry test-tube and allow it to remain in position for a time. The tube will be dimmed by the transpiration of water. Prove that the under-portion gives off water. Observe that transpiration is less in thick leaves.

That plants behave like animals in breathing out co_2 can be shown by putting away in the dark a handful of moist fresh green leaves under a big bell jar duly corked and testing the presence of the gas by the addition of limewater.

Observe the different changes of colour in Autumn. Look into the structure of the twig when the leaf is about to fall.

When you come across insectivorous plants observe the structure of the leaves and the contrivances by which they are able to catch, kill and digest insects.

Make drawings to illustrate the adaptation of leaves to surroundings. Dig up a few plants and see how the drainage system of leaves corresponds with the spread of rootlets.

(5) FLOWERS, FRUIT AND SEEDS.

Flowers.

Uses of flowers.

Habits of flowers.

Parts of flowers and the uses of each part.

Examination of common flowers.

Kinds of flowers.

Shapes :—star, bell, cup, glove, butterfly, &c.

Colours :—rose, pink, violet, blue, yellow, &c.

Perfumes :—sweet, pungent, &c.

Flowers serving as weather glasses, clocks and calendars.

Pollination by wind.

Pollination by insects.

Cross fertilisation and its uses.

Flowers and insects.

Wild flowers and garden flowers.

Flowers in the different seasons.

How flowers are adapted to their surroundings :—soil, protection against honey-thieves, invitation to bees, &c.

Practical Work.

Examine the common flowers and draw sketches to illustrate the position and arrangement of the sepals, petals, stamens and pistils.

Make enlarged drawings of the stamens and pistil and show the stages of the progress of the ovary. Note carefully those plants which have stamens and pistil in the same flower and those which have them in separate flowers. Examine the flowers for honey and make a list of all the flowers found which contain honey. Observe that under cultivation some flowers do not make seeds and ascertain the reason why. Note how scaly structures take the place of sepals and petals in the flowers of grasses and cereals.

Prepare a list of flowers whose pollen is carried by (1) the wind, (2) the insects. Note the flowers visited by the bees and the wasps.

Devise an experiment to show the necessity of pollination for the formation of seeds.

Show that better seeds are formed by cross fertilisation.

Make sketches of the different flowers in the different seasons and note the time.

Observe how flowers put on gay colours or have standards to invite bees; how by hairs, spikes or a sticky fluid they prevent the honey from being stolen by thievish ants; why double flowers secrete no honey; why the stamens of wind-pollinated flowers are long; how flowers are turned downwards on damp days; and how the growth of the flower is adapted to the soil in which the plant is grown.

In the examination of a flower the following points will have to be noted :—

(1) Whether the flower is complete, if not, which parts are absent; (2) The number of members in each part; (3) Whether the members of each part are separate or combined together; whether they are free or adhere to the members of the part inside or outside of them; (4) Whether the flower is regular or irregular; (5) Whether the flowers are bisexual or unisexual and if the latter, whether the flowers bearing the stamens and those bearing the pistil are on the same plant or on different plants; and (6) Whether the perianth is above or below the ovary.

Fruit.

Kinds of fruit :—fleshy—cucumber, plantain, &c.—dry—pea, poppy, &c.

Common fruit and their structure.

Uses of fruit.

Dispersal of fruit by running water, animals and wind. Examples.

Practical Work.

Examine all common fruit and ascertain to which kind they belong. Look into their structure. Make drawings of opened and unopened fruits.

Collect fruit found floating in neighbouring streams or ponds and ascertain to what plant they belong.

Pull the fruiting spray of hedge plants along your upper cloth and notice how they stick.

Watch a furze bush and ascertain how fruits explode and scatter their seeds.

Seeds.

Formation and growth.

Kinds of seeds.

Dispersal of seeds by plants, animals, wind and water. Illustrate.

Practical Work.

Break open ripe fruit and see how the seed cases are placed in each. See how the seeds and seed cases develop from day to day.

Examine different seeds for wings, hairs, and spikes and record observations.

Go out on a windy day and ascertain how the seeds came to be scattered on the ground and ascertain to which plants they belong.

(6) FORMS OF BOTANICAL RECORDS.

(1) *Garden Note-book.*

(*a*) Date ; (*b*) Description of work done ; (*c*) Name of seeds sown ; (*d*) Period of germination in each case ; (*e*) Period of flowering ; (*f*) Observations about the growth of plants ; influence of the weather, attacks by insect-pests and the remedies applied, &c. ; (*g*) Produce gathered (*h*) Temperature of air and soil at each observation.

(2) *Garden Income and Expenditure Note-book.*

Income.	*Expenditure.*
(*a*) Donations from teachers, &c.	(*a*) Preparation of soil, &c.
(*b*) Subscriptions from pupils.	(*b*) Purchase of manures.
(*c*) Sale of crop.	(*c*) Do. of seeds.
(*d*) Miscellaneous.	(*d*) Do. & use of tools.
	(*e*) Harrowing, weeding, gathering of crops, &c.
	(*f*) Miscellaneous.
Total :———	Total :———

(3) *A Record of School Walks.*

(*a*) Date of walk ; (*b*) Time at which the school was left ; (*c*) Time of arrival at destination ; (*d*) Aim of the walk ; (*e*) State of the weather ; (*f*) Wind—direction and condition ; (*g*) Observations with drawings or sketches.

(4) *A Record of Collections.*

(*a*) Date of collection ; (*b*) Objects collected ; (*c*) How dried or preserved ; (*d*) Observations ; (*e*) Remarks.

(5) *A Record of Experiments.*

(*a*) Description of experiment ; (*b*) Facts observed ; (*c*) Inferences ; (*d*) Figures, sketches or diagrams illustrating the experiment ; (*e*) Remarks and any interesting facts of note ; (*f*) Apparatus used.

(6) *A Record of Examination.*

The form recommended in Hooker's Botany Primer or Oliver's Indian Botany may be used.

BOOKS RECOMMENDED.

The following books are recommended for the use of those who are desirous of mastering the elementary principles of Botany :—

Nature Teaching, by Francis Watts and W. G. Freeman.

Landseer's Object Lesson hand-books and readers.

The story of the Plants, by Grant Allen.

Helpful notes on Nature study, by H. E. Ward.

Eyes and no eyes, by Arabella Buckley.

Glimpses into Plant Life, by Mrs. Brighton.

First book on Indian Botany, by Daniel Oliver.

Glimpses into the Life of Indian Plants, by Rev. I. Pfliedeser.

Flowers, Fruits and Leaves, by Sir John Lubbock.

Science Botany Primer, by Sir J. D. Hooker.

A Cycle of Nature Study, by M. M. Penstone.

Object Lessons in Elementary Science, by Vincent Murche.

Botany for Beginners, by Ernest Evans.

Nature Study and Life, by Hodge.

How Plants live and work, by Eleanor Hughes Gibbs.

Experiments with Plants, by Osterhaut.

The Teaching Botanist, by Ganong.

Elementary Botany (in Tamil), by K. Rangachari.

Biology, Part II (in Telugu), Vignana Chandrika Series.

M. SUBRAHMANYAM.

SHELLEY'S *ADONAIS* : A VINDICATION.

A CAPACITY for virtuous indignation is a very elevating attribute of our conscience, whether intellectual or ethical, on its negative side. The possession of it argues greater vitality of sensibilities, and implies a more constant exercise of them. It may be said that calm repose is most effectively reached through holy wrath. Whatever we ought to be, to do or to have, is best attained through our impatience of the insidious attempts which the world makes to tempt us into whatever we ought not to be, to do, or to have. When, therefore, we find a person's withers wrung by anything which he sees or reads, we naturally infer that such quick sensitiveness proves the depth of his convictions. If, however, his mode of criticism betrays, not the intensity of honest appreciation, but the impotence of ignorance or the malice of deliberate blindness, then his simulation of anger provokes in us the reality of it. His false fury opens on him our true indignation.

In none else of the concerns of life is the exercise of this capacity a greater duty or a more disinterested privilege than in the vindication of departed worth. The March number of the *Educational Review* contains a criticism of Shelley by one Mr. Sundrier, which is, to borrow Mr. Sundrier's words, one of 'the most pathetic and the least harmful' attempts to blacken one whom the world has agreed to regard as a classic, with the imperfections, it may be, but also with the solid worth, of a classic. The criticism is so unfair, and, what is more, so erroneous, that to suffer it to pass unnoticed may be an injury to the memory of Shelley, and is certainly an insult to our obligations to him. I am not disposed to stretch my fingers towards that most despicable weapon of refutation, namely, the impeachment of motive ; still less is it necessary for my purpose to do so, since Shelley's name stands on too firm a basis to need or to permit of the miserable device of motive-mongering. The defence of Shelley does not call for those methods of his assailant but for which no defence had been necessary.

Perhaps some may hold that a person who indulges in the kind and method of criticism referred to above is beneath the seriousness of notice and the compliment of correction. I, too, would have thought so, were it not that I believe Mr. Sundrier to have been actuated by no perversity of malice. It is consequently worth my while to take up the points of Mr. Sundrier one by one. The students of a classic need claim no eminent insight in vindicating him, nor does his reputation depend on the service of far weaker hands ; but when other weaker hands pluck his laurels with irreverent levity, they, the humble recipients of his grateful beneficence, owe it to him and

to themselves to guard what others will soil and to correct where others exaggerate.

While we may not be prepared to admit the literal sense of the poet's remark that bad poets always turn critics, we can see a vital truth in the emphasis which the remark lays on the need for poetic impulses in those who would be good critics. The true critics of Shakespeare are those who had the poetic gift, or clear poetic sensibilities, in themselves. I am sure that Mr. Sundrier does not call himself a poet, and any one can see in his criticism his poetic sensibilities, or, rather, his lack of them. Unfortunately, he is not merely a dubious critic to be sifted; he is one who demands the sterner discipline of explosion. That is the course which Mr. Sundrier has himself aimed at following in his treatment of Shelley, and must be the course which, according to the golden rule, he desires others to follow in dealing with him.

To borrow the expression of Coleridge, words are wasted alike on those who feel, and those who do not feel, the rich vein of poetry that lies embedded in Keats, Byron, Hunt and Shelley. Straws enough we can find, in all conscience, floating on the surface of these poets; but it is the privilege of readers, and is therefore the duty of critics, to dive down to the pearl-beds that test the sincerity, and reward the patience, of resolute search. In showing himself to be regardless, if not incapable, of such patient labour, Mr. Sundrier certainly displays that originality with the lack of which he twits Shelley in the form of *Adonais*. Mr. Sundrier lashes himself into fury on finding that Shelley brings the noble Sidney into the unholy company of Byron and Hunt and Chatterton. What this critic's laws of poetic truth and beauty are, I know not; but if his remark that the work of the poet never gets beyond the character of the man is one of them, I have no wish to learn the rest. Does Mr. Sundrier seriously contend that the measure of a poet's character is the measure of his work? Judged by this standard, all the great poets of English, with the exception of two or three, must be ruled out of Court. To adhere to the ten commandments is his alchemy for reaching the philosopher's stone of poetry. What a comforting assurance this must be to the many staid, respectable people, who, hitherto ignorant that their poetic salvation lies in their hands, have painfully remained what Carlyle would call inarticulate poets! How greedily people would snatch laurels if, by abjuring drink, falsehood and unclean company, they could do so! What a nice shortcut to Parnassus! Mr. Sundrier is evidently a disciple of Arnold, and indeed no one else better deserves his allegiance. But has not Arnold himself assigned to Byron one of the two Olympian heights of the last century? Mr. Sundrier's observation that Keat's sole admirable quality is his occasional consciousness of his own insignificance tempts one to say that this critic's sole admirable quality is the very frequent glimpse he gives us, I shall not say of his insignificance, but of his inattentive studies. To say that Keats is often immature in his poetry is to say that he was young; to say that even his latest poetry contains blemishes is to say that he was only a man. But to say that he is not a poet, much less a classic, is a pretension of originality that ill deserves notice on account of the originality of the pretension. But let me pass to details.

Mr. Sundrier assails the folly of Shelley in assailing the intelligence of his readers. Surely, Mr. Sundrier is not acquainted with the literary history of those times when the '*blackguard*' magazine and the '*quartering*' magazine and the '*Edinburgh Review*' vied with each other in murdering genius. Keats, Byron, Wordsworth—all were singled out for the tender mercies of these literary assassins, and bleeding hearts, uncut books and savage recriminations marked the amenities of criticism. Even at this distance of time one shudders to recall the whips and scorns which the above poets had to endure as a penalty for having been poets. That being the case, is it for Mr. Sundrier to add the insult of censure now to the injury of inappreciation then? Mr. Sundrier cannot realise how it would lacerate the very core of one's being to be treated as Shelley and others were in those days. And what shall we to think of a person, who, when those ill-used hearts have long ago mouldered in the grave, and when the repentent world has already set up over it the monument of its piteous reverence,—unearths the bloody shafts which formed the portion of those geniuses when alive, and hurls them with impotent rage at their works? Is it charity? Is it justice?

Over Mr. Sundrier's remarks on the borrowed nature of the structural form of *Adonais*, I shall not waste many words. Poets do not, as indeed they need not, consider originality to lie in the choice of form, but in pregnancy of thought. They take up whatever mould is ready or familiar or convenient, and care only for the higher originality, of thought. If they are defective in this higher originality, and if the defect can be clearly traced to the disregard of the lower, blame them by all means. If their thought is beautiful or beautifully original, then it is as much a credit to have made an old lyre yield a new sound as it is to have fashioned a new lyre. Indeed, the credit is higher.

Shelley's description of himself as "the last cloud of an expiring storm whose thunder is its knell" is one which Mr. Sundrier has altogether failed to understand. He discovers in it the very height of self-accusation, whereas there is in it an infinity of pathos and appealing interest which must be felt in order to be grasped. If you remember that the poet soon after passed into the valley of the Black Shadow, and that he was far above the grovelling dust of his day, you will find in that description a tale of misrepresentation and cruel treatment and angnish, and a presage of approaching end, which certainly deserved better than to be twisted into affected modesty or interpreted with ignorant contempt.

That the philosophy of the poem is unsatisfying is the next item in Mr. Sundrier's bill of indictment. I do not care to inquire what his conception of such philosophy is, or how much of it will satisfy him. But I ask Mr. Sundrier whether the philosophy of *Hamlet* satisfies him Does not Hamlet think of suicide? Is not Hamlet's death a sort of suicide? Does he not speak of the undiscovered Country? There is an inspiration in the indefinite wailings and aimless yearnings of such geniuses which is richer, more sacred and more tender, truer and more soothing, than the most precise beacons held out by the moral philosopher. The poet is not a mere chronicler and annalist. He does not deal alone with the facts of life as they are, but with the facts as they ought to be; and in proportion as his observations appear to differ from the stale, commonplace facts as creeping men conceive them to be, do they approach that Truth which alone is Beauty, and that Beauty which alone is Truth.

Mr. Sundrier is very angry with Shelley for being changelessly wedded to Grief when external Nature has discarded the hood of Winter and wears a gay garb. He speaks of

Shelley as being carried away by an unintelligent hankering after contrast. Could he feel as Shelley felt and be what Shelley was, he could then understand the grief of Shelley; the reference to the returning brightness of Nature, so far from impeaching the intensity of the grief, only brings it out into bolder relief. At the worst, the lines are only an example of that exaggeration which makes up so great a part of poetry, and is none the less an integral portion of the very stuff of it. They are to be enjoyed by the width of a tolerant mind, but not to be visited with the chastisement of verbal inquisition. If such lines and their unsatisfying philosophy are to be dismissed as "harmonious madness," I can only say of a frenzy which Shakespeare owned, that there is a pleasure in being mad, which none but madmen know.

Mr. Sundrier then denounces the lines which Shelley addresses to the critic-assassins of Keats. Mr. Sundrier is unable to discover any artistic elegance in those lines. If Mr. Sundrier could compose a few 'artistic' lines which would serve as a vial for the kind and degree of wrath which the assassins had provoked in Shelley, he will have done what has not been done before in English literature. Will Mr. Sundrier expect such angry lines to shine with elegant polish and sublime language and profound imagery? One would like to know how this critic would 'artistically' describe a liar or a murderer. Mr. Sundrier has got a rather queer view of the nature and occasion of elegance. He would not call a spade a spade.

There is then a condemnation of Shelley's making Nature gay and bright when his heart is throbbing with grief. Mr. Sundrier characterises this as a violation of the fundamental theory of art, which is falsified by human experience. The glibness with which this complacent critic speaks of fundamental theories and poetic truth and human experience is quite amusing, were it not that such assuming superiority is perfectly absurd. But be this as it may, let us examine his point. Mr. Sundrier is of course referring to the pathetic fallacy; but what business has he to elevate it into the fundamental theory of art? The pathetic fallacy was made for poets, but poets were not made for the pathetic fallacy. There is a famous passage in Milton, which, if Mr. Sundrier means anything, he must condemn as an even more heinous violation of the pathetic fallacy. The simplicity with which Mr. Sundrier regards the pathetic fallacy as a law of the Medes and Persians for poets to follow with undeviating fidelity is itself a very pathetic fallacy. It is better to err with Milton and Shelley than to be in the right with Mr. Sundrier.

When Mr. Sundrier attributes Shelley's over-indulgence in Personification to poverty of imagination, he no doubt scores a point which, however, he loses unluckily by emphasising it too much. To deny the Promethean heat to the author of *Prometheus Unbound* is a far bolder exploit than was performed by Prometheus himself. Personifications, however, are to be judged not by their paucity or profusion. A few of them, used carelessly, would disgust where plenty, dealt out correctly, will charm. It is not by the fingers, but by fine sensibilities, that you ascertain the beauty of figures. No doubt it may cloy the palate if they are laid on too thick; but that does not by itself show that the figures are lifeless or inappropriate; much less does it prove sterility of fancy. To lay such a charge at the door of that poet of the last century who excels all others in the domain of fancy and imagination, is to take the wrong sow by the ear. Mr. Sundrier then triumphantly brings forward what he piously regards as a clinching argument. He says, "Mr. Shelley uses the image of lending and borrowing. This single image is sufficient to prove that Shelley has no artistic sense for figurative language." What an overwhelming argument! I am very reluctant to mar Mr. Sundrier's enjoyment of this exquisite theory by seeming to question its soundness. In a poem of four hundred and ninety-five lines, Shelley uses the image of lending and borrowing twice. Presto, he has no artistic sense for figurative language. Mr. Sundrier, be it noted, criticises not the fitness, but the fact, of this use. What audacity on the part of Shelley! What a glaring proof of inartisticity! If he had occasion to convey the ideas denoted by lending and borrowing, why could he not have avoided the use of those particular words? Has he not used them already? Why not express the ideas in a roundabout way, so as not to hurt the artistic ears of Mr. Sundrier? Or, if he could find no other single words for those ideas, why not give up the ideas themselves? Or, why did he not apply to Mr. Sundrier, who could have taught him synonyms for those words? I can only pity Shelley for the sins of omission and commission which he has wantonly committed in repeating the use of those words. I find other words also in the poem which Shelley has the hardihood to use repeatedly; and I admire the delicate forbearance which Mr. Sundrier has evinced in not taking the poet to task for them.

Lastly, Mr. Sundrier asserts that the beauty of thought and expression in this poem is questionable. Beauty must be felt: it is incommunicable and ineffable. It has, like Truth, such a face and such a mien as to be loved needs only to be seen. Mr. Sundrier can be acquitted of unwillingness to see only by being charged with inability to see. I shall leave him the choice between these two shortcomings. Those who are free from either of them have already seen, and will be ever enjoying, the beauties of this poem. There are beauties in it of thought and of expression, and of a combination of these, which cling to the memory and quicken the pulse, which lift the heart and even give wings to the mind. Who that has ever read the fiftieth stanza will cease to be haunted by its intense purity and repose of resignation, by its serene dignity and elevation of wisdom? The next stanza,—how inspiring it is in the rebound it gives to the unstrung mind! Also, it provides an answer to a charge which Mr. Sundrier prefers against Shelley for being untrue to the facts of life. We find by experience that people, in the freshness of their grief, forsake those attractions of Nature to which they resort afterwards for softening it. They yield themselves to that hand whose efforts in plucking the rooted sorrow from their memory they at first oppose. While during the early burst of grief, Shelley refuses to be comforted by the quickened animation of Nature, he subsequently surrenders himself to its mellowing influence. Mr. Sundrier conveniently disregards, or is unconsciously blind to, this stanza, and adds misrepresentation to faulty reading. Then, again, what felicity of diction is married to thought in the lines describing the grave of Keats! What schoolboy does not know and love those four lines beginning with "The one remains, the many change and pass"? What shall we think of the temerity which denies beauty to a poet, whose beauty of conception is like a sun compared to many farthing candles? What other poet has mounted high on wings of such ethereal

delicacy, and from that eminence poured songs of such dulcet and piercing melody, mingled with such tender and refined sorrow? What other poet has excelled him in demonstrating the aerial possibilities of language? Assert as strongly as you can or care that he is often mystic, often heavy; but a poet is not to be judged by his defects alone. And even if the *Adonais* is full of such defects,—which it certainly is not—, go through his other poems to see his more attractive side before you pronounce judgment. Mr. Sundrier has evidently not done this, or he would not have passed such a hanging sentence. The fact that Shelley thinks highly of *Adonais*, so far from being a legitimate object of contemptuous glee, ought to have taught him, if he had the requisite modesty and candour, to attach some weight to the poet's opinion, and should have made him, if, after a close study he differed from the poet, to express his opinion with diffidence and even mistrust of himself.

The fact is, Mr. Sundrier, with all his professed mastery of the fundamental canons of criticism, has not grasped two elementary principles which are as much the sign of practical wisdom as they are the mark of common fairness and the badge of intellectual obligation. We must take geniuses as we find them; and when we try to sit in judgment on them, we must clear our minds of all preconceived prejudices, and judge them, not with the set purpose of convicting them, but of finding out the truth. This procedure which men follow in hearing ordinary criminals,— shall they abandon it with impunity in judging their teachers and benefactors whose labours are intended to lift men, from being little more than brutes, to a position only a little lower than angels?

N. M. RAMA IYER.

MATHEMATICS.

[Conducted by B. KRISHNAMACHARI, M.A.]

54. [B. KRISHNAMACHARI, M.A.]

Show that the product of the series

$$1+\frac{x}{1\cdot 2}+\frac{x^2}{(1\cdot 2)^2}+\frac{x^3}{(1\cdot 2\cdot 3)^3}+\ldots\ldots$$

and $1-\frac{x}{1\cdot 2}+\frac{x^2}{(1\cdot 2)^2}-\frac{x^3}{(1\cdot 2\cdot 3)^3}+\ldots\ldots$

is $1-\frac{x^2}{1^3.2!}+\frac{x^4}{(1.2)^3.4!}-\frac{x^6}{(1.2.3)^3.6!}+\ldots\ldots$

Solution by M. BHIMASENA RAO.

It is easily seen that the product of the two given series contains only even powers of x.

The coefficient of x^{2n} in the product

$$=\frac{1}{(2n!)^2}-\frac{1}{\{(2n-1)!\}.2!^2}+\frac{1}{\{(2n-2)!\}^2(2!)^2}$$
$$\ldots\ldots+\frac{1}{(2n!)^2}$$
$$=\frac{1}{(2n!)^2}\left[1-\left\{\frac{2n!}{(2n-1)!1!}\right\}^2+\left\{\frac{2n!}{(2n-2)!2!}\right\}^2\ldots\ldots+1\right]$$
$$=\frac{1}{(2n!)^2}\{{}_{2n}C_0{}^2-{}_{2n}C_1{}^2+{}_{2n}C_2{}^2\ldots\ldots+{}_{2n}C_{2n}{}^2\}.$$

Now $(1+x)^{2n}={}_{2n}C_0+{}_{2n}C_1x+{}_{2n}C_2x^2+\ldots\ldots+{}_{2n}C_{2n}x^{2n}$

and $(1-x)^{2n}={}_{2n}C_{2n}-{}_{2n}C_{2n-1}x+{}_{2n}C_{2n-2}x^2\ldots\ldots+{}_{2n}C_0x^{2n}$.

∴ The coefficient of x^{2n} in $(1+x)^{2n}(1-x)^{2n}$,

$$i.e.,\ (1-x^2)^{2n}=+(-1)^n\frac{2n!}{(n!)^2}$$
$$=\{{}_{2n}C_0{}^2-{}_{2n}C_1{}^2+{}_{2n}C_2{}^2\ldots\ldots+{}_{2n}C_{2n}{}^2\}.$$

∴ The coefficient of x^{2n} in the product of the given series

$$=+(-1)^n\frac{1}{(2n!)^2}\cdot\frac{2n!}{(n!)^2}=+(-1)^n\frac{1}{(n!)^2.2n!}.$$

∴ The product

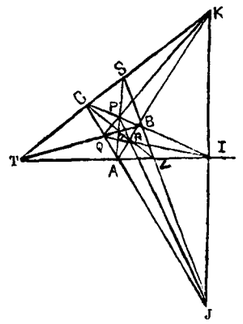
$$=1-\frac{x^2}{1^2.2!}+\frac{x^4}{(1.2)^2.4!}-\frac{x^6}{(1.2.3)^2.6!}+\ldots\ldots$$

The result may also be established by observing that the given series satisfy the differential equations $x\frac{d^2v}{dx^2}+\frac{dv}{dx}-v=0$, $x\frac{d^2v}{dx^2}+\frac{dv}{dx}+v=0$ and proving that the product satisfies the equations $x^2\frac{d^2y}{dx^2}+5x\frac{d^2y}{dx^2}+4\frac{d^2y}{dx^2}+4y=0$ as indicated in Edward's Differential Calculus, Chapter XX, Question 14.

55. [B. KRISHNAMACHARI, M.A.]

Concurrent rays through the vertices A, B, C of a triangle cut the sides at P, Q, R; show that the intersections I, J, K of BC and QR, CA and RP, AB and PQ, are collinear; also that if BJ and CK, CK and AI, AI and BJ meet in S, T, V, then AS, BT, CV are concurrent.

Solution by M. BHIMASENA RAO.



Since the rays AP, BQ and CR are concurrent, we have

$$\frac{AR}{RB}\cdot\frac{BP}{PC}\cdot\frac{CQ}{QA}=+1.$$

Consider the triangle ABC and the transversal QPK.

$$\frac{CQ}{QA}\cdot\frac{AK}{KB}\cdot\frac{BP}{PC}=-1$$

(observe that the ratio $\frac{AK}{KB}$ is negative).

$$\therefore\ \frac{AK}{KB}=-\frac{AR}{RB}.$$

Similarly $\frac{BI}{IC}=-\frac{BP}{PC}$ and $\frac{CJ}{JA}=-\frac{CQ}{QA}$.

$$\therefore\ \frac{AK}{KB}\cdot\frac{BI}{IC}\cdot\frac{CJ}{JA}=-\frac{AR}{RB}\cdot\frac{BP}{PC}\cdot\frac{CQ}{QA}=-1.$$

∴ The points I, J and K are in a line.

Since $\frac{AR}{RB}=-\frac{AK}{KB}$, the points ARBK form a harmonic range.

∴ The pencil (C, AOBK) is harmonic, *i.e.*, in any quadrilateral, any two opposite sides, the line joining the intersection of these two sides and the intersection of the diagonals, and the third diagonal form a harmonic pencil. Consider the quadrilateral AJIB. The diagonals intersect at V and the third diagonal is CK. ∴ The pencil (C, AVBK) is harmonic. Hence CV passes through O. Similarly AS and BT pass through O. Hence the proposition.

QUESTIONS FOR SOLUTION.

64. [T. SUNDARA RAO, B.A.] In a certain temple there were four Ganesas, one on each wall, and in front of each Ganesa was a fountain which had the virtue of multiplying threefold the flowers which were washed in it. A worshipper took a certain number of roses with him. Their number was tripled in the first fountain and after offering a certain number of them to the first Ganesa took over the remaining flowers to the second fountain. These were tripled at the second fountain and he worshipped the second Ganesa with the same number of roses as the first. He continued this process offering the same number of roses to each Ganesa, and found that he had 10 flowers left with which he worshipped Siva. How many flowers did he take to the temple and how many did he offer to each Ganesa? [*From the Lilavati*].

65. [M. BHIMASENA RAO.] ABC is a triangle and S the circumcentre. AS, BS and CS meet the sides in D, E and F. If I_a, I_b and I_c are the ex-centres show that I_aD, I_bE and I_cF meet on the line joining the incentre and the ortho-centre of the triangle, and that the

pedal circle of the point of concurrency with respect to the triangle ABC touches the nine point circle of the triangle ABC.

66. [M. BHIMASENA RAO.] Through a given point any line is drawn cutting the sides of a given triangle in P, Q and R. Prove that the line joining the centres of the pedal cirles of P, Q and R with respect to the given triangle envelopes the locus of the centres of the in-conics of the given triangle which pass through the given point. Hence show that this locus is a conic and when it is a circle, the pedal circle of the given point with respect to the given triangle passes through a point of contact of the nine point circle with the inscribed or escribed circles of the given triangle.

67. [M. BHIMASENA RAO.] Show that the four conics which can be inscribed in a given triangle so as to pass through two given points are touched by a conic passing through the given points.

68. [M. BHIMASENA RAO.] Through a given point on the curve of question 34 any line is drawn. Find the remaining points of intersection of the line and the curve.

THE VERNACULAR COMPOSITION AND THE INTERMEDIATE COURSE.

THE recent Government order in regard to the vernacular composition being made a compulsory subject with a minimum of 50 per cent., procreates an impulse in consequence of which I indite the following lines for the perusal and earnest consideration of the public and the Government, in particular.

The matter is of such an import, it seems to me, that it cannot be permitted to rest where it is. True; we—I mean the public—should have clearly brought home to the Government the undesirableness of such a decision as the present one, but, it seems to me, that such a step before now would have been thought unpardonably presumptive in many quarters. It is in fact this fear of a stigma that has refrained people like me from expressing anything on the matter before the publication of a final decision by the Government. Not only that. We have all been aware that the affair has been treated in a serious spirit; that is to say, it has received throughout its course every attention it deserved. Nowhere had it been meddled with either in an inconsiderate manner nor, as we are all aware, have the proceedings in the Senate been tainted with any sort of indifference. It is no wonder therefore that no voice of disapprobation has been raised anywhere.

To recapitulate. At the instance of Mr. P. R. Sundara Iyer, a committe was convened to consider the question of having 'composition in a vernacular language,' the question itself having come into existence by the action of the Local Government. This committee consisted of members who were best fit to represent our interests. It was the opinion of this committee that the Composition Paper should be dropped altogether. The matter was next brought before the Senate when an animated discussion ensued which terminated in the same away as it did in the committee, namely, in the majority being for the entire abolition of the Composition Paper. There was, however, some dissent against this view. This minority while unwilling to drop the Paper were of opinion that the minimum ought to be fixed at 35 per cent. Clearly, therefore, there were two opinions and only two on the matter: The Paper was to be abolished altogether as the majority desired, or it was to be retained with 35 as its minimum. There was

not one in the Senate who was of the opinion of the Government. These proceedings of the Senate were sent to the Government for a final decision. The public were confident, at any rate, I, for one, was that the Government would magnanimously grant the wish of the majority, or if it felt that such a wide divergence from the course it thought proper would be construed for *esprit mowtonnier*, it would at least concur with the opinion of the minority. Surely, there was nothing wrong in such confidence. Yet to the bewilderment of all, in the teeth of the opposition of the public, the Government has chosen its own course ending in a way which is least palatable and most bitter.

It is my firm opinion that the Government has thus acted in the matter not from any vain pride, not from any desire to exclude as many as possible from entering the portals of University, as is sometimes alleged, but from the mistaken notion that the institution of the Vernacular Composition Paper would be for the good interests of the Vernacular languages the study of which has been of late probably on the decline. I sincerely believe that on a clear representation and exposition of the matter the Government would kindly and surely reconsider its decision, and even drop the Paper altogether, as the majority in the Senate and Mr. Sundara Iyer's Committee desired.

It must be remembered the new Intermediate Course has very many good features which the disappearing F.A. is devoid of. The most noteworthy of these is the utter discouragement of that accursed 'cramming' which may be now safely asserted to have received its death-blow. Everything that could be done has been done by the new system to oust cramming altogether. We have no longer a set of heterogeneous subjects to study. There is no more shallow culture to be afraid of. On the other hand our youngsters have to make a real deep study in any one of the great subjects—Mathematics, Science, Histories, and Classics. It is no longer possible to get through one's collegiate course in as easy a way as it has been hitherto possible. This means that our young collegians have to swallow an intellectual food which is far more difficult to digest than the one they had been till now accustomed to.

The intermediate student whose optional branch is History, for instance, has to acquire a very wide knowledge of his subject. He has to study, as can be seen from a College calender the stout volumes of Bury's "History of Greece" and How and Leigh's "History of Rome" in addition to Logic and many other books including Modern History. There are no prescribed books for him, and consequently, his field of labours is limitless. On the influence of physical features on the civilisation of a country the lad has to read Buckle's "History of Civilisation"—at least the first volume of it. Similarly on every such point he has to study quite separate volumes, mostly of respectable sizes. This is certainly very taxing for the tender brains of a lad of 17 or 18 summers.

In the Matriculation class from which he has just come he was only accustomed to the mugging up of "Compendiums", "*Vade Mecums*", and "Questions and Answers" (the latter being of the kind 'When was the Second Battle of Buxar fought?') The shift from this course of study to the one prescribed for the Intermediate is very high and sudden.

Being so, the object of the Government ought to be to remove and not to introduce

minor pin-pricks of the sort of Vernacular Composition in order to permit the attention of the students to be engaged with the perusal of the more important and difficult subjects. It is very unjust to bother the poor lads with such a dry subject as a vernacular composition. Not only does the Government desire to make the Composition compulsory, but it also insists on the candidates getting 50 per cent (!) for a mere pass.

In addition to the optional subjects there is the English Language to tussle with. Books have been introduced for what is called detailed study and non-detailed study. I have just gone through a book prescribed for the latter object, and I find it very stilt. It seems to be a book decidedly high for the standard. Regarding this, I shall try to write in a future issue.

But to come to the Composition. I am not for the institution of any composition paper at all. Apart from the reasons hinted above there are supernumerary difficulties which strongly urge me (and I suppose every reasonable man too) to plead against such a step. First, let us take the case of the Sanskrit boy. He takes that subject for his second language in his first form. From the first form to the sixth he has to read Sanskrit and Sanskrit alone. He has absolutely nothing to do with his Vernacular, which, no wonder, he either forgets or completely murders by corruption. The Telugu of the people in the Southern districts is intermixed with Tamil and as such, it would sound very strange to the ear of a man from the Northern districts. For example, the Southern Teluguian would say పూడ్చినాడు where the Northerner speaks పెళ్లి పోయెను. By పూడ్చినాడు (pudchinadu) the latter would understand what we mean in English by 'buried' while its real meaning is "went away"! (Roughly we may take all the parts to the South of Nellore to comprise the Southern Districts.)

The Telugu boy of the South often takes up Sanskrit in his first form, for he will find it very difficult to understand the pure Telugu language. When he comes to the Intermediate class he has to write Vernacular Composition, that is to say, composition in Telugu. Just think what he can write. He has forgotten his telugu alphabets. Where is the wonder in it ? Six years ago (supposing he passes his Matric in his first year, which is very doubtful) he had learnt them. Since then he had neither the occasion nor the necessity to even look at them. He reads English journals in the Library, and writes to his father or guardian in English. Now, granting but not admitting, as the lawyers say, that he does remember the alphabets, pray what composition can he write? Is it sufficient to know the alphabets alone to write a composition and what is more monstrous, to score 50 p. c. in it ? He can only go on with his 'pudchinadu,' confound it probably with 'Velnadu' in the course of his 'composition,' and afford the examiner a very amusing reading with half-an-hour's hearty laughter in the bargain. Beyond that he cannot do much. Certainly, he is not to blame for all that.

There is another class of students whose case is more pitiable. These take up a subject which is not their mother-tongue, for their second language. Thus a Canarese boy takes Telugu in his first form. Now, look at it. He can read his Telugu text, repeat his Telugu grammar and know some Telugu idioms, to boot. But he cannot speak Telugu ! He can hardly understand it even !! He passes his Matric !!! and lo ! he has to write a composition in Telugu. His Canarese is at a discount. He has n't learnt its alphabets even. What is this poor boy to do ?

The study of vernacular grammar in the lower forms is very much neglected by 98 p. c. of the students. The Sanskrit, Telugu Tamil and the Canarese students all alike fish out the important points in their respective texts, and get through the examination. What can these write worthy of being called a 'composition' ?

A paper in composition is instituted in order to test the style, the grammar and the idiom of the candidate. This is the object of the Paper. The students can hardly pretend to have acquired knowledge of any one of these three. In such a state, is it not monstrous to hope that they can score 50 p. c. ? Is it not murderous ? I ask you. These are difficulties which the students ought to feel, and there are yet many others which they cannot help at all. These are with the examiners.

A certain Telugu Pandit or a Tamil Pandit likes a very simple style while another man hates it and likes only sesquipedalian phraseology. Pray what are the poor candidates to do tangled between the two ? Whom should they aim to please so as to get 50 p.c. ? Their fates are completely in the hands of the examiners. Certainly this was not at all the object aimed at by the Goverment when they passed orders in the G. O. dated 13th May last.

These are the *pros* and *cons* of the question which ought to receive the attention of the Government, who, I hope, will kindly see its way to the complete abolition of the Vernacular Composition Paper.

ENTRE DEUX VINS.

ABOLITION OF MATRICULATION EXAMINATION.*

Of course there can be marshalled very strong arguments both against and in favour of this point. Let us, at first examine the arguments against abolition.

1. The abolition of the examination will spell a chaos in the higher examinations.

2. The standard of examination will not be uniform

3. Any other test will not be a thorough one.

4. There will be display for partiality in admissions to Colleges.

Now we shall take up those which favour the abolition. They are as under—

1. We should march with times.

2. The present test encourages cramming in the whole of the secondary course.

3. Both the teachers and the taught aim at simply passing the test anyhow, not caring for the intellectual training.

4. The examination is too unwieldy.

5. This test is devoid of any fixed standard.

6. There is difficulty of accommodation which increases every year.

7. The University Commission where the Bombay interests were powerfully represented by Rev. Dr. Machigan—was of opinion that the examination was open to serious objection.

There is, besides, a host of arguments strong enough to prove the necessity of abolition.

Of course, those who criticize this step of Government have a perfect right to do so on the strength of reasonable grounds, but they should rather shrink, for the interest, of their own country, from ascribing a motive to Government. The following will show that the Government is not actuated by any other motive than that of

* This and the following are the papers read by Mr. K. P. Upadhyaya, B.A., in the recent Educational Conference held in Bombay under the auspices of the Teachers' Association, Bombay.

putting the Educational System on a sound level. As always happens, the human knowledge being only limited, Government may be wrong but to prove this, the public should wait for a time until the experiment is given a fair trial and at the end of a fixed period, if it would be found that the arrangement of abolishing examinations is prejudicial to the best interests of the country, the Government, I am sure, will show its readiness to do away with it. We all know that Government--whatever be its motives in introducing any kind of reform—always has the moral courage to acknowledge to the public its own defects. Plague policy of the Bombay Government is an instance to the point. There is no need to multiply such examples, as the Educational Policy is so openly expressed, that those who run may read it.

There is at present to be noticed a general tendency of decrying a step which emanates from Government. The Vernacular series has now come in for an undue share of criticism on this very ground. Those who criticize it, do not give it as much thought as it needs; they do not allow the series sufficient time to prove either its usefulness or worthlessness by practical results. We should now pause here and dispassionately weigh as to what good results would follow from the abolition of the examination.

For this let us at first see what becomes of the primary stage.

There you all know that a boy studies up to the highest Vernacular Standard—passes the annual examination and gets a certificate from the Headmaster of the School where he has been studying. If he desires to enter Government service, he presents himself at the Vernacular Final Examination—passes the test, and the department furnishes him with a testimonial or rather a passport for service.

If he desires to advance his Vernacular studies further, he seeks admission to one of the many Training Colleges in this Presidency, by going successfully through the examination test fixed by the Principal of the College.

Please note that the students seeking admission to a Training College, have as yet never complained, that the examination-test was either too stiff or too easy, or that it was partial. They have adapted themselves to the test and the whole machine of this educational institution goes on without any jarring sound.

In the light of this past experience of the first stage of education, let us now solve this difficult problem and the solution seems to me to be this, that, let a student have the facilities to study up to the Matriculation course in a High School and then to submit to an annual Examination to be held by the Government Inspector. Those who would pass this test would be furnished with the Leaving Certificate that he has passed the English Standard VII. This test, it should be noted will possibly include all those who form the Standard VII. If, however, strong public opinion objects to this arrangement of making it compulsary for all boys who form the class (St. VII) to appear at the annual examination, only those who desire to secure the Leaving Certificate may present themselves.

Those who want Service will have to pass the test of School Final Examination for which arrangements have already been made by Government.

Those who seek admission to a College may undergo the test fixed by the College where he desires to study.

If this arrangement is approved by Government, of course, carrying with it the educational public opinion, because it is no use introducing a popular reform which the people attack from all its sides, many of the main objections raised by the advocate of the non-abolition theory would at once disappear, of course, Government Educational Inspectors will complain that they have already been over-burdened with the work of office and inspection and that Mr. Upadhyaya is a great fool to make such a stupid proposal. Here I must say, that for the public interests, it should be so arranged that at least

Standard VII. may be examined by the Inspector who would be helped by the Head-master and his Staff. To examine a VII. Standard only in English would not take more than two whole days. And I am sure the Inspectors would not grudge this, if it is to be done solely for the interests of the boys. The test undertaken by an Inspector will be a sound and impartial one and notwithstanding this, if this arrangement is objected to, the Headmaster of the High Schools should be empowered to hold the examination of this Standard also.

Now one difficulty remains and it is this, that the examination test settled by different Colleges will not be uniform and that the best College will attract the best boys—

You know the University Commission jettisoned the proposal of doing away with the Matriculation Test on this ground. There is only one way to get out of this difficulty and it is this, that-all the Colleges may co-operate to set one type of question papers. In this the procedure adopted for holding the Vernacular Final Examination will help us. It is there arrranged that the department appoints an Examination Committee in each Zilla, Head-master of a High School being generally the Presidant and also nominates Examiners for each subject. These Examiners draw the papers on the subjects assigned to them and submit them through the President to the Educational Inspector. Thus there will be as many papers on each subject, as there are Committees, and the Educational Inspector has a wider scope to make his own selection. Of course some difficulty must arise to decide as to what the best paper is, because he is not expected to have a grasp over the Vernacular but somehow he does it. Many a time some questions are selected from each paper. Thus a uniform set of question papers is at last set in the examination. An analogous arrangement is desirable in this case also. The proposal of Government that each year, after the examination is over, every College should submit all question papers and some marked answer papers to the Board of Examiners, is open to a very serious objection. This arrangement would be just like giving a man medicine after he dies. What would become of those students who have unjustly to suffer and who thus have to lose all the bright prospects of future?

As for the second point *i.e.*, the best College—will have the best boys, it should be remembered that even in the old order of things, the best students always go to the best College, if they have the means to do so. At any rate this is not a serious grievance to complain of, because it is always good to have in a College either a set of inferior or superior staff. To yoke a best gem with the dullest brain in a class room does not yield salutary results.

One point more and then done with the subject. What about the pecuniary loss to the University It is an open secret that Matriculation Examination is now a paying concern.

In a scheme where one's purse is concerned, there is bound to be a very very loud cry as to the real and supposed disadvantages accruing from it. So it is my humble opinion, that if Government is serious about putting into force this scheme with the least possible friction with public opinion, it would kindly express its readiness to reimburse the substantial loss.—I mean the loss of "glittering gold."

Question--What should form the Curriculum of Studies in a proper scheme of Secondary education?

Answer—In answering this important question it is necessary to keep before our eye, the principle that there ought to be continuity in all the stages of education, whether Primary, Secondary or Collegiate.

Just as flower, fruit and seed form but the three stages of a plant, so the above-mentioned branches must be the different *aspects of one complete and harmonious whole*.

In answering this question we should also bear in mind the proposed reforms of Government

for the University course. We need not forget the curriculum of the Primary education sanctioned in the year 1902 by Government.

In deciding as to what subject should constitute the course of Secondary education, we should ascertain the basis upon which the fabric of secondary education should be raised. In other words we should see— what should be the aim of the Secondary education? This aim cannot be better expressed than in the words of His Excellency the Governor of Bombay. He says—"No subject should be included in the compulsory curriculum, unless it can as thoroughly be taught as to play an effective part in the intellectual training and to be, therefore, capable of being turned to *direct* or *indirect account in after life.*" The aim of Secondary education should not only be the imparting of knowledge, but it should also have *a bearing on the National* advancement.

Everything that has connection with us and that influences our physical, intellectual and moral nature is a means of education to us. The school, whether it may be a primary or a secondary institution, is a part of the general education. The school not only imparts knowledge, but engrafts the *principles* of *morality* &c., at the time when the mind is in a condition to *receive them.* The impressions then made prove indellible. It is, therefore, that the work of the school is considered as the noblest and grandest.

It will thus be seen that there is a close connection between the primary and the secondary course as between the secondary and the college course. Therefore, the object of introducing reforms in both should be analagous. This object is to bring all the institutions of this country *in line with the educational methods which have now assumed practical form in the Western world.*

There is another point which *challenges* our attention before deciding this question. It is its *financial aspect.* Any course planned with utmost care and greatest circumspection will be jettisoned by Government, if it would entail heavy expenditure because, in no uncertain terms, the Bombay Government has laid it down as a general educational policy that all the available funds would, henceforward, be utilised for the purpose of *expanding the scope of primary education.* Our sympathetic and far-sighted Governor, Sir George Clarke, has *often* told us that the Secondary education has, for the present, no claim for any Government help for *its expansion.* Thus, you will agree with me if I state:—

1st. That the course *that we are to-day discussing* should form an *intermediacy step*—a sort of bridge between the Primary and College stages.

2nd. That it should have before its eye, its educational value and a future practical utility.

3rd. That it should *not entail heavy expenditure on Government.*

A glance at the Primary *curriculum-chart No. 1* will show you that it contains the following subjects.

Primary course.

Vernacular reading.	*Mathematics.*	*History and Geography.*	*Object lesson.*	*Kindergarten.*	*Drawing,*

Chart No. 2 contains the subjects proposed by Government for *the first year* of the *University course.*

First year—University course.

English.	*2nd Language.*	*Mathematics.*	*Practical Science.*

Chart No. 3 includes within its scope the *University course after the first year*, which may be termed "Higher University Course."

Higher University Course.

Art or humanistic studies.			*Science-studies.*	
English.	*Mathematics or Logic.*	*2nd Language.*	*English, writing & essay.*	*One of three Science groups.*

Our duty to-day is to so fill in this *chasm* of Secondary education that it may not prove a

mere patch work. All the three curriculums should *form a continuous and consistent whole of one integral system.* Thus the first subject that *naturally* strikes us is "*English.*" From a comparison of the charts, it will be seen that the *first* subject of the *three courses* will be the same *in essence*, though the subject of the *Primary stage* appears *different in form.* We all know that the object of *Vernacular reading*—is to secure a *grasp* over the *structure of the language.* The object of including "*English*" either in *the Secondary* or in the *College course* is the same, though the *language be different.* Students must have a fair knowledge of English if they desire to be successful in life. In view of the abolition of the Matriculation Examination—and of empowering the Colleges to hold their own entrance examination, it is necessary that two English text books for prose and poetry should be fixed for this course. Compulsory paraphrase seems to be necessary.

Second and *third subjects* of our curriculam will be *Mathematics* and *Second Language.* These are subjects common to Secondary as well as College studies. They need no special comments.

HISTORY AND GEOGRAPHY

Then comes the subject of History and Geography. The proposal of Government to teach only Indian History and not to load the brains of students with unconnected facts relating to English History is commendable. Geography should rather take a practical turn. It should rather be taught from a map than from a book, &c.

For the fifth subject in *our list*, let us look to the *charts.* At once "*Science*" draws our attention. We note, in the charts, that this subject can *trace its origin* to the *Primary course.* I mean the *inclusion of* "*object lesson*", therein. Reference to the present curriculam of the Secondary education will remind us of the *inclusion* of *chemistry* and *astronomy*, which *fall within the domain of science*, but these subjects, though important *in their own way*, do not furnish us with *continuity* and their inclusion in the High School course *is beset with* many difficulties. The subjects of *Nature study* and Hygiene proposed by Government as their *substitutes* are excellent in *their educative value* to the students. We know that the aim of introducing "*object lesson*" in the *Primary course* is to allow children to *study Nature* and thus to *cultivate the power of observation.* So it is *consistent* to introduce *Nature study* in the *second* and *intermediary* stage. Of course, here the *scope* of its *use* will be considerably *widened* and the *secrets of Nature* will be *unlocked* by a *deeper study* and a greater *concentration.* The knowledge of simple Hygiene is needful to all. The subjects of *chemistry* and *astronomy* should be eliminated for the following *reasons.*

1st. It is better and more consistent that this subject should begin from the *University first year.*

2nd. All the High Schools cannot be equipped with a *strong staff* and adequate *apparatus.*

3rd. At *the advanced stage of education*, students will be able to better understand the *physical facts.*

4th. These subjects have no *educational value* as they give only *fragmentary information* in theory form only.

Then comes *the subject of drawing*, which is common to the first and the second stage. Its usefulness is admitted by all who are concerned in matters educational. The subject of *compulsory Vernacular* is *last but one.* The arrangement of teaching all the subjects of secondary course through the *medium of Vernacular* will be deemed the best reform ever introduced in India. This point has been widely discussed by the ablest educationalists of this country and *the trend of educational opinion* is in favour of this *reform. Financial difficulties*, however, come in the way. In order to meet this public demand half way and to set aside the complaints that the students of High Schools get no *sound knowledge* of their own Vernaculars which is very necessary the

University has *introduced* the subject of Vernacular into the High School course. This subject urgently stands in need of a *simple test* in examination, and a clearing *of certain points* proposed by the *Superintendent, New English School, Poona,* in his recent letter to the University of Bombay.

A last word and I shall stop. If we cast a glance at the chart of the Primary education, we shall find that *its last but not least important* subject is *kindergarten.* As to its *aim and use* there seems to have arisen some misunderstanding both in the *mind of the Department* as well of *the public. Kindergarten is not a subject* but *it is a system,* and as such it can, with advantage, pervade *the whole structure of education.* If it be conceded that the principle of kindergarten system is to impart knowledge by *creating sentiments of joy* in the heart of children and thus to secure the *all-round development*; if it be conceded that the two of the most advanced *countries* of the world—*Germany* and *America* owe their all-round prosperity to the *proper and adequate application* of this system to *their educational institutions of all grades,* the system if introduced into all the courses of education is sure to do incalculable good to this country, and therefore, it deserves all the consideration and encouragement which Government can give. The half-hearted arrangement of *launching* only a portion (4 *gifts*) of the system into the *Primary stage* and of *trusting,* for its beneficial results, to *the poorly-paid* and *ill-equipped* teachers in the *initial* stage, has contributed to bring forth to the public view, its *worst defects from which no educational system of the world* is free and the system is dying an *unnatural death* in this country and particularly in this Presidency, provided Government will not give it a helping hand.

OUR ENGLISH LETTER.

LIVERPOOL, *May* 1909.

The Budget has been introduced, and for the rest of the Session Parliament will do little besides discuss, amend, and carry Mr. Lloyd George's scheme. It can hardly be said to have fallen like a bolt from the blue, but if there were a metaphor which, all unknown to your correspondent, stands for the opposite process, it would describe the situation with some accuracy. As Mr. Churchill has said, instead of dismay at this year's deficit we are in doubts as to what shall become of next year's surplus. And if things pass out as is expected, it cannot but tend to the furtherance of the cause of education. For what we are suffering from most of all just now is, the extreme pressure on the municipalities which leads to a cheese-paring policy with regard to the schools. If this pressure could be lightened, and it would be one of the first duties of a Chancellor with money at his disposal to take steps in that direction, no doubt we should see better days, and the Liverpool schools, for instance, might be washed out oftener than once a month. The cry of the over-rated townships—we use the epithet in its technical sense—would no more be heard, and they would no longer be driven by the necessity for economy to rely on unqualified teachers in the schools. Why spend money on bricks and mortar and make it all so much waste expenditure by employing incompetent teachers?

We have written once or twice recently on continuation schools. The member for Carnavon brought the matter up in Parliament some days ago. He made out a strong case as to the importance of doing something further to fill the gap in those critical years which follow upon a boy or girl leaving school. At a generous estimate only one boy in three receives any education between his fourteenth and seventeenth year. In twenty-one German States there is a compulsory system. Denmark's success in agriculture is largely due to their success with their agricultural continuation schools. So long as we merely have a system whereby a boy or girl who has had to work hard all day has the option of going to a night school we cannot expect much good to result—even to those who make use of the facilities. What is wanted is, an agreement between parents and employers and the Board of Education working through the local authorities. Mr. Runciman held out hopes of something being done in this direction. The whole question of boy labour is engaging the attention of the Government, and he hoped that the school-leaving age would soon be raised. The Departmental Committee which he appointed last year is soon to make a full report on this matter. Lancashire with its half-times stands in the way. Apparently Lancashire is to be a thorn in the side of the educationists as well as the socialists, who cannot capture the Trades Unions for socialism because the hard headed artisans of the Northern Counties have accumulated enough savings and bought enough rows of houses to make them proof against any proposals which in relieving others of much, will relieve them of something. It is precisely the same with the half-time system, for which nothing whatever can be said, except that it pays—though even from the monetary point of view it is doubtful whether it pays in the end. But Lancashire (of the Manchester school in politics) is apt to take a commercial view of things: Corinth itself in its great days was not more frank in looking at all political questions from this standpoint. However, on this matter of continuation schools Mr. Runciman has set a consultative committee to work which is collecting evidence and working at schemes in detail in the hope of securing something which it will be possible to put into practice. And we can only hope he will be successful. The instruction given in the elementary schools has been improved out of recognition, and it is indeed to be regretted if this improvement is not going to be followed up by some additional teaching which will make the work done of a more permanent character.

The National Union for Teachers has held its annual Conference at Morcambe, the English Naples (for this comparison we do not accept full responsibility; we have seen it on posters). Much useful work was gone through, if it is ever much use to talk and pass resolutions. It is significant that Mr. Hole, the President, contended that the only possible solution of the everlasting difficulty is secular education. "I must say that I am driven to the conclusion that in this solution lies the largest measure of practical justice and equity that can be meted out to contending claims; provided always that where denominations have furnished the funds for building their schools, they must receive from the public a fair rent for the occupation of the premises and money to keep them in a satisfactory condition of sanitation and repair." Mr. Pickles, a distinguished ex-President, led a hearty assault on the Premier and Chancellor for their non-possumus attitude on the question of further Exchequer grants to relieve the local authorities. All they got from the Education office was high ideals, and no money at the back of them.

Co-education was also discussed. It was a lady who brought forward the resolution against it. She contended that the time-table was drawn up in the interests of the boys to the detriment of the girls, who were also spoiled by the men-teachers. And it was hinted very plainly that there were certain moral aspects of the question which were perfectly well known to those with experience of the system, and which told very strongly against its advisability. We think that the opponents of the system made out a strong case: no doubt there is something to be said on the other side, and something was said, but the strength seems to lie with the opponents of the system. The general outcome of the discussions has been well summed up as follows: The Conference was of opinion that classes must still further decrease in size; scales of salaries, once promised, must be enforced; Government grants

must be increased; 'boys and girls' departments should have separate head teachers.

The Chancellor of Oxford University is Lord Curzon. We do not imagine for one moment that you have forgotten that fact. We are not allowed to. And why, pray, should not a Chancellor be something more than a mere figure head. Lord Curzon has addressed an open letter to the University and is determined in this and other ways to work his will upon the place. But he is not anxious for a Commission, and he will no doubt be cheered to know that he has the support of your correspondent on this point. Let the young Turks do their best before the powers step in. The Endowment Fund that he is raising has reached £ 140,000, and he would not like to see further contributions checked by the laying of ruthless hands on the constitution. But Lord Curzon himself goes very far towards reform. The two vexed questions of recent times he settles on the side of the progressives—No Greek in smalls, and degrees for women. But he does not go very far towards reform of the scholarship system. The scholarships go for the more part to classical men and to the sons of well-to-do parents. How any Oxford man can dispute the latter point passes our comprehension. No doubt anything could be proved from Statistics, but we all know who get the scholarships. Take the last list: Magdalen demyships and exhibitions have just been won by boys from Tonbridge, Rugby, Harrow, Bishop's Stortford, Eton, Winchester, King Edwards, Morpeth: we give them in the order in which they come. That list proves nothing of course, but it illustrates a well known fact that it is only a few restricted exhibitions that really are given to men, who could not go to the Varsity otherwise. It was very rarely the case that a man took the status of a scholar without the emolument, though surely that course is one that ought to be encouraged. Lord Curzon's letter has been well received. The Hebdomadal Council has agreed to certain changes which he has proposed in Congregation and Convocation, and no doubt more will come of it: so we will spare you any futile prophecies.

Ruskin Hall has been the scene of conflict this last month. True to their traditions, the Trades Unionists have indulged in the luxury of a strike. They were not satisfied with the removal of the Head of the College who had as a matter of fact completely failed to maintain discipline, and they took extreme measures. But it is thought that the business is now happily settled. Mr Sidney Ball must have made an excellent intermediary.

Liverpool University are honouring some distinguished men tomorrow. It is the first official appearance of the new Chancellor, the new Lord Derby, who has hardly the Academic or literary qualifications of Lord Curzon or even of his father whom he succeeds. But the men to receive honorary Degrees include Lord Charles Beresford (will he ever lose his popularity?) and Lord Roberts (who is not quite the idol that he was and deserves to be), Vinograd off and Balfour and Birrell, Sir John Brunner and Lord Crewe. No doubt the gilded youths will be generous in their orations. It is said that the Public Orator at Cambrige mystified science and classical men alike, in his Ciceronian references to Dr. Sventted in and his exploits, but the introduction of 'Mesopotamiam' in the middle roused the gallery to the highest pitch of enthusiasm.

Reviews and Notices.

A FIRST BOOK OF BOTANY. BY ELIZABETH HEALEY MACMILLAN AND CO., LIMITED. 1909.

We have great pleasure in bringing this book to the notice of our readers. It has been planned to follow so far as possible a seasonable arrangement and starts with the study of fruits. Observation and experiment form the dominating notes of the lessons, and great stress is laid on the need of constant practice inaccurate sketching. Though the specimens used are such as can be obtained easily in England, yet in the hands of an intelligent teacher the book will be found useful in India.

BOTANY. BY J. REYNOLDS GREEN, SC.D., F.R.S., DENT'S SCIENTIFIC PRIMERS.—J. M. DENT AND CO., LONDON. 1s.

This book by an eminent botanist presents the study of a plant as a living organism. The author has attempted to present plants as they are engaged in the struggle for existence, not only to describe their form and structure but also to explain what they do in life and why and how they do it. The book deals with botany as a branch of biology and the author therefore advises that some biology should be read before beginning botany. The book may with advantage be read by students preparing for the Intermediate Examinations of Indian Universities.

BIOLOGY. BY R.T HARVEY GIBSON, M.A DENT'S SCIENTIFIC PRIMERS. J. M. DENT AND CO., LONDON. 1s.

The book contains an outline of some of the more important principles of the science of biology, and an attempt has been made to give in simple language the inter-relationship existing between structure and function in living organisms. An elementary knowledge of physics and chemistry is pre-supposed. The book will surely be found of interest and service to those who are not acquainted with the general principles of biology.

CHEMISTRY. BY W. A. TILDEN, SC.D., F. R. S., DENT'S SCIENTIFIC PRIMERS. J. M. DENT AND CO. LONDON. 1s.

Professor Tilden's other books are so well known to teachers of science in India that the present one needs no special recommendation. The author has attempted to expound the fundamental principles of chemistry in an elementary form to readers entirely ignorant of the subject. Facts alone are relied upon throughout the early part of the book, and theory is introduced only after duly preparing the mind of the reader for its right appreciation. The subject is logically developed and nothing superfluous has been introduced. Dr. Tilden rightly advocates a commingling of both the heuristic and didactic systems. He points out that there are great objections to both these systems. The unqualified didactic method tends to paralyse the power of observing correctly and reasoning clearly thereon. Perpetual problem-solving, which is the characteristic of the heuristic method, harasses the young student and tends to render physical science distasteful, as has been found to be the case in American institutions. The object of education is to communicate the experience of the race in its main outlines to the individual and save him from those morasses into which the race had fallen in its development. Life is too short for any individual to teach himself by direct experience the great principles upon which a branch of science is built up. The author treats as far as possible the several parts of the subject in the historical order of discovery. The book forms a safe guide which can be placed in the hands of every beginner.

THE SCHOOLMASTERS' YEAR BOOK AND DIRECTORY. 1909. A REFERENCE BOOK OF SECONDARY EDUCATION IN ENGLAND AND WALES. THE YEAR BOOK PRESS, C/O SWAN SONNENSCHEIN AND CO., LIMITED, LONDON.

This book consists of three parts. The first part gives general information, such as administration of secondary education, educational societies and organizations, examinations and inspection, chronicle of the year, publications. All this is preceded by a very interesting review of the year. This part contains much that will be found interesting by the Indian teacher The second and third parts contain respectively lists of secondary schoolmasters and secondary schools. The book gives one an idea of the magnitude of the work done by the secondary schoolmasters in England and as such deserves a place in the library of every secondary school in India.

HAZELL'S ANNUAL FOR 1909. A CYCLOPÆDIC RECORD OF MEN AND AFFAIRS FOR USE IN 1909. EDITED BY W. PALMER, B.A. (LOND.) HAZELL, WATSON AND WINEY, LD., LONDON. 1909.

The 1909 Annual has been thoroughly revised and rewritten to meet the changing needs of the time. To make the book up to date in regard to questions of the day, a number of new articles has been added. The book contains a mine of information on all matters, biographical and statistical. No school or college library can afford to be without a copy of this reference book.

AN INTRODUCTION TO PROJECTIVE GEOMETRY. By L. N. G. FILON, M.A., D. Sc. EDWARD ARNOLD, LONDON.

The aim of this book is to supply a compact text-book giving the theory of conic sections on modern lines. It has been prepared to meet the demands of the Pass and Honours Degrees of the University of London. Though the spirit of the projective methods has been adhered to, the author has, instead of basing the treatment of the subject upon harmonic groups, introduced cross-ratio from the beginning, as this enables the development of projective geometry by an appeal to metrical properties, the method best suited to beginners. Most of the examples are taken from exercises set to classes at University College, London, and from College and University Examination papers. We heartily recommend the book as an easy introduction to the classical treatises of Cremona and Reye on the same subject.

Indian Educational Notes.

MADRAS.

WE understand that Mr. P. Lakshmi Narasu Naidu, B A, Assistant Professor of Physical Science, Madras Christian College, has been appointed Professor of Physical Science, Pachaiyappa's College, Madras. We heartily congratulate the Trustees of the Pachaiyappa's College on this excellent appointment.

THIS year the State Technical Scholarship has been awarded to Mr. Syed Fayazuddin of Ellichpur to learn the art of tanning. Mr. Syed Fayazuddin is a young man of twenty-two, is a second class Mechanical Engineer and was a student of the Government Chrome Tannery of Madras before he was selected as Government scholar. The value of the scholarship is £150 per annum and it is tenable for two years which period may be extended for one year more if necessary. Mr. Syed Fayazuddin will leave Bombay by the Mail Steamer of the 21st August reaching England by the middle of September. The place of his education in England will be selected by the Secretary of State for India after his arrival in London.

THE Government of Madras in recording the report on the working of the Rajahmundry College during 1908, remarks, that the very small number of non-Brahmin Hindus who attend the College—only 10 as compared with 137 Brahmins—is much to be regretted.

THE Government of Madras has vetoed the resolution of the Madras University regarding the abolition of "composition in a vernacular language" as one of the compulsory subjects in the Intermediate Examination and passed orders making vernacular composition for Intermediate Course *compulsory* and fixed a very high minimum of *50 per cent.*

MR. O. J. Couldrey, B A., Inspector of Schools, Sixth Circle, and acting Professor of English, Presidency College, is to act as Principal, Rajahmundry College, during the absence of Mr. M. Hunter, on leave or until further orders. To join on the 5th July 1909, the date of reopening of the Rajahmundry College after the summer vacation.

THE report of the Law College for the year 1908 contains some items of interest. The strength was eighty less than in the previous year, and it is sincerely to be hoped that Madras will not in the near future suffer from a dearth of Vakils. The results, however, of the examinations were on the whole fair, though those of the previous year for the degree of B.L. were much better. Only the results of the First Grade Pleadership Examination were, as Dr. Bourne remarks, far from encouraging. The acting Principal, Mr. C. E. Odgers, Barrister-at-Law, appointed tutorial hours in which students might come and consult him, but very little use was made of the opportunity. Mr. Odgers fears that the students prefer to get through their examinations by a terrific cram shortly before the examinations take place, instead of learning steadily throughout the year. That is characteristic of Indian students in most colleges, for the result of an examination is always regarded as of more importance than the amount of knowledge gained. The authorities of the Law College appear, however, to be making efforts to counteract the students' faith in cram and to encourage them to use the College as a place of study.

THE Government of Madras have sanctioned the transfer to the Department of Industries of certain Industrial Schools in Madras, and have directed that the grants to these institutions in future be paid by the Director of Industries. The following is a list of the institutions so transferred :—

Madura Technical Institute; Tinnevelly Technical Institute; Anjumaniamu-fid-i-Ala-i-Islam, Madras; Arni Industrial School; Art Industrial School, Nazareth; W. M. Industrial School, Karur; St. Joseph's Industrial School, Coimbatore; Anjumani-Isha-Athal Hasanath, Vellore; Erukattancheri Industrial School; L. M. Industrial School, Salem; U. F C. M. Agricultural School, Melrosapuram; Government Press Technical School; Ramnad S.P. G. Industrial School; Guntur A.E.L.M. Industrial School for Mahomedan Women; All Saints' Girls' Industrial School, Puthur; Kudankulam S P G. Industrial School for Women; Scottish Ladies' Association Industrial Classes, Kilpauk; St. John's Art Industrial School, Nazareth; Chinglaput U. F. C.M Industrial School for Girls; Idayankudi S.P G. Girls' Industrial School; Trichinopoly Kumstown E.L M. Industrial School; W M, Lace-making Girls' School, Karur; Tangasseri St. Joseph's Girls' School; H.E L M. Industrial School, Nayudupet; Irungalur Girls' Industrial School; Cuddalore S.P G Industrial School for Girls; Kilnr D.M. Industrial School for Girls; Gudur G.M. Girls' Lace-making Class; Tindivanam St. Joseph's Industrial School; Arcot A.M. Women's Industrial School, Ranipettai; Cuddalore O. T. Edward S.P.G.; Industrial School; Guntur A E L.M. Industrial School; Puttur All Saints' Boys' Industrial School; Bellary St. Joseph's Girls' Industrial School; and P. T. Chengalvaraya Nayakar's Technical School, Vepery.

A Government Order states :—

1. The Director of Public Instruction makes the following proposals in regard to examinations for European schools—(1) that the conduct of the examinations be entrusted to a Board to be called the "European School Examination Board"; (2) that all the clerical work connected with the examinations be done by the Office of the Commissioner for Government Examinations under the control of the Secretary; (3) that the non-official members of the Board be paid a remuneration of Rs. 100 each for their services as members in addition to any other sum that may be allowed to them for setting and valuing question papers; (4) that non-official examiners and superintendents be remunerated; and (5) that the same Board be entrusted with the examination of candidates from Bangalore schools also, and that the charges be apportioned between Madras and Bangalore.

2. It is further proposed that the Board above referred to should consist of the Inspector of European and Training Schools, who should also be President, the Senior Inspectress of Girls' Schools, and two officials and three non-officials to be appointed annually by the Director of Public Instruction. The principal duties of the Board are defined as follows :—

(1) To recommend the centres and places of examination; (2) To fix the number and length of the question papers and the dates of the examinations subject to the provisions of the Code; (3) To nominate examiners from their own body and from outsiders and to nominate superintendents of examinations; (4) To consider and pass the question papers. (5) To moderate, if necessary, and to pass the marks of the examiners; (6) To declare which candidates have passed; (7) To recommend the award of scholarships on the results; (8) To report to the Director of Public Instruction on the examinations.

3. The Government accept generally the proposals of the Director of Public Instruction and the constitution of a Board as proposed; but they consider that no member of the Board should be an examiner.

4. The Government also approve the payment of remuneration to the examiners according to the following scale, the remuneration being paid to all examiners, whether officials or non-officials :—

(i) PRIMARY MIDDLE SCHOOL AND SCHOLARSHIP EXAMINATIONS.

Setting a dictation paper, Rs. 5; setting any other paper, Rs. 20; valuing a dictation paper, As. 4; and valuing any other paper, As. 8.

(ii) HIGH SCHOOL EXAMINATION.

Setting a three-hours or longer paper Rs. 50; (Proportionate rate to be allowed for a shorter paper). Valuing a three-hours or longer paper, 6 annas to 12 annas.

The rates for valuing the High School Examination papers will be fixed in accordance with the scale prescribed by the Madras University for the Matriculation examination.

IN modification of G O. No. 118 Educational, dated 24th February 1898, the Governor in Council directs that the Matriculation Examination of the Allahabad University shall in future be accepted as equivalent to the Upper Secondary Examination or the Matriculation Examination of the Madras University for the purposes of article 1 of the Public Service notification.

2. The Commissioner for Government Examinations will be requested to submit a draft of the necessary alterations in the Public Service Notification.

I.

REPORT ON THE OPERATIONS OF THE MADRAS TEXT-BOOK COMMITTEE FOR THE OFFICIAL YEAR 1908—1909.

The constitution of the Committee on 1st April 1908 was as follows :—

Mr. H. J Allen, M A., M.R Ry. B. Hanumanta Rau, B. A., Mr. R. L. Jones, M A., F.R.A.S., Khaja Khan Sahib B A., M R Ry. M. Krishnan, B.A., B L., Mr. H. Malim, M A., M.R Ry. S. Mangesh Rau, B A., Mr. A. I. Mayhew, B.A., Mr. E. W Middlemast, M A., M.R.Ry. K. Nagoji Rau, B A., Rao Bahadur. M R.Ry. K. B. Ramanatha Aiyar, M.A., B.L, L.T., M.R.Ry. M. Rangacharlar, M.A., Rao Bahadur. Mrs. C. E. Rhenius. Rev. J. D. W. Sewell, S J, Mr. J. H., Stone, M A., F R H S., T. Saiyid Mahmud Sahib. M.R Ry. K. Virasalingam Pantulu, Rao Bahadur. Rev T Walker, M A., Mr. J. A. Yates, M A, Rev. A. Moffat, M.A., B SC, F R S E., *Secretary.*

Three hundred and seventeen books were considered by the Committee during the official year, and 202 of them were found suitable for use in schools.

APPENDIX A.

RULES FOR THE TEXT-BOOK COMMITTEE.

1. The Madras Text-Book Committee has been appointed for the following purposes:—

(a) To take into consideration such books as may be submitted to it by the Director of Public Instruction and to advise him in regard to their suitability as text-books for the several classes and forms in recognised schools in accordance with the curricula from time to time prescribed for such classes and forms, the list in each subject and for each class or form being as varied and complete as possible, so that managers of schools may have a wide field in which to exercise the freedom of choice vested in them.

(b) To advise the Educational department as to the steps to be taken for the preparation and publication of new text-books when necessary.

(c) To help in forming, under the control of the Director of Public Instruction, (i) an educational library containing copies of all text-books approved from time to time by the department, copies of text-books approved or prescribed in other provinces of India and in other countries, and copies of works on the theory, the practice, and the history of education; and (ii) an educational museum containing plans and models of school buildings and specimens of maps, diagrams, apparatus and appliances suitable for schools.

2. The Committee shall consist of not more than twenty members in addition to the president.

3. The members of the Committee shall be appointed by the Director of Public Instruction who may, at any time and without assigning reasons, remove any member. The members shall hold office for three years but shall be eligible for reappointment. A member leaving the Presidency for an absence exceeding six months shall be considered to have permanently vacated his seat. Vacancies not exceeding six months in duration shall, when necessary, be temporarily filled up.

4. The Director of Public Instruction shall be *ex-officio* president, and one of the members shall be secretary.

5. The Committee shall have power to appoint sub committees, each consisting of not more than five members in addition to the chairman, for the purpose of dealing with different subjects and languages. It shall also have power to consult specialists who are not members of the Committee. Any member appointed to fill a temporary vacancy on the Committee shall *ipso facto* become a member of the sub-committees to which the absent member belongs. Every book referred to the Committee by the Director shall be referred by it to the appropriate sub-committee for examination and report.

6 The chairman of each sub committee shall be aprointed by the Committee, with the limitation that in the case of the sub-committees for the vernaculars an Inspector of the department shall always be chairman.

7. The Committee shall meet ordinarily twice a year, on the last Wednesday in March and the last Wednesday in October. The president shall have power to convene special meetings as occasions arise or on the requisition in writing of not less than four members. Sub-committees shall meet at such times as their respective chairmen may consider necessary.

8. Seven members of the Committee shall form a quorum. The quorum for a sub-committee shall be not less than half the members of such sub-committee, who are resident in Madras.

9. The meetings of the Committee and of sub-committees shall ordinarily be held at the office of the Director of Public Instruction.

10. At all meetings of the Committee or of sub-committees, the president or the chairman, as the case may be, shall take the chair; but in case of his absence the members present shall appoint a chairman.

11. All questions that may arise at meetings of the Committee or of sub-committees shall be decided by a majority of the votes of those present. In the event of the votes, including that of the president or the chairman, being equal, the president or the chairman shall have a second or casting vote. Opinions of absent members may be submitted in writing, but shall not count as votes.

12. It shall be the duty of the secretary to give notice of the meetings of the Committee and of sub-committees when held at the ordinary place of meeting, to attend the meetings of the Committee and whenever possible the meetings of the sub-committees, and to keep a record of the proceedings When the secretary cannot be present at a meeting of a sub-committee, a similar record of the proceedings shall be kept by the chairman of the sub-committee, who shall forward it to the secretary.

13. A copy of the proceedings of every Committee meeting shall be forwarded to the Director of Public Instruction within two weeks after the meeting.

14. The Committee shall, not later than the 1st June in each year, forward to the Director of Public Instruction a report on the work done during the official year. This report shall be submitted to Government by the Director with such remarks as he may see fit to offer on the operations of the Committee.

15. Each book forwarded to a sub-committee shall be referred to not less than two of its members for expression of opinion.

16. No books referred to a member shall be kept for more than a month.

17. In the case of books rejected as unsuitable by the Text-Book Committee, some brief indication of the grounds on which the judgment has been formed shall be given.

18. The lists of books passed by the various sub-committees shall be printed and circulated among the members of the Committee at least a fortnight before the date of the meeting at which they are to be approved.

19. The Committee will have no concern with the text-books of schools classed as European schools by the Director of Public Instruction unless they are specially referred to them for opinion by Government or by the Director.

APPENDIX B.

THE CONSTITUTION OF THE SUB-COMMITTEES CORRECTED UP TO DATE.

SUB-COMMITTEES.

(1) *English.*

Mr. J. H. Stone, M.A., F.R.H.S., *Chairman*, M.R.Ry S. Mangesh Rau, B.A., Mr. A. I. Mayhew, B.A., M.R.Ry. K. B. Ramanatha Aiyar, M.A., B.L., L.T., Mr. J. A. Yates, M.A.

(2) *Mathematics (including Drawing).*

M.R.Ry. B. Hanumanta Rau, B.A., *Chairman.*, Mr. R. Ll. Jones, M.A., F.R.A.S., Mr. H. Malim, M.A., Mr. E. W. Middlemast, M.A., Rev. A. Moffat, M.A., B.SC., F.R.S.E., Mr. J. D. W. Sewell, S.J.

(3) *History and Geography.*

Mr. H. J. Allen, M.A., *Chairman*, Mr. A. I. Mayhew B.A., M.R.Ry. K. B. Ramanatha Aiyar, M.A., B.L., L.T., Rev. J. D. W. Sewell, S.J., Mr. J. H. Stone, M.A., F.R.H.S. Mr. J. A. Yates, M.A.

(4) *Vernaculars (Tamil, Telugu, Malayalam and Canarese).*

Mr. A. I. Mayhew, B.A., *Chairman*; M.R.Ry. K. Nagoji Rau, B.A., Rao Bahadur (*Tamil*), M.R.Ry. K. B. Ramanatha Aiyar, M.A., B.L., L.T., (*Tamil*), Rev. T. Walker, M.A., (*Tamil*), Mrs. Cecil E. Rhenius, (*Telugu*), M.R.Ry. K. Viresalingam Pantulu, Rao Bahadur (*Telugu*), M.R.Ry. M. Rangachariyar, M.A., Rao Bahadur (*Telugu and Canarese*), M.R.Ry. M. Krishnan, B.A., B.L., (*Malayalam*), M.R.Ry. S. Mangesh Rau, B.A., (*Canarese*).

(5) *Hindustani, Arabic and Persian.*

Khaja Khan Sahib, B.A., *Chairman*; T. Saiyid Mahmud Sahib.

(6) *Sanskrit.*

M.R Ry. M. Rangachariyar, M.A., Rao Bahadur, *Chairman.*

(7) *Latin and Greek.*

Mr. A. I. Mayhew, B.A., *Chairman.* Rev. J. D. W. Sewell, S.J., Mr. J. H. Stone, M.A., F.R.H.S.

(8) *French and German.*

Mr. E. W. Middlemast, M.A., *Chairman*; Mr. A. I. Mayhew, B.A., Rev. A. Moffat, M.A., B.SC., F.R.S.E., Mr. J. A. Yates, M.A.

(9) *Physics, Chemistry and Hygiene.*

Mr. R. Ll Jones. M.A., F.R.A.S., *Chairman*; Rev A. Moffat, M.A., B.SC., F.R.S.E.

(10) *Kindergarten Teaching and Object Lessons.*

Mr. J. A. Yates, M.A., *Chairman*, M.R.Ry. K. Nagoji Rau, B.A., Rao Bahadur.

II.

2. During the year under report, the power to frame rules for the guidance of the Text-book Committee and to appoint members of the Committee was delegated to the Director in G. O., No. 270, Educational, dated 8th April 1908.

BOMBAY.

THE Senate of the University of Bombay have re-elected the Hon. Mr Chunilal H. Setalvad for recommendation to his Excellency the Governor with a view to nomination as an additional Member of his Excellency's Council for making Laws and Regulations only.

PROF. Panse of the Fergusson College made a speech in connection with a gathering of students of the Satara New English School. Prof. Panse is a member of the Deccan Education Society of Poona. He is reported to have advised the students to refrain from taking part in even such philanthropic movements as the *Paisa—Fund* or the *Mushti—fund.*

HIS Highness the Maharaja of Bikanir has been pleased to make a second grant of Rs. 5,000 to the Seva Sadan Fund, the first grant of Rs. 5,000 having been made a few weeks ago. The Maharaja Sahib intends marking his sympathy with the work of the Seva Sadan again. This speaks volumes for his enlightened appreciation of the efforts being made to train a body of high class Indian ladies for philanthropic work of all kinds, to relieve and educate all in need of help, with the view of making them self-respecting and useful members of the society. We are glad to learn that H. H. the Maharaja of Jodhpur also contributes a second instalment of Rs. 4,000, and H. H. the Maharao of Dungarpur and H. H. the Nawab Sahib of Tonk give a first instalment of Rs. 1,000 each.—*The Bombay Gazette.*

THE Bombay Government have empowered school-inspecting Officers to provide slates and books free for deserving poor pupils in indigenous schools.

CALCUTTA.

THE Bengal Government have, it is understood, sanctioned a proposed expenditure of Rs. 69,000 on the provision of quarters for the Principal and two European Professors of the Agricultural College, Sabour, Bhagalpur District, as it is necessary that these officers should reside on the College premises.

DR. Satis Chandra Bagchi, LL.D., is nominated an ordinary Fellow of the Calcutta University.

IT is understood that one Industrial scholarship has been allotted to Bengal.

THE M. M. Bose's Homeopathic Medical College has been amalgamated with the Calcutta School of Homeopathy. Henceforth the combined staff of the two colleges will join hands for the propagation of the new system of medicine. We are requested to announce that the institution has been entirely remodelled and every facility will be afforded for the study of Materia Medica and a thorough practical training in all the other allied branches.

MR. C. Russel, Principal of the Patna College, on leave, is expected to return to India early in July when he is likely to officiate as Principal of the Presidency College in place of Mr. James, who is now acting as Director of Public Instruction, Bengal.

THE Annual Distribution of Prizes to the Bengal-Nagpur Railway School, Dongargarh, came off on Tuesday, 18th instant. The programme consisted of a few recitations, songs, and drills which were rendered most enthusiastically by the children of the school on a stage which had been previously arranged and prettily decorated for the occasion. Mr. Shortland, District Engineer, and President of the School, presided, and spoke a few kind words to the children and the working party of the satisfactory manner in which the work of the school was being carried out. The prizes were then distributed by Mrs. Horrocks, the little winners most gracefully bowing as they received them. The children were then marched to the Manager's premises, where a sumptuous feast of cakes, sweets, and tea was in readiness laid out on lengthy decorated tables, to which the little ones did justice.

HIS Excellency the Chancellor of the Calcutta University has been pleased to nominate Dr. Girindra Nath Mukherjee, B.A., M.D., to be an ordinary Fellow of the Calcutta University.

A RESOLUTION is published in the *Calcutta Gazette* regarding the distribution of the Government senior scholarships which were hitherto awarded on the results of the First Arts Examination of the Calcutta University. This examination will be replaced in 1909 by the Intermediate Examinations in Arts and Science; and the senior scholarships will in future have to be distributed among two different classes of students. The position attained by a student on the joint list of successful Arts and Science students will be a guide only in comparison with other candidates in the same branch of the examination and the Director of Public Instruction is authorised to assign scholarships to Arts or Science at his discretion, and to apportion scholarships between Arts and Science candidates in such manner as, in his judgement, best accords with the comparative merits of the candidates.

SRI Bharat Dharma Mahamandal is now reviving the ancient system of Hindu education on modern lines. A Sadhu Vidyalaya with a boarding house has been opened in Rishikesh for the training of Sadhus. The Mahamandal Provincial organisations are establishing such institutions in other parts of India.

IN a recent "*Calcutta Gazette*" the result of the Entrance Examination has been published. Of 5890 successful candidates, 1610 have been placed in the first division, 3279 in the second and 1001 in the third division. The result seems to be on the whole fair.

PUNJAUB.

HIS Honour the Lieutenant-Governor, as Chancellor of the University of the Punjab, has been pleased to nominate the Hon. Mr. Justice F. A. Robertson as Vice-Chancellor of the University, in succession to Sir P. C. Chatterji, C.I.E., whose term of office expired on the 22nd instant.

THE plans of the new Arabic College at Lucknow have been approved. The committee have secured the services of Kazi Talumuz Hussain, M.A., Aligarh, as Principal.

IT is understood that the question of filling up the vacancies in the recently sanctioned professorships in the Lahore Medical College is engaging the attention of the Imperial and Local Governments.

Khan Bahadur Imam Ali, B.A., of Guzerat, has offered Rs. 500 to endow a medal to be presented annually at the Punjab University Sports Tournament to the student judged to be the best all-round horse-rider on the occasion. The medal is to be styled, "The Lord Minto Imam Ali Medal for Horse riding." The approval of the Viceroy having been obtained, the Senate has accepted the offer.

THE meeting of the Mahomedan Educational Conference held at Aligarh on the 29th and 30th May was presided over by Khan Bahadur Moulvi Takkallah and attended by delegates from Surat Peshawar, Nagpur, Lahore and Amritsar. Schemes for popularising education were distributed.

WITH reference to the rumours that Government wished to officialize the M.A.O. College at Aligarh, the Lieut.-Governor has sent the following letter to the Trustees:—"I have to my regret noticed in the newspapers that there is a certain amount of feeling abroad that the Government desires to officialize the M.A.O. College. I wish to assure the Trustees that nothing is further from my wish and intentions in this matter. The success of the College depends entirely upon its continuing to be in the future as in the past, an institution owing its life and energy to the spontaneous efforts of the Mahomedan community, and any attempt to officialize the institution would be fraught with danger and such as I could not in any way be a party to. My intervention in the difficulties which have recently arisen was in no way due to a desire to interfere with the management, but to help the Trustees if I could."

COCHIN.

IN lieu of the two scholarships for training in Forestry, a scholarship of £200 per annum, tenable in foreign countries, for two years, has been awarded to Mr. K. Govinda Menon, B.A., D.D.R., Working Plan Officer and Superintendent of Depôts in the State Forest Department, on the following among other conditions:—That he completes his training in Forestry in Oxford and supplements it with a practical course in Germany. A scholarship for medicine, of Rs. 600 per annum, for three years, is awarded to Miss G. M. D'Souza, who is the only candidate who has passed the Matriculation examination. A technical scholarship, tenable in foreign countries, of £100 per annum, for two years has been awarded to Mr K. Raghava Kurup, F. A. He is to study the tanning industry in Germany. His Highness' Government have also been pleased, as a special case, to supplement the scholarship granted to Miss Cruickshank, studying for the B. A. degree in the Madras Presidency College, by a grant of a scholarship of Rs. 500 for another year.

WITH the approval and sanction of the British Government, the Darbar have appointed Mr. J Vansomeren Pope, M.A., late Scholar, Trinity College Cambridge, late of the Indian Educational, Service and Director of Public Instruction, Burmah, as Special Educational Officer for a period of three years.

UNITED PROVINCES.

THE Director of Public Instruction, United Provinces, in his report on the reformatory school at Chunar, states that the education of the boys makes steady progress, but it struck him that the school was weakest on the side of which it should be strongest, namely, in its efforts to reform the character. Industrial training as judged by the profits, was very successful, but the reports concerning 110 boys who have left school show that only ten are practising the trades learned in the school. It does not, of course, follow that the training has been wasted, and it is at least satisfactory to know that only one youth out of 110 is not engaged in some sort of work. The report on the after-conduct of the released boys is said to be very satisfactory reading.

IN view of the Government of India's Resolution dated 1st September, 1908, allotting four scholarships tenable in Europe—three for the study of Sanskrit and one for the study of Arabic—notice is given that candidates desirous of applying for the State Scholarship for the Scientific Study of Sanskrit should send in their applications at once to the Director of Public Instruction, United Provinces, Allahabad, stating their educational qualifications, nationality, period of residence in the United Provinces, and any other particulars and reference which they may like to give, together with true copies of their certificates and testimonials. The value of each scholarship will be £ 150 a year, and will be tenable for two years.

INDIA GENERAL.

A SIMLA telegram states that the Government of India have this year awarded the State scholarship, tenable in Europe by domiciled Europeans and Eurasians, to Mr. Leslie Hyde Lacy Langley, who was nominated by the Government of the United Provinces.

THE project of a new University for India originated by Mrs. Besant, in her capacity as the President of the Board of Trustees of the Central Hindu College at Benares, has apparently made some progress since it was noticed about a year ago. In the interviews Mrs. Besant had with Lord Morley and Lord Minto regarding her schemes, she met with a good deal of encouragement. A lengthy petition has since been drawn up to be submitted through the Government of India to his Majesty the King Emperor. "It is stated that the proposed University will have a field of activity distinct from that of existing Universities. First and foremost, it will affiliate no college in which religion and morality do not form an integral part of the education given: it will make no distinction between religions accepting equally Hindu, Budhist, Parsi, Christian and Mahomedan, but it will not affiliate any purely secular institution. It is claimed on behalf of the proposed institution that it will supply a gap in the educational system of India, and will draw together all the elements which regard the training of youth in honour and virtue as the most essential part of education. It will be a nursery of good citizens, instead of a mint for hall-marking a certain standard of knowledge."—*Indian World*.

IN connection with Regent's Park Baptist College, London, there is an Angus Lectureship in Theology, which commemorates a former Principal of the College, Dr. Angus. This year for the first time the Trustees have appointed a missionary to the lectureship, the Rev. Dr. George Howells, of Serampore. Dr. Howells will take as the subject of his lectures, "Christ the Goal of Indian Thought," and they will be delivered in the autumn of the present year. After their delivery Dr. Howells expects to return to India, to reorganise the Serampore College as a Christian University. Dr. Angus himself, Dr. S. G. Green, Dr. Clifford and Professor Rendel Harris are some of the distinguished men who have preceded Dr. Howells in the Lectureship.

THE invitation sent by Mr. A. K. Jamal, on behalf of the Mahomedans of Burma to the All-India Mahomedan Educational Conference to hold their annual meeting at Rangoon in December next has been formally accepted.

MR. Hobhouse, replying to Mr. Arthur Murray, promised to refer to the Goverment of India the question of holding entrance examinations for Quetta Staff College simultaneously in London and India.

FOLLOWING the usual custom some Industrial scholarships will be awarded this year to enable a number of Indian students to proceed to Europe for the purpose of undergoing industrial education.

THE announcements in Reuter's telegram regarding the results in the Cambridge Mathematical Tripos examination, are of special interest as this is the last of the Senior Wrangler. India is represented in the list by no less than four scholars, two belonging to the Punjab and two to the Madras University. The Punjabees are Mr. Chowla, fourteenth and Mr. Inayutulla, twenty-seventh. The Madras men are Mr. Thompson bracketted fourth, and Mr. Rao ninth in the list. The Punjab University had an earlier Wrangler in Mr. Balak Ram, fourth, and Madras, in Mr. Thiagarajan, Senior Wrangler.

Foreign Notes.

GREAT BRITAIN.

THE University of Glasgow has conferred the Honorary Degree of D. LITT upon Mr. Stanley H. Turner, Lecturer in Political Economy in Aberdeen University.

OXFORD Convocation has accepted some £1,000 subscribed to establish a Studentship, tenable at the British School at Rome, in Memory of the late Professor Pelham.

THE Trustees of the Oxford University Endowment Fund have given £250 for three years, to provide the stipend of a Lecturer in Japanese in the University: and £250 for three years for a Lectureship in Political Theory and Institutions.

MR. Fransis L. Griffith, Reader in Egyptology at Oxford has given the University £8,000 in aid of Egyptological research.

THE Drapers' Company have made a further donation of £10,046 to Bangor University College to be applied in payment of the new Library and Museum of the College.

A Conference on the subject of University Extension is to be held in October, Delegates from the British Universities and University Colleges having been invited. It is understood that Sir Oliver Lodge will preside, and that the place of meeting will be either Oxford or Birmingham.

DURING the present month a party of a hundred Russian Teachers came on a visit to London for the purpose of visiting the Schools, studying the English Educational system, and making some inquiries into Social questions. The members of the London Teachers' Association acted as guides to the parties.

ON the occasion of the Darwin Centenary Celebrations, the University of Cambridge proposes to confer the Honorary Degree of SC D. upon many and it is proposed that the Honorary Degree of MA. be conferred upon J. D. Anderson, Gonville and Cain's College, Teacher of Bengali.

THE King will open the new buildings of Birmingham University on the 7th of July, and to mark the occasion, a number of Honorary Degrees will be conferred for the first time in the history of the University. A strenuous effort is being made to wipe off the deficit of £175,000 before the Royal visit, and a special appeal is made to the small donor: the last £75,000 raised by the University was subscribed by only a hundred individuals.

NEITHER Latin nor Greek is to be compulsory for the Glasgow M.A. Degree under the new ordinances approved by the Court and Senate of the University.

AN appeal is being made for £37,000 to bring up the 321 Church Schools in Staffordshire up to modern requirements by making the necessary alterations and enlargements. During the last seven years over £31,000 has been spent in a similar way.

AT the May meeting of the London University Convocation, it was decided to request the Senate to take up the necessary steps to reduce the quorum of Convocation from fifty members to thirty. The other business was mainly formal.

A GIFT of £50,000 has been offered by the Goldsmith's Company towards the cost of the extension of the Engineering Department of the Imperial College of Science and Technology. In return the Company asks for separate representation on the Delegacy administering the Department.

THE Annual Conference of the Association of Teachers will be held this year at Liverpool and will open on Whit-Monday. Important resolutions relating to the improvement of Technical Education will be discussed during the Conference.

THE Oxford Hebdomadal Council has accepted the principle of Lord Curzon's proposed reform of the council, the Congregation and Convocation as also the principle that modern Greek be no longer required as a necessary subject for the Degree in Arts and endorsed most of his other suggestions subject to consideration by committees which are to be appointed to deal with them and to take practical steps for carrying them into effect.

MR. GUBBINS has been appointed First Lecturer on Japanese at Oxford. The appointment is made experimentally for a term of three years.

MR. Krishnavarma has scored his first point in the battle which he is waging against outraged British opinion. Recently the Hebdomadal Council of the University of Oxford received a memorial signed by 115 members of Convocation asking that the following resolution might be submitted to Congregation:—"That the Herbert Spencer Lectureship be abolished and the sum of £11,000 given by Pandit Shyamaji Krishnavarma to endow the lectureship be returned to the sender and that such steps be taken as the University may be advised will secure these ends with the utmost promptitude." The Council have taken the advice of the Standing Counsel to the University (Mr. J. A. Simon, K. C., M. P.) on the matter raised by this memorial, and are advised by him that there is no method by which the University can lawfully determine the trust. It will, therefore, be impossible for the University to abolish the lectureship. The lectureship in question was founded and endowed by Mr. Krishnavarma in 1904. The lecturers up to the present have been as follows:—1905, Frederic Harrison; 1906, Hon. Auberom Herbert; 1907, Francis Galton; and 1908, Benjamin Kidd.

It is now understood that despite the failure of the University to abolish the lectureship, the aim of the memorialists may be attained in another direction "since it will prove difficult to persuade distinguished men to accept appointment to a lectureship endowed by a donor holding the opinions of Mr. Krishnavarma."

There is also a strong feeling among Members of the University that steps should be taken to deprive Mr. Krishnavarma of his M. A. degree.

MATRICULATION EXAMINATION, 1909.

HISTORY OF ENGLAND:

THE TUDORS AND THE REFORMATION

BY Mr. MARK HUNTER, M.A.

PRICE—8 Annas.

MATTHEW ARNOLD:

SOHRAB AND RUSTUM

WITH INTRODUCTION AND NOTES

BY T. O. HODGES ESQ., B.A.,

Principal and Professor of English,

KUMBAKONAM COLLEGE.

PRICE Re. 1.

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The Educational Review.

The Teaching of Geometry.

The New Regulations of Indian Universities have displaced Euclid by syllabuses, and this, in the opinion of many teachers, is likely to lead to confusion and chaos in the absence of an authoritative guide which lays down a definite sequence. In reviewing the circular recently issued by the Board of Education on the teaching of geometry and graphic algebra, Professor George M. Minchin lays stress on the dangers inherent in the system of teaching geometry from a syllabus. "The imperfections of Euclid are an old controversy which need not be enlarged upon. His merit as a logician is very great, and his logic is, on the whole, a type of accurate reasoning. Those who took part in reforming his system sought at once to preserve his logical sequence and to improve the subject-matter on which it was to be exercised. This they tried to do by familiarising the beginner with the main concepts of geometry in ways more natural and more easy than those adopted by Euclid—by an early use of rule and compass, which dispensed with that somewhat complicated and ridiculous problem which forms the very second proposition of Book I, "through a given point to draw a right line equal to a given fine right line," a most gratuitous stumbling block to the beginner. They assumed the potent Baconian principle that "examples give a quicker impression than arguments." There is no doubt that the new system has made geometry much more easy in its initial stages for the young pupil, but it contains one great element of danger—it may, to a great extent, replace strict logic by rule of thumb, and accurate expression by slipshod language. Those who have to examine papers on geometry sent by pupils from scores of different schools must admit that this danger has not been averted, and the reason is easily found. *We are at present teaching geometry on syllabuses.* So long as this plan is adhered to, there will be most perplexing diversities in the sequence of assumptions and propositions in school teaching, not unmixed with inaccuracy of expression. The present writer knows from experience that it is necessary for an examiner to keep before him several books on geometry when dealing with the work of various schools, owing to the fact that a proposition which one pupil thinks it necessary to prove another assumes as an axiom. Moreover, the whole of the pupils of a school are sometimes found to speak of a circle as *touching* a triangle at its three vertices. This is a matter dependent on the individual teacher and it cannot be cured by any syllabus. There are, of course, several excellent text-books on geometry, with little difference in the order of propositions, but no one of them is universally adopted. The successful reformation of the teaching of geometry seems to require an authoritative text-book which will serve as a definite guide to all teachers—such as that sanctioned by the Minister of Education in France. In the absence of such a definite guide the present somewhat chaotic system will continue." The necessity of such a guide was pointed out at a recent meeting of the Madras Teachers' Guild and it is to be hoped that some action will be taken by the Guild in this matter.

Moral Instruction in Schools.

A most influential deputation waited sometime ago on the President of the Board of Education to make some proposals on the subject of moral instruction in elementary schools. The chief point on which the deputation laid stress was, that at present moral instruction was an optional subject in elementary schools, and they desired that it should be compulsory and systematic. The President pointed out that moral instruction had its place as an optional subject in the Code, but as the list of compulsory subjects was already a large one, if they were to add to that list, he thought, they would find the drawing up of an elementary school time-table would be a very difficult matter. We think that Mr. Runcimann has missed the point. He ought to have told the deputation that the proper teaching of every subject does exactly what they expect would be the result of systematic moral instruction. The facts that have been fairly well established by science and which are already in the school curriculums are enough to form a basis for developing some appreciation of the great worth and natural dignity of man; of his sympathetic relation with all sentient life, particularly his fellowmen; of the value of universal peace; of the necessity of shaping our lives in accordance with law; of the vast possibilities of future progress; of the importance of accepting in cheerful faith the goodness of all we cannot now see or understand. The school offers the best opportunities for the practical regulation of conduct. The school is a social laboratory in which the pupil develops a moral code experimentally and puts into practice under helpful supervision every item of knowledge gained.

The advocates of moral instruction in schools very often forget that the knowledge of morality and the practice of it can be widely separated. In the ordinary school there is too little opportunity for the practice of anything, much less for the practice of morality. People talk about moral laws and rules, but there is no working contact between these moral principles and the average affairs of every day life. What is needed in education is a genuine faith in the existence of moral principles which are capable of effective application. "All the rest is mint, anise, and cummin", as Dr. Dewey points out in his *Ethical principles underlying education*. "The one thing needful is that we recognise that moral principles are real in the same sense in which other forces are real; that they are inherent in community life, and in the running machinery of the individual. If we can secure a genuine faith in this fact, we shall have secured the only condition which is finally necessary in order to get from our educational system all the effectiveness there is in it. The teacher who operates in this faith will find every subject, every method of instruction, every incident of school life pregnant with ethical life."

Higher Education and the Drama.

In comparing the English and French systems of the higher education of women, Mrs. Frederic Harrison makes a strong plea for greater use of the theatre as a means of culture. She considers that the educational superiority of French over English women lies in the fluent use of pure and correct language, in correct taste depending upon delicacy of feeling as prompted by the heart, and in right judgment as dictated by the intelligence. And all these are claimed by Mrs. Frederic Harrison to be the result of a study of great dramas at the theatre. In the education of women in France, art finds a large place. On certain afternoons every week the classical drama as represented by Moliere, Racine and Corneille, and a few moderns in its greatest perfection, is played for the benefit of the young girl, who is

rigidly kept from the baneful and vulgar influences of the theatre. Every French girl regards this as part of her intellectual training, and Mrs. Harrison asks why they should not in England have a classical repertory for their young girls played on one afternoon in each week. Selected plays of Shakespeare, Goldsmith, Sheridan, Milton, Murray's plays from the Greek given by real artists, would, she thinks, raise the standard of taste and give English girls some idea of correct taste and right judgment in the fine arts as in the art of life. We are at one with Mrs. Harrison in her estimate of the cultural value of art. Though the springs of art are in life itself, yet true art can re-vitalise and re-inspire the life of a people.

Two Values of University Education.

At the opening of the new buildings of the Men's and Women's Union in connection with Manchester University, Lord Morley delivered an interesting speech on the value of University education. There are two opposing theories of University education. According to the one the glory of knowledge should be pursued for its own sake, and according to the other only that kind of knowledge should be pursued which is likely to bring bread and butter. Lord Morley would give exclusive allegiance to neither of these views. He considered the social life as the most essential and possibly the most valuable part of University education. He declared that the most excellent and the most delightful of his friendships were those formed in his university days. Without reflection upon his Oxford masters, tutors and dons, he would certainly say that the walks and talks which under-graduates and friends had with one another of the same age with the same ambitions, the same hopes, and the same common end, were far more valuable in after-life than lectures and verse-making or prose-making. All these things furnished a stimulation more valuable than the direct stimulation of the actual teaching. The universities formed nurseries of character in which men and women not only gained knowledge but also acquired the habit of thinking and a culture of mind which could be secured in no other way. The habit of living in a sort of collective bond with the other students is no doubt a thing of great value, but we fear Lord Morley estimates too low the debt of the student to his professor. The inspiration which a student receives from a good teacher cannot be counter-balanced by anything else. The ends of education are the same from the kindergarten to the university, but the methods are different.

The Progress of Education in India.

The fifth quinquennial review of the progress of education in India, prepared by the Director-General of Education, was recently issued. It deals with the period of the five years ended March 31, 1907. The report tells us that whereas the increase in the number of students receiving instruction in the higher institutions continued at a rate lower than that in the preceding quinquennium, the vernacular education of the masses has expanded with remarkable rapidity. Though in the quinquennium 1897-1902 the arts, medical, and engineering colleges in the aggregate rose in numbers from 15,831 to 19,639, yet on March 31, 1907, the total had only increased to 20,786, while the total increase in the number of pupils in secondary schools was six thousand less in the last quinquennium than in the preceding one. The educational expansion among the bulk of the people becomes clear by a comparison of the changes that have taken place in the five years 1902 to 1907 with those in the previous fifteen years. In several cases the increase in school attendance has been nearly as great in the later and shorter period as in the earlier and longer, and in some cases it has actually been greater. This progress is no doubt indicative of the beneficent results of British rule in India, but for the money spent on the educational machinery, the achievement seems comparatively poor. In a very short period the Americans have attained a remarkable success in the education of the Fillipinos. We doubt whether a foreign government will achieve that success in the education of a people which is possible for an indigenous government. The little State of Baroda has done much more for the cause of education than the British Government. The Gaekwar of Baroda has made education free and compulsory in the whole State. The full report of the progress of education in the Kadi District, the largest district in the Baroda State, is before us, and it shows that the advance in education during the last thirty-six years has been most striking and furnishes an example of what can be done by purely indigenous effort. Were the control of Indian education entirely in the hands of Indians, the results would apparently be greater and more beneficial.

Educational Reform in Turkey.

Side by side with the change of government from absolute monarchy to limited monarchy, Turkey seems to be going through a series of reforms in all directions. No better indication of a genuine attempt at social enlightenment and reform is to be found than in the proposal to start a new school at Constantinople. The aim of the school will be to provide a liberal and practical education for two hundred pupils who will be admitted between the ages of ten and thirteen. Civic instruction will form the chief subject with a view to teach the rising generation its rights and duties. English and Turkish will be the two media of instruction. Great stress will be laid upon the practical study of commerce and agriculture, and two additional languages will have to be chosen from among French, German and the Slavonic languages. The school is to be located on an estate of not less than one hundred acres, so that there will be plenty of room for practical instruction of all kinds. The annual fee for each pupil will be about £77 and the initial capital is to be obtained by the floating of a limited liability company.

Trade Schools for Girls.

In London there are several technical institutes to which girls' trade schools are attached. The trades taught are dress-making, upholstering, ready-made clothing, ladies' tailoring, laundry-work, and waistcoat-making. In all these schools the training is modelled more or less on that given in the French schools. The girls generally enter the schools between the ages of fourteen and sixteen and at the end of their two years' course the advisory Committees assist in finding the students employment. About two-thirds of the time is given to trade-training, the remainder is devoted to drawing and English subjects. As compared with ordinary apprenticeship these schools possess certain advantages. The girls are not submitted to the unsuitably long hours of the work room; they work under hygienic conditions; their general education is continued; they are taught more than one branch of trade and are given a good all-round training in it, in addition to receiving a systematised training in colour and form; and they are still under authority and school discipline at the most impressionable age.

In this connection it is interesting to note an entirely new movement in the great work of the higher education of women. At King's College, London, a post-matriculation course for the education of women in home science and household economics has been organised. The main object of the course is to provide a thoroughly scientific education in the principles underlying the whole organization of home life, the conduct of institutions, and other spheres of civic and social work to which the same principles are applicable, and to fit women for the work of inspectors, lecturers in domestic science, county and district councillors, and so forth. A certificate will be awarded by the College to students who take the complete course and pass an examination to the satisfaction of the Council. For students whose general education has reached the standard requisite for entry on University courses of the usual undergraduate type the course of study extends over a period of three years. Students of graduate standing may take a one year's course.

Higher Education in the United States.

The annual report of the United States Commissioner for Education contains a complete and carefully arranged series of tabulated statistics concerning the more than six hundred universities, colleges, and technological schools of that country. Gifts and bequests amounting to more than four and a half millions sterling are reported to have been received by the six hundred and six establishments for higher education in the United States during the year ended June 30, 1907. Of this total more than two and a half millions went to endowment, more than one and a half millions to buildings and improvements, and the remaining half million to current expenses. No fewer than forty-two of these institutions received a minimum of twenty thousand pounds each, the highest five in this respect being as follows: University of Chicago £1,189,000; Yale University, £198,000; Princeton University, New Jersey, £153,000; Harvard University, £139,000; and Cornell University, £56,000. The aggregate teaching force employed in this work amounted to 24,679, showing an increase of more than seven hundred over the preceding year, and the total number of students enrolled was more than 290,000. Four-fifths of these institutions were either for men only (150) or for both men and women (330), and these four hundred and eighty universities, colleges, and other institutions for higher education received sums amounting in all to more than thirteen and a half millions sterling, of which more than three and one-third millions was derived from the fees of the students themselves. When will that day dawn when India can be proud of a similar record?

Physical Education.

At a recent meeting of the National League of Physical Education in England the President laid down the principle that it is far better to encourage preventive legislation than to be able to boast of innumerable voluntary societies to mitigate preventible evils. If legislation is the quickest, and perhaps the most effective way, it is yet a reflection on the common sense and self-control of a people that so much legislative compulsion should be needed. But public health forms such a prominent factor in securing the foundations of a nationality that individuals should sacrifice their liberties in the interests of national safety. One of the resolutions passed at the meeting, therefore, was that "in the interests of the physical welfare of the coming generation the provision of health visitors is of cardinal importance."

Not only should physical education go hand in hand with intellectual development, but our schools should also become hygienic centres where the principles of healthy life are taught and practised.

We are glad to note in this connection that a Bill dealing with the question of physical education in the schools of Italy has been placed before the Chamber of Deputies at Rome. The Bill aims at making physical education compulsory, both for boys and girls, in all public elementary and intermediate schools, and it also lays down that no private school may be opened in the future unless proper provision be made in the curriculum for physical exercises. Under the head of physical exercises are included gymnastics, chorus singing and shooting. For the future every school is to have both a covered play-ground and an open play-ground, and pupils will not receive promotion nor will they be able to obtain certificates of proficiency unless they have passed well in gymnastics. The Bill also lays down that at least once in every month the pupils of elementary and intermediate schools should take long walks to places of national, scientific, or artistic interest, in order that they may learn in a practical way something about the history of their motherland. The new measure is not limited in its application to the primary and secondary stages of education, as it provides also a six month's course of physical education in the universities, and this is made compulsory for all undergraduates who desire to become teachers in elementary and middle schoools.

Language Teaching in Secondary Schools.

Sometime ago a motion was made in the House of Lords that the Board of Education should prepare a return showing for each of the secondary schools on the grant list the total weekly number of hours devoted to the teaching of Latin, French, German and Spanish during two school years. The Board found it impossible or undesirable to give this information in the statistical form required, but has issued instead a memorandum on language teaching in State-aided secondary schools in England. More than half of the circular recounts the early history of State-aided science schools and shows their gradual evolution into the recognised secondary schools of to-day, with a curriculum in which science occupies its proper place as part of a liberal education. In 1902 it was recognised that the want of training in other subjects and especially in the power of expression and the use of language, prevented boys from profiting as much as they might from the instruction in science. In 1904 the scope of the secondary school was laid down by defining it to be a school which affords to each of its scholars, up to and beyond the age of sixteen, a general education, physical, mental and moral, given through a complete graded course of instruction of wider scope and more advanced degree than that given in elementary schools. In the methods and practice of modern language-teaching salutary reforms have taken place, but the Board's circular unfortunately gives no guidance and sage counsel. It has been received in England with great disappointment and dissatisfaction. Some of the recommendations it makes appear to us to be retrograde. "The Board have seen no reason to depart from the traditional view that without a knowledge of Latin, a scholarly study of modern literature, history, or philosophy impossible.' This looks more like the view of the Romish Church than that of the Board of Education, in which there are experts in modern

languages. With more truth one can assert that without a knowledge of German it is impossible to make a scholarly study of modern literature, history, philosophy, theology, or science.

The Knowledge of the Mother-tongue.

While we in India are deploring the ignorance which most educated Indians have of their own vernacular, the same complaint is being made in England. At this year's annual meeting of the National Educational Union, Mr. S. H. Butcher, M.P., pointed out the deplorable ignorance which most modern men and women have of their own language. In the days when a letter was seldom written, the couching of correspondence in careful and direct English was regarded as a mark of culture. Now-a days this is the exception and not the rule, and this is considered by Mr. Butcher as one of the greatest reproaches of an educational age. He therefore advocated an increased attempt to inculcate in the younger generation a feeling for good style, good taste and clear expression. This, he thinks, can be achieved by appealing to children through the ear, by reading aloud passages illustrating the main features of good English in prose and verse, and by encouraging the recitation of attractive literature, always endeavouring to make such work a pleasure. By this means, he hopes, the choice of suitable and varied words will become a habit and the knowledge of the English language of greater interest to many. This is a point of view which teachers of languages in Indian schools and colleges would do well to consider. The remarks of Mr. Butcher concerning the English language are equally applicable to any other language which can lay claim to a literature of its own. Further, those that have had anything to do with the teaching of English know how poor and barren is the result produced. Few indeed are those among the educated Indians who can appreciate the superiority of such English classic writers as Stevenson or Newman. Only when good vernacular becomes instinctive with the educated Indian, would he be in a position to appreciate the worth of a good style in expressing his ideas in a foreign language.

Child Study.

The Annual Conference of the Child Study Society was recently held in Manchester under the presidency of Prof. Findlay. England has not till now taken any leading share in the development of child study, although it can lay claim to some important work in the medical and hygienic side. The experimental study of the child is almost wholly the work of Germans and Americans. The greatest work on the subject is Lay-Meumann's *Die experimentelle Padagogik*, in two volumes, but the principal results will be found in the smaller book on the same subject by Dr. W. A. Lay. In America the Chief workers in this field have been Professors Earle Barnes and Stanley Hall, and the results of their investigations are to be found in the various numbers of the *Pedagogical Seminary*. Dr. Stanley Hall has brought together a number of essays on the subject of child study in a volume entitled *Aspects of Child Life and Study*. Availing itself of the instruments and methods of experimental psychology child study has become a science of exact measurement. The purpose of child study is not to produce a new system of education but, as Prof. Findlay put it, to afford scientific procedure by which all plans for the upbringing of children could be investigated. It seeks to furnish materials for the science of education as distinguished on the one hand from the art of education and on the other from the philosophy of education, which deals with ideals.

Manual Instruction.

The instruction in primary schools is far too literary and rarely calls into play many of the natural activities of young boys. Hence it fails to furnish that unconscious training in habits of discipline, order, accuracy and self-control which are the greatest benefits of a proper education. It has often been pointed out that manual instruction forms an instrument of such training. In the current number of *The Nineteenth Century and after*, Lady Darwin tells us what is being done in Sweden to develop the powers of observation, concentration and resourcefulness. The national schools of Sweden are open in the morning only from eight till one and in some cases the lack of space prevents the youngest children from attending school during the ordinary hours of work. These latter are therefore unoccupied in the mornings while their parents are out at work. For these young children Madame Gustaf Hierta Retzius opened twenty years ago the first workshop with a view to give them shelter both before and after school hours and teach them manual work. There are now sixteen such workshops and seventy-two in the whole of the country. The rooms for these workshops are usually provided by the parish and they are supported from municipal funds supplemented by the several parishes and private charity. The ages of children attending them range from about seven to fourteen years. Among the branches of work taken up by the elder children are included boot-making, wood-carving, basket-making, ironwork, weaving, carpentry, sewing, cutting-out, dressmaking, and tailoring. The products of the children's labour are sold for the benefit of the school, and when the money thus realised is found to be in excess of the cost of the raw materials, the children receive a good wholesome meal as an immediate and tangible return. The rooms are kept tidy and clean by the children themselves, and each week the girls share in batches in preparing the meals for themselves and their comrades. There is no compulsion whatever to attend the workshops, but the children come regularly three times a week, the younger ones from eleven till one, and the elder ones from five till seven. The teaching staff is partly paid and partly voluntary. The average annual cost of teaching is said to be from one to two pounds per head. The movement, started in Stockholm has spread not only in the whole of Sweden, but has also been copied in Finland, Denmark, Poland and other countries.

Education in Japan.

In Japan elementary education is compulsory, and every Japanese youth must attend school for six years, four of which are spent in the lower grades and two in the upper grades. The work in the high schools which are directly preparatory to that of the colleges and universities is divided into three main sections,—namely—(1) medicine, (2) law and literature, and (3) pharmacy, engineering, science, and agriculture; so that students can, at a comparatively low age, begin to specialise in that branch which they intend to make their own afterwards. No fewer than six advanced technical schools are maintained by the Government. The courses in these schools are spread over three years and include such subjects as mechanics, applied chemistry, electricity, furnace work, metallurgy, naval architecture, and civil and mechanical engineering. There are three special training schools for the preparation of teachers for the advanced technical schools. There are four-

thousand public and private schools giving instruction in business and commercial subjects. No wonder that Japan holds a high rank among the advanced nations of the world in industrial and commercial matters. We, in India, are backward in educational enterprise. Is it that we have not enough faith in the primary importance of education, or is it that being subject to foreigners for centuries we have lost all power of initiative?

Reformatory Schools in Hungary.

At Kassa in Hungary, there is a remarkable industrial institution which is devoted to the work of reclaiming juvenile offenders. This establishment is completely devoid of everything that will mark it as a house of detention. Its basic idea is that which underlies all sanatoria; its residents are looked upon as diseased and are kept there to be cured. Everything is done to render the life of the inmates agreeable, and anything that is likely to make it look penal is absent. The inmates are named 'boarders,' not prisoners, and they are grouped into families. Each family consists of twenty-four children, and has a head, who plays the part of foster-father. In the performance of his duty, it is the constant endevour of the foster-father to teach those in his charge to be generous, kind and courteous to one another. The boarders have their bands, their games, and their swimming school, and they are even allowed to visit their parents occasionally. In the workshops the most modern machinery and methods are employed and diligence and thrifty habits on the part of the boys are encouraged by the payment of wages. There are a few reformatory schools in India, but none of them is really comparable with the institution at Kassa.

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MATHEMATICS.

[Conducted by B. KRISHNAMACHARI, M.A.]

45. [M. BHIMASENA RAO.] If $x = a$, $y = b$, $z = c$ satisfy the equation

$$px(y^3 - z^3) + qy(z^3 - x^3) + rz(x^3 - y^3) = 0,$$

show that

$$\frac{a^2x^2(qb-rc)(qy-rz)}{q^2-r^2} + \frac{b^2y^2(rc-pa)(rz-px)}{r^2-p^2} + \frac{c^2z^2(pa-qb)(px-qy)}{p^2-q^2} + \frac{(pa-qb)(qb-rc)(rc-pa)}{(p^2-q^2)(q^2-r^2)(r^2-p^2)} \times (px-qy)(qy-rz)(rz-px) = 0.$$

Solution by K. S. SRINIVASACHARI, B.A., L.T.

$x=a$, $y=b$, $z=c$ (A)

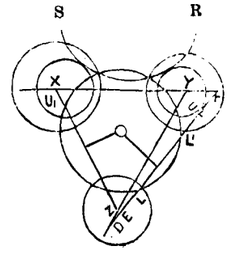
$\Sigma px(y^3-z^3)=0$ (B)

Identically $\Sigma x^3(y^3-z^3)=0$ (C)

$\therefore$ From (B) and (C) $\frac{p}{x}=\frac{q}{y}=\frac{r}{z}$ and from (A) each of these is equal to

$$\frac{p}{a}=\frac{q}{b}=\frac{r}{c}.$$

$$\therefore \frac{(qb-ra)(qy-rz)}{q^2-r^2} = \frac{(q^2-r^2)(y^2-z^2)}{q^2-r^2} = y^2-z^2.$$



$\therefore$ The given expr. $= \Sigma a^2x^2(y^2-z^2) + \pi(y^2-z^2)$
$= \Sigma x^2(y^2-z^2) + \pi(y^2-z^2)$
$= -\pi(y^2-z^2) + \pi(y^2-z^2)$
$= 0.$

47. [M. BHIMASENA RAO.] Show how to describe the circles which cut three given circles at given angles.

Solution by K. S. SRINIVASACHARI, B.A., L.T.

Let X, Y, Z be the centres of the circles of radii r_1, r_2, r_3 and let Σ be the reqd. circle

Let the angles be θ, ϕ, ψ.

On the line YZ find a point D such that DY : DZ $= r_2 \cos\phi : r_3 \cos\psi$.

Similarly find E and F on ZX and XY. Then DEF is a st. line.

Find O the radical centre of the ⊙s X, Y, Z and describe the circle, its radius being the tangent from O to one of the circles. Let this circle cut DEF in pts. L and L'.

Again describe any circle RS cutting the given circles X and Y at the given angles. (Two circles can be described with the given condition and also having a given radius).

Describe the two circles U_1 and U_2 which are coaxal with the pair X and Y and which touch the circle RS.

Then Σ must pass through L and L' and touch U_1 and U_2.

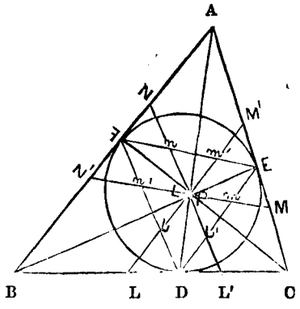
For proof *vide* Lachlan's Modern Pure Geometry, Art. 382.

[The proof depends upon two properties of a circle which cuts two other circles at given angles (1). It must touch two circles coaxal with them (2). It must cut a circle coaxal with them orthogonally.]

51. [M. BHIMASENA RAO.] The inscribed circle of a given triangle ABC touches the sides BC, CA and AB at the points D, E and F. AD, BE and CF meet in a point P. Show that lines drawn from P parallel to the sides of the triangle DEF meet the sides of the given triangle in six concyclic points, and deduce that

$$IP^2 = r^2\left\{1 - \frac{3}{\left(\tan\frac{A}{2} + \tan\frac{B}{2} + \tan\frac{C}{2}\right)^2}\right\}$$

where I and r are the centre and radius of the in-circle.



Solution by K. S. SEINIVASACHARI, B.A., L.T.

Let the parallels meet the sides of the $\triangle ABC$ in L, L'; M, M'; N, N',

and those of the $\triangle DEF$ in l, l'; m, m'; n, n'.

Tangents at E and F to the circumcircle of the $\triangle DEF$ meet at A.

Hence AD and similarly BE and CF must pass through the cosine-centre of the $\triangle DEF$.

Hence P is the cosine-centre of $\triangle DEF$.

$\therefore$ the points l, l'; m, m'; n, n' must be on the Lemoine circle of the $\triangle DEF$.

$\therefore$ $Pn \cdot Pl' = Pl \cdot Pm' = Pn' \cdot Pm$.

Again since the $\triangle$s ABC and DEF are in perspective, P being the centre.

$\therefore$ the parallels are self-corresponding straight lines.

$\therefore$ $PL' \cdot PN = PM' \cdot PL = PM \cdot PN'$.

Hence the points L, L'; M, M'; N, N' are concyclic.

Area of the $\triangle DEF = \frac{1}{2}r^2(\sin A + \sin B + \sin C)$

$$= 2r^2\cos\frac{A}{2}\cos\frac{B}{2}\cos\frac{C}{2}.$$

which is also equal to

$$\rho r\left(\cos^2\frac{A}{2} + \cos^2\frac{B}{2} + \cos^2\frac{C}{2}\right)$$

where ρ = the radius of the cosine circle of the $\triangle DEF$.

$$\therefore P = 2r\,\frac{\cos\frac{A}{2}\cos\frac{B}{2}\cos\frac{C}{2}}{\cos^2\frac{A}{2} + \cos^2\frac{B}{2} + \cos^2\frac{C}{2}}.$$

Again if ρ_1 be the radius of the Lemoine circle

$$4\rho_1^2 = r^2 + \frac{4r^2\cos^2\frac{A}{2}\cos^2\frac{B}{2}\cos^2\frac{C}{2}}{\left(\cos^2\frac{A}{2} + \cos^2\frac{B}{2} + \cos^2\frac{C}{2}\right)^2}.$$

$Pn \cdot Pl' = \rho_1^2 - \frac{IP^2}{4}$ (the centre of the Lemoine circle is the mid-pt. of I P.)

$\because$ $Pn \cdot Pl' + Pl \cdot Pm' + Pn' \cdot Pm = 3Pn \cdot Pl'$

$$= 3\rho_1^2 - \frac{3IP^2}{4}$$

$= r^2 - IP^2$ (*vide* Casey's Euclid, Ex. 8, page 231).

$\therefore$ $IP^2 = 4r^2 - 12\rho_1^2$,

$$= 4r^2 - 3r^2 - \frac{12r^2\cos^2\frac{A}{2}\cos^2\frac{B}{2}\cos^2\frac{C}{2}}{\left(\cos^2\frac{A}{2} + \cos^2\frac{B}{2} + \cos^2\frac{C}{2}\right)^2}$$

$$= r^2\left\{1 - \frac{12\cos^2\frac{A}{2}\cos^2\frac{B}{2}\cos^2\frac{C}{2}}{\left(\cos^2\frac{A}{2} + \cos^2\frac{B}{2} + \cos^2\frac{C}{2}\right)^2}\right\}$$

$$= r^2\left\{1 - \frac{3}{\left(\frac{\Sigma\cos^2\frac{A}{2}}{2\pi\cos\frac{A}{2}}\right)^2}\right\}.$$

Now $\frac{\Sigma\cos^2\frac{A}{2}}{2\pi\cos\frac{A}{2}} = \frac{\Sigma\cos\frac{A}{2}\sin\frac{B+C}{2}}{2\pi\cos\frac{A}{2}}$

$$= \frac{\Sigma\cos\frac{A}{2}\cos\frac{B}{2}\sin\frac{C}{2}}{\pi\cos\frac{A}{2}} = \Sigma\tan\frac{A}{2}.$$

$$\therefore \quad IP^2 = r^2\left\{1 - \frac{3}{\left(\Sigma\tan\frac{A}{2}\right)^2}\right\}.$$

64. [T. SUNDARA RAO, B.A.] In a certain temple there were four Ganesas, one on each wall, and in front of each Ganesa was a fountain which had the virtue of multiplying threefold the flowers which were washed in it. A worshipper took a certain number of roses with him. Their number was tripled in the first fountain and after offering a certain number of them to the first Ganesa took over the remaining flowers to the second fountain. These were tripled at the second fountain and he worshipped the second Ganesa with the same number of roses as the first. He continued this process offering the same number of roses to each Ganesa, and found that he had 10 flowers left with which he worshipped Siva. How many flowers did he take to the temple and how many did he offer to each Ganesa? [*From the Lilavati*].

Solutions by R. N. NANDIVADA and M. BHIMASENA RAO.

Let the number of flowers taken by him to the temple be x and the number offered to each Ganesa y. Then from the conditions of the problem we get the

equation $\quad 81x - 40y = 10,$

whence $\quad x = 40k + 10,$

$\quad y = 81k + 20$

where k is any integer. Giving k the values 0, 1, 2, 3, &c. we see that $\quad x = 10, 50, 90, 130, \ldots$

$\quad y = 20, 101, 182, 263, \ldots$

Thus the least number of flowers he took to the temple is 10, when he would have offered to each Ganesa 20.

[R. N. Nandivada seems to think the solution $x = 10$, $y = 20$ unique. It is not so as will be seen from the solution given here.]

QUESTIONS FOR SOLUTION.

69. [K. S. SRINIVASACHARI, B.A., L.T.] Given the two diagonals and the angles of a quadrilateral, construct it.

70. [K. S. SRINIVASACHARI, B.A., L.T.] Inscribe a triangle in a given triangle, so that its three sides may pass through three given points which are collinear.

71. [M. BHIMASENA RAO.] In a given triangle ABC inscribe an equilateral triangle DEF such that, if the circumcircle of the triangle DEF cuts the sides BC, CA and AB in D', E' and F', the lines DE', EF' and FD are concurrent. If O be the point of concurrency and T the centre of the circle DEF show that OT^2

$$= \frac{x^2y^2 + y^2z^2 + z^2x^2 - xyz(x+y+z)}{3(x+y+z)^2}$$

where $x = OA$, $y = OB$ and $z = OC$.

72. [M. BHIMASENA RAO.] A conic touches the sides of a triangle at points where the normals are concurrent. Show that the line joining the centre of the conic to its isogonal conjugate with respect to the triangle passes through a fixed point.

73. [M. BHIMASENA RAO.] ABC is a triangle. AD, BE and CF are drawn perpendicular to the sides BC, CA and AB whose middle points are L, M and N. AD and MN intersect in X, BE and NL in Y and CF and LM in Z. Show that LX, MY and NZ are

concurrent at the symmedian point of the triangle.

74. [M. BHIMASENA RAO.] The pedal circle of a point P with respect to a triangle touches the nine points circle of the triangle. Show that the line joining the point P to its isogonal conjugate with respect to the triangle passes through a fixed point. Find the angles of the triangle formed by the asymptotes of the locus of the point P.

75. [B. KRISHNAMACHARI, M.A.] Fifteen school girls walk out arranged in threes. How many times can they go out so that no two are twice together. [*Cayley.*]

A SYLLABUS IN EXPERIMENTAL GEOMETRY.

(Continued from page 229).

SECTION IX.

48. *Quadrilaterals* (or *Quadrangles*): meaning of the terms. *Diagonal.* Two diagonals each dividing the quadrilateral into two triangles.

49. (1) The sum of the interior angles of a quadrilateral = four right angles:

(*a*) by measurement;

(*b*) by drawing a diagonal and applying 26 (*a*).

(2) The sum of the exterior angles when the sides are produced in order.

50. Construction of quadrilaterals from given data.

Note:—Before beginning to work out an exercise from given data, it is always advisable to *make a rough sketch* of the figure and mark therein the given lengths, etc. This will save a good deal of trouble and confusion.

51. *Polygons* (= rectilineal figures of many sides).

(1) Measuring sides and angles of polygons;

(2) *Diagonal* of a polygon. The number of diagonals that can be drawn from a vertex is three less than the number of its sides.

(3) A polygon of n sides is divided into $n-2$ triangles by the diagonals passing through a vertex.

(4) The sum of the interior angles of a polygon of n sides $= 2(n-2)$ right angles—easily deduced from (3). Also, by measurement and addition.

(5) The sum of the exterior angles

(*a*) by measurement and addition;

(*b*) from (4) above.

(6) Construction of polygons from given data—see note under 50.

52. *Special polygons:*

Pentagon (of five sides), *hexagon* (6 sides), *heptagon* (7 sides), *octagon* (8 sides), *nonagon* (9 sides), *decagon* (10 sides), *duodecagon* (12 sides) and *quindecagon* (15 sides).

Verification of the facts of 51 in the case of these.

53. *Regular polygons.*

(1) A polygon is said to be *regular* when it has all its sides equal and all its angles equal to one another.

Note:—In the case of triangles, the first condition alone is sufficient (for the second follows from it), but in all the others both the conditions should hold good.

(2) The value of an interior angle of a regular polygon of n sides $= \frac{2}{n}(n-2)$ right angles—from 51, (4).

It is useful to remember the values of the interior angles of some of the special polygons of 52.

(3) The value of an exterior angle of a regular polygon of n sides is $\frac{1}{n}$ of four right angles.

(4) Finding the number of sides of a regular polygon when the value of an *interior* or *exterior angle* is given.

(5) Construction of regular polygons on a given finite straight line.

SECTION X.

54. *Parallel straight lines:*

(1) Observe the opposite edges of a table, blackboard, slate, the iron-rods of a window, etc.;

(2) Find the locus of points at a constant distance from a given straight line;

(3) Draw a number of straight lines making a constant angle with a given straight line on the same side of it.

Measure the distance between each pair of these lines in a number of places.

In all these cases, we have examples of straight lines which are said to be *parallel.* Hence the definition of parallel straight lines.

(4) Straight lines parallel to one another have all of them the *same direction.*

55. Parallel straight lines with *transversal* (a line cutting them in any manner). *Alternate angles, corresponding angles* and their respective *equality. Interior angles* and their *sum.*

56. Another use of the set square.

(1) To draw a parallel to a given straight line through a given point—only one solution. *Playfair's axiom.*

(2) The distance between two parallel straight lines is the *perpendicular* from any point in one of them to the other. It is clear from 55 that this distance is *perpendicular to both the lines.*

(3) To draw a parallel to a given straight line *at a given distance* from it. Two solutions.

57. *Intercepts on a transversal.*

The intercepts on a transversal by any number of parallel straight lines at equal intervals are equal.

58. Important applications of 57.

(1) To divide a given finite straight line into any number of equal parts. See *Godfrey and Siddons,* Page 142.

(2) To cut off a part from a given straight line equal to a given fraction, (*e.g.*, $\frac{3}{7}$) of the whole.

(3) To divide a given finite straight line in a given ratio (*e.g.*, 7 : 4).

59. The straight line drawn through the middle point of a side of triangle parallel to the base bisects the third side; and *converse.*

SECTION XI.

Parallelograms.

60. A *Parallelogram* is a quadrilateral with its opposite sides *parallel.*

(*a*) Measure the sides and angles of a parallelogram. Draw the diagonals and measure their segments. Deduce the following properties from the measurements:—

In a parallelogram,

(1) The opposite sides are equal.

(2) The opposite angles are equal.

(3) The diagonals bisect each other.

(*b*) Each diagonal divides it into two congruent triangles (by superposition).

61. *Four kinds of parallelograms:*

(1) *Square:* All sides equal and all angles equal (hence each a right angle). The square is the only regular parallelogram.

(2) *Rectangle* or *oblong:* Opposite sides alone equal, and all angles right angles.

(3) *Rhombus:* all sides equal, but not all angles.

(4) *Rhomboid :* opposite sides alone equal; all angles not equal.

62. Construction of parallelograms from given data : *e.g.*, given

(1) Two adjacent sides and the contained angle;

(2) Two diagonals and the angle between them.

63. (1) Construct a square, given a side or a diagonal.

(2) Construct a rectangle given

(*a*) two adjacent sides;

(*b*) the angle between the diagonals and the length of a diagonal.

(3) Construct a rhombus, given

(*a*) side and an angle;

(*b*) side and a diagonal; etc.

SECTION XII.

64. *Pencils of lines :*

(1) A number of straight lines drawn from a point form a *pencil;* the point itself is known as the vertex of the pencil.

(2) Lines from a point to a straight line. Comparison of their lengths by measurement.

(*a*) Of these, *the perpendicular is the shortest.*

(*b*) The straight line which is nearer the perpendicular is shorter than those more remote.

(*c*) There are two lines of the pencil, and two only, equal to each other, one on each side of the perpendicular.

(3) Drawing straight lines of given length from a given point to a given straight line. The three cases, depending on the length given—two solutions, one solution or no solution according as the given length is greater than, equal to, or less than the distance of the point from the line.

(4) Easy problems on the above.

65. (1) Drawing straight lines of given length to a circle from a given point (1) within it and (2) without it. The several cases as in 64.

(2) The *maximum* and *minimum* length of such lines.

(3) Problems on the above.

SECTION XIII.

Construction of triangles—continued.

66 Construction of a triangle, given two sides and the angle opposite to one of them.

Four cases (including that in which the triangles are on two sides of a given side).

The Ambiguous Case. See 64, above.

67. Construction of a triangle when the three angles are given. Number of solutions infinite.

Note : From what we have seen already, it is clear that, in order to get a triangle of required size, one of the elements of the data must be a side; otherwise, we only get one of a species of triangles.

68. Miscellaneous constructions of triangles.

SECTION XIV.

Areas.

69. (1) Units used in measuring areas. The *square inch,* the *square centimetre,* etc.

(2) Areas of rectangles and squares, by dividing them into unit squares by parallels to the sides, and counting the number of these squares. Deduce the following :—

(*a*) The area of a rectangle of sides a and b inches is $a \times b$ square inches.

(*b*) The area of a square of side a inches is $a \times a$ or a^2 square inches.

(3) Practical examples in areas.

70. *Squared paper :* Explanation and use of—. Finding the areas of rectilineal figures by using an oiled squared paper and counting the number of unit squares enclosed by the perimeter.

Note : In counting the squares, it will be often found that many of them are cut through by the bounding lines. In such cases, a rough approximation to the area is obtained by counting a broken square more than half a complete square as one, and leaving out those that are less than half.

71. *The area of a triangle.*

(1) A rectangle is divided into two equal parts by a diagonal. The area of each of the triangles $= \frac{1}{2}$ the product of the sides containing the right angle.

(2) The area of *any* triangle is obtained by reducing it to the former case by drawing an altitude; it is equal to

$\frac{1}{2}$ *altitude* $\times$ *base.*

(3) Finding the area by counting unit-squares contained and verification by (2).

(4) The areas of polygons by dividing them into triangles and applying (2).

72. Theorems on the areas of triangles based on the above results :—

(1) Triangles on the same base and having the same altitude (*i.e.*, having their vertices on a parallel to the common base) are equal in area.

(2) Triangles on equal bases and having the same altitude are equal in area.

(3) In particular, triangles on the same base, or on equal bases, and having a common vertex are equal in area.

73. *Areas of parallelograms :*

(1) The *base* of a parallelogram is a side on which it may be supposed to stand. The *altitude* will then be the distance between the base and the opposite side.

(2) The area of a parallelogram is the product of the base and the altitude—apply 71 (2).

(3) Hence

(*a*) Parallelograms on the same base and having the same altitude (*i.e.*, lying between the same parallels) are equal in area.

(*b*) Parallelograms on equal bases and having the same altitude are of equal area.

(*c*) In particular, a parallelogram = a rectangle on the same base and of the same altitude.

74. Reduction of a quadrilateral to an equivalent triangle. *Godfrey and Siddons,* P. 178. Extension to the case of polygons. Hence, areas of polygons may be found accurately by reducing them to equivalent triangles and then finding the areas of the latter.

75. (1) If a parallelogram and a triangle stand on the same base and have the same altitude, the area of the parallelogram = 2 that of the triangle.

(2) Application to construct a rectangle equal in area to a triangle, and hence to any rectilineal figure.

76. (1) *Theorem of Pythagoras :* The square on the hypotenuse of a right-angled triangle = the sum of the squares on the sides containing the right angle.

(*a*) Induction by using squared paper.

(*b*) By Perigal's dissection—*Godfrey and Siddons,* P. 189.

(*c*) Alternative methods—*Ibid,* page 192.

(2) Problems on the theorem.

77. Useful applications of the above theorem :—

(1) Graphical extraction of the square roots of natural numbers *Ibid,* page 196-7.

(2) To find a square equal in area to the sum of two squares. (The side of the required square is the hypotenuse of the right-angled triangle of which the sides are the sides of the given squares.

Extension to find a square equal in area to a number of given squares.

SECTION XV.

Loci—continued.

78. To find the locus of a point moving at a constant distance from two given straight lines.

(1) When the straight lines are *parallel*, the locus is the parallel midway between them.

(2) When the straight lines are *not parallel* and intersect, the locus is found to be [apply 54, (2)] the pair of bisectors of the angles between them.

(3) When the straight lines are not parallel and do not intersect, they can be produced to do so, thus reducing to case (2).

79. Problems on *the intersection of loci.*

SECTION XVI.

Circles—continued.

80. (1) *Angle in a segment.*—Contained by the straight lines joining any point on the arc to the extremities of the chord of the segment.

(2) Draw a number of angles in the same segment of a circle and measure them. *They are found to be equal to one another.*

(3) *Major* (larger) and *minor* (smaller) segments formed by a chord dividing a circle into two unequal parts.

The two segments are said to be *Conjugate* to each other.

(4) The following by measurement :—

(*a*) The angle in a semicircle is a right angle.

(*b*) The angle in a *major* segment of a circle is *acute* and that in a *minor* segment *obtuse*.

(*c*) The two angles in the conjugate segments of a circle are *supplementary*, *i.e.*, the opposite angles of a quadrilateral inscribed in a circle (*a cyclic quadrilateral*) are together equal to two right angles.

(*d*) *Angles at the centre and at the circumference* standing on the same arc or chord of a circle. Measure them and see that the former is double the latter.

81. (*a*) Converse of 80 (2).

The locus of points at which a given finite straight line subtends a constant angle is the arc of a segment on the line as chord and containing an angle equal to the given constant angle. See 98, (4).

(*b*) Application to the construction of triangles when one of the known elements is the vertical angle.

82. *Equal chords of a circle.*

(1) They are equidistant from the centre, and *converse*.

(2) The locus of their middle points is a concentric circle.

(3) Corresponding inequality theorems.

83. (1) The perpendicular from the centre of a circle on a chord bisects it, and conversely, the join of the centre to the middle point of a chord is perpendicular to it (by measurement).

COR: The perpendicular bisector of any chord of a circle passes through the centre.

(2) To draw a chord through a point within a circle, so as to be bisected at that point.

84. (*a*) *To find the centre of a given circle.* See Cor. of 83. The centre of the circle is the point of intersection of the perpendicular bisectors of any two chords.

(*b*) To complete a circle when only a part of the circumference is given.

Find the centre as in (*a*), and with its distance from any point in the arc as radius complete the circle.

SECTION XVII.

Inscribed polygons and circumscribed circles.

85. Definitions. A polygon is said to be *inscribed* in a circle when all its vertices lie on the circumference of the circle. With reference to the polygon, the circle is said to be *circumscribed* about it, and is also known as the *circumcircle* of the polygon.

86 *Inscribing regular polygons in a circle.*

(1) Since the polygon is to be regular, its sides subtend equal angles at the centre, and the value of each of these angles is a submultiple of four right angles, depending upon the number of sides of the polygon to be inscribed.

Hence the construction of the polygon by drawing radii dividing the central angle into the required number of equal parts.

(2) In particular, inscribing in circles in the following regular figures:—Equilateral triangle, square, pentagon, hexagon, octagon and decagon.

Note:—The side of a regular hexagon inscribed in a circle is equal to the radius of the circle. Hence the alternative construction with compasses only.

87. The area of a polygon (of n sides) inscribed in a circle, by dividing it into triangles by means of radii to the vertics.

If regular, these triangles are equal, and the area becomes $= n \times$ the area of any of these triangles, *i.e.*, $= \frac{n}{2} \times$ a side $\times$ its distance from the centre.

88. (*a*) Circles of equal radii passing through a given point; the locus of their centres is a circle of centre the given point and radius equal to the common radius.

(*b*) *Circles passing through two given points.*

Since the centres are equidistant from the two given points, their locus is the perpendicular bisector of the line joining them. This join of the given points is called the *common chord* of the circles passing through them.

89. *Circles passing through three given points.*

(1) Applying 88 (*b*) twice, we see that there is only one point equidistant from the three points. Hence the solution is *unique*.

(2) Case when the construction fails, *viz.*, when the three given points are in a straight line. Reason?

(3) The circle of (1) is the circumcircle of the triangle formed by joining the given points.

Cor: *Three* points are sufficient to determine a circle completely.

90. *Circumcircle of other polygons*: Extension of the construction of 88 (*b*).

91. Miscellaneous facts and constructions :—

(1) A circle can be described about a quadrilateral having its opposite angles supplementary—converse of 80, (4) *c*.

(2) If a parallelogram be inscribed in a circle, it is a *rectangle*. (Its diagonals are diameters).

(3) The lines joining the ends of perpendicular diameters of a circle form a square. (Construction of an octagon—alternative method).

(4) Construction of a right-angled triangle given

(*a*) hypotenuse and a side or an angle;

(*b*) hypotenuse and corresponding altitude.

(5) The common chord of two or more circles is bisected at right angles by the line of centres.

SECTION XVIII.

Tangents to Circles.

92. (1) *Tangent, a straight line touching a circle,* the limiting position of a *secant* when the two points of intersection move towards each other and coincide. *Point of contact.*

(2) The tangent to a circle at any point is *perpendicular* to the radius to that point, the point of contact.

(3) Drawing a tangent to a circle at a given point on its circumference.

(4) The perpendicular to a tangent of a circle at the point of contact passes through the centre of the circle.

(5) The tangents at the ends of a diameter are parallel.

93. (1) *Tangents to a circle from an external point.* Since the join of the centre to the external point subtends right angles at the points of contact, it is the diameter of the circle on which these points lie. Hence the construction—*Godfrey and Siddons,* page 262.

(2) Drawing tangents to an arc (*a*) at a point in it, and (*b*) from a point outside it.

(3) Exercises in drawing tangents to circles of given radii from points at given distances from the centre.

(4) Application to find a square equal to the difference between two given squares.

94. The following by measurement:—

(1) The tangents to a circle from an external point are equal.

(2) The join of the external point to the centre bisects the angle between the tangents and also that between the corresponding radii.

(3) *Chord of contact.* The join of (2) bisects the chord of contact at right angles.

95. (1) *Circles touching each other: internal* and *external contact; common tangent* at the point of contact.

(2) Locus of centres of circles touching one another at a common point. See 92 (4). It is the perpendicular to the common tangent at the point of contact.

(3) The line of centres of circles touching one another passes through the common point of contact.

(4) Condition that two circles should touch each other.—The distance between the centres must be equal to the sum or difference of the radii.

(5) The locus of the centre of a circle rolling on another.

96. *Common tangents: exterior* and *interior.*

(1) Construction of *exterior* common tangents to two *equal* circles.

(2) Construction of *exterior* common tangents to two *unequal* circles.

Godfrey and Siddons—page 264.

(3) Construction of *interior* common tangents to two circles—*Ibid,* page 266.

(4) Number of common tangents to a pair circles for different positions of the latter—*Ibid,* page 245.

97. Miscellaneous constructions of circles to satisfy given conditions. *E.g., ibid,* Ex. 1290.

98. (1) *Alternate segment, angles in the alternate segment.*

(2) The angles made by a chord of a circle with a tangent at one of its ends are respectively equal to the angles in the alternate segments.

(3) Application to inscribe a triangle in a circle equiangular to a given triangle.

(4) Application to construct a segment on a given straight line containing a given angle.

SECTION XIX.

Inscribed circles and circumscribed polygons.

99. The locus of centres of circles touching two given straight lines is

(*a*) The straight line midway between them if they are parallel, and

(*b*) The bisector of the angle between them if they are not parallel. See 78 (2) and 92 (2).

100. (1) Inscribing a circle in a given triangle—construction deduced from 99 (*b*).

Terms *incircle, incentre* and *inradius.*

(2) *Escribed circle of a triangle* (or *excircle*), *excentre* and *exradius.*

Construction of the three escribed circles.

(3) How a triangle with its four associated circles illustrates the various cases of concurrence, collinearity and common tangents to circles.

101. (1) Inscribing circles in regular polygons. The construction is only an extension of 100.

(2) In particular, inscribing circles in an equilateral triangle, square, pentagon and hexagon.

(3) Inscribing circles in parts of a circle, *viz.,* a segment and a sector.

102. Miscellaneous exercises based upon the foregoing constructions, *e.g.,*

(1) Describing a number of circles in regular figures, each touching a side and its two neighbours.

(2) Similar constructions within circles; etc.

103. *Circumscribed polygons*:

(1) A polygon is said to be circumscribed about a circle, if all its sides are tangents to it.

(2) Exercises in circumscribing regular polygons of given number of sides—by drawing tangents at the ends of radii, dividing the central angle (4 right angles) into the required number of equal parts.

SECTION XX.

Area—continued.

104. Area of a circle of given radius and parts of a circle,—by counting the number of unit squares enclosed, using transparent squared paper.

105. Area of a polygon circumscribed about a circle of given radius $= \frac{1}{2}$ the radius of the circle $\times$ perimeter of the ploygon (divide the polygon into triangles by joining the vertices to the centre, and draw radii to the points of contact of the sides).

106. If the number of sides of the above polygon be increased, the perimeter will approach the circumference until, when the number becomes very large, there is no appreciable difference between the two. Hence, the area of a circle

$= \frac{1}{2}$ radius $\times$ circumference,

$= \pi r^2$, with the usual notation.

Equality of circles of the same radius.

107. (1) Equal chords of a circle cut off segments of equal area (superposition, or counting squares).

(2) Sectors standing on equal arcs are equal in area [same as in (1)].

108. (1) If a number of chords be drawn in a circle passing through any point within it, the rectangles under the segments of the chords are equal in area.

(2) Application to find the side of a square equal in area to a given rectangle and therefore to any rectilineal figure. See 75 (2) and 83 (2).

(To be continued).

S. BALAKRISHNA AIYAR.

MATERIAL FOR RELIEF MAPS.

(1) *Namamchunam* or pipe-clay and ordinary cotton from which seeds are removed are mixed and soaked in water for about a day and ground together to form a pasty substance. The outline is formed on a dealwood plank with this paste and additional paste added for relief. After drying, gorges, river canals, &c., may be cut with the help of a chisel. Water colours may be given and then varnish.

(2) A card-board may be cut in the shape of the country whose relief is wanted and relief may be represented by pasting additional card-boards proportionate to the height.

Or additional card-boards of different colours may be pasted (green: sea-level; yellow; 1500 to 3000 ft. above sea level, &c.)

(3) Fine chalk powder may be mixed with gum (ಗೋಂದು) water to the required consistency. Do as in (1).

(4) Harbut's Plasticine: (sold at Messrs. Higginbotham & Co.) Make the Plasticine like a flat piece of paper by rolling a roller over it and of the required size. Put it on a card-board over which the shape is drawn and cut it to the required shape. Show relief by removing or adding plasticine. Plasticine of different colours may also be obtained.

(5) Draw the outline with pencil on a wooden plank with the help of the lines of latitude and longitude enlarged a definite number of times from an ordinary map. Take a large quantity of fine chalk powder and a small quantity of linseed oil and mix them with the help of a mortar and pestle into a paste. The paste may appear at first to be requiring some more oil but gradually after being well-mixed, the paste becomes thin. The paste may not at first stick itself to the plank but if we just arrange to place it on the plank in the proper position it will in course of time adhere very closely to the plank. The elevations are shown by additional paste being added. The colours used may be prepared by mixing the ordinary color powders sold in the market with linseed oil. The whole is varnished with japan varnish.

(6) Soak tamarind seeds in fresh water and get their husk removed. The seeds should then be well ground and boiled so as to form a paste. Fresh water should be used throughout. Add fine chalk powder to this paste in the proportion of 1 to 6. Proceed as in the first case.

(7) Slightly warm a quantity of linseed oil in a vessel and gradually add to it some well dried finely powdered and sifted whiting, gently stirring the whole with a stick all the while. As it forms into a solid mass take it out of the vessel and first heat it on a stone with a mallet and then knead it well with the hands until it becomes uniformly soft and plastic. Then prepare the relief map and expose it in a place free of dust till it gets dry.

(8) Boil down a number of old newspapers and reduce them to a pulp with a rice pounder. Boil and pound again and yet again till the paper is as pulpy as possible. Strain off the water, and pour some gum water or glue water over the mass. Mix well into a plastic paste. Proceed as above.

A SYLLABUS IN HYGIENE

SUITED TO ELEMENTARY SCHOOLS.

"The first requisite to success in life is to be a good animal and to be a nation of good animals is the first condition to national prosperity."

HEALTH IS WEALTH.

CLEANLINESS PREVENTS ALL DISEASES.

Infant standard.	First standard.	Second standard.	Third standard.	Fourth standard.
Person. Clean hands and faces.	Use and care of parts of the body *e.g.*, hair, eyes, ears, nose, lips, teeth, hands and feet. The use of soap and soap-nut.	Cleanliness. (1) At home. (2) In the school and street. Neatness. Proper postures in sitting and lying and when at work in school. Bathing.	The formation of habits of cleanliness and neatness. Ungainly postures and the harm resulting from them. Hot and cold water baths. Baths for patients.	The formation of habits of cleanliness and neatness. Proper and dignified bearing. Baths in mineral waters.
Clothing. Cleanliness in clothing.	The necessity for clothing.	Kinds of clothing and their appropriateness to different seasons.	Shoes and their kinds. Change of clothing. Woollen dress.	The conditions of good dressing.
Eating. Why should we eat?	Its use and abuse. Moderation. What we should not eat. Food for infants and for adults.	The different kinds of food and their respective uses. Salt an important article of food. Facts to be remembered while eating. Puddings. Unpunctuality in feeding.	Vegetable and animal food. The different kinds of food and their respective uses. Butter and ghee. Over-feeding and under-feeding.	Fruit, roots, starch, eggs and meat. Tobacco
Drinking. Pure water is the best drink.	Good drinks and harmful drinks. Milk and its uses.	Characteristics of pure water. Uses of boiling water. River water. Buttermilk and curd.	How bad water may be purified. The three-pot filter. How well-water may become impure. How stagnant water is unwholesome.	Kinds of water and their impurities. Distillation. Tanks and how to keep them. Tea, coffee and alcohol.

Infant standard.	First standard.	Second standard.	Third standard.	Fourth standard.
Air.				
Breathing is a sign of life.	Fresh air as food and bad air as poison. Why we need air.	How to avoid bad air.	How air is made impure. The relation of doors and windows to air. The air we breathe in and the air we breathe out. Overcrowding.	Constitutents of air and their respective uses.
Light and heat.	Why essential.	Bad light and how to avoid it.	The relations of windows and doors to heat and light.	The influence of colors.
Sleep.				
Time for sleeping.	What good sleep is. The necessity for sleep. Early to bed is healthy.	Reinvigoration during sleep. Duration of sleep. Conditions to ensure good sleep. Proper bedding.	Sleep for the aged, young children and patients. Clothing during sleeping hours.	...
Exercise.				
Work and play.	The advantages of physical exercises. Recreation.	The special usefulness of games. Drill and its uses. Running.	Conditions to ensure good exercise. Regularity. The times of taking exercise.	When exercise should be avoided. Over-doing. Swimming as an exercise.
Accidents and injuries and the first aid to the injured.	...	Foreign bodies in the eye and the nose Bleeding from the nose.	Bites and stings of scorpions and centipedes &c., Burns and scalds. Bruises.	Suffocation; Snake bite and bites of mad animals. Drowning; sprains and strains. Bleeding. Insensibility. Poisoning. Sun stroke. Fits.
Diseases.	How to prevent diseases.	Fever-origin, symptoms, treatment and carefulness. Eyesore. Headache and Stomach-ache.	Kinds of fever and their treatment. Malaria and how to prevent it. Quinine. Cholera and Diarrhœa.	Contageous diseases and their treatment Dysentery. The uses of vaccination.
The human body.	The uses of the bones. The five senses. Movements and how they are facilitated. The flow of blood in the body. Breathing in and breathing out. Why we eat and drink.	How the bones of the body are arranged. The eyes and the ears, their use and misuse. How senses are the gate-ways of knowledge. The joints in the body and why they are necessary. What makes the blood run faster. The feeling of the pulse. How we breathe and why we breathe. What we do in eating and drinking.	The eyes and the ears—their delicacy. Touch, taste and smell. The skin and its uses. The blood and its work. Animal heat. The heart and the lungs. How food is digested and how the bad matter in the body is got rid of.	The human skeleton. Muscles and their work. The eyes and the ears, their structure. The training of the senses. Nerves and their importance. The work of the brain. The circulation of blood. The heart and the lungs. The process of alimentation. The organs of excretion.

N. B.—The Managers and Inspecting Officers of Schools are requested to modify the Syllabus so as to suit it to the requirements of their schools and pupils.

M. SUBRAHMANYAM.

SHOULD GIRLS HAVE THE SAME SECONDARY EDUCATION AS BOYS?

Before answering this question, it is necessary to ascertain the scope of duties which girls are expected to do in their future life. Those noble qualities which make up the most perfect womanhood are wifehood, motherhood and womanliness. All the duties of girls, therefore, are centred round them. Let us see how these various duties are done by an Indian woman and for this purpose—we shall have to study the whole range of an Indian girl's development.

As soon as a girl is born, nature—her first and foremost teacher—takes her charge and begins to develop her physical, intellectual and spiritual nature. Home-surroundings and particularly the girl's mother help in the work of this edification. When she grows somewhat old, the means adopted for her training differ from those which bring about the development of a male child. Parents, nay, even society, looks at her, not as a social and national asset, but simply as a means of managing, in the best economical and most efficacious way the home-life. In her father's house, she is always looked upon as a loan which is meant for the permanent use of another family. If we dive deep into the matter of the nature of her conception, we shall see that a combination of elements quite different from those which constitute a male child, has played an important part in her formation and production. Thus the very source suggests a bifurcation of development. Still it is possible that the means to be employed for the purpose of bringing about the growth up to a certain stage, may or can be common both to boys as well as to girls. Nature, too, corroborates this fact. The same milk of the mother nourishes both the male as well as the female child and thus makes the body grow. Then the inherent faculty of activity contributes to secure the physical development of both. In intellectual as well as moral growth both proceed in parallel lines. The light of religion sheds the same lustre and makes possibly equal effect upon the heart of both. In spite of the marvellous similarity between them, their respective and legitimate functions differ—nay, differ widely. In the East and specially in this country, if the real dissimilarity between their duties be set aside, the whole structure of Indian nationality would be destroyed. It should, therefore, be borne in mind that women are not the imitation of men, but that they are diffrent entities in so far as their duties are concerned.

Some are of opinion that the aim of girls' education should be to give them the elementary instruction of three R's, and to teach them the pretty arts and sciences of cooking, knitting, and sewing as of preparing other house-hold necessaries. The aim of female education is, indeed, higher than that, and this aim is not only to make girls good wives and good mothers but to quote Mrs Annie Beasant, "to turn out noble women." In the education of girls, we need not consider her simply as a unit of family but also as a unit of national life.

A girl at the age of about eleven or twelve is married. When she attains puberty, she goes to the family of her husband, where she merges herself in its interests with her whole heart and soul and thus becomes an inseparable factor in the new circumstances. Now she is no longer a girl but she has to assume the roll of a wife. In an Indian family she is no longer an independent factor. The duties which she has to perform in this capacity are very arduous, and in adapting herself to the new environments in which she has been placed, she has to take resort to the training which she has tried to get in her girlhood. Very soon she becomes a mother and at once the horizon of her functions gets very much widened. Unfortunately wife's duties do not end here. In the sphere of motherhood, she has to draw much help not only from the physical and mental training but also from her spiritual development If she be wanting in any one of these elements, she will not be able to faithfully

perform her duties as a mother. Children are placed under her charge not as units of individual families but as elements of social and national assets. They are not mere toys to be played with at random.

Then comes a stage, when she has to act not only as a wife but also as a companion to her husband in his onward march in spiritual-growth. After the age of 50 or so, both the husband and the wife renounce their worldly connection with the family and the outer world and merge themselves in the profound contemplation of their Creator. In this sphere, she helps her higher and nobler "other half" in permanently breaking forth the shackles of the worldly enjoyments and temporal enticements and in engendering the perennial flow of love in his heart for God. Thus he attains the stage of a liberated soul who considers the whole universe as his family— जगदेव कुटुंबकम्. It will thus be seen that this is the ideal of the various duties of an Indian woman. In this connection, we have to remember that the foundation upon which the magnificent fabric of the most elevated ideal of an Indian woman is based, is to be laid in the short period of her girlhood. To those who are either the members of Indian society or who have close acquaintance with its customs, know that a girl is married at the age of eleven or so and then she leaves the school for good. It will thus be seen that a great deal of circumspection and foresight is needed in devising the curriculum of any stage of education whether primary or higher in the case of girls.

The prefatory remarks given above help us in deciding that the course of the secondary education for girls should be different from that for boys and that the girls can not have the same secondary education as boys.

If we review the educational history of the most advanced and civilised countries of the world, we would see that the studies for girls are marked with two characteristics; (1) that they include only a few requisite subjects; (2) that they are of a more advanced stage than those for boys. The reason is obvious. Girls, at a certain age, have to begin a house-life. If we compare the parallel lines in which the educational curricula of the boys and girls of Japan proceed, we shall observe that at a point where the domain of the secondary education commences, the higher schools for girls will correspond with the middle schools for boys. From this it is clear that, unlike boys, in the case of girls, the question of time limit intervenes. In so far as the secondary education is concerned, the course of studies should be so arranged that within a small compass much practical and useful work of teaching may be accomplished. In so doing it is natural that something must be left out of girls' education. Let it not be that which makes her physically strong, because bodily strength is very useful to her in her future life, nor the intelligent understanding of all those simple and homely arts which fit her for household duties. I would consider that scheme of the studies the best which will enable her to leave the school with the conviction that the school-studies have endowed her with such power and wisdom as would help her in after-life. Mere knowledge of unconnected facts and abstract notions will be of no use to her. If she has not studied and grasped the most rudimentary principles of housekeeping, the theoretical knowledge of the twenty-four volumes of Encyclopædia will not help her with the practical use of the saucepan.

In this country, in some of the wealthy and civilised families, girls study not only up to the high school but also up to the college course. They pass with honors their examinations for degrees but owing to the indifference of their parents and their own apathy—they remain utterly ignorant of their legitimate house-hold duties. The result is that when the time for the practical life-work comes, they prove a burden to their family and a source of inconvenience and mortification to their *fortunate* husbands. In this

connection, I shall lay before my readers one funny but useful incident which has actually taken place and then shall close the subject.

In one Summer-season, a pair with one cook left Bombay for an outside sanatōrium. The husband was a barrister and the wife was a graduate of the University. They passed their time in each other's company for a number of days, when an altercation took place with the cook. The cook, thereupon, left them during the night and the morning of the next day dawned. It was six, seven, eight nay nine o'clock, and still even the tea was not served by the wife. The husband was all along under the impression that his wife knew how to cook food, etc., but to his utter surprise he found that she did not know how to ignite fire even. So the poor man had to run to Bombay without any delay to bring another cook and the graduate lady confined herself in her bungalow without tea or food for a long time. Surely India does not want such education of girls.

SHOULD THERE BE A PUBLIC TEST AT THE END OF THE SECONDARY EDUCATION? IF SO, WHAT SHOULD BE ITS CHARACTER AND HOW FAR IS THE PRESENT MATRICULATION EXAMINATION SUITED TO THIS PURPOSE?

We know that a student's life is divided into three parts, *viz.*, childhood, youth and maturity. Each of three stages is complete in itself though a combination of these three makes up a harmonious whole. The observation of nature teaches us that in the growth of a human being, each stage must attain consummation before the development of the higher stage commences. Unless the trunk of a tree is fully and perfectly developed, the process of bifurcation of branches will not begin. The process of fertilisation will certainly anticipate a full-fledged growth of all its preceding stages. The same rule holds good in the case of human development too. There ought to be a means to know that a particular stage in the human development has attained perfection, though this perfection must be considered as limited in so far as the whole range of human development is concerned. This means, what is in English termed, a test or examination. In the light of these prefatory remarks it will be easy to understand that there is an imperative necessity of holding an examination at the end of each stage of education. Although it is true that examination is not a sound and perfect test to know the true state of development of a child-mind, yet, as Dr. Palmer, Bishop of Bombay, in his presidential address in the fourth session of the Conference very aptly remarked, it only shows the direction like a straw which though trifling in its nature, shows the direction of the stream by floating on its surface. Examination shows, though imperfectly, the land marks which the development leaves behind in its onward march.

Education has also three corresponding stages *viz*, primary, secondary and collegiate. Each stage is distinct in itself and each stage requires a test just to ascertain whether it has reached its culminating point. Any attempt made to develop the higher stage of education even though the preceding stage is immature would be just like taking a step to superimpose a structure on the weak foundation. We thus establish the need of holding an examination at the end of each stage of instruction. We shall now decide as to what the nature of this test should be. This nature can be best judged from the results which a particular course yields. In order to decide a suitability of an examination, we should always bear in mind this fact that the method of teaching or instruction invariably depends upon the kind of the examination-test and so, for the imperfections to be noticed in the system of teaching, greater responsibility falls on the head of examiners than on that of teachers or managers of institutions. An examination must be of such a kind as would not encourage cramming which is a bain to society but as would contribute to bring about the all-round and har-

monious development of the whole-man. It must here be conceded that knowledge has to be tested, all the world over, by some means. As no human institution is infallible, the test employed for the possession of knowledge cannot be perfect, But there are different degrees of imperfection and we seek for that test which has got the least degree of fallibility. The true examination looks to the work of the pupil rather than to his performance at a public examination, and for this purpose, there should be a wholesome combination of individual (teacher's,) observation with the result of the examination.

Before we take up this question, it would be better to know the view expressed by the Bishop of Bombay with regard to the feasibility or otherwise of the system of examination. He did not think that the examination could be entirely abolished. He did not consider examinations as a curse, though they might be doubtful instruments of good. It was true that those who had nothing to do with the examinations, those who never held one and never prepared anyone for it—in fact the outside public—thought more of the examinations than those who know something about it. All educationalists, he thought, would agree with him in this view. The exact point to observe was this, that the examinations were only of any value with regard to subjects that were examinable. There were many subjects which were not examinable and which were more important with regard especially to public services. It was obvious that nobody could examine a boy's character by written examination papers. It was also very true that it was not easy to test the physical development of candidates by written examinations. Even inspection of doctors could not give them an idea of the gymnastic training. He went further than this and agreed with Mr. Wren, the acting Principal of the Secondary Teachers' College, that it was hard to test the power of thinking by examinations. But here he must draw a distinction. It was not difficult to test the thinking power of advanced pupils in advanced subjects. The more advanced a pupil, the more certainty they had of testing his thinking powers. But if they went to the other end and took elementary subjects, then they must fail to test the power of thinking of the candidates. It was preferable, owing to the diversity of teaching and the diversity in human nature, that there should be an examination by an external agency. He thought that it should be made clear to the teachers what they had to teach. They must regard examinations, like the proverbial straw which indicated the direction of the current. Mr. P. Wren, M.A., presented the other side of the picture in his forcible language. He argued that as examinations were made for men and not men for examinations, the time had arrived when steps might be taken to bring about the eventual complete abolition of examinations from the village school to the University. He characterised examinations as a curse, which they should do away with and train [illegible] must the[illegible]ther. Examinations were an unmitigated evil[illegible]d home-destroyed the body without training th[illegible]uties. I He hoped a day would come when all th[illegible]uties. I inations would be abolished to the w[illegible]dies the the students and the teachers who sh[illegible]e school be mere memory trainers, but should studies their energies to training the mental and wisdom sical qualities of the pupils, form their char[illegible]ledge and teach them discipline.[illegible]ll be

Now we come to the subject of Matriculation examination. This test is not suitable to the modern requirements of education for the following reasons—

(1) The examination every year grows unwieldy and difficulties crop up for proper accommodation.

(2) The standard of examination is uncertain and not uniform.

(3) The way in which question-papers are, every year set encourages unadulterated cram throughout the whole range of secondary education.

(4) As a public test, it has every year to examine nearly sixty per cent. of candidates who cannot or would not join a college,

(5) It creates in the hearts of students unhealthy spirit of excessive competition which ruins their health and which gives an exaggerated and fictitious value to memory-training.

(6) Failure in the examination results is disappointment and subsequent ruin of memory careers.

These circumstances actuated the Bombay Government to propose the abolition of the Matriculation examination and to empower colleges to hold their own entrance examinations. In order that entrance examinations held by each college may not be of a very hard or stiff nature, and that an element of partiality or favour may not play an important part in the admissions of boys to colleges. Government suggest that all colleges should submit all their question-papers and some marked answer papers to the Board of Examiners which is nominated for this purpose. This suggestion is, however, open to two objections (1) that it does not usher in an element of uniformity in the various examinations, and (2) that it is not sufficiently preventive to certain evils which are sure to follow as natural concomitants to this arrangement. To ask the Board of Examiners to express their view as to the nature of the examination is just like an attempt to give medicine to a man after he dies. Suppose, from a regular inquiry, it is found that a set of candidates had to unjustly suffer from the stiffness of question papers, of what avails would this inquiry be to those sufferers. It may be that careers of some would be ruined by this failure, so it is necessary that precautionary measures should be taken from the first. For this purpose I would suggest the following arrangement.

Let the Board of Examiners consisting of different professors of colleges be appointed from the first, and let it be presided over either by the Vice-Chancellor of the University or the Director of Public Instruction. This Board will appoint a committee for examination composed of at least two, if not more, of professor examiners who are experts for one subject. These examiners would draw and submit their question papers. Under the arrangement made, each subject would have two question papers for each subject. This arrangement would provide the Board with a wider scope of selection. In the selection thus made the Board will be able to introduce an element of uniformity. Papers will be printed and distributed to colleges on the same day.

It must be admitted that though by the above arrangement, uniformity of standard would be introduced in so far as the examination test is concerned, yet the standard of examining papers will not be the same. I think, it should not be so. Each college should have a free scope to have its own standard of examining papers, because each college has a different ideal. Let each college have some facilities to make its own selection of candidates according to its requirements. The arrangement of yoking the brightest boy with a dull one as his class-mate does no good to the College. Let there be, in every college, either a uniform set of inferior or of superior stuff. This will help the college to introduce an-element of specialisation within its curriculum and carry it to a very high pitch.

We should, however, not be blind to one difficulty that would arise from the arrangement suggested above. Suppose 300 candidates present themselves at the entrance examination of the Elphinstone College, 250 candidates pass the test but the college can accommodate only 150 students and consequently the remaining 100 scholars would find themselves in an awkward position. On a little consideration it will be found that this is an evil which cannot be entirely removed but which can be minimised in its effects. Those colleges which have to keep a low ideal of examination and which have sufficient accommodation, will be very glad to admit those candidates who have successfully passed a higher ideal. Of course real difficulty would arise if the total output of successful candidates from all colleges would be far in excess of the number of candidates who after passing the Matriculation test sought admissions to different colleges. But then also some other means would be devised to remove this difficulty. Suppose, on account of want

of accommodation every year, it is estimated that 500 students after passing their tests have to be rejected. This state of things will prove itself to be a sufficient incentive for Government either to open a new college or to encourage private enterprise to do so.

The question of granting leaving certificates can be solved in the following way. A student of a high school would study up to the VII. standard, would pass the annual examination held by the department and would be provided with a leaving certificate by the head-master of the high school where he was studying. At this point, a bifurcation would begin. If he has a mind to qualify himself for Government Service, he would appear in the school-final examination. If he has an inclination to and a means for prosecuting his college studies, he would submit himself to the entrance Examination held by a college.

It would thus be seen that the Matriculation examination in the present form is not suitable. While introducing a reform, what we, as human beings of common reason have to see is, that whether advantages accruing from it would preponderate over disadvantages. There is no reform we conceive of which is absolutely good. Difficulties are sure to arise and real manhood lies in overcoming them and not in passive submission to them. If a nation would be deterred from making reforms in any line by imaginary or chimerical impediments, there would be no progress in its advancement. In the up heavals of nations, in social, political and industrial spheres—painful experiences play a more important part than the pleasant ones. If the difficulties anticipated by the opposite party would result from the abolition of the test of the present Matriculation Examination—surely ingenuity of human minds will find out proper remedies for their solution.

This paper also read by Mr. K. P. Upadhyaya, B.A., in the recent Bombay Educational Conference.

THE EDUCATIONAL WORK OF MATTHEW ARNOLD.

By ROBERT S. WOOD.

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It is twenty-one years since the passing of Matthew Arnold, whose personality and influence the world will not willingly let die. Some may remember how, on his death in 1888, the series of official reports, written by him from 1852 to 1882, on the inspection of schools and training colleges, were rescued from the oblivion common to Blue-book lore, and judged of such value as to deserve separate publication with an introduction by Sir Francis Sandford, who long held the reins at Whitehall as secretary to the now defunct Committee of Council on Education.

Of few of the many contemporaries of Arnold could it be said that their official utterances, wide experiences, and practical suggestions would stand the test of time and deserve to be unearthed fifty-six years after they were penned, and made to-day the basis of discussion in many lecture rooms.

But time is a fine tester of men's reputations, and it is of much interest to see, in the list of books on educational principles and practice prescribed a few months ago by the Board of Education for study by candidates for the Elementary school Teachers' Certificate, a new edition of the collected reports on elementary schools by Matthew Arnold, issued twenty-one years ago at the request of old friends. These reports, ranging so far back as 1851, and contemporaneous with the days of small things, when the foundations were laid of what was fifty years after to become a mighty educational superstructure, have a real historic interest for the present-day student of the problem of national education.

In this new edition of the reports Arnold will speak to a new generation in his telling style, voicing opinions still bearing fruit, and reminding readers of his insight, knowledge, and high authority. Especially will Arnold's personality and influence be impressed as the student studies the more recent volume recommended by the

Board, "Suggestions for the Consideration of Teachers and others concerned in the work of Public Elementary Schools," which will prove a mine of wisdom and experience applicable to all who work in the wide field of education, and references to which will be met in Arnold's reports from 1852 onwards.

It is not the fortune of many educators, even though they be school inspectors, to loom so largely and so long upon the public horizon as did Arnold But Matthew Arnold was something more than an ordinary inspector, one whom the teacher for at least three decades after the introduction of the Lowe Code of 1862, perhaps often unfairly, regarded simply as a recorder of noughts and crosses, and an awarder or docker of grants.

In those old, unhappy days the visits of H.M. inspectors were regarded rather as visitations to be feared. But in Arnold's case, the spirit of the official demands was uppermost, and he strove to soften their rigidity. Hence his welcome—even in the years of payment by results and the individual examination of pupils—as a trusted and friendly visitor and critic, ready to help and encourage those who, while patiently awaiting the coming of a better day, strove to keep up their hearts amidst the monotonous routine generated by the Lowe decrees of 1862.

Arnold was a many-sided man, and in him the scholar and poet dominated the official attitude and impulse; hence his enduring fame and claim to the affectionate regard and grateful memory of all progressive teachers.

The student in the lecture hall making his first acquaintance with Arnold's dicta on the practical difficulties confronting the schools of fifty years ago, when national education was in its infancy, will need guidance and direction as to Arnold's life, early training, and equipment for the office which he adorned. Here the student will meet with a difficulty. Of the elder Arnold, the standard biography by the late Dean Stanley will be available; but of the poet and school inspector, no such record of his life-work, ideals, methods, genius, and correspondence will be a hand, as Matthew Arnold desired that he should not be the subject of a biography, and his family and friends have regarded his wishes.

Fortunately, one of Arnold's colleagues has since given to the world an admirable, if short, estimate of his official career. Sir Joshua Fitch, a trusted authority in his day on educational systems and an attractive writer on pedagogy, has written "Thomas and Matthew Arnold, and their Influence on English Education." Fitch's warm appreciation of the services to the State rendered by his illustrious colleague will possess much interest for the student, and throw light upon the work of Arnold, and explain the honourable position which the Arnolds occupy in the history of public education in England. Moreover, in his estimate of Arnold as an official and an advocate of improved secondary education, the author in no way violates the request of his friend.

Many highly interesting passages in the book are called from the "Series of Reports" prescribed for examinees in 1910, and Sir J. Fitch has hewn from this quarry of experience, facts and opinions helpful to present students, and these he has arranged in due sequence and order.

Prospective elementary-school teachers who are required to make, before 1910, a study of the Board's "Suggestions for those concerned in the work of Schools," will note how Arnold's influence as an educational pioneer is repeatedly indicated in his school reports given in the new edition of the volume issued a few months ago. Especially in the 'sixties does Arnold persistently and vigorously advocate the claims of literature as a vitalising influence in the primary school, where the demand for accuracy solely was stifling the more liberal and refining studies.

Arnold, though a loyal official, did not shrink from boldly speaking his inmost thoughts, and he strongly condemned the mischievous character of the Lowe Code in reducing school practice to one dead level of mechanical uniformity, such as could be indicated and readily assessed on a

schedule of individual passes and failures, to the neglect of worthier and weightier aspects of school work. It will ever be to Arnold's credit and honour that he did so even when others of his colleagues were, in the language of official-dom, justifying or condoning in a guarded or half-hearted spirit the baneful effect of the methods of a so-called system of *payment*—not of true *education*—which left little room for the encouragement of originality and resource, as well as of wide culture, among teachers. Arnold's name will be treasured by teachers, whose work and difficulties he so well knew and appreciated.

SKETCH OF ARNOLD'S OFFICIAL LIFE, 1851—1886.

The events of Arnold's life may be summed up in a few sentences. He was born in 1822, the second child and eldest son of Dr. Arnold, the great Head master of Rugby. In 1836 he was sent to Winchester School, and in the following year he was removed to Rugby, where he lived in his father's house. The strong educational bent of his father comes out in his eldest son's thirty-five years' work at the Education Office; in Matthew's elder sister, the wife of the late Mr. W. E. Forster, by whose efforts the famous Elementary Education Act of 1870 was passed; and in his younger brother, William D. Arnold, director of public instruction in the Punjab, who died prematurely in 1859 at Gibraltar, on his return home, invalided from India; and in Edward Arnold, a beloved clergyman, and also an inspector of schools. The late Mr. H. O. Arnold Forster was the son of William Arnold and nephew of Matthew Arnold.

At Oxford University, at the age of twenty-one, Matthew Arnold gained some distinction by a poem on "Cromwell," which won the Newdigate prize. He obtained a fellowship at Oriel College in 1844. Among his contemporaries at Oriel were many men who later won their spurs in public life in many spheres, including Church, the Dean of St. Paul's, Frazer, the Bishop of Manchester, and Arthur Hugh Clough, Arnold's fellow-poet, friend, and fellow-Rugbeian. In 1847 Arnold became private secretary to the Marquis of Lansdowne, the then Lord President of the Council.

In 1851 Lord Lansdowne offered him an inspectorship of schools under the Privy Council, and this post Arnold held until 1886, when he retired from the public service on a pension. On several occasions he was specially employed to make enquiries into the state of education in foreign countries, thus anticipating the work of the existing Board of Special Inquiries. The value and force of Arnold's reports on secondary education are now beginning to be esteemed at their full worth by advocates of improvement. He also accepted, for two periods of five years each, the professorship of poetry at the University of Oxford. He did not long enjoy his position of freedom after his retirement, for he died suddenly on the 15th of April, 1888, a victim to an affection of the heart not unlike that which had proved fatal to his father and grandfather.

It is not surprising to find from his letters that one possessing such versatility and charm of manner, and the creative power he evinced, should not take kindly to the millstone grind associated with examining national school children in spelling, the rules of Arithmetic, and plain sewing. "But that was the best the State did for the poet, the thinker, the analyst of beauty, and the subtle theorist," said the *Times* in an obituary article in 1888. But he never repined, though he saw crowds of his inferiors glorified by State and Church.

"Matthew Arnold was too sane and wholesome-minded a man, he had too much of the saving health of a sense of humour, to repine at what he could not help; but that is not the same as saying that he did not *feel* how much of his work was lost labour." Some of his admirers used to describe his work as "cutting blocks with a razor."

He speaks constantly of his official work in terms which show that it was distasteful to him, and that he regarded it as drudgery; *e.g.*—

It is a long, tedious business hearing the students give specimen lessons at the training schools. There is little real utility in it and a great deal of claptrap, and that makes the expenditure of time the more disagreeable to me. However, I get a good many notes written, and odds and ends of things done.

It was not a profession he would have chosen had he been free to choose, says Sir Joshua Fitch. When Lord Landsdowne offered him the post, he accepted it, as he used frankly to say afterwards, because he wished to marry, and because an assured income was necessary for him. Having entered upon his duties, he at first expected to find the work more interesting than it actually proved to be. He said:

I think I shall get interested in the schools after a little time; the effects on the children are so immense, and their future effects in civilising the next generation of the lower classes, who, as things are going, will have most of the political power of the country in their hands, may be so important. It is really a fine sight in Manchester to see the anxiety felt about them, and the time and the money the heads of the cotton manufacturing population are willing to give them. In arithmetic, geography, and history the excellence of the schools I have seen is quite wonderful, and almost all the children have an equal amount of information; it is not confined, as in the schools of the richer classes, to one or two cleverest boys.

And in words that may be laid to heart by all, he writes to his mother in 1854:

I more and more have the feeling that I do not do my inspecting work really well and satisfactorily, but I have also had a stronger wish than usual not to vacillate and be helpless, but to do my duty, whatever that may be; and out of that wish, one may always hope to make something.

Hearing the lessons of students and estimating their goodness or badness appeared to him the most wearisome drudgery, as we learn from the following humorous allusion to portions of his daily routine:

I must go back to my charming occupation of hearing students give lessons. Here is my programme for this afternoon: avalanches, the steam engine, the Thames, India rubber, bricks, the Battle of Poictiers, subtraction, the reindeer, the Gunpowder Plot, the Jordan. Alluring, is it not?

Twenty minutes each, and the days of one's life are only three score years and ten!

But as his old colleague wisely interposes:

There was here concealed more of real interest in the duties of his office than he actually acknowledged. And, in truth, it may be doubted if any other laborious and responsible post in the public service would have suited him better. A secretaryship, or any office which condemned him to sit for six hours a day at a desk, minuting documents and "having the honour to be," would have proved intolerable to him.

The inspectorship, at least, offered him more freedom, more variety, greater power of adjusting his own duties to his own conveniences, and in his case at least, larger leisure for literary pursuits than he could have otherwise obtained. On the whole, the public has dealt indulgently with those of its servants who have reflected lustre on official life by the repute they gained in the world of letters.

In one of the most admirable passages in this interesting book on the value of such opportunities and the importance of the functions which the inspector is called upon to discharge when the holder *likes* and enjoys his work, the experienced writer says:

He is called upon to visit from day to day schools of very different types, to observe carefully the merits and demerits of each, to recognise with impartiality very various forms of good work, to place himself in sympathy with teachers and their difficulties, to convey to each of them kindly suggestions as to methods of discipline and instruction he has observed elsewhere, and to leave behind him at every school he inspects some stimulus to improvement, some useful counsel to managers, and some encouragement to teachers to do their best. And it matters much to the civilisation of the whole district whether this duty is entrusted to pedants and detectives who confine their attention to the routine of examination, or to men whose own attainments command respect, and who are qualified by insight, enthusiasm, and breadth of sympathy to form a just judgment both of the work of the school and of the spirit in which the work is done.

Arnold was not an exacting inspector. If he found children looking good and happy, and under the care of a kindly and sympathetic teacher, he would give a favourable report, without inquiring too minutely into the percentage of passes in arithmetic or the number of errors in spelling per child. He valued the elementary schools rather as centres of civilisation and refining influence, where manners and conduct, which he regarded as three-fourths of life, received deserved attention, rather than as places for enabling the maximum number of children to spell and write, and do a great number of sums without a mistake.

All this will, we think, be ever counted to Arnold for educational righteousness, especially as he lived among crooked and perverse official theorists who had little sympathy with his own more generous and liberal ideals on the needs and possibilities of child nature and development. This attitude and habit of mind alone should, we think, endear the name of Arnold to all who are associated with the children in the people's schools, coming, as they do in many cases, from homes where there is hardly one redeeming and refining influence which makes for improvement on healthy citizenship, and a right standard of conduct and life.

His experienced assistant, Mr. T. Healing, has thus described his methods of work:

He never pretended to be an oracle in matters of instruction, and therefore never attempted to prescribe to teachers the precise methods they should use, though he would often kindly criticise a teacher's mode of handling a subject if it lacked simplicity or breadth of treatment. For example, the multiplication of more topographical details in geography, neglect to arrange facts in illustration of great general principles, or wandering among points of little practical value in grammar, while the main facts or rules bearing upon the construction of sentences were overdrawn.

He claimed "free play for the inspector," and accorded the same to the teacher, being always ready to acknowledge and praise originality of treatment, and to allow full liberty to give any turn to the instruction for which the teacher's special tastes and acquirements qualified him.

In a school he looked for indications of the operation of the humanising power of literature as shown in the performance of recitation with due intelligence and expression, and, if possible, with feeling; in grammar when marked by accurate thinking and correct application of rules; and in composition by appropriate use of words.

In striving to arrive at a just estimate of the state of the instruction in a school he would often examine in elementary subjects the second standard, as giving some measure of the accuracy of the spelling and arithmetic; and then the reading, recitation, and grammar of the upper division, thus gauging the extent to which anything approaching culture had penetrated.

His usefulness as an inspector appears to me to lay very much in his success in bringing some tincture of letters into the curriculum of the elementary school.

While outspoken and fearless in his exposure of serious faults and weakness, he was not harsh or unsympathetic towards teachers, as his official testimony to their industry and enthusiasm, penned fifty-five years ago and long ere the Lowe proposals were introduced, indicates:

"No one," he says, "feels more than I do; how laborious is their work, how trying at times to the best of health and spirits, how full of difficulty even for the best. . . . Still, the quantity of work actually done at present by teachers is immense; sincerity and devotedness of much of it is even affecting." —*The School World.*

OUR ENGLISH LETTER.

LIVERPOOL, *June* 1909.

OXFORD is regarded by Lord Curzon and his friends as a vast work-house, where a sojourn is not an opportunity of learning, but a sort of consolation prize in the race of life. These must not be taken as the words of your correspondent whose respect for the Chancellor would forbid any such unsparing statement: really they should be in inverted commas and the fault lies with Mr. Musings—without—Method of Blackwood's. He is much incensed that Lord Curzon has said that the Commissioners of 1850 "were more concerned in helping real ability than they were in compensating real poverty": and now it would seem the Poor Man is to come to Oxford in order that he may be recompensed in some way for the hardship of his early life Here he would not receive a University Education, but a cunningly devised substitute that would not make too much demand on his intellect or industry. And hence he would be doubly deceived: he would not receive an Oxford training, and he would be deluded into thinking that he had. The paragraph that follows is worth quoting. "Education is not an excellent thing of itself. It is often the worst possible clog upon a journey through this world. It is a thousand times better to be a good carpenter than a bad smatterer, and a smattering is all that Oxford can offer to the Poor Man. Yet this smattering, small as it is, will be sufficient to turn the Working Man against his craft. If Lord Curzon's College

were established, it would achieve no other purpose than is achieved by Ruskin College. That is to say, it would turn decent working men into agitators, Secretaries of Trades Unions, and Labour Members. In brief, the Poor Men would not take back to their workshops a better trained mind. They would use the University as a means of getting out of their workshop altogether. And the world cannot show a more bitterly tragic figure than the aimless, half-educated loiterer who believes himself too good for one trade and is manifestly not good enough for another. Whereas, in fact, the University has a plain and simple duty to perform. It is the patron of learning, the guardian of scholarship. It touches remotely the practical work of life. It is not asked to fit its *alumni* for the profitable exercise of trade or profession. Its very uselessness should be its greatest glory. To those who have a talent for humane letters or for science its door stands open wide. It asks of them, not what they have in their pocket, but how they can turn their brains to the best account, not for worldly profit, but in the cause of knowledge."

In such terms does the writer attack Lord Curzon's proposal of a Working Men's College, with its peculiar curriculum and its exemptions in various ways from the ordinary tests.—And as the days go by and his proposals in general are criticized, we are hearing from all sides a chorus of dissent. It is ill-work reforming a University, and it is assuredly work that could be done by no one individual And some take it that the true place of a Chancellor is not among the radicals but among the conservatives. And it is not merely on this matter, but on the question of Compulsory Greek, degrees for women, and the fellowship question that he has aroused considerable opposition. Lord Curzon wants to make a fellowship an endowment of research. "Research should be the primary, and if possible the sole work of their holders". But this is not merely running counter to Oxford custom but to the verdict of educational science and commonsense. Everywhere it is considered desirable that research and teaching should go hand in hand, because in reality, each is indispensable to the other. A schoolmaster cannot keep abreast of his work unless he keeps abreast of his subject: still less can a University tutor. And the two sides should always be kept together: it should in some way be made possible for a teacher to be an original student. And this would best be secured by the provision of a fund that would enable the College to employ a larger staff of tutors and thus give each a reasonable amount of leisure. Each man would specialize in whichever direction pleased him: one man would do more teaching and less research, and another less teaching and more research, each after his own bent. But if the burden were lightened in this way, and tutors had not to work so hard for their livelihood in term time or to use their vacations in examining for various Universities, much good would be done, though, as Dr. Rashdall has put it," it must be frankly admitted that the Tutorial System will always be one more favourable to educational efficiency than to scientific productivity.

The Council has been considering the Chancellor's memorandum, and on some of the less important heads (there are fourteen in all!) it has voted its approval of the general principle involved. And as some reform must come without much delay, no doubt the dissenters will have to show a more excellent way if they wish to defeat the Chancellor's proposals. They have been stringently criticized, but in the main they hold the field. Was not the Hon. George Curzon always esteemed a superior person? Cambridge is pointing out that she already possesses many of these reforms. Oxford replies, that that is small recommendation: and so we wait to see what will come of it all.

The Teachers' Register is further off than ever: Mr. Runciman is not giving way over the Staffing Circular. These two facts affect us differently. Our delight at firmness against the authorities is mitigated by the stubbornness against the teachers. But it is something to know that Mr. Runciman is not to be bullied. 'Our schools will cost us more' is the burden of the complaint. But Mr. Runciman has shown that this is by no means

inevitable, though we venture to think it is theological, and will be the general, outcome. To pay your teachers more is going to cost a pretty penny, and all manner of 'administration,' and giggling, and re-arrangement will hardly meet the extra cost.

The question of the employment of married women as teachers has come up again. It was discussed recently at the National Association of Head Teachers held at Leicester. The action of education authorities in London and Liverpool has evoked a strong protest. In London it is proposed (but not decided) to terminate the engagement of all married women whose names are on the "unattached" list—the term 'unattached' having an Educational and not a matrimonial reference.—It seems doubtful whether a hard and fast rule ought to be laid down. Marriage is an elastic term. Some married women are forced to earn their livelihood. Why not at teaching? A young family is of course an absolute bar, but the local authority could easily make a discrimination on broad lines in individual cases. A lady (Mrs. Dean) not long ago expressed the opinion, that a woman ought not to be disqualified merely "because she chanced to fancy a man." But another (Miss Palmer) "objected to a woman adopting two professions." Thus do our spinsters and matrons disagree.

We have lost three men of letters in a few weeks. John Davidson, Algernon Swinburne, and George Meredith are three names that will live, though we should not suggest that Davidson is of the calibre of the others. But in all three there was something of the spirit of revolt: what was a trait in Meredith and Swinburne was the distinctive characteristic of Davidson. Meredith sleeps in his loved Surrey: the Dean refused the request for a tomb in the Abbey but what matters it, after all? Who could forget his *Richard Feverel* or his *Love in the Valley*? It is remarkable to note the diversity of opinion as to what was his best work. *Shagpat*, *Evan Harrington*, *Beauchamp's Career*, and not these only, are mentioned. Long may his memory live. The story of his generous treatment of young authors, while he himself was not being recognized at his true worth by either critics or public, is wonderful indeed. Few could have come through as unembittered as was Meredith. He was the most brilliant conversationalist of his time. And now the last of the great literary victorians is gone, if we except Thomas Hardy.

We are desired to publish the following:—

TOWN HIGH SCHOOL,
CUDDALORE, N T.
July 26th, 1909.

FROM

G. SHIVA RAU ESQUIRE,
Headmaster, Town High School,
CUDDALORE, N.T.

To

THE HEADMASTER,

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SIR,

May I take the liberty of inviting your attention to the following and request that you will be so good as to favour me with your views at your early convenience?

Early in the year there was a proposal that the ensuing Matriculation Examination might be postponed to March next. The proposal, however, does not appear to have been discussed on its merits; either it was dropped or in any case it fell through. The main objections, it appears, were:—

1. That if so postponed, it would be the only examination held in March next.

2. That, as the results would then be ready only about the close of May, Colleges would be without pupils in the Junior Intermediate Class next term and thus lose heavily.

What provision was in the end made in the interests of the "slaughtered innocents" (or, as others might prefer to call them, "hardy annuals") is too well known to need mention here.

But this provision, in my humble opinion, while it is no compromise at all, actually places at a disadvantage the very class of persons for whose benefit it was intended. For

1. As many as six books (including the Poetical Selections) have to be mastered in English alone; of these, two were read in the Fifth Form last year in most schools; and considerable portions of two others had already been gone through (in the Sixth Form) before the "veterans" could rejoin school. Thus these boys could have the benefit of instruction for only about half their English Text, being thrown on their own resources for the rest.

2. In several Institutions, when these unfortunates came, it was already the fag-end of the first term.

3. The new syllabus in Mathematics differs considerably, especially in Geometry, from the old one. These poor boys, having in most cases imbibed only Euclidean Geometry, were quite *non possumus* with the new Geometry—many had to devote the first few weeks to learning how to handle instruments. In several cases while Euclidean Geometry has been easily forgotten, the new Geometry, less understood, has yet failed to make any lasting impression. Ninety days' tuition in Modern Geometry is hardly enough to equip pupils for a searching examination in the subject.

4. The exact standard of the whole examination being for obvious reasons still in great measure unknown, a few weeks more available for study would be a distinct advantage to the candidates.

5. Under the Transitory Regulations the "veterans" have only two chances open to them. And, for reasons stated above, if the examination is not postponed (to, say, January next), the first chance will have come in vain for a great majority of these. This is a double hardship, inasmuch as they not only stand thus to lose one whole year, but are also virtually restricted to only one chance, that of 1911.

It appears highly desirable, therefore, that the next Matriculation Examination should be held in January rather than in December next. The advantages of this course are

1. The candidates can have the benefit of some four weeks' further tuition at school.

2. They will have longer time for preparation and therefore greater opportunities for clearing doubts and solving difficulties.

3. The Matriculation will not be the only examination held in January next.—By the way, the F.A. Examination may also be held in January, with the Matriculation; the University need not incur the trouble and expenditure involved in holding these examinations separately,

4. Colleges can have pupils in the Junior Intermediate Class next year, certainly long before they had them this year.

Thus, the suggestion now made, namely, to hold the examination in January next, seems in every way a compromise that ought to be generally acceptable. And I feel sure that, if pressed by a large number of heads of institutions (if not by all of them), it will be favourably considered by the University authorities, who will certainly not turn a deaf ear to reasonable representations.

I would suggest, therefore, that some united action be taken in the matter and a joint representation made at an early date. I shall be glad to hear from you

(*a*) whether you are willing to join in a joint representation as suggested; and

(*b*) whether you do not think it desirable that for discussion and joint action in matters in which (as in the present case) Headmasters are specially interested, a *Headmasters' Conference* be organized as a permanent institution.

I am, Sir,
Yours truly,
G. SHIVA RAU.

Reviews and Notices.

A NARRATIVE OF INDIAN HISTORY FOR HIGH SCHOOLS. By J. C. ALLEN. LONGMANS, GREEN AND CO. 1909. *Re.* 1-8-0.

The book before us is intended for the use of the Matriculation classes of our High Schools. The simple and easy style in which the narrative is couched is well adapted to the needs of the high school student. In less than 250 pages, the author has succeeded in giving an interesting account of the main outlines of the History of India. The questions added at the end of each chapter serve the double purpose of helping the student to examine himself in mastering the book and of indicating the directions in which independent thought and further study will be useful. For this latter purpose, the author has suggested at the end of his book, a course of extra reading in respect of the several periods of Indian History. There are numerous illustrations, maps and plans, and the book is neatly printed and got up.

SELECTIONS FROM SHORT STUDIES ON GREAT SUBJECTS. By J. A. FROUDE: WITH INTRODUCTION AND NOTES. By J. THORNTON. LONGMANS, GREEN & Co. 1909. 1*s.*

The book before us forms one of Longmans' class-books of English Literature, and the object of the selections is, to introduce the reader to one of the greatest writers of English Prose in the nineteenth century. At this late time of day it will only be a work of supererogation to bestow any particular praise on Froude's style. We would, however, quote the following passage from "England's Forgotten Worthies," which is among the selections included in the book under review, as a sample of his well of English undefiled. "The springs of great actions are always difficult to analyse—impossible to analyse perfectly—possible to analyse only very proximately; and the force by which a man throws a good action out of himself is invisible and mystical, like that which brings out the blossom and the fruit upon the tree. The motives which we find men urging for their enterprises seem often insufficient to have prompted them to so large a daring. They did what they did from the great unrest in them which made them do it, and what it was may be best measured by the results in the present England and America." There are five other pieces given in the book each of them as good as the one we have quoted from, and the brief historical and explanatory notes furnished by the editor serve to elucidate the text. The selections will form excellent reading—whether in class or for private study—for students preparing for the Matriculation or Intermediate examination.

A POCKET LEXICON AND CONCORDANCE TO THE TEMPLE SHAKESPEARE. PREPARED BY MARIAN EDWARDES. J. M. DENT & Co. 1909. 2*s.* 6*d.* *net.*

A Shakespearean glossary and concordance of this kind—at once full enough for the ordinary needs of the general reader and small enough for frequent and ready use—has been a long felt want, and the compiler and the publishers have by the issue of the present book, which is neatly printed and cheaply priced, placed the general reader who is also a lover of Shakespeare, under a deep debt of gratitude. As the compiler says, a complete Shakespeare Lexicon is not possible in a pocket volume, and choice therefore has been made of all words, which, since the days of Shakespeare have fallen into disuse or undergone a change of meaning, together with others used by him, which had more than one signification. Expressions and passages that have offered especial difficulty to the commentators are also included, the chief interpretations, and where necessary, the variorum readings being supplied. The book will also to some extent serve the needs of the special student of Shakespeare, inasmuch as it is a brief résumé of the results of the labours of generations of Shakespearean scholars in the matter of interpretation. We would gladly quote the notes on some of the more obstinate cruces of the plays, but we have no room for them. The book is what the publishers claim it to be, "a very useful and handy companion," and we are glad to commend it to the notice of all readers of the great dramatist.

THE EARLY EDUCATION OF CHILDREN. BY LAURA L. PLAISTED. OXFORD. AT THE CLARENDON PRESS. 1909.

The aim of this book is to expound educational principles by means of some examples of work. It claims to be the outcome of many years' experience in teaching little children and in training young teachers. Every principle laid down and every method advocated, is said to have stood the test of practice. The author, however, lays no claim to novelty or originality. The book is divided into two parts. The first part deals mainly with the education and management of the child under five years, and the second part with that of the child from five to seven years. An appendix deals with the medical responsibilities of the school teacher, written specially by a medical man. There are more than thirty illustrations and about a dozen plates of which two are in colours We heartily recommend the books to all teachers of primary schools.

GLIMPSES OF HIDDEN INDIA. BY JOHN LAW. INDIAN EDITION. THACKER, SPINK AND CO., CALCUTTA, SIMLA, BOMBAY.

In this book the author gives us his impressions of Indian life. The book is well written and forms interesting reading. But it cannot be said that the author's reflections are sound and accurate. The book opens with the following words of a Russian officer:—"It must be sad to visit a country where the English are so much disliked," and the author regards this description of the relation between the Englishman and the Indian as true, though sad and full of significance at the present time. The book closes with a chapter on Vedantism.

FRENCH AND ENGLISH PARALLELS. BY F. R. M. FURSDON. METHUEN AND CO., 36, ESSEX. STREET, STRAND, LONDON. 3*s.* 6*d* *net.*

The book is a compilation in which a successful attempt has been made to give the proper English equivalents of French idioms, metaphors and proverbs. The book will be found very useful by all Indians who are trying to acquire a fair knowledge of the French language. The genius of the French language is such, that it bristles with metaphor, and without a fair knowledge of French metaphor, it is impossible to really understand any passage of ordinary French prose. We are glad to recommend the book to our readers.

COMMERCIAL FRENCH READER. BY W. M. POOLE, M.A., AND MICHEL BECKER. JOHN MURRAY, ALBEMARLE STREET, LONDON, W. 1909. 1*s.* 6*d.*

This book contains the more valuable parts of "Commercial French, Part I" by the same authors and published by the same firm. We have not had the pleasure of reviewing the first book but from the fact that it has already gone through five editions, it is evident that the book has been found very useful. We have no doubt that this second book will meet with the same reception, especially as it is offered at a considerably reduced price.

THE PUBLIC SCHOOLS' YEAR BOOK AND PREPARATORY SCHOOLS' YEAR BOOK. TWENTIETH YEAR OF PUBLICATION, 1909. THE YEAR BOOK PRESS C/O SWAN SONNENSCHEIN AND CO, LTD., 25, HIGH STREET, BLOOMSBURY, LONDON, W. C.

This book forms a reliable official guide to the great English Public Schools. It gives up-to-date information on all matters connected with Preparatory and Public Schools. There are also articles on the Universities giving full details of Universities other than Oxford and Cambridge, and much useful information is also given concerning the various professions. The book will form a useful adjunct to every school library.

GRAMMATICAL ENGLISH. BY F. W. G. FOAT, D.LITT. (EDWARD ARNOLD.) 3*s.* 6*d.*

A publication which will be found very useful in the higher Forms of our High Schools and the Intermediate classes of our Colleges, is *Grammatical English*, by Mr. Foat, recently published by Messrs Edward Arnold. As the title indicates, it is written with an educational purpose whose value cannot be over-estimated—to direct the attention of students to the practical side of Grammar. There is no attempt to burden the memory of the reader with a bewildering number of grammatical rules whose bearing on correct, written English, is not evident at least to a student in the early stages of his education. A constant eye to the utilitarian aspect of Grammar and its relation to composition keeps the book from descending to the level of the average sombre grammatical manual. There is no doubt that the teaching of Grammar would gain much in liveliness and practical interest by the adoption of such a text-book.

The errors in Grammar and idiom to which young students are prone are dwelt upon with special care and there is throughout the laudable effort to make the beginner appreciate the practical value of a study of this subject. Chapters on *Oral Speech, Derivation of Words and Phrases, Style and Composition* add to the usefulness of the book.

We have no hesitation in saying that the book will be found to be of immense value to students and teachers alike.

Indian Educational Notes.

MADRAS.

PROMOTION.

(1) T. SHAIK Muhamed Hussain Sahaib Bahadur, B.A., an Assistant Inspector of Schools, to be a member of the Provincial Educational Service in the ninth grade *vice* Mr. C. A. Wilkinson transferred to the scholastic branch.

(2) Mr. Thorvey Krishna Rau Hunumantha Rau, B.A., L.T., to be sub *pro tem.* in the ninth grade of the Provincial Educational Service and to hold one of the posts recently added to the cadre of that service.

Mr. T. Krishna Rau to act in the ninth grade of the Provincial Educational Service during the absence of Mr. V. R. Venkatarama Aiyar on leave or until further orders.

The above promotions to have effect from 5th July 1909.

APPOINTMENTS.

THE Director of Public Instruction is pleased to make the following appointments :—

(1) Mr. V. Sayanna Sastri, Sub-Assistant Inspector of Schools, Hospet range, to act in the Kurnool range, *vice* Mr. A. Venkanna Pantulu on other duty or until further orders—to join as soon as possible after handing over charge to the Supervisor, Hospet.

(2) Mr. S. Raghunatha Rau, Fourth Assistant, Central High School, Mercara, to act as Sub-Assistant Inspector of Schools, Hospet range, in the probationary class, *vice* No. (1)—to join as soon as possible.

A PUBLIC meeting under the auspices of the Fifth Celebration Day of the Shorthand and Type-writing Institution, Trichinopoly, was held in the Hindu Secondary School on Sunday, 18th instant, with Mr. T. V. Swaminatha Iyer, B.A., L.T., in the chair. The Report of the Institution is highly commendable. The Institution is strictly a *private* one and under the management of a single individual. The result produced ever since its inauguration is a charming one. In Type-writing this year 17 students were sent up, 13 passed in Theoretical and 11 passed in Practical and Oral Test with one first class. In Shorthand 10 students were sent up, 8 passed with 7 first class and only one second class. This clearly shows how steadily and efficiently the institution is conducted.

The Chairman after giving expression to his feelings of pleasure in having had an opportunity of presiding over meetings of this kind, spoke at some length about the love and zeal of the students in co-operating with their master in the celebration of the Institution Day. Then he spoke about the successful working of the Institution in spite of rival Institutions started side by side.

With the usual vote of thanks to the Chairman and Lecturer and after garlanding and distributing *pan supari* the meeting terminated.

MR. B Narsinga Row, son of Dr. Denegal Raghabendra Row of Mangalore has stood Ninth Wrangler in the Cambridge Mathematical Tripos. He belongs to the same community as Mr. Justice Chandravarkar and Dr. B. Row, M.D., D.SC. He had a record of University career winning a treble First Class and Gold Medals in English, Sanskrit and Physical Science, and also the College Gold Medal. He went to England in the year 1907 as a Government of India Scholar, and joined St. John's College, where, after a stay of six months, he successfully competed with the Seniors and won the Major Scholarship.

GOVERNMENT has just issued a G. O. on the work of the Presidency College during the past year, and the comment thereon must be gratifying to the Professors. It is much to their credit that the percentage of passes was higher than the average of the Presidency, History, in particular, having produced very good results. These latter are probably the results, as Government suggests, of the alteration in the examination papers whereby greater scope is given to the exercise of memory. Such reforms, of course, are disheartening to those who hope for permanent improvement in the education of Indian youths. As to the students' progress in the various subjects, the Professors' reports state, that English composition showed some progress, whilst in physics the answers to the papers set indicated that the practical instruction was producing some effect. The report of the Professor of Mathematics is notable chiefly for his recorded inability to recommend the promotion of two lady students, but the biological class has the distinction of readily finding posts for its graduates. Taken altogether, the reports show that the work during the year was well done, in spite of the lowering of the History standard, and that in other subjects a higher standard than before was attained by the majority of students who attended the classes. Certain alterations have been made in the methods of instructions and are accompanied by a note to the effect that through them a still greater improvement will be forthcoming in the future.

MR V. R. Venkatarama Aiyar, Acting Inspector of Schools, VI. Circle, has privilege leave for three months.

MR. S. V. Melagiri Rao Pantulu, Acting Assistant Inspector of Schools, Guntur district, has privilege leave for two months, with effect from 1st July 1909.

MR. S. Swaminathan, B.A., Barrister-at-Law, is to act as Principal and Senior Professor, Law College, Madras, during the absence of Mr. R. A. Nelson, on leave, or until further orders, to join on the 28th June 1909.

MR. C. Madhavan Nayar, Barrister-at-Law, is to act as Junior Professor, Law College, Madras during the absence of Mr. C. E. Odgers, on leave or until further orders, to join on the 28th June 1909.

THE Government of Madras have sanctioned a grant of Rs. 10,684 towards the cost of building the Sarah Tucker School for the Blind at Palamcottah, provided the work is completed by June, 1910.

Major A. Miller, M.B., M.R.C.S., L.R.C.P., I.M.S., is to be Lecturer in Experimental Physics, Medical College, Madras, for the session 1909-1910 or until further orders.

THE Madras Government have approved of the selection of Sonti Venkatarama Murti, for a Government Scholarship tenable in England by natives which has been placed at their disposal this year by the Madras University. On arrival in England he will present himself at the India Office and follow such instructions as the Secretary of State may give him.

HIS Excellency the Governor opened the Agricultural College at Coimbatore as an institution which has been started for developing agricultural research and education. The Hon'ble Mr. Castle Stuart in his opening speech said, that the object of the College is to send out in course of years an army of trained agriculturalists, who will go amidst the cultivating ryots and teach them practicable work and advantages of scientific agriculture. His Excellency made a lengthy speech, dwelling on the benefits conferred by the British Government on the ryot population. His Excellency said, that the ryots had been saved from persecution and had been given abiding peace, religious freedom, civic liberty and justice between man and man. The ryots' material wants had also not been overlooked. The cost of the institution is rupees eight lakhs.

BOMBAY.

MR. Sajba Shankar Rangnekar, B.B., LL.B, of Bombay, stands first in First Class among the successful candidates at the Final Bar Examination, held last month in London. Mr. Rangnekar has had a most successful career in England, having previously carried away two prizes at the same time at the Term Examinations held by the Council of Legal Education in March last. This is the second time throughout the history of the English Bar that an Indian wins the very highest place among successful candidates.

THE Syndicate of the Bombay University has appointed a committee consisting of the Rev. Dr. D. Machichan, M.A., D.D., LL.D., The Hon. Mr. C. H. Setavlad, B.A., LL.B., Dr. N. F. Surveyor, M.A., B.SC., M.D., and Principal, R. P. Paranjpye, M.A., B.SC., to inspect the various Colleges affiliated to the University. The committee will visit Poona on the 16th and 17th instant, to inspect and report upon the four colleges situated in Poona.

MR Balkrishna Bhasker Pradhan has been nominated by the Government of India to a State Technical Scholarship from this Presidency, to go to England to complete his study of Electrical and Mechanical Engineering. Mr. Pradhan passed his L.C.E. examination from the Victoria Jubilee Technical Institute in the year 1907, having obtained the Lord Reay Gold Medal and is at present a Senior Fellow in that Institute. He belongs to the Somawanshi Kshatriya Pathare community.

CALCUTTA.

WE understand that a scheme costing one and a half lakhs of rupees annually has been sanctioned by the Secretary of State for increasing the superior teaching staff of Government colleges in Bengal.

BISHOP JOHNSON, presiding at a meeting of the Church Aid Association, announced that the Government had promised £3,000 for the endowment of the Nagpur School if another £3,000 could be raised. The Association had secured £1,200 towards the total.

BABU Nobo Krishna Bhaduri, M.A., Head Master Barisal Zilla School, sent up 24 candidates for the last Entrance Examination, of whom 23 have passed, 13 being placed in the first division and the rest in the second and the third divisions. The brilliant result reflects great credit to the able Head Master and other members of the teaching staff.

MR. Harinath Ghose, M.B, who passed the M.D., examination held by the Calcutta University in April last and was commended for a thesis on Indicanuria, with summary notes of 142 cases, has been awarded a gold medal on the recommendation of the examiners.

THE Calcutta School of Art has opened its new session with a re-arrangement of the classes upon the plan laid down by Mr. Havell and Mr. Percy Brown. The Elementary department is the foundation of the system, and from this division branch out an Industrial Arts department, a Teacher's department, a Draftsman's department and, most advanced of all, a Fine Arts department. Having successfully negotiated two years study in the Elementary class, the student is qualified to take up any of the departments of the school enumerated above according to his own particular bent.

16260

AN estimate, amounting to Rs. 24,175, has been sanctioned for the construction of a Railway School at Hubli, Madras and South Mahratta Railway.

RAJA Balwant Singh of Agra left nine lakhs for raising the Rajput High School founded by him to the status of a College, and one lakh for a boarding house.

MAHAMAHOPADHYAYA Satis Chandra Vidyabhusana, M A , PH D., Professor of Sanskrit and Pali, Presidency College, Calcutta, has gone to Colombo *viâ* Madras and Tuticorin. The Professor will stay in Ceylon for six months to study Pali and Buddhist Philosophy under local savants, and intends visiting Anuradhpur, Kandy, etc., which are well-known centres of ancient learning.

SIR Bejoy Chand Mahtab Maharajadhiraj of Burdwan, has subscribed one thousand rupees towards preparing the site of the playground for the Darjeeling High School.

IT has now been decided to admit private as well as Government students to the Agricultural College at Pusa, and rules in this connection are being framed.

THE results of the public examination held by the National Council of Education, Bengal, in June last, are out. In the Fifth Standard Examination (corresponding to the Matriculation Examination of the Calcutta University) of 112 candidates, 105 appeared of whom 47 passed (12 in the 1st division, 19 in the 2nd division and 16 in the 3rd division.)

From Rampur	National Institution	8
„ Habiganj	„ School	4
„ Kishoreganj H.M.	„ „	4
„ Sylhet	„ „	2
„ Khulna	„ „	1
„ Chandpur	„ „	3
„ Maldah	„ „	1
„ Dinajpur	„ „	3
„ Noakhali	„ „	1
„ Comilla	„ „	2
„ Dacca	„ „	1
„ Soharang	„ „	1
„ Vidyagriha Yeotnal	„ „	2
„ Shiraji Vidyalaya, Amraoti		3
Others		11
	Total ...	47

In the Seventh Standard Examination, Science Department (corresponding to the I. Sc. Examination of the Calcutta University) all the 9 candidates appeared from the Bengal National College and School have passed: 7 in the first division and 2 in the 2nd. Of these 9 students, 5 took up scientific (A) group special subjects being Mathematics, Drawing, Mechanics and Steam Engine, Carpentry and Smithy, and the remaining 4, scientific (B) group, their special subject being Zoology, Botany and Physiology (both theoretical and practical). The common subjects for examination of all these scientific students being Physics and Chemistry (both theoretical and practical) and Essays, in English and vernacular each on any one of the subjects for examination.

In the Seventh Standard Literary Department (corresponding to the Intermediate in Arts of the Calcutta University), of 10 examinees 9 have passed, 2 in the 1st division, 3 in the 2nd, and 4 in the 3rd (from Bengal National College 4, from Dacca National School 2, External 3. Total 9.)

In the Primary Technical Examinations of 38 candidates, 30 appeared of whom 19 passed (17 in the 1st division, 1 in the 2nd, and 1 in the 3rd)

From Rangpore National School	12
„ Mymensing „ „	6
External	1
Total ...	19

In the Secondary Technical Examinations of 10 candidates, 9 appeared of whom 5 passed (all in the 1st division); all from Rangpore National School.

The new 6th year class, both literary and scientific., as well as all the college classes (1st year) have commenced in the Bengal National College from the 19th instant.

UNITED PROVINCES.

THE Government of the United Provinces through the Legal Remembrancer brought a suit in the Court of the District Judge of Agra, against the Commissioner of Agra, Vice-President, and 33 Trustees of the Agra College. The plaintiff's prayers were:—(1) That this Court be pleased to authorize that Board of Trustees of the Agra College use all grounds and buildings and movable property, set out in Schedule I. annexed to the plaint, and use funds derived from the properties and investments set out in Schedule II. annexed to the plaint for the sole object of carrying on the Agra College. (2) That the Trustees be authorised to permit, as a temporary measure, the Government of the United Provinces of Agra and Oudh to carry on, if necessary, in College buildings the High School, which, it is said, Government intends to establish in Agra until Government has acquired or built separate premises for the same. (3) And that for the better carrying on out of the said trust, this Court be pleased to sanction a scheme. The suit has excited great interest in educational circles. Mr. Wallach, Government Advocate, came in from Allahabad to represent the Government. Defendants did not appear and *ex parte* decree was passed in favour of Government.

THE Director of Public Instruction, U.P., has been addressed by the Government of the United Provinces with reference to the report on the Reformatory School at Chunar for the year 1908. The letter goes on to say that Mr. Dela Fosse writes, that he found the school weakest in its efforts to reform character, yet, beyond a brief statement that religious instruction was given as in previous years, the Superintendent makes no mention of this important subject. His Honor the Lieutenant-Governor was much surprised at this omission, and required a separate report on it from the Superintendent without delay. The orders of the Government are that more vigorous steps should be taken to obtain a teacher who can give religious and moral instruction in place of the deceased teacher. The letter concluded with the remark that His Honour, the Lieutenant-Governor, was pleased to observe that the members of the visiting committee have continued to pay attention to the school.

THE Amritsar District Muslim League passed resolution asking that Principal Archibald's resignation be accepted and another European be appointed Principal of Aligarh College.

The *Indian Daily Telegraph* hears that Her Highness The Begum of Bhopal has increased the state-aid given to the Nadwatulalama, Lucknow, from Rs. 600 to Rs. 800 per annum, and that the Begum of Nawab Nurul Hasan Khan of Lucknow, son of the late Nawab, Syed Siddiq Hasan Khan, has started a ladies' subscription fund for affording financial help to this Institute. The increasing interest displayed by Mahomedan ladies in the cause of education is a promising sign of the times, and augurs well for the future of Indian Mussalmans.

THE Punjab Education Department propose to issue revised scheme of studies for Vernacular and Anglo-Vernacular Schools. It will be based largely on the recommendations made by the Educational Conferences held in April last.

THE new Punjab Agricultural College at Lyallpur is being fitted up, and it is hoped to open it next month. The European expert staff will comprise the Principal, who is also an Agricultural Chemist, the Professor of Agriculture and the Economic Botanist.

INDIA GENERAL.

AT this year's P.W.D. Accountants' Examination held on the 7th and 8th June, forty-two candidates are declared to have passed the test. The examination is held under the direction of the Principal, Civil Engineering College, Sibpur, and the centres at which it was held simultaneously this year were Shillong, Chittagong and Rangoon.

THE following Home Department resolution is published:—

It has been frequently brought to the notice of the Secretary of State for India, that Indian students, on their first arrival in England, experience difficulties by reason of their lack of information as to educational facilities and social conditions, and he has for some time had under consideration the possibility of rendering available for their use, information and advice of the kind required. He has now, after consulting the Government of India, decided to establish a Bureau in London for the supply of information as well as a Standing Committee for general advisory purposes. The Bureau and the Committee will work in close relation with one another and the head of the Bureau, who will be called the Educational Adviser to Indian students. He will also act as Secretary to the Advisory Committee.

2. The functions of the Bureau will be to answer inquiries in regard to educational facilities, to keep a list of lodgings and boarding houses suitable for Indian students and of private families willing to receive them on such terms as may be arranged, to furnish students with references, to bring to the notice of the Advisory Committee any cases in which the regulation of educational institutions bears hardly on Indian students, and generally to give all possible assistance either to students themselves or to their parents in India. The Bureau will be in close touch with the Board of Education, with its correspondents at the leading Universities, and with local committees in India.

3. The Advisory Committee will be available for consultation by students or their parents, by the Educational Adviser and by the Secretary of State, and will bring to the latter's notice any matter in regard to which it may desire to suggest action on his part for improving the position of Indian students. It will stand as far as possible in *loco parentis* to students whose parents are unable themselves to supervise their education. In particular its members will be ready to assist students in social matters. It is hoped that in this way they may be able to do much towards removing any feeling of friendlessness and towards providing for young Indians social opportunities which would not otherwise be open to them. The following gentlemen have accepted the Secretary of State's invitation to serve on the Advisory Committee, of which Lord Ampthill has consented to act as Chairman:—Sir M. M. Bhownaggree, K C I E; Mr. Saiyed Ameer Ali, C I E.; Major N.P. Sinha, I.M.S., retired; Mr. Kamruddin Latif; Mr. Theodore Morison, Member of the Council of India; Pandit Bhaswandin Dube, Barrister-at-Law; Lieutenant-Colonel Sir W. Curzon-Wyllie, K.C.I.E., C.V.O., Political Aide-de-Camp to the Secretary of State.

4. The appointment of Educational Adviser to Indian students has been accepted by Mr. T. W. Arnold, formerly of the Indian Educational Service, who has relinquished his post as Assistant Libra-

rian at the India Office for the purpose. Mr, Arnold has taken up his duties and the Bureau of information is temporarily located at the India Office until suitable premises can be obtained elsewhere.

5. The Governor-General in Council now desires to explain the measures, which, after consulting Local Governments, he considers should be adopted in India with the object of supplementing the activities of the Central Bureau and the Advisory Committee in England. It is proposed to establish local committees consisting of representative European and Indian gentlemen in each Province, excepting Burma and the North-West Frontier Province. These committees will be in direct communication with the Central Bureau in England. By means of this agency it is hoped that the Educational Adviser will be able to obtain all information regarding individual students which may be desired by the University or other authorities in England and thus to meet the need which has made itself felt for detailed and trustworthy information as to the position, means and character of Indian applicants. The committees will be sufficiently large to be representative in character, and Local Governments will co-operate with the Universities in bringing them into existence. It is the intention that each committee shall have among its members representative Indian gentlemen of good position and local reputation enjoying the confidence of the educated classes of the Province no less than of the Government. The Government of India consider that it will be advisable to appoint to the committee a number of Indian gentlemen residing in the mofussil who will take a personal interest in their work and will explain their objects and advantages throughout the area in which they exercise a local influence. The Provincial Committees will be constituted by the Local Government and Administrations, and the Vice-Chancellor of the University and the Director of Public Instruction will be members where practicable. The functions of the Committees will be (1) to furnish information and advice to Indians who contemplate going to England; (2) to circulate in India to colleges and other institutions the educational, financial and social information collected by the Central Bureau in London; (3) to communicate with the Central Bureau on behalf of students before they start or on behalf of their parents when they are in England. One of their minor duties will be to see that the handbook of information which will be published by the Central Bureau is kept up to date, and the latter will be asked to supply from time to time to the Local Committees in India, all information necessary to correct that given in the current issue of the book.

6. Local Governments and Administrations have generally accepted the above proposals, and it only remains now to give effect to the scheme. The Governor-General in Council desires therefore, that steps may be taken as soon as possible to constitute the local committees. The intention is, that there shall be in each province a General Committee representing the Province as a whole, and that where necessary there shall also be Sub-Committees at such local centres as may be convenient. The President and Members of these Committees will be selected and appointed by the Local Governments. As stated above, these proposals will not for the present apply to Burma, and the North-West Frontier Province will be represented on the Punjab Provincial Committee by the Officer in charge of Education in the former Province. The Province of Coorg might similarly be represented on the Madras Committee. Native States, who so desire will also be represented by the Political Officers of the States on the Committees at the head-quarters of their respective Universities.

7. There will be a paid Secretary to each Provincial Committee who will be appointed by the Local Government. It has been stated by one Local Government that the services of a Secretary can be procured on an allowance of Rs. 60 per mensem. Such an arrangement may not be possible in every case, and the Government of India leave it to the discretion of Local Governments to fix the pay of this officer subject to a maximum limit of Rs. 200 per mensem. The Provincial Committees, as soon as they are constituted, should place themselves in communication with the Educational Adviser to Indian Students, India Office, London.

THE Indian Society of Oriental Art, has just issued a review of its work which shows that despite somewhat limited financial support the Society has been able to do some most useful work. Besides publishing reproductions of Indian pictures, and thus encouraging and cultivating an appreciative interest in Indian art, the Society has endeavoured to promote the practice of lithography, a process which should be peculiarly suited to the Indian craftsman, and the results have been sufficiently encouraging to justify further experiments. Substantial help has been given to students, and a considerable number of original pictures have been sold through the medium of the Society. It is noted that since the Society's first exhibition several Bengali and other magazines have taken to publishing quite good reproductions of ancient and modern Indian pictures, and there is reason to believe, that in this direction, the Society has already exercised a wholesome influence. The Society aims at encouraging and assisting in every way practicable, and if need be financially, all indigent and deserving artists whether students or otherwise, in painting, sculpture, and the fine arts generally, and is glad to hear of deserving cases. During the ensuing cold weather it is proposed to hold another exhibition of ancient and modern oriental paintings, and a number of very promising exhibits are alredy assured.

The following scholars have been selected for scholarships for Industrial education in Europe:—

BOMBAY.

R. V. Gurjar—Process of Bleaching, Dyeing and Printing in Mills.

B.B. Pradhan—Electrical and Mechanical Engineering.

BENGAL.

Manmatha Nath Bysack—Textile Chemistry, with special reference to the dyeing, printing and bleaching of textile fabrics.

PUNJAB.

M. Nawab-ud-din—Tanning industry.

BURMA.

Maung Po Thein—Mining Engineering.

EASTERN BENGAL AND ASSAM.

Srijut Girish Chandra Bardalai—Mining Engineering.

C. P. Saiyid Faiz-ud-din—Leather Tanning.

THE Government of the Hyderabad State have decided, on the recommendation of the High Court, to establish Law Classes in the Aurangabad and Gulbarga Divisions, the subjects of instruction will be, Civil Law, Criminal Law, Mahomedan Law and Hindu Law, the lectures being given in Urdu. The admission fee to the class has been fixed at Rs. 10 with a monthly fee of Rs. 5, but in the case of Government servants and students of limited means, the admission fee has been reduced to Rs. 5 and the monthly fee to Rs. 3.

ABDUL Karim Jamal has promised Rs. 2,00,000 towards the development of Mahomedan education in Rangoon.

Foreign Notes.

GREAT BRITAIN.

THE centenary celebrations at Cambridge in commemoration of Darwin brought together delegates representing science in all the foremost intellectual centres of the world. It is very suggestive to reflect on what is implied in the statement of the Chancellor, that he remembered the uncomfortable sin that was caused by the publication of "the origin of species," but that Cambridge had followed Darwin's lead successfully, and hoped to carry the enterprise still further, for it was proposed to found a new chair of Genetics, a study that is peculiarly associated with Darwin's name. Mr. Balfour in a remarkably appreciative speech expressed the universal opinion of instructed persons when he said that the discoveries of the great scientist would remain as perpetual landmarks in the intellectual history of mankind: he had imprinted his signature on the whole development of future thought. Mr. Balfour also most properly pointed out, that Darwin's scientific work, apart altogether from the generalization of the origin of species, would suffice to rank him as one of the most remarkable investigators the world had ever seen, the appreciations delivered by eminent men of science of various nationalities formed a specially interesting and impressive portion of the ceremonies. Cambridge has honoured herself in honouring so handsomely one of her eminent sons.—(*The Educational Times.*)

THE amount devoted to scholarships by the London County Council this year, though somewhat lower than in some previous years, still reaches the very large figure of £263,080. The considerations kept in view by the Higher Education sub-committee in working out the scheme are well worth repeating:—

That as far as possible, no child or young person shall be debarred by poverty from obtaining the kind of education which will prepare him for the career for which his talents and character befits him and that the pecuniary emoluments attaching to the scholarships should be sufficient to enable students to obtain the kind of education, whether industrial, scientific, or literary, which is best suited to their needs and capacities but not sufficient to induce them to undertake a particular course of study with the object of securing the pecuniary advantages attaching to the scholarship.

SIR Robert Stout, Chief Justice of New Zealand, who is at present on a visit to London, spoke as follows concerning University education:—"We have double the number relatively getting a University education that you have, we hope, the time will soon come when the Universities will be as free as State schools. Until that time comes, I feel we shall not be doing our duty. A University career ought not to be a question of a man's means, but of his capacity."

AN agreement allowing of an interchange of the Matriculation certificates issued by the joint Matriculation Board and the University of London respectively has been completed, and each party to the agreement will now proceed with the mutual recognition on the terms and conditions arranged. In each Examination system, there are certain obligatory subjects, without which no certificate is issued. Besides these obligatory subjects, each system requires that three other subjects should be taken, under stated conditions, from a schedule of subjects specified in the syllabus.

MESSRS. John Swire and Sons, have promised a contribution of £30,000 towards the Hongkong University Endowment Fund, the Toukoo Sugar Refining Company £5,000, and the Ocean Steamship Company £5,000, on condition that the whole amount required is subscribed.

THE Vice-Chancellor of London University for 1909-1910 is Dr. M. J. M. Hill, Professor of Pure Mathematics at University College, London. Dr. Hill, who was fourth Wrangler in 1879, has a distinguished record at London University as well, having been Prizeman, Exhibitioner, Scholar and Gold Medallist.

THE vacant Principalship of Aberdeen University is regarded with much interest in Scotland—especially as there is an unusual delay in filling the post. One reason alleged for the delay is that the report of the Commission on the financial position of the Universities is expected, and one of the recommendations in this report will probably be that of an increase of salary of the head of Aberdeen University.—(*University Correspondent.*)

A COMMITTEE has been formed, including Mr. Asquith, Lord Milner, Lord Crewe, Mr. Balfour, Lord Curzon, and representaives from the Universities to promote the interchange of students between the Universities of the Empire and the United States, and also between different parts of the Empire, and to establish scholarships enabling students to travel for the purpose of industrial, social and other studies. They will be selected on the lines of the Rhodes' Scholarships, and the first experiments will be between Britain and Canada and the United States.

PROFESSOR WILLIAM JACK, who is now retiring from the Chair of Mathematics in the University of Glasgow, has had a very varied career, although the success with which he has filled very diverse appointments has been uniform. After a distinguished academic career at Glasgow and Cambridge, he was appointed H. M. Inspector of Schools for the South of Scotland. After a few years in that office, he resigned to become literary manager to the Macmillan firm of publishers. Then for several years he was Editor of the *Glasgow Herald*. He also acted for a time as a private inspector of secondary schools, and held various other educational posts. He seemed at last to find his sphere when he was selected for the Mathematical Chair at Glasgow, for he has held it for about thirty years. Professor Jack, married the daughter of Professor Nichol, who once was well-known as Professor of Astronomy and whose son was for many years Professor of English Literature, and for these and other reasons his old students feel that with his retirement one of the few remaining links of connection with the University of former times is broken. The resignations of three well-known men from medical chairs at Glasgow, Edinburgh, and Aberdeen have also been announced almost simultaneously. Dr. Cleland at Glasgow retires from the Anatomical department where he began his teaching career as a Demonstrator nearly 50 years ago. Dr. Chiene resigns the Surgery Chair in Edinburgh, which he has filled with distinction since 1882, and Dr. Ogston vacates the corresponding post at Aberdeen.

PROFESSOR SIMON NEWCOMB, whose death is announced, was President of the Astronomical and Astrophysical Society of America. He was born in 1835, and at the age of twenty-six became Professor of Mathematics in the United States Navy, from which appointment he retired in 1897. He was also a Professor of the John Hopkins' University, and a member of many American and Foreign Societies. He received honorary Doctorates from many Universities, including Cambridge, Oxford, Dublin, and Edinburgh. He has made many astronomical discoveries and has published numerous astronomical works.

MATTHEW ARNOLD:

SOHRAB AND RUSTUM

WITH INTRODUCTION AND NOTES

BY T. O. HODGES ESQ., B.A.,

Principal and Professor of English,

KUMBAKONAM COLLEGE.

PRICE Re. 1.

Srinivasa Varadachari & Co, Triplicane & Esplanade, Madras.

The Educational Review.

Technical Education in Germany.

The undoubted superiority of Germany is acknowledged on all hands to be due to her pre-eminence in education. The German school system is compulsory. Till 1891 the law required employers to let young persons below eighteen have sufficient time out of working hours to attend a continuation school. In 1891 communes were authorised to institute such schools, and adopt compulsion, even where State law did not require it. As a result, more than half the German communes have declared for compulsion, and the fact that any commune may do so at any moment has had a remarkable effect on employers, parents and apprentices. Some cities even require compulsion for girls. The continuation school requires all young persons between fourteen and eighteen to attend for instruction in German, arithmetic and drawing for three separate terms devoting six hours weekly to the work, usually in three attendances. Exemption is granted to those who attend trade schools, and this has given an extraordinary impetus to the foundation of trade schools and classes by communes, different trades, and employers of labour. The needs of every neighbourhood are duly considered. The following list gives the trade classes held in Berlin: painters and decorators, barbers and hair-dressers, upholsterers, plumbers, glaziers, wheelwrights, basket-makers, book-binders, printers, gardeners, pastry-cooks and confectioners, photographers, tinners, coopers. Frankfort-on-Main has classes for waiters and hotel managers as well as chimney-sweeps; in Leipzig attention is paid also to the needs of chambermaids. Trade classes are often held in buildings annexed to the different trades. It is a noteworthy fact that retired German employers who possess a high reputation often spend their leisure and experience in teaching their trade or art to the rising generation of Germans. Small towns vie with each other in trying to attract renowned teachers to their neighbourhood during the holidays. Instruction at a continuation school is gratuitous; it is not necessarily so in a trade school. The State always gives grants-in-aid. Industrial training is given in Germany in four classes of institutions. Technical universities and secondary technical schools prepare men of science, directors, managers, foremen; elementary technical schools are helpful to small employers working on their own account as well as for workmen; trade schools train the rank and file of the industrial army. Every effort is made to fit the small man for his business, unmindful of employers on a large scale. The same thoroughness is visible in commercial education which has three great divisions. In these institutions the student is made to acquire a working mastery of English, French and every other European language which he needs for business. No wonder that with such systematic and organized effort Germany has arrived at her undoubted excellence.

Education in Japan.

Complete and authoritative information on the subject of education in Japan is furnished by the new work of Baron Kikuchi, President and Honorary Professor of the Imperial University of Tokyo and Whilom Minister of Education in Japan, in which is embodied the substance of the lectures delivered by the author two years ago under the Martin White Benefaction in the University of London. The

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The Educational Review.

Technical Education in Germany.

The undoubted superiority of Germany is acknowledged on all hands to be due to her pre-eminence in education. The German school system is compulsory. Till 1891 the law required employers to let young persons below eighteen have sufficient time out of working hours to attend a continuation school. In 1891 communes were authorised to institute such schools, and adopt compulsion, even where State law did not require it. As a result, more than half the German communes have declared for compulsion, and the fact that any commune may do so at any moment has had a remarkable effect on employers, parents and apprentices. Some cities even require compulsion for girls. The continuation school requires all young persons between fourteen and eighteen to attend for instruction in German, arithmetic and drawing for three separate terms devoting six hours weekly to the work, usually in three attendances. Exemption is granted to those who attend trade schools, and this has given an extraordinary impetus to the foundation of trade schools and classes by communes, different trades, and employers of labour. The needs of every neighbourhood are duly considered. The following list gives the trade classes held in Berlin: painters and decorators, barbers and hair-dressers, upholsterers, plumbers, glaziers, wheelwrights, basket-makers, book-binders, printers, gardeners, pastry-cooks and confectioners, photographers, tinners, coopers. Frankfort-on-Main has classes for waiters and hotel managers as well as chimney-sweeps; in Leipzig attention is paid also to the needs of chambermaids. Trade classes are often held in buildings annexed to the different trades. It is a noteworthy fact that retired German employers who possess a high reputation often spend their leisure and experience in teaching their trade or art to the rising generation of Germans. Small towns vie with each other in trying to attract renowned teachers to their neighbourhood during the holidays. Instruction at a continuation school is gratuitous; it is not necessarily so in a trade school. The State always gives grants-in-aid. Industrial training is given in Germany in four classes of institutions. Technical universities and secondary technical schools prepare men of science, directors, managers, foremen; elementary technical schools are helpful to small employers working on their own account as well as for workmen; trade schools train the rank and file of the industrial army. Every effort is made to fit the small man for his business, unmindful of employers on a large scale. The same thoroughness is visible in commercial education which has three great divisions. In these institutions the student is made to acquire a working mastery of English, French and every other European language which he needs for business. No wonder that with such systematic and organized effort Germany has arrived at her undoubted excellence.

Education in Japan.

Complete and authoritative information on the subject of education in Japan is furnished by the new work of Baron Kikuchi, President and Honorary Professor of the Imperial University of Tokyo and Whilom Minister of Education in Japan, in which is embodied the substance of the lectures delivered by the author two years ago under the Martin White Benefaction in the University of London. The

volume is very comprehensive in character; it gives a summary of the history of Japan, especially as bearing upon the development of education, sketches the administrative system, explains the position of women in the home and in society, expounds the organization and methods in all the different classes of colleges and schools, and concludes with a chapter on home education. The object of Japanese education, it is stated, is "to prepare boys and girls, young men and women, for their future life." "Education is considered one of the most important functions of the State, and is therefore entirely under State control." "The educational system is not determined by laws which have to pass through the Diet, but by Imperial Ordinances, which are issued by the Emperor on the recommendation of the Cabinet, after being submitted to the Privy Council." Throughout the whole system the most vigilant and laborious care is taken to find out the best ways of doing things and to carry them into operation. Says Baron Kikuchi: "We are still learning and investigating; there are many questions which we have to solve, many improvements which we have to attempt. We shall not take any one country as our model: we have tried, and we are trying, to find out good and bad points of different systems, that we might know how to introduce and adapt the good to our use and avoid the bad." The fifth article of the Imperial Oath of Five Articles says: "Knowledge shall be sought for throughout the world, so that the welfare of the Empire may be promoted." Though the aid of foreign example and of foreign instructors is freely sought, yet their application is controlled by the keenest regard to Japanese circumstances.

The Japanese system of education includes the elementary school, the middle and the higher. In the first the ordinary course is distributed over four years, and is compulsory for all children of six years and upwards; but a supplementary course of not more than two years is also provided for those children whose parents cannot afford to let them proceed to the higher elementary schools. After the completion of the ordinary elementary course of four years, a child enters the higher elementary school for a period of two, three, or four years, and then goes on to what is called a middle school for five years more, where he obtains the highest general education available. After the middle school course, it is open to the youth to choose between a technical college, a higher normal school, and the University. If he elects to go to the University he must first enter a higher school, in which he passes through a three years' preparatory course; but for the technical college, the higher normal school, and for military and naval schools the entrance qualification is simply the diploma or leaving certificate of having passed satisfactorily through a middle school. The whole organisation is thorough. All teachers, whether of the University, the Middle School or the Elementary School, are Civil servants, and although their salaries are somewhat low, yet the consciousness of their position as an important factor in the State inspires them with a real spirit of patriotism.

When one examines the educational system of Japan, he finds the keynote of the whole to be self-sacrifice. In the midst of a serious and restraining poverty the people of Japan have shown an invincible determination to secure thorough educational efficiency by learning in every way and from every quarter

where valuable instruction was to be had. Can India find a better example to imitate? But, alas! India has no self-government to elevate herself by her own effort.

The Training of Feeble-minded Children.

In the *Psychological Clinic* for November last Dr. Witmer, Professor of Psychology of the University of Pennsylvania, discusses the important question of feeble-mindedness, especially with reference to children. He points out that the preliminary point to be determined is whether feeble-mindedness is a temporary mental defect or an incurable affection of the brain. For investigating this question Professor Witmer conducts in connection with the Psychological Laboratory at the University of Pennsylvania what is called an Orthogenic School. He reports the case of a boy eleven years old, mentally and morally defective, who was treated and cured in his Orthogenic School. The little boy, before he was cured, could read, but he never read a single sentence without making several mistakes, and he was unable to do even the simplest addition or subtraction correctly. He did not play naturally with other children. He was subject to outbursts of uncontrollable and unreasoning anger, which caused his parents much anxiety. A few years before he was brought to Dr. Witmer several specialists of high standing had pronounced the boy mentally defective, and gave no hope of his ultimate recovery. "Some children," says Professor Witmer, "stand at a point where the path of individual development forks. One road leads on through a life of imbecility or markedly sub-normal efficiency. The other road will bring the child at maturity to a life of normal activity. That such widely divergent possibilities are open to one and the same child, will appear incredible to those who have not had the opportunity to watch the course of development of these children." And again he says, "the type of child whom I have under consideration ought, in my opinion, to be viewed as being in as critical a condition as the child who is on the verge of death from typhoid fever. In an acute disease every remedial agency will be called upon regardless of the expenditure of money and scientific effort. The retarded child of ten years of age, from the medical standpoint, is not suffering from alarming symptoms. From the standpoint of society, the family, and from his own point of view, if he could give expression to it, his condition is more alarming than if he stood momentarily expecting a summons to another world. If I am right in the position for which I am contending, there are children under ten years of age who have before them a life which is little better than a living mental death, who might, if taken in time, be rescued from this condition and developed through a course of training to the normal mental stature of man."

The point is of importance to educationists in all countries, as the medical inspection of schools is revealing the presence in ordinary elementary schools of a number of pupils who are not only unfit mentally to benefit by the education, but are even a hindrance to the progress of their fellow pupils.

"The Revival of Learning."

Dr. Miers, Principal of the University of London, delivered an oration on "The Revival of Learning" on the Foundation Day of the University College, London. The title of the lecture does not exactly convey what is dealt within it. The lecture is not a historical retrospect, but bears upon the present day dealings of lecturers and pro-

fessors with their pupils. Dr. Miers is evidently vexed with the poverty of a system under which the lecturer dictates to the students a quantity of facts and theories which can be read with equal clearness and greater facility in published text-books, and do not need to be laboriously entered into note-books. The Principal of the London University therefore puts forward a plea for the revival of learning on the part of students as distinct from teaching on the part of teachers. When a man leaves his college, his attitude of mind changes, he is no longer taught anything but he has to learn everything for himself. This change of attitude of mind, Dr. Miers thinks, ought to take place when one leaves school. Though there has been a reorganization of teaching, there has not been a corresponding revival of learning. Books on education deal with how to teach, but one scarcely finds any reference to the word "learning" in them. A weak feature of modern education is that so much is expected to be done by the teacher and so little by the student. The way in which University students learn is far more important than the way in which they are taught. Professors should be regarded by students in the same way as they regard libraries and laboratories, that is to say, as sources of knowledge from which students have to extract what they can. All the improvement has been sought in the attempt to improve the teaching, but nothing has been done to get rid of the practice of unintelligent cramming and unprofitable ways of learning. A remedy for this must be sought in the attempt to improve learning. The quickening impulse which would improve the methods of learning is the spirit of inquiry.

Primary Education in India

The fifth quinquennial review of the progress of education in India, to which we referred in our last issue, has been issued together with maps and statistical tables, in the form of Parliamentary Blue-books. The report tells us that in the whole of India there are some eighteen millions of boys of school age, of whom only 3,630,000, or about one-fifth of the whole, attended the elementary schools in 1907, which represents an increase of six-hundred thousand on the figure of 1902. As the report itself says, this increase is "a very slow one when compared with the distance that has to be travelled before primary education can be universally diffused." In 1907 there were on the whole about one hundred and three thousand schools with an average of thirty-six pupils each; the areas served by individual schools ranged from three and three-quarter square miles in Bengal to nearly forty-five and a-half square miles in the Central Provinces and Berar. Of these schools less than one-fourth were under public management, either municipal or imperial, the remainder being mainly "adventure" schools receiving grants-in-aid from Local Boards. The report says that, notwithstanding considerable improvements made of late years, the buildings and equipment are by no means all that can be desired, and it is said that most of the teachers, who number in all one hundred and forty thousand, possess no higher educational qualification than that of the fourth standard. Nothing better can be expected from teachers whose average salary, according to the report, amounts to only eight rupees per month, which is just as much as what a scavenger, coachman, or butler gets. The report appears to us to be a sorry and painful declaration of

the incapability of the British Government to produce any fruitful results in the way of popular education.

Primary Education in England.

At the twelfth annual conference of the National Association of Head Teachers Mr. Iliffe, the President of the Conference, commented upon some remarks recently made by Mr. C. P. Trevelyan, the Parliamentary Secretary to the Board of Education, about "the failure or break-down of popular primary education". Mr. Iliffe is not prepared to admit any break-down of popular primary education, although he recognised that improvement was both desirable and possible. The elementary school has, in the opinion of teachers in all parts of the country, become "the happy hunting ground of the faddist." Mr. Iliffe referred in proof of this to the fact that among the subjects pressed upon the primary school was temperance, co-operation, penny banks, civic and moral instruction, the metric system, hygiene, gardening, shooting, and quite a host of others, so that by the mere mentioning of these fads even the faddist would be convinced that those claims were preposterous. One part of Mr. Iliffe's presidential address deserves serious consideration. He maintained that the external examination did not set up a standard to be arrived at, because it was positively harmful when examination rode roughshod over the feelings of the teacher, crippled his curriculum, and took no account of the circumstances of the school.

Home-making.

Home-making is a subject which is receiving much attention in girls' schools in England. Experiments are being carried out in various elementary schools. The following is an account of an experiment which is being carried out with a view to the practical training of the girls in home-making. On the staff of the school there is a technical teacher, and what the children learn in their technical room is vitally connected with their other lessons, as well as with what they do at home, and with what they will do in the future. Some forty girls of Standards VI. and VII., who are not going on to a secondary school, are drafted into this home-making department. For their training they have the use of two class rooms and three supplementary rooms. The latter consist of a little parlour, a small bed-room, lavatory, &c. Of the two class rooms one is used for general education, being the ordinary room for Standards VI. and VII., and the other for practical work, in which cookery, washing, carpentry, sewing and other things are carried on. There are two teachers, one for domestic science and one an elementary teacher. The class is divided into sections A and B, of twenty children each. During the first week A spends the morning in practical work and the afternoon in general education, and B does the opposite. During the following week matters are reversed. Each girl thus spends over 500 hours in practical work during the year. The girls begin their technical course by a three-weeks' course of card-board work. The object of this is to develop manual skill and give them knowledge and dexterity which will prove serviceable in the home. Then comes a four week's course of carpentry with simple tools, when such things as nailing, gluing, fixing a handle to a drawer, &c., are learnt. Meanwhile, in the class room, the girls receive another kind of introduction to home-work—about six lessons on woman's work in different ages and in different stages of civilization—that they may realize the importance of the difficulties to be overcome and the necessity

for being on the alert to adjust themselves to their serroundings. They then pass on to the usual subjects of the housewifery course—cleaning, mending, making, hygiene, cooking, keeping of accounts, and the care of children—which are all carefully dealt with according to the needs of a working man's home. The scheme is an admirable one, which well deserves the attention of those who may be entrusted with the work of improving the Institution for the Training of Mistresses in this Presidency, which has been talked of for sometime past. In this connection it may be pointed out that the Battersea Polytechnic, which is a very popular institution, has a three-years' course of theoretical and practical instruction in domestic subjects. The success of this course is proved by the fact that all the students who are leaving this session have practically secured positions before completing their courses of training.

The Teaching of Temperance in Elementary Schools.

The Board of Education has issued a very remarkable document containing an exhaustively detailed syllabus of lessons on temperance for scholars attending public elementary schools. The document presents in an orderly form a series of suggestions for systematic instruction in the different kinds of food and their uses, the effects of alcoholic beverages on the human body, and the evil consequences of intemperance alike to the individual, the home, and the state, this last section being intended for use only with children above twelve years of age. Thus this state document, while being a syllabus, assumes the rôle of a moral and scientific treatise. Teachers and managers of schools are at the same time reminded that instruction in the subject of temperance should itself be temperate and of such a quality as to make a sober appeal to the ordinary reasoning capacity of the average child, and it is also pointed out that some of the so-called scientific temperance teaching given in the past as to the harmful effects associated with the drinking of alcoholic beverages under any conditions whatever have rested on somewhat precarious foundations. The syllabus is followed by fourteen pages of notes which furnish a judicious and well-reasoned argument in favour of real temperance which will surely appeal to all thoughtful men. It is the duty of the public school to lay true foundation for principles which will serve as guides in later life, and as such it behoves upon it to inculcate the principles of true temperance. We are of opinion that the proper remedies for intemperance are more likely to be secured by an improved and more generally diffused education in early life upon the evils of intemperance and by moral agencies than by legislative prohibition.

The Indian University System.

We are in perfect agreement with the following remarks on the Indian University System made by Sirdar Jogendra Singh in his Presidential address at the Second Sikh Educational Conference. "We need," the Sirdar says, "less diffusion and more concentration, we need a system of education with definite aims and aspirations. In short, we want a system which may further the development in equal measure of the mind, the body and character of the pupil. A mere literary standard of education is of no importance and it is this and this alone which unfortunately has been engaging the minds of our educationalists. The question is not that of the reform of universities only. Perhaps, only a little simplification would make the universities more useful. The Indian University System ought to conform to the best system of University education in Europe. The University education ought to be made easier by reducing the subjects and the text-books to allow time for the development of critical judgment and imaginative power, which have much greater intellectual value than memory or the power of assimilation. The idea that if University education is made easier the country will be overrun by graduates is absurd. If the universities turn out men healthy in body and mind they will find scope enough in the various fields of activities for the use of their powers. It is the deceased, dwarfed product of the present system of University education who can carve no career and can only find shelter in the Bar or the Government office. We must not only reform the system of University education but move all along the line."

Moral Instruction.

"Whatever their politics all must be agreed that it is to the interest of any State that its citizens should grow up imbued with high moral principles. At present our educational system inculcates none at all." Such is the indictment of the Indian educational system by the *Times of India*. It seems to us that such indictments are more easily made than proved. How is moral instruction to be given in schools? What is the sort of morality taught? Is teaching of morality to be associated with the teaching of religion? These questions never receive attention. We are of opinion that the proper teaching of every subject proves a never exhausting source of moral instruction. We regard the school as a social laboratory where the scholars develop a moral code experimentally and find the best opportunities for the practical regulation of conduct. As Professor Sadler says, "the most essential things of all lie in the personality of the teacher—in sympathy, in moral insight, in an almost pastoral care, in a sense of justice, in candour of heart, in self-discipline, in consistency of conduct, in a reverent attitude of mind, and in a faith in things unseen. The service of those who are most faithful in the ministry of teaching comes from nothing lower than a sense of vocation." In all matters of instruction example is better than precept and this is all the more true in the case of moral instruction. No doubt educational orators tell us that the fundamental function of the school is to build character. But they forget that character is an organic personality, is a growth and not an edifice, that can be erected brick by brick and board by board by any sort of educational masonry or carpentry yet devised. For organic growth suitable environment is necessary. But does the State in India furnish such suitable environment? Can the British Government in India say that it has prepared the country for the development of such moral virtues as Japan is proud of to-day? Schools and colleges in India lay the foundations neither for vocational efficiency nor for social efficiency. How then can they develop character?

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Crown 8vo. about 430 pages. Price—Re. 1.

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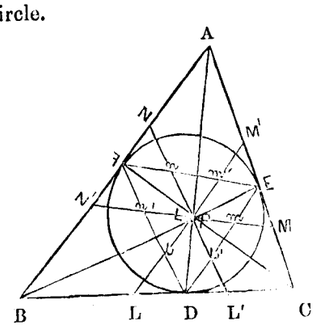
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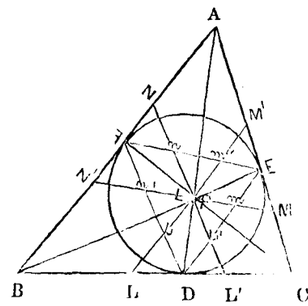
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∴ Cot θ = cot L + cot M + cot N, where L, M and N are the angles of the triangle LMN.

Angle $L=MN'N=90-\frac{A}{2}$, for AMN′ is an isosceles triangle

$\therefore$ Cot $\theta = \tan\frac{A}{2} + \tan\frac{B}{2} + \tan\frac{C}{2}$

Hence $1P^2=r^2\left\{1-\frac{3}{\left(\tan\frac{A}{2}+\tan\frac{B}{2}+\tan\frac{C}{2}\right)^2}\right\}$

47. [M. BHIMASENA RAO.] Show how to describe the circles which cut three given circles at given angles.

The following construction is given by the Proposer.

Let x, y and z be the given circles and r_1, r_2 and r_3 their radii and θ, ϕ, ψ be the given angles. Draw circles with radii $r_1 \cos\theta_4$, $r_2 \cos\phi$ and $r_3 \cos\psi$ concentric with x, y and z respectively. Draw the common tangents of these new circles taken two and two. Coaxal with x and y, two circles can be drawn touching the direct common tangents of the circles concentric with x and y, and two circles can be drawn touching the transverse common tangents of the same circles. Let the four circles drawn be denoted by P,Q; P′,Q′. If R,S; R′,S′ denote the corresponding circles with respect to y and z then the two circles touching P,Q,R and S; the two circles touching P,Q,R′ and S′; the two circles touching P′, Q′, R and S and the two circles touching P′, Q′, R′ and S′ give in all eight solutions for the problem.

35. [M. BHIMASENA RAO.] Nine different positive integers (other than zero) can be found such that if arranged as in the following square, the sums of the three integers in any horizontal row, in any vertical column or taken diagonally are all equal to a given number n, provided that n is a multiple of 3 and not less than 15.

a_1	a_2	a_3
b_1	b_2	b_3
c_1	c_2	c_3

When n is given, show that the number of solutions which the square admits of is the greatest integer in $\frac{n^2-16n+72}{36}$, different arrangements of the same integers in any solution being discarded.

Solution by the Proposer.

I. If $\begin{array}{|c|c|c|}\hline a_1 & a_2 & a^3 \\ \hline b_1 & b_2 & b_3 \\ \hline c_1 & c_2 & c_3 \\ \hline\end{array}$ is a solution, with the same integers a_1 a_2 etc., we have the following seven solutions.

$\begin{array}{|c|c|c|}\hline c_1 & c_2 & c_3 \\ \hline b_1 & b_2 & b_3 \\ \hline a_1 & a_2 & a_3 \\ \hline\end{array}$ $\begin{array}{|c|c|c|}\hline c_3 & b_3 & a_3 \\ \hline c_2 & b_2 & a_2 \\ \hline c_1 & b_1 & a_1 \\ \hline\end{array}$ $\begin{array}{|c|c|c|}\hline a_3 & b_3 & c_3 \\ \hline a_2 & b_2 & c_2 \\ \hline a_1 & b_1 & c_1 \\ \hline\end{array}$

$\begin{array}{|c|c|c|}\hline a_1 & b_1 & c_1 \\ \hline a_2 & b_2 & c_2 \\ \hline a_3 & b_3 & c_3 \\ \hline\end{array}$ $\begin{array}{|c|c|c|}\hline c_1 & b_1 & a_1 \\ \hline c_2 & b_2 & a_2 \\ \hline c_3 & b_3 & a_3 \\ \hline\end{array}$ $\begin{array}{|c|c|c|}\hline c_3 & c_2 & c_1 \\ \hline b_3 & b_2 & b_1 \\ \hline a_3 & a_2 & a_1 \\ \hline\end{array}$

$\begin{array}{|c|c|c|}\hline a_3 & a_2 & a_1 \\ \hline b_3 & b_2 & b_1 \\ \hline c_3 & c_2 & c_1 \\ \hline\end{array}$

The quantities a_1, a_2 etc., are to be determined by the following eight equations which are not all independent.

$a_1+a_2+a_3=n$...(1) $a_1+b_1+c_1=n$...(4,
$b_1+b_2+b_3=n$...(2) $a_2+b_2+c_2=n$...(5)
$c_1+c_2+c_3=n$...(3) $a_3+b_3+c_3=n$...(6)
$a_1+b_2+c_3=n$...(7)
$a_3+b_2+c_1=n$...(8)

(5)+(7)+(8)—(1)—(3)$=a_2+b_2+c_2+a_1+b_2+c_3+a_3+b_2+c_1-(a_1+a_2+a_3+c_1+c_2+c_3)=n$.

$\therefore 3b_2=n$ showing that n is a multiple of 3 since b_2 is an integer.

Again (1)+(2)—(6)—(7)$=a_1+a_2+a_3+b_1+b_2+b_3-(a_3+b_3+c_3+a_1+b_2+c_3)=0$.

$\therefore b_1+a_2=2c_3$.

II *Values of* c_3.

Since n is a multiple of 3, suppose it to be equal to $3m$; then $m=b_2$; c_3 must be less than $2m$ for values greater than $2m-1$, for c_3 will give zero or negative values for a_1 since $a_1+b_2+c_3=n=3m$ *i.e.*, $a_1+c_3=2m$. Again c_3 cannot have the value unity, for b_1+a_2 will then be equal to 2, the only integral solution of this equation being $b_1=a_2=1$ which is inadmissible for b_1 and a_2 are given to be unequal; nor can c_3 have the value $2m-1$, for in that case $b_1+a_2=4m-2$ which gives $b_1=a_2=2m-1$ since the other integral solutions will make either b_1 or a_2 greater than $2m-1$. Hence the values that c_3 may have are from 2 to $2m-2$ inclusive, the value m being excluded since it is the value of b_2.

III. Since $b_1+a_2=2c_3$ we have to solve the series of equations $b_1+a_2=4$, $b_1+a_2=6$, $b_1+a_2=8$,.....$b_1+a_2=2p$.....$b_1+a_2=4m-4$.

Consider the equation $b_1+a_2=2p$, the solutions are (1, $2p-1$), (2, $2p-2$), (3, $2p-3$)..... ($p-1$, $p+1$), ($p+1$, $p-1$) etc.,..... ; the solution (p, p) is evidently inadmissible.

The values greater than p for b_1 will not give a different solution. Suppose $b_1=p+r$, then $a_2=p-r$. The square will then become

$2m-p$	$p-r$	$m+r$
$p+r$	m	$2m-p_1-r$
$m-r$	$2m-p_1+r$	p

Change all the rows into columns.

we get

$2m-p$	$p+r$	$m-r$
$p-r$	m	$2m-p_1+r$
$m+r$	$2m-p-r$	p

This solution we would have obtained by taking $b_1=p-r$ and $a_2=p+r$. Therefore by discarding the values of b_1 greater than p we do not omit a different solution but a different arrangement got by changing all the rows into columns. Hence if we discard all such values we reject arrangements similar to the last four shown in I.

If $p>m$ we can show that we do not get a different solution. Consider the equations

$b_1+a_2=2(m+q)$...(1)
$b_1+a_2=2(m-q)$...(2)

Solutions of equations (2) are $\{1, 2(m-q)-1\}$, $\{2, 2(m-q)-2\}$, ... $\{m-q-1, m-q+1\}$. thus giving $m-q-1$ solutions...(3)

Solutions of equation (1) are $\{2q+1, 2m-1\}$, $\{2q+2, 2m-2\}$, ... $\{m+q-1, m+q+1\}$ giving $m+q-1$ $(2q+1)+1=m-q-1$ solutions. [observe that b_1 and a_2 should be less than $2m$ and hence the least value of b_1 is here $2q+1$...(4)]

By taking the solution $\{m-q-r, m-q+r\}$ in (3) and $\{m+q-r, m+q+r\}$ in (4) we have the two squares

$\begin{array}{|c|c|c|}\hline m+q & m-q+r & m-r \\ \hline m-q-r & m & m+q+r \\ \hline m+r & m+q-r & m-q \\ \hline\end{array}$ and $\begin{array}{|c|c|c|}\hline m-q & m+q+r & m-r \\ \hline m+q-r & m & m-q+r \\ \hline m+r & m-q-r & m+q \\ \hline\end{array}$

which are not different solutions. Hence by taking p to be less than m, we reject those arrangements similar to the second and third shown in para I.

IV. Suppose n is even and $=2k$. Since we take p to be less than m we have to solve the equations $b_1+a_2=4$, $b_1+a_2=6$, $b_1+a_2=8$ .....$b_1+a_2=2k$, $b_1+a_2=2k+2$..... $b_1+a_2=4k-2$....(1)

Consider the equation $b_1+a_2=2k+2r$. If b_1 be given, then $a_2=2k+2r-b_1$ and the square will become

	$2k+2r-b_1$	
b_1	m	$2m-b_1$
	$2k-2r+b_1$	

If we interchange the first and third rows, we get a different arrangement of the above square, which is the solution $\{b_1, 2k-2r+b_1\}$ of the equation $b_1+a_2 = 2k-2r+2b_1$, and this will have been already considered before we reach the equation $b_1+a_2 = 2k-2r+2b_1$, and this will have been already considered before we reach the equation $b_1+a_1=2k+2r$, if $2k-2r+2b_1$ is not greater than $2k+2r$ *i.e.*, if b_1 is not greater than $2r$. Hence in the equation $b_1+a_2=2k+2r$, values of b_1 from 1 to $2r$ inclusive will give only a different arrangement, the solutions which ought to be retained being $(2r+1,\ 2k+r-1)$ ..... $(k+r-1,\ k+r+1)$, and the solution $(2r,\ 2k)$ is inadmissible for $2k$ which is equal to m is the value of b_2. So we have for the equation $b_1+a_2 = 2k+2r$, $k-r-1$ different solutions. Therefore for the series of equations in (1) we have $1+2+3+\ldots\ldots+k-1+k-2+k-3\ldots\ldots+1 = (k-1)^2 = \frac{1}{4}(m^2-4m+4)$ solutions when m is even.

The case when m is odd and equal to $2k+1$ can be similarly treated. The equation $b_1+a_2=2k+2r$ will in this case admit of $k-r$ solutions, the values of b_1 from 1 to $2r-1$ inclusive not yielding a different solution, and the total number of different solutions is in this case $k(k-1) = \frac{1}{4}(m-1)(m-3)$ when m is odd.

V. The nine quantities a_1, a_2 etc., given in the question should be unequal. Therefore we have to show that the difference between any pair of the nine quantities is not zero. The nine quantities can be taken two and two in 36 ways. But by the above method we have secured b_1, a_2, c_3 and b_2 to be unequal. Therefore we have already considered 6 out of the 36 cases, so 30 cases have now to be considered. Since $n=3b_2$ we have $b_1+b_3 = a_2+c_2 = c_3+a_1 = a_3+c_1 = 2b_2$...(1) b_2 is different from b_1, a_2 or a_3. Since $b_1+b_2+b_3 = a_3+b_3+c_3=n$, $a_3-b_2 = b_1-c_3$. Since b_1 and c_3 are unequal, a_3 is different from b_2. b_1-b_3 is not equal to zero, if not b_1 will become equal to b_2 which cannot be. Similarly a_2-c_2, c_3-a_1, a_3-c_1 are unequal to zero. The remaining 32 out of the 36 expressions can be divided into 16 pairs, the expressions in each pair being equal, for any expression say a_2-a_3 has its equal c_2-b_1 by virtue of the equations in (1). Therefore we have only to consider 16 cases and of these, b_1-b_3, a_2-b_2, c_3-b_2, a_3-b_2, b_1-a_2, b_1-c_3, a_2-c_3 are not equal to zero. Therefore it is enough if we consider the nine expressions b_1-c_2, b_1-a_1, b_1-a_3, b_1-c_1, a_2-a_1, a_2-a_3 a_2-c_1, c_3-a_3 and c_3-c_1. Now $a_1+b_1+c_1 = c_1+c_2+c_3$ $\therefore$ $b_1-c_2=c_3-a_1$ which is not equal to zero. Similarly $b_1-a_3 = a_2-c_1 = c_3-b_2$, $c_3-a_3=a_2-b_2$ and $c_3-c_1 = b_1-b_2$. If m, b_1 and c_3 are given, $a_1=2m-c_3$, $c_1=m+c_3-b_1$, $a_3=m-c_3+b_1$ and $a_2=2c_3-b_1$. Therefore $b_1-a_1=b_1-(2m-c_3) = (b_1-m)+(c_3-m)$ which is not equal to zero since $m > c_3 > b_1$ (III & IV); $b_1-c_1=b_1-(m+c_3-b_1) =$ above $2b_1-c_3-m$, which will be equal to zero only when $b_1=m-t$ and $c_3=m-2t$ where t is a positive integer since b_1 and c_3 are less than m, *i.e.*, only when $b_1 > c_3$, but b_1 is always less than c_3. Again $a_2-a_1=2c_3-b_1-(2m-c_3) = 3c_3-b_1-2m$ which will be equal to zero when $b_1=m-3t$, and $c_3=m-t$ where t is a positive integer, and a_2 will then be equal to $m+t$. But a_2 is always less than m. Lastly if $a_2=a_3$ we have $2c_3-b_1-(m-c_3+b_1)=0$ *i.e.*, $3c_3-2b_1=m$. The general solution of this equation is $c_3=m-2t$ and $b_1 = m-3t$ and then a_2 will be $m-t$ where t is a positive integer. Since $c_3 > b_1$ and c_3, b_1 and a_2 are less than m, we have to exclude such solutions from the number of solutions $\frac{1}{4}(m-2)^2$ or $\frac{1}{4}m-1)(m-3)$ according as m is even or odd.

Therefore inadmissible values of b_1 are $m-3$, $m-6$, $m-9$ etc, when $c_3=m-2$, $m-4$, $m-6$ etc., the number of such solutions being $\frac{m}{3}-1$, $\frac{m-1}{3}$ or $\frac{m-2}{3}$ according as m is of the form $3k$, $3k+1$ or $3k+2$.

If $m = 6k$, the number of admissible solutions is

$\frac{1}{4}(m-2)^2 - \left(\frac{m}{3}-1\right) = \frac{m^2}{4}-\frac{4m}{3}+2$

If $m = 6k+1$, the number is $\frac{1}{4}(m-1)(m-3)-\frac{m-1}{3} = \frac{m^2}{4}-\frac{5m}{3}+1\frac{1}{12}$.

If $m=6k+2$, $6k+3$, $6k+4$ or $6k+5$ the number of solutions will be $\frac{m^2}{4}-\frac{4m}{3}+1\frac{3}{4}$, $\frac{m^2}{4}-\frac{4m}{3}+1\frac{3}{4}$, $\frac{m^2}{4}-\frac{4m}{3}+1\frac{1}{3}$ or $\frac{m^2}{4}-\frac{4m}{3}+1\frac{5}{12}$. Hence we see that whatever m may be, the number of solutions is always the greatest integer in the expression $\frac{m^2}{4}-\frac{4m}{3}+2$ *i.e.*, $\frac{n^2-16n+72}{36}$ since $m=\frac{n}{3}$.

VI. We have thus shown how to obtain solutions of the square where the nine quantities are all different. We will now consider when they will all be positive. If m, c_3 and b_1 are given the remaining quantities are completely determined and their values are

$a_1=2m-c_3$	$a_2=2c_3-b_1$	$a_3=m-c_3+b_1$
b_1	$b_2=m$	$b_3=2m-b_1$
$c_1=m+c_3-b_1$	$c_2=2m+b_1-2c_3$	c_3

Since m, c_3 and b_1 are positive and $m > c_3 > b_1$ it is evident that all the quantities are positive. Therefore when the expression $\frac{n^2-16n+72}{36}$ is greater than unity, the square admits of solutions *i.e.*, when $\frac{n^2-16n+36}{36}$ is positive. $n^2-16n+36$ is positive when n does not lie between $8+\sqrt{28}$ and $8-\sqrt{28}$. As n should be a multiple of 3 and the integer which is a multiple of 3 and next to $8+\sqrt{28}$ is 15, the square admits of solutions only when n is equal to or greater than 15.

As an example let $n=24$, therefore $m=8$. The number of solutions is the greatest integer in $\frac{8^2}{4}-\frac{4\times 8}{3}+2$ *i. e.*, in $7\frac{1}{3}$.

$\therefore$ We get 7 solutions.

$c_3=2$		$c_3=3$		$c_3=4$		$c_3=5$	
b_1	a_2	b_1	a_2	b_1	a_2	3	7
1	3	1	5	1	7	4	6
		2	4	3	5		

Values of c_3 greater than $m-3$ need not be considered. The value 2 for b_1 when $c_3=4$ is inadmissible. The seven squares are

14	3	7
1	8	15
9	13	2

13	5	6
1	8	15
10	11	3

13	4	7
2	8	14
9	12	3

12	7	5
1	8	15
11	9	4

12	5	7
3	8	13
9	11	4

11	7	6
3	8	13
10	9	5

11	6	7
4	8	12
9	10	5

41. [M. BHIMASENA RAO.] For what value of n is the number of solutions to the square referred to in question 35, *viz.*, the greatest integer in $\frac{n^2-16n+72}{36} = kn$, k being an integer.

Solution by the proposer.

Let $\frac{n^2-16n+72}{36} = kn + f$ where f is a proper fraction.

$\therefore$ $n^2-4n(4+9k)+72-36f=0$.

$\therefore$ $n=2(4+9k) + \sqrt{4(4+9k)^2-(72-36f)}$.

$\therefore$ $4(4+9k)^2-(72-36f)$ should be an exact square. Now $a^2-(a-1)^2=2a-1$ and $a^2-(a-2)^2 = 4a-4$. If a and b be two positive integers, a being greater than b, a^2-b is not an exact square if $2a-1$ is greater than b. If b is less than $4a-4$, a^2-b is a square only when $b=2a-1$.

Suppose $a=2(4+9k)$ and $b=72-36f$, $2a-1=4(4+9k)-1$ and if k is greater than 1, $4(4+9k)-1$ is greater than $72-36f$ $\therefore$ k can only be 1.

Again $4a-4=8(4+9k)-4$ and is greater than $72-36$ when $k=1$. $\therefore$ $4(4+9)-1$ should be equal to $72-36f$ *i.e.*, $f=1\frac{7}{12}$, and $n=2(4+9)+2(4+9)-1=51$. As the values for n and f are not inconsistent since we find $f=1\frac{7}{12}$, when we substitute 51 for n in $\frac{n^2-16n+72}{36}$, the value 51 for n satisfies the required condition.

44. [M. Bhimasena Rao.] How many numbers can be formed with the digits 1, 2, 3, 4, 8, t and s, where t and s stand for 12 and 16 respectively, such that the sum of the digits of any number is equal to 16? This question in a different form is known as 'Kakapadaprastaram' (కాకపదప్రస్తారం) in books on Hindu Music.

Solution by the Proposer.

Let the number of ways of forming numbers the sum of whose digits is equal to n be denoted by u_n. These numbers can be divided into (1) those which have 1 as the first digit, (2) which have 2 as the first digit, etc. When 1 is the first digit, the sum of the remaining digits is $n-1$, and there are u_{n-1} such numbers. By similar reasoning we see that

$$u_n=u_{n-1}+u_{n-2}+u_{n-3}+u_{n-4}+u_{n-8}+u_{n-12}+u_{n-16}\ldots\ldots\ldots(1)$$

When the sum is equal to the first digit, there are no remaining digits and there is only one way of forming such a number. $\therefore$ $u_0=1$. By putting $n=1, 2, 3$, etc, we can find u_n when n is any given positive integer.

Changing n into $n-1$ in (1) we have

$$u_{n-1}=u_{n-2}+u_{n-3}+u_{n-4}+u_{n-5}+u_{n-9}+u_{n-13}+u_{n-17}\ldots\ldots\ldots(2)$$

From (1) and (2) we get

$$u_n=2u_{n-1}-u_{n-5}+(u_{n-8}-u_{n-9})+(u_{n-12}-u_{n-13})+(u_{n-16}-u_{n-17})$$

Let $v_n=u_n-u_{n-1}$

$\therefore$ $u_n=2u_{n-1}-u_{n-5}+v_{n-8}+v_{n-12}+v_{n-16}\ldots\ldots(3)$

By means of this relation which is true for values of n greater than unity, we can expeditiously calculate u_2, u_3 etc., till n is greater than 12, as follows:

u_0	u_1	u_2	u_3	u_4	u_5	u_6	u_7
1	1	2	4	8	15	29	56

u_8	u_9	u_{10}	u_{11}	u_{12}
109,	210,	406,	785,	1519.

v_0	v_1	v_2	v_3	v_4	v_5	v_6	v_7
1	0	1	2	4	7	14	27

v_8	v_9
53	101

$u_{13}=2\times1519-109+7+0=3038-102=2936$

$u_{14}=2\times2936-210+14+1=5872-195=5677$

$u_{15}=2\times5677-406+27+2=11354-377=10977$

$u_{16}=2\times10977-785+53+4+1=21954-727=21227$

$u_{17}=2\times21227-1519+101+7+0=42454-1411=41043$

and so on.

Therefore the required number is 21227.

We may also obtain another relation

$$u_n=2u_{n-1}-u_{n-5}+b_{n-8}+v_{n-12}+v_{n-16}\ldots\ldots\ldots(3)$$

change n into $n-4$, $u_{n-4}=2u_{n-5}-u_{n-9}+v_{n-12}+v_{n-16}+v_{n-20}\ldots\ldots\ldots(4)$

Subtract (3) and (4), $u_n=2u_{n-1}+u_{n-4}-3u_{n-5}+(v_{n-8}+u_{n-9}-v_{n-20}\ldots\ldots$

$\therefore$ $u_n=2u_{n-1}+u_{n-4}-3u_{n-5}+v_{n-8}-v_{n-20}$ (5)

(4) is true if n is greater than 5 $\therefore$ (5) is true if n is greater than 5 and if n is less than 20 the relation becomes $u_n=2u_{n-1}-3u_{n-5}+u_{n-4}+u_{n-8}$ which does not contain v.

By means of this relation we have

$u_{17}=2u_{16}-3u_{12}+u_{13}+u_9$

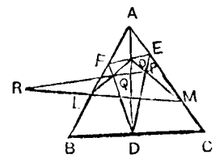
$=2\times21227-3\times1519+2936+210$

$=42454-4557+3146$

$=41043$, verifying the result already obtained.

70. [K. S. Srinivasachari, B.A., L.T.] Inscribe a triangle in a given triangle, so that its three sides may pass through three given points which are collinear.

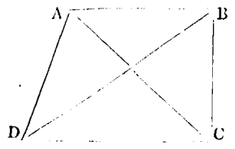
Solution by M. Bhimasena Rao.



Let P, Q and R be the given points. Through R draw any line cutting AB and AC in L and M, join LQ and MP meeting in O. Join AO and produce it to meet B C in D. Produce DP and DQ to meet AC and AB in E and F.

The triangles ALM and DQP are in perspective since AD, LQ and MP are concurrent. Therefore the intersections of AL and DQ, LM and QP, AM and DP are collinear, *i.e.* the points E, F and R are in a line. Hence DEF is the triangle required.

69. [K. S. Srinivasachari, B.A., L.T.,] Given the two diagonals and the angles of a quadrilateral, construct it.



Solution by M. Bhimasena Rao.

Let ABCD be any quadrilateral. If the diagonals and the angles be given, the points B and D move on the arcs of two circles passing through A and C when the line AC is fixed. As the angle BAD is given we have to place on the circumference of these two circles a line equal to BD and subtending an angle equal to BAD at the point A. This therefore reduces itself to question 52 proposed in the Review for April 1909.

QUESTIONS FOR SOLUTION.

76. [M. Bhimasena Rao.] The pedal circle of a point P with respect to a given triangle touches the nine points circle of the triangle. Show that the anharmonic ratio of the pencil formed byjoining the circumcentre of the triangle to any four positions of P is equal to the anharmonic ratio of the corresponding points of contact on the nine estle ircin.po

77. [M. Bhimasena Rao.] Find the locus of the mean centre of the points of contact of the four tangents drawn from any point on a given cubic to the curve. When will this locus reduce to a point?

SCOPE AND UTILITY OF EXAMINATIONS.*

By R. P. Paranjpe, M.A.

I propose to-day to consider how far examinations serve a useful purpose in education, under what conditions they do harm and in what way we can guard against their misuse. I have nothing to say which is either very original in substance or fresh in manner. All that I can do in this place is mostly to consider the usual arguments for and against examinations. What are the objects of public examinations? In the first place they are intended as a check on teaching and a test of instruction by some outside authority. Now we might have institutions or teachers whose instruction does not require any check or test, but in the vast majority of cases the teachers themselves would like this test to give them confidence. It is found that where there is no such external check, education often degenerates into mere formal lessons. Students from one excuse or another often absent themselves from the lecture room

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unless they are greatly interested either in the subject or in the lecturer. Such fascinating lecturers are rare, and subjects which in their very elements are interesting are rarer still. After all, if every subject were interesting in all its stages, education would not be such a hard task. It is because we think that some subjects are worth being forced into the minds of pupils even though they do not like them, that education requires all the complicated organization it at present possesses. We do not want to encourage the reading of fiction, we want only to regulate it. But the elementary stages of grammar cannot be made interesting. No amount of kindergarten methods will make mensa, mensae, mensae . . . interesting to boys of ten. If you think that a knowledge of grammar is desirable at the age of fourteen you won't get that knowledge into the boys by simply lecturing to them; there must be some external incentive; otherwise both the teachers and the taught are apt to get slack in that subject. And it is found that external public examinations form a very good incentive for keeping both up to the mark.

After all, the evolution of the mind of an individual, like the evolution of the race, is not exactly a pleasant process. Just as innumerable individuals have to go to the wall to create a better type of individual, a great many natural inclinations and instinctive propensities have got to be curbed during this process of education; and in fact the end of education is to make the individual feel that this curbing is itself natural and instinctive. All honour to those who do their best to mitigate this cruel process of nature "red in tooth and claw." But we are not likely to advance if we deny the inherent conditions of the problem. We must have some external stimulus to education in some subjects, and examinations are necessary evils attending on education.

Again it is found by almost everybody that knowing a subject is one thing and being able to formulate it properly is another. One may think oneself possessed of immense knowledge, but the knowledge is not complete and useful unless we are prepared to be examined in it. There are some kinds of knowledge which are useful while they are being acquired. Their use is in the process of acquisition. In other cases it is sufficient if we have only a speaking acquaintance with it, or if we know how we can get at it whenever we like. But we must have the capacity to get up any subject that we may require, and this capacity can only be tested by formal examinations.

While a great many persons suffer from overconfidence and overrate the amount of their acquisitions, a fairly large number are prone to underrate their capacity, and either by a kind of mental incapacity or by pitching their ideal too high think that they do not know a thing at all when they are fairly acquainted with it. Keeping a high ideal before you is the best way of improving yourself; but if you pitch your standard of practical execution too high you would be like the historian who spent forty years in collecting material for only a very small portion of the period which he wished to cover in his *magnum opus*, and whose labour was so much waste so far as the public were concerned, as he died before he wrote a single word of it. A public test of your attainments is therefore often useful in giving you confidence in yourself, in showing you that while you are deficient in a thing, others are probably more so.

But we are told examinations import so many extraneous elements, their formality is so galling to weak minds, their cast iron rigidity so accentuates all the effects of chance or accident that it is better to do without them at all. Now these are some of the inseparable evils of publicity; but they are not so very unnatural in this workaday world. We cannot always get all the conditions that we want for best putting forth all our faculties. We have to live our lives, and we shall find that we must generally work under exactly such conditions. If you, Mr. President, receive at 12

midnight a telegraphic summary of an important speech of Lord Morley, you must be prepared to turn out a readable leading article on it by 2 A.M. in time for the morning number. It will not do for you to say that you must read a dozen blue books and twenty treatises on the subject of the speech, and that you would like to have a long conversation with Lord Morley on his views, before you can write anything useful about the speech. A man in commercial life, or holding an important executive post will have to act with all the publicity, the formality, the rigidity, that is incidental to an examination. It is time enough that we must try as far as possible to mitigate these evils, just as in a sham fight one mitigates all the actual horrors of actual battle. But one judges of the quality of a regiment by its performance in manœuvres, and this judgment, although it may sometimes go wrong, will still be in the majority of cases right.

Mr. Fredreck Harrison in his latest book "*Realities and Ideals*" observes: "Any sensible man who wanted to engage a confidential secretary, or a literary assistant, or a man to send on a responsible mission, would not trust to a marksheet, so mechanical, so hurried. He would see each candidate once or twice for an hour or two, talk quietly to him, get him to talk quietly, leave him to write a short piece, set him to do a piece of actual work, try him backwards and forwards in spontaneous, unexpected ways, as the quality of each candidate seemed to suggest. He would not burden himself with more than four or five candidates at a time. At the end of a week, a sensible man would perfectly make up his mind which of the four or five was best fitted for the particular work required, and he would almost certainly be right." Now surely even Mr. Harrison will admit that his sensible men are very few; and that what few there are at all are required by the world for other work which the world considers more important. Further, suppose this sensible man in engaging a secretary advertised and received two hundred applications from persons who on the face appeared to be capable. If he follows his sensible method he will require nearly a year to make his choice, and by the end of the year he will have got heartily sick of the whole business. He must have a rough and ready test. He has, however, many personal considerations to go by, which ordinary educational authorities have not got. Of course the recorded opinion of the teachers of a student will be an important deciding consideration; but this is often likely to be one-sided and partial, and requires to be corrected by some disinterested observer. On account of the vast number of students to be examined this can only be done by means of an examination something like what we have now. Of course there are many improvements possible, but we cannot do away with these examinations altogether.

Moreover, examinations are nowadays very often used as tests for entrance into public service. This use of examinations is condemned in that it does not examine the character and the moral qualifications of the candidates. The fact that a man is good in turning out good Greek prose or solving hard riders in the Integral calculus in a very limited amount of time proves nothing, says our objector, as to his capacity for an administrative or judicial appointment. This method of appointment is also condemned by simply calling it Chinese as if everything Chinese is *ipso facto* valueless. Now the case for these examinations has been put as strongly and as eloquently as possible by Macaulay in his speech on the India Bill. "It is said I know," says Macaulay, "that examinations in Latin, in Greek, and in Mathematics are no tests of what men will prove to be in life. I am perfectly aware they are not infallible tests; but that they are tests I confidently maintain. Look at every walk of life, at this House, at the other House, at the Bar, at the Bench, at the Church, and see whether it be not true that those who attain high distinctions in the world, were generally men who were distinguished in their academic career." Now

these observations of Macaulay are in these matter-of-fact days apt to be discounted on account of their florid eloquence itself. But everybody will see that they are substantially true. If there were no competitive examinations for public service, there would be introduced into the public service a host of other considerations which will make everybody think the remedy worse than the disease. In a system of competitive examinations it is quite possible and very often does happen that a very competent man is kept out; but the case of a man taken in who proves an utter failure is comparatively rare. Further you do not put the man who is taken in service immediately into a very responsible position. What you do is merely to give a successful examinee a chance of distinguishing himself, and this I think can be fairly allowed.

Let us now consider the charges that are laid against public examinations. The most important is that they encourage superficial study. Now to a certain extent this is true; but this would mean generally that the examiner does not know his own work, if he cannot distinguish thorough from superficial preparation. It is quite true that if a student has theoretically learnt his whole text-book by heart he will be able to pass successfully. But I deny that such a preparation can be called superficial. Thus no amount of superficial preparation will give a student facility in writing good English or Sanskrit, or will enable him to solve riders in mathematics. Further, it is often this very capacity for superficial acquaintance with a subject that is very valuable in after life. A lawyer when getting up his brief in a partition suit will only get up such facts as will pay most in the opinion of his judge. He will not study the history of the family in question as Freeman did the history of the Norman conquest. He will in fact get up his subject like the student his subject for an examination.

We are again told that when a candidate prepares a subject for examination he has no higher motive in the study. Nobody can begin the study of a subject from higher motives. One can get a liking for a particular subject as he goes deeper into it, and nobody is worth much who has vigorous intellectual antipathies. As has been well said it is fitting for a young man to have preferences, but no exclusions. Generally speaking, when a man boasts that he learns a subject simply because he is made to learn it, it is for the purpose of obtaining an indirect compliment upon proficiency in some other subject. Personally I have never felt abhorrence for any subject which it has fallen to me to learn, whether it be Latin, History, Physics, Botany or English. Of course this does not mean that I have no preferences, or that I have no strong ideas on the comparative worth of various subjects of study. I consider, says the Latin proverb, nothing that is of interest to humanity as foreign to me. This is the spirit which ought to animate all students. The fact that you are to be examined in any subject does not preclude your detailed study of it. With most students this distaste for subjects they learn for their examinations is a mere cloak for idleness. The good teacher will see that this state of things does not occur.

The evil of cramming comes to a certain extent under the above heads, but it is made so much of nowadays that one wonders whether there had been no cramming forty years ago. If the course in a subject is sufficiently extensive, and the subject is one that will require a very extensive memory for learning by rote, this evil will be to a great extent avoided. If instead of appointing one play of Shakespeare, the course consists of a dozen plays, and the questions are fairly general and stress is not laid on the number of questions attempted, but on the quality of the answers, we shall not often hear complaints about cramming. If in mathematics simple riders only are asked—which follow straight from bookwork—or if bookwork is to be asked at all, it contains long connected pieces which will require the understanding of the whole argument, then, there would hardly be any cramming in mathematics. If great stress is laid on practical examinations in science, we should not have much to complain of as regards cramming in that subject. If great credit is laid on composition in a second language it will not be crammed. A frequent change in text-books not announced too early before the year for which they are appointed will to a certain extent discourage cram.

Again, educational authorities, and especially the university, can do a great deal in discouraging the present output of annotated editions. These spurious annotations are the great cause of cram. Originally intended as helps to cramming, they have now become the cause of cramming. The ingenuity of these annotations is heart-rending when one thinks of the numbers it is going to degrade. The annotators take every possible precaution that their readers will not have a single opportunity of exercising their legitimate curiosity. They need not use a dictionary, a reference book explaining allusions, a history of literature of an encyclopædia. All this your annotator provides. With such a text-book a student need not attend his lectures. He need simply learn the book by heart. It supplies him with paraphrase, summaries, literary estimates, all ready made. The university might well discourage by all possible measures the use of such annotations by the students, say by the exclusion of such annotators from the board of examiners.

Again, we are told that with the existence of examinations a class of crammers is likely soon to arise. Their race is not yet extensive in this country, although we have in Bombay several persons who pursue this occupation. Now I have no objection to a person who is engaged to give personal attention to a student who is too weak or too slow to profit completely by his lectures. Or if he helps a student who is above the average in abilities by getting him to read above the range of his lectures, he would serve a very useful purpose. But a teacher who helps a boy to learn up a subject for an examination by unfair means, who shows him how to make a display of knowledge he does not possess, whose sole business is to give tips, and doggerel pnemonic lines to learn by heart several points in a book, is an unmixed evil. Students and specially their guardians should have nothing to do with this race. A little change in the examination in the way of allowing candidates to take some kind of books with them will also discourage this profession of cramming. Only let us not be slaves of mere words and damn a man, simply because he is called a crammer by somebody. After all, learning by heart a fine poem is not sin if one understands it and has learnt it in order to be able to derive pleasure from it at all times.

"Easy come and easy go" is a rule applicable equally in matters of the intellect. It is only subjects which can be forgotten in a short time that can be also easily learnt. I do not think anybody will, by any amount of midnight oil, make up in a fortnight a subject like English composition or mathematics. There is a limit beyond which faculties cannot be forced, and forced acquisition is not possible in real intellectual pursuits. Again it is no case against examinations that some students preparing for them abuse their time for six months and damage their health during the remaining three months in trying to make up lost time. I think teachers and guardians ought to take care that boys keep a uniform pace of work, and do not abuse the ability of the brain to bear excessive strain for a short time. If guardians are careful not to allow students to appear for an examination unless they have worked steadily for the whole period of study, this excessive cramming will soon be put a stop to. After all most of the evils in education are to be traced to the fact that proper supervision is not exercised over students by their parents. Parents should not feel that they are doing their duty if they pay for the schooling of their children. They must take continuous interest in their intellectual growth.

We are often told that if a boy learns a subject

for an examination he gets heartily sick of it ever afterwards. Classicists tell us that Cæsar and Xenophon are two authors who being forced to provide intellectual gymnastics to little boys are no longer appreciated as mere men of letters. There is not a single person, it is said, who can look at them with an intellectual detachment so very necessary to appraise a writer. Classical scholars are often unable to appreciate the remark of Cicero that while raw pedants will consider Cæsar's commentaries very good material for composing a history, men who really know their business will refrain from tampering with such a masterpiece. For myself I think that people who get such a disgust with a subject because they learnt it at school will never get a liking for any subject at all. I have not much sympathy for the impassioned lover who made his beloved live in such an ethereal realm that he got out of all his love when he saw her enjoy such a material thing as a hearty meal. If I may recount a personal experience I had to learn Scott's Bride of Lammermoor for the previous examination, and to dissect it in the usual manner for the purposes of the examination. I took then, and have taken since, the most lively interest in the unfortunate love of Lucy Ashton and Edgar Ravenswood, have laughed at the droll tricks of Caleb Balderstone, felt a kind of creeping at the supernatural acumen of the blind Alice, sickened at the disgusting behaviour of the three old cronies, abhorred the cool, calculating statecraft of Sir William Ashton and been suitably awed by the imperiousness of Lady Ashton.

You will have observed, gentlemen, that I have several times made reservations about subjects for examinations. I agree with several famous educationists about the *non-examinability* of certain subjects. We have in this country a notion that every subject which it is desirable for men to know should be a subject for university examinations; and amateur curricula-makers think that when they have established the fact that a study is useful they have proved the case for including it in the arts course. In this light I do not know how big the curriculum will be. But these gentlemen forget Spencer's telling discussion on what knowledge is of most worth. Now, those subjects which can be learnt mechanically by cramming, are unfit as examination subjects. If the object merely were to get up the facts of that subject into your memory without taking into account *how* the facts were got up, then it may be useful. But in examinations intended for boys above sixteen, such a mere acquisition of facts is not aimed at. The object is to see whether those facts have become part and parcel of his intellectual life. In this connection I will consider the use of history as subject-matter of a formal examination. Now I yield to none in recognising the high value of history. But it is not fit for a compulsory course at an examination for all candidates. In order to write an intelligent answer to a historical question a great part of it must be a mere work of memory. To bring out anything fresh from the student he must get beyond these facts of memory. Hence I regard history to be a subject unfit for a general examination. Again, everybody may be expected to get a knowledge of history from his general reading. He may be made to attend a course of lectures which can be made interesting by an ordinary professor. A knowledge of history is an essential adjunct to liberal culture, and consequently may not be made compulsory. Further, the aims and methods of historical research and philosophy of history are too abstruse for the age when students are in the hands of the university, until at any rate the M.A. stage. It is difficult, therefore, to see that history can properly claim a place in our curriculum except perhaps in the way of compulsory attendance at lectures. We must use similar consideration in determining the place of other subjects. Science will thus be seen to be useless unless accompanied by a thorough practical knowledge.

Again some of the evils of examinations are

brought about by our needlessly intensifying the evil of competition. In our university, at any rate, the award of medals and prizes is absurdly overdone. It is difficult to suggest how we can get out of the people the idea that the only way of commemorating a more or less distinguished person is by the endowment of a prize or scholarship in the university. Some of these scholarships do certainly form the rungs of an educational ladder; but the others often go to the least deserving and frequently minister to the vanity of the giver and the recipients. At any rate we must limit the pomp and ceremony attaching to the winning of a very sectional prize in some unpopular or unimportant subject. The University of Cambridge has followed a good practice in doing away with the order of merit in one of its well-known examinations, and other universities can usefully follow suit. If the University were not hampered by the necessity of having to administer so many endowments, its examinations would be certainly more effective.

We, in Bombay, even surpass other Indian universities in the number of our examinations for an Arts course, and we are very reluctant to advance even such a trifling step as the abolition of the Previous Examination.

One of the most effective points made against examinations is that they do not necessarily bring out the man who turns out most famous in after life. All that we can urge in this case is that on an average the first man will be decidedly better than the tenth best; it does not mean that every first man is better than every tenth man. But the same retort is made against every similar choice. Students of literary history know how FitzGerald's Omar Khayyam lay rotting in the dust at a penny a copy with a second-hand bookseller for years until it fell into the hands of a competent critic; but that does not mean that every such book that is popularly neglected is bound to be a masterpiece. Once in a while a Parkinson may have come out a Senior Wrangler while Thomson (afterwards Lord Kelvin) came second, and Sir John Seely a Junior Optime, while Macaulay went without a tripos at all; it does not, however, warrant the conclusion that the Senior is not generally better than the others. A French wit has written a book on the forty-first academician. You may remember that the French Academy consists of forty immortals, and when a vacancy occurs it is to be filled by the votes of the remaining immortals. By the forty-first academician he meant the eminent writer who ought to have been one, but was not; and the author was able to quote the names of Molière, Diderot, Jules Verne and several others as the forty-first academicians. Yet everybody will agree that the forty included the flower of French literary talent. One must in this case go by the law of averages, and then it will be conceded that the best men are those who have done best in their examination, and the man who is best intellectually is also generally the best in character, courage and morals.

I think I cannot better end my remarks than by quoting Mr. Frederick Harrison's conclusions: "Let Examinations be much fewer—they are ten times too numerous. Let them be much more free—they are over-organised, over-regulated. Give examiners more time, more discretion, more room. The more the teachers are themselves the examiners, the better; the less examining becomes a profession and a special staff, the better. Do not set examiners to test teachers, as well as students; do not set up mechanical rules whereby to test the examiners. Believe that it is possible to learn without any prize, money or reward in view. Trust the teacher; trust him to teach, trust him to examine. Trust the examiner and do not set up a mill. Above all, trust the student. Encourage him to study for the sake of knowledge, for his own sake and the public good. Cease to present learning to him as a succession of races, where the knowing ones may land both fame and profit."

IS CO-EDUCATION ADVISABLE IN THE SECONDARY EDUCATION.*

This is one of the phases of education which has as yet, not engaged much attention of the educational experts of this country as also of the educational public. If we leave India to roam over other far advanced countries of the world and peruse their annual reports of educational progress, we would find that with the exception of America, no other country has, up to the present time, thought it expedient or useful to devote a serious thougt to this educational problem. In England, too, as Dr. Machichan, Principal of the Wilson College and Chairman of the third session of the Conference, remarked, co-education is not thought desirable. It is true that America has been able to show to the world that the experiment of co-education, with proper handling, proves a success, yet now complaints have arisen that the system of co-education in America has been over-worked and the output of women has preponderated over that of men in many professions. In the profession of teaching, women teachers are engaged to teach not only high school classes but also college—classes of boys. The Americans have now come to realise that by the over-working of the system of co-education, home life which should be the proper and legitimate sphere of women's abilities and knowledge, suffers tremendously. Every husband is not rich enough to engage servants to manage his household duties. Every family is not expected to have the arrangement of an external agency for bringing up children. In every society, howsoever advanced it may be in point of civilisation and culture, and howsoever wealthy it may be, the majority of women must be house-wives and good mothers for a considerable portion of their time in the management of household affairs. Lady doctors, or lady clerks form an exception to the general rule. Even Japan, where 91 per cent. of male and 87 per cent. of female children of school-going age learn, has thought it fit to allow co-education up to the primary stage only.

This question of co-education should be looked at from two standpoints. (1) From a Western standpoint. (2) From an Eastern standpoint. Looking at it from a Western standpoint, we see that although in theory it is conceded that women have the same rights as men in every sphere of life, no practical steps have been taken in Europe to put that principle into force by making arrangements of introducing co-education into the educational institutions. If there would be seen any attempts of the kind in any country such as Scotland, they are of a hap-hazard nature and only touch the surface and do not go to the root of the question. We all know that there is, at present, a strenuous strife going on in England to bestow on women equal rights in the political sphere. How many public leaders seriously and sincerely help the suffragists in their fight for the principle of equality in politics? This incident is quite sufficient to prove that even the Western world, with all its elevated ideal of equality of rights of both men and women, has not yet been awakened to the high sense of duty. What to speak of a poor God-forsaken country such as India?

But the ideal of the East is quite different from that of the West. The East does not expect that its women should only be the means of ministering to the physical comforts of their husbands and of propagating and perpetuating their line. The East expects that women should be the complement and not the imitation of men. If women are to be men in every respect, why should they be born as women? The very nature of their conception suggests a bifurcation of development and of their ultimate usefulness. The hoary East does not desire to have a cart of an Indian life pulled by two equally spirited horses. The wise and serene East does not wish that there should be two helmsmen to one ship so that it may be foundered on the rock. The ideal of the East anticipates that a woman should be a counterpart of man and hence she is called a "better half." A woman is not a whole integer. To put this fact in an algebraical expression, a man plus a woman is not equal to two but equal to only one. If this be the ideal of the East and particularly of India, there is no scope for co-education in any stage of instruction, much less in so far as the secondary education is concerned. It is true that in the whole of India, the city of Bombay and the Parsee community have shown readiness to give this experiment a good trial and one notices that in Bombay, at present, some educational institutions where the element of Parsee-children predominates, have already commenced to give co-education. But this does not prove that the whole country is ripe for this experiment. Dr. Machichan, in his presidential address emphatically declared as his personal view that the system of co-education in India would be a failure. Under the circumstances, though I admit that co-education humanises the boy, places him in an atmosphere where courtesy and good manners form a *sine qua non*, teaches him a wholesome lesson of the respecful comradeship towards the softer sex, while it makes the girl free from a false notion of bashfulness without unsexing her; although I admit co-education gives both the boys and the girls a training to work on the same platform for the welfare of the society of which they are but the members, I cannot but say that co-education is not desirable in this country under the present conditions. From a look at the educational statistics of the whole of India when we learn that only one out of 144 girls studies in schools, when we find that the percentage of girls studying in the secondary schools, is practically nil or very small, we at once see that the time has not arrived to think of introducing the system of co-education, in this country in the second stage. It should, however, be interesting to note that even in this country, admission of girls of 8 or 9 years to boys' schools does no violence to the Indian feeling and those who have opportunities of visiting the village-schools, would find young girls studying with boys. In India as a whole the number of girls in boys' schools is 42 per cent. of the total number of girls under instruction. In Burma and Madras, this proportion is larger.

There is another phenomenon which we should not forget to mention here. It is this that Indian colleges have already taken up the question of co-educating females with males. In this connection Dr. Machichan said that twenty-five years ago a Parsee gentleman went to him with his two daughters with a proposal to admit them to his college and it was then that the co-education made a beginning in the educational history of India. But it should be remembered that this arrangement of allowing girls to study both in the primary and in the college stage with boys is made to meet the contingency and to follow the principle of economy.

Some suggest that in so far as the teaching of common subjects are concerned, the girls should be allowed to study together with boys; others advise that for secular knowledge only there is a scope for co-education but for ethical training there must be a bifurcation. I think the following arrangement will suit the modern requirements of this country. In villages, for want of separate arrangements for the education of girls, they may be allowed to mix with boys up to the age of 10 years at the most in elementary schools. In large towns and cities girls should have separate schools for themselves in the primary stage as is the case in the whole of India. As for the secondary education, we all know that the masses have not realised the benefit of this kind of education. In large towns and cities, only the wealthy and civilised communities send their daughters for high school studies and their number is still very small. In colleges as in elementary education in villages, owing to the absence of separate facilities for girls, they have no opposition left but to study with males. It is no exaggeration to state that with given separate facilities for educating girls, whatever may be

* A paper read by Mr. K. P. Upadhyaya, B.A., at the recent Bombay Educational Conference

the stage of education, Indian parents would always prefer to send their daughters to those institutions which are specially meant for them.

THE VALUE OF COLLEGE LIFE FOR WOMEN.

Before giving a detailed account of life in a women's college it is necessary to explain how, in a country where sixty years ago a woman graduate was unknown, education has so far advanced that to-day women students are to be found in every British University. If we go back two generations in the history of England and compare that period with the present day, one of the most striking changes that we shall observe is the change of view with regard to the education of women. Sixty years ago an English girl was sent to school until the age of sixteen or seventeen. By that time she was thought to have completed her education, and it was the duty of her parents to marry her as soon as possible. If she did not marry she remained in the home of her parents and helped in the household, always, however, with the sense that in the opinion of others she had missed her vocation. This prevailing idea that marriage was the only aim of a girl's life dominated the curriculum of the schools. More stress was laid on teaching girls to behave with scrupulous and often absurd decorum and correctness in the society in which they would move when married and upon accomplishments which would make them attractive than on training them in self-mastery and in the power of thinking and acting independently.

Very gradually, however, this old view of the purpose of women's education gave place to a vew, which was determined by three main considerations. In the first place public opinion began little by little to demand that a woman should be not merely a capable housekeeper but able in a wider sense to be the companion of her husband. Thus men came to desire that their wives should be able to share and appreciate their interests and that they should be companions in the enjoyment of books, in intellectual pursuits and in social interests. Further, the question of the early training of children had at that time been brought into prominence. More and more it came to be realised that the formation of character depends to a great extent upon the influences of early life, and that if children are to grow up to be good and true men and women too much importance cannot be given to the training of the first years of life. As a natural consequence greater emphasis was laid upon this aspect of a woman's life, and it was felt to be essential that the women upon whom the training of children so largely depends should themselves be fitted to exercise the wisest and the best influence upon their children. Lastly the scope of women's work came to be enlarged. The example of many noble women, who during last century lived great lives, proved that though marriage was still to be considered the highest life to which a woman could be called, yet women who did not marry had a real part to play in society, and that there were many spheres of service in which their help was needed, not in any sense to take the place of men, but to be exercised in matters in which a woman's knowledge and influence are of real value.

But this gradual change of view and broadening conception of service in the life of a woman was in part caused by and in part found its practical expression in a gradual improvement and modification of the education given to girls. The training of character became the aim of education, and in place of the old limited outlook teachers began to care more that their pupils should be trained for the whole of life, and that their actions should come to be governed by an underlying purpose of service, in whatever sphere their future life was to be spent.

This enlarged conception of the aim of education could not be fulfilled without a corresponding advance of the standard of education for girls. If

women were to exercise the best influence in the home circle, and if the help of women was needed in other spheres of service also, from this very fact it became apparent that they could not be denied the best that education could give to enable them to fulfil the larger demands made upon them. But an improved and higher education was only brought within the reach of women by those who were prepared to advance step by step even at great personal cost. Two of the leaders of this movement were Miss Beale of Cheltenham and Miss Buss of the North London Collegiate School. Their first endeavour was to improve the curriculum of existing girls' schools, bringing them more closely into line with the standard of boys' schools, so that girls too should be trained to exercise their powers of thought and judgment in the study of subjects which had hitherto been closed to them. For many years this movement met with keen opposition from those who felt that to give girls better education meant a sacrifice of womanliness. But it should be clearly understood that those who have led this movement during the past fifty years have never disparaged marriage, but they have sought throughout to give to women a deep sense of the value of life and of the contribution which they as women may make to society as a whole. The objections brought against women's education could not be disproved except by experience, and there were many men and women who in face of keen opposition carried out their purpose of giving better education to women until they had proved its value. Those women who to-day have profited by the broader education that they have received cannot be too grateful to the pioneers, who at great personal sacrifice fought for what they felt was for the real good not only of the women themselves but of the nation as a whole.

This movement towards higher education for women culminated in the attempt to make university education, as well as improved school education, accessible to women. The history of this latest development is of very great interest, but cannot be given here. It was only very gradually that public opinion was persuaded to allow to women the best that education could give. Pretexts of health, of mental incapacity, of unfitting them for their future life, were brought forward. But whilst many of these arguments had very great weight, the quiet persistent efforts of both men and women have so changed public opinion that to-day it is possible for every woman who really desires to do so to continue her education and to receive the very best that any of our universities can give.

Having briefly followed the revolution in thought which has taken place with regard to a woman's sphere of influence and the gradual concession of the best education which has accompanied this change of thought, let us pass to the life of women who have chosen to continue their education in one of the colleges which have been established within the last forty years. Let me say, however, to avoid misunderstanding, that in Great Britain the proportion of women who study for a degree is as yet small, though every year it is increasing.

At the age of eighteen or nineteen a girl who intends to go on to the university leaves school, where she has studied up to the matriculation standard. The more modern Universities of Great Britain are non-residential, and the women who attend classes there live either at home or in private lodgings. In the older Universities of Oxford and Cambridge the residential system for women students is followed as for the men, whilst in some of the other Universities the advantage of the residential system has been so far recognised that hostels are being introduced. The advantage of a residential college life as compared with a non-residential life is so great that a description of the former will alone be given. The main features here described are true of all residential colleges, but some of the details are characteristic only of women's colleges in Oxford.

As soon as a girl goes to college she finds herself with some hundred or two hundred students, who are divided up into "years" according to the length of time that they have been in college. The course generally lasts for three or four years, and the first

and second years are roughly classed as Juniors, the third and fourth years as Seniors. Her life now falls into two main divisions, the intellectual life and the social life of the college.

The new student must decide what course of study she intends to pursue. Her work is then arranged by the tutor responsible for those taking up that particular branch of study, and before many days have passed a time-table of lectures has been drawn up. The student's work now comprises lectures and private study. During her college course she attends an average of some eight lectures per week. These are arranged primarily for the students of the men's colleges, but women students are also admitted. Thus the women now have access to the very best lectures given in the University. Her reading is directed by her tutor, and the main part of her time is spent in studying the books thus suggested. Twice a week she goes to her tutor either with an essay upon the subject she has been reading up or to discuss with him the difficulties and problems arising out of it. This system of private tuition coupled with public lectures, though it is not followed in all universities, is of the utmost value. It means not only that the student is brought into contact with some of the keenest intellects (for many of the leading men in the University are willing to take women as pupils), but that in individual work she is compelled not merely to acquire knowledge but to think for herself and to learn how to work. Every student would admit that the real advantage of her college course has not been the amount of knowledge of facts that she has gained, but the discipline that has taught her to think and which in proportion as she has profited by it enables her to grasp facts and principles with greater effectiveness in other spheres.

But whilst the intellectual advantages are of so great value the social life of a residential college is of equal importance. There are societies and clubs of all kinds. The debating society is an excellent training ground in hard, logical reasoning and in self-control. The afternoons spent in games, either on the hockey field, on the river, in the gymnasium or on the tennis court, are times never to be forgotten. In all these sports one learns that each one is but a unit in a whole and yet that the whole is ineffective unless each part does its work. In a hockey or a tennis match the whole college becomes one and there is no need to talk of *esprit de corps* for it is there, and many a student is encouraged to do her best for the honour of her college, when she cares little for her own distinction. Moreover, in the daily life with a hundred or more students there is the contact of women of very different natures. Originality is encouraged, eccentricities are modified, and in the give and take of daily life, in the modification of one's own plans to suit those of others and the demand to subordinate self-interest to the interest of the whole, there is the life of a society in miniature, and many a student who in her first term was shy and unable to fit in with her companions develops into a strong and useful member of the community whose influence would be of value in any sphere of service.

But though there is so much to be gained from contact with others, community life has its dangers unless there is ample opportunity for private study and thought. This also is provided for in the arrangement of the college buildings. Each student has a room to herself, which she uses as a private study where she may be quite undisturbed and to which she may invite her friends. This opportunity of privacy is one which a girl rarely secures in home life, where her help is so constantly in demand that she cannot count upon definite time for private reading and thought, and the undisturbed hours that she has been able to secure are reckoned as one of the great benefits of college life and one which contributes greatly to the growth of character.

But that which gives college life its lasting value is its religious side. Only a few of the women's colleges are on a religious basis, but in all of them there is a strong religious influence. How can it be excluded when many a student comes to college hard hit by the realities of life and striving to find a faith which will satisfy her religious consciousness? Many and many a time friend has helped friend to break through the clouds of doubt to a strong faith. But this intercourse has only been possible because of the close bond of friendship which grows up with one or two in college life. Such friendship is not mere flattery aping friendship. The real friend does not scruple to criticise, and many an old student, who is out in the world, where so often criticism is cruel and secret, looks back with thankfulness to the courage of a college friend who dared to make friendship real by unsparingly condemning what was wrong and untrue, or who gave her the courage and determination to fight through doubt and indecision to a faith which has made her strong to help others.

And what of all this? are women any the better for college life? Is not woman's real place in the home, and should she continue her education at so great expenditure of time and money unless she is to have some direct use for it? Whatever her sphere of life may be, every woman who has been privileged to spend three or four years at college will gladly admit that her life there has added immeasurably to her breadth of outlook. College life is not merely an interval of happiness with no bearing upon future life. The discipline of thought and regular study, the development of mind, the training in community life, the warmth of true friendship, are all qualities which are useful to any woman after college life is over, whether she is called to the management of a home, to the profession of teaching or to any other work. Break into a group of fourth year students just drawing to the close of their college life as they are discussing what their life is to be in the future. The prevailing tone is not a desire for the sphere where the greatest amount of pleasure is to be obtained but a desire to spend life where it can be best used for the service of others. Isolated as college life is in many ways from the realities of life, especially from its sadder aspects, yet these very realities, the sorrows and sufferings of the poor, the misery of life in the slums of our great cities, call loudly for attention even during college days. It is not at all an infrequent thing for a student to devote one or two evenings a week during term time to bringing happiness into the lives of those who are less fortunate than herself, and to give up part of her vacation to help in work in the slums of some great city and to bring of the joy of her own life to others. And after college what persists is this same spirit of service, this same compelling thought that life is real and that every life has some service to give.

Many students marry after leaving college and use what they have gained in training their children and in helping in a quiet way those to whom their help is of value. Some take up teaching, and all over the world in colleges and schools are to be found those whose inspiration to serve and give of their best to the younger generation came to them in their college days. Others again are doing hard and strenuous work, having sacrificed the ease which might have been theirs, in the service of those who are poorer than themselves not only in money, but in love and happiness and ideals. In the control of institutions such as hospitals and workhouses for alleviating the sufferings of the poor and destitute, in looking after the training of orphans and the children of paupers, and in bringing their influence to bear upon the improvement of the regulations under which women work in our large factories and of the conditions in which so many of the poor live, the value of women's sympathy and help has come to be more and more acknowledged. There is no reason now-a-days why a woman's life should be without outlook, since public opinion has recognised that her influence may be exercised in so many spheres without loss of womanliness and the truest education of her powers is now open to her. But if it is only the road to brilliant intellectual attainment which has been opened to women, the result is not worthy of the struggle which has secured it. Fortunately the higher education of women has not stopped short at this result. This movement would have been a failure had it meant the gift of greater intellectual power to women unaccompanied by a sense that greater

privileges bring with them greater responsibility. To give of one's best to others where and how and when possible is the aim which has dominated the higher education of women, and it has not been altogether unfulfilled in the lives of those to whom this boon has been granted.—*Christian College Magazine.*

MAIDA LENWOOD.

OUR ENGLISH LETTER.

LIVERPOOL, *July 1909.*

"Knowledge shall be sought for throughout the world, so that the welfare of the Empire may be promoted." This is an extract from 'The Imperial Oath of Five Articles' which were promulgated in Japan in 1868. That year was the turning point in Japanese history: a new era was ushered in by the Restoration of *Meiji*, and something of the outcome is known to all of us. One of the greatest factors in this astonishingly rapid progress has been the zeal for education which is denoted by the words we have cited. England and America can bear witness to the thoroughness of this search for knowledge. Knowledge and character—knowledge as the source of power and character as the guarantee of its permanence—have been the main objects of an earnest quest. Japan to-day is a sufficient monument to education. We do not intend to imply that Japan is the creation of this generation. She has her roots in the past. Long centuries of preparation have fitted her to make use of her new opportunities. But her zeal in the cause of education has brought her to her present position. She has secured Western instructors: she has sent her sons to the best of Western schools, and, in a lesser degree, to the Universities. Her future will depend on her possession of the more stable virtues. Her versatilities and ability to receive impressions are proved characteristics, but these very virtues have their defects. And the period she is now entering upon will have very decisive issues. Much insight into the present position, and the policy which has led up to it, can be gained from the volume on the subject which John Murray has just published. The author is Baron Kikuchi who is President of the Imperial University of Tokyo and has been Education Minister in Japan. The book is most readable. The excellence of the English does not surprise your correspondent who was once at a meeting in which it was announced that Baron Kikuchi would propose a vote of thanks. The ease and grace of his speech were only equalled by its lucidity and aptness. The cleverest of speakers could not have improved on it, and it was a striking testimony to the linguistic ability which no doubt he is not alone among his compatriots in possessing.

The chief subject that the Assistant Masters discussed in their conference at Cambridge was the Teachers' Register. Mr. Newsane, the Chairman, reviewed the history of the dispute and the negotiations which led up to the deadlock of November last. He was of opinion that the old Register failed because it shut up teachers in cast-iron compartments. The new plan was to remove this objection once and for all. There was to be one Register.

And to this it was suggested that sub-registers stating special qualifications should be appended. In these could be grouped (1) primary teachers, (2) secondary teachers, (3) technical and special-subject teachers. This seems somewhat like a repetition of the old scheme which failed so utterly, but it would be possible for teachers' names to appear on each of the sub-registers. It would be a register of special qualifications which would not be mutually exclusive, and the primary teacher would not really have any cause for complaint. All alike would be classed as teachers.

In the end the Conference adopted *enbloc* a series of resolutions on the matter that the Council had drawn up at its morning meeting. They demand the formation of a Registration Council to which they want transferred the total amount of fees that have already been paid for registration. The Conference was unanimous on the whole question, and it would certainly seem that the primary teachers ought to unite with them in prosecuting some such scheme. It is high time something was done, or perhaps the rest of the £12,000 already paid in fees may be used to some other ends by the Board of Education: some of it has already gone, they know not whither!

The Birthday Honours have gone largely to poor men. The plutocrat has his share no doubt, but we take it that never have so many men earning less than £1,000 a year been honoured, not that we take that as the poverty line, or some of us would have reached starvation mark! But numbers of literary and educational workers have received well-earned distinctions. Among them Mr. J. H. Yoscall is prominent. He has been a schoolmaster, has held the Presidency of the National Union of Teachers, and has written sundry books of which the last published is far from the best. Mr. James Stuart was Professor of Mechanics at Cambridge, and afterwards, if we mistake not, Editor of the Morning Leader: now, to the joy of his many friends, he has been made a Privy Councillor. A member of the Court of Liverpool University in Dyce Duckworth has been made a Baronet, and Professor Dill of Belfast, and a predecessor of Mr. Lewis Paton as High Master at Manchester Grammar School, is one of the new Knights. Among the others is Toby M.P., the friend of all, Francis Galton of Eugenics fame, Inglis Palgrave, and Dr. Campbell of the Blind College. There is none but deserves his honour, while there are scores and hundreds—who would deny it? Who are equally worthy. However, these have been taken and the others left, and it is indeed good to see Governments honouring men who cannot have contributed anything to party funds, but have contributed much to the common weal.

The new Code for Elementary Schools has just been issued. It will lie for a month on the table of the House of Commons, and during this time particular minutes can be challenged either there or in the Lords. In this respect it is unlike the Secondary Schools Code which is operative from the time of its publication. One or two modifications are observable in the new Code. Mr. Runciman is allowing practically two years for the managers to bring their schools up to the new regulations as regards the employment of qualified teachers and the number of children allowed per class. This will go far to oil the wheels of the reform. For by that time it is likely enough that the Exchequer will be able to relieve the local rates to some extent, and from the first the objections to the new Code have been financial rather than educational.

Reviews and Notices.

THE TEACHING OF ENGLISH COMPOSITION, BY MISS E. E. COVERTON (DENT'S MODERN LANGUAGE SERIES. 1*s.* 6*d.*)

The scanty literature on the subject of the Teaching of English Composition has been added to by Messrs. Dent & Co., by this excellent book of Miss Coverton. It is evidently intended to suit teachers of the Higher Forms as well as those engaged in teaching the College classes. A remarkable feature of the book is the attempt to combine the teaching of literature with composition. This combination of literature and composition is applied to work in classes of all grades. Exercises in composition based on well-known literary works are treated with taste and discrimination. The narration of famous stories in literature is a subject that can be taught without any difficulty in the High School classes. While the attention of more advanced students can be directed with advantage to the critical treatment of the literary classics they have to study in the class room for their examinational purposes. It is possible to foster a literary taste in young minds by exercises of this kind, though at the same time too much stress cannot be laid on the necessity for occasional essays on bread, general topics. The chapters on *Story-Telling* and *Original and Descriptive Composition* will be found to be of special use to teachers engaged in the training of very young minds. The most valuable part of the book is however, the chapter devoted to the treatment of *Composition Lessons based on Poetry and Drama.* The reading of a poem of action to a class of young students and an exercise on its subject-matter is sure to serve a double end. Even some elementary poems of *thought* can also be used for this purpose. There should be no difficulty in giving literary exercises to the higher classes as their range of study must give ample opportunities for subjects of this kind. The book deserves the attention of composition teachers at least for this valuable part.

A chapter on the *Study of Prose and Style* is another welcome feature pointing out the necessity for a critical and discriminating study on the part of the student, of the style of various authors. Success in composition is largely influenced by the literary models a student places before himself, and an adequate recognition of this truth has been exhibited in this book.

A broad outlook on literature and the absence of undue attention to the mechanical aspects of written composition are other aspects of the work which must commend themselves to teachers of this difficult subject.

Indian Educational Notes.

MADRAS.

A public meeting of the Kumbakonam Elementary Teachers' Association was held recently in the Town High School Hall, Kumbakonam under the presidency of M. R. Ry. L. C. Williams Pillai Avl., B.A., Inspector of Schools, VI Circle. About 180 Elementary Masters and Mistresses were present on the occasion. The following were among the gentries that graced the meeting by their presence:

Mr. C. S. Swamy Iyer Avl., B.A., B.L., Sub-Judge.
Mr. B. C. Ramaswamy Iyer Avl., Assistant Inspector of Schools, Tanjore Dt.
Mr. Rau Bahadur S. Appu Sastriar, Headmaster, Native High School.
Mr. K. R. Doraiswamy Iyer Avl., B.A.
Mr. Visvanatha Mudaliar Avl., B.A., Police Inspector.
Mr. Narayana Row, Special Thasildar.
Mr. Arulanantham, B.A.
Mr. T. K. Hanumantha Row, M.A., L.T.
Mr. T. K. Venkatarama Iyer Avl., B.A., L.T.
Mr. Sarma, M.A., L.T.
Mr. A. Govindarajhuloo Mudaliar, Sub-Asst. Inspector of Schools, K. R.
Mr. V. C. Streenivasachari, Sub-Asst. Inspector of Schools, Tanjore Range.
Mr. R. Swaminatha Iyer Avl., Headmaster, Town High School, Kumbakonam.
Mr. K. V. Venkatarama Iyer, B.A.
Mr. E. N. Ramachandra Iyer & Mr. R. Rungaswamy Iyengar Avl., Supervisors of Elementary Schools inthe Kumbakonam Range, and others.

The proceedings began with a fine prayer song, with play on Harmonium by Miss Narayana Row. Then the girls of Vapattoor Elementary School sang National Anthem with Kolattam which was much appreciated by the audience. This was followed by dramatisation with appropriate song and music of the story of "The Bear and the Travellers" by the pupils of Board Elementary Schools, Darasuram. The boy that acted the part of the bear, elicited tremendous applause, and this item of the programme was very interesting. Afterwards the pupils of the Municipal Board Elementary School, Silk Weavers' Street, Kumbakonam, acted the story of the "Tree that bore witness" admirably well. This lesson on civics, illustrated clearly how the functions of the various members of the Sub-Judge Court, such as Vakils, Plaintiff, Defendant, Bench Clerk and Sub-Judge can be well impressed upon the minds of young pupils of Elementary Schools as a kind of play. The boys that played the part of plaintiff and defendant were much applauded.

There was a model lesson given on physical and flag drill by Appathorai Pillai, Asst. Municipal Gymnastic Instructor with the pupils of the aided Elementary School, Big Street, Kumbakonam. The lesson was splendid and was much commended. Mr. R. Swaminatha Iyer, Headmaster, Town High School, Kumbakonam, who has kindly undertaken to deliver a series of lectures on science for the benefit of the Elementary Schools lectured on chemical properties of air. His lecture was clear and impressive. He handled the subject very intelligently and illustrated the various properties of air by a series of very successful and interesting experiments which was greatly appreciated by one and all present.

Then rose Mr. L. S. Williams Pillai Avl, Veteran Educational officer, amidst loud cheers and after distributing the certificates of merits awarded in connection with the Kumbakonam Elementary Educational Exhibition held on 17th June 1909, delivered in simple Tamil, a very interesting and instructive speech which was listened to with rapt attention. He explained clearly the aim of the new scheme of studies and said that it consisted of 3 R's and 4 extras, namely, General Knowledge, Drawing, Gardening and Museum. He laid a great stress in 3 R's. Then he dwelt at length upon the usefulness of the school garden in imparting instruction in agriculture and infusing spirit of enthusiasm for the agricultural profession in the minds of the young pupils. He explained clearly the prominent part, which clay modelling and drawing play in developing the powers of observation of young children. He dwelt upon the principles of correlation of studies which strengthened memory and largely contributed to the clear understanding of all the subjects taught. He spoke highly of the superiority andthe nobility of the teaching profession from his experience of 36 years to be enthusiastic and lively in the discharge of their duties despite their low pay. If the principles of the new scheme of studies were clearly and intelligently adopted by all the teachers of Elementary Schools, he was sure that all young pupils will run to school with joy and pleasure instead of regarding it as a place of terror and pain. He attached a great importance to the formation of School Museum which is a great aid to the teaching of the Nature study. He impressed upon the teachers that the greatness of their duty consisted in the formation of sound character of those young pupils entrusted to their care. He said that he was highly pleased to see such a large number of teachers in the different parts of the Kumbakonam Taluk met in one place and advised them to attend regularly such meetings that are conducted for their benefits by the Inspecting Officers. Finally he thanked Mr. R. Swaminatha Iyer, Headmaster, Town High School, Kumbakonam, for his instructive lecture on Science. Mr. Rao Bahadur S. Appu Sastriar, Headmaster, Native High School, Kumbakonam, on behalf of the Teachers' Association, thanked the President for the great honor he had done to the Association by occupying the chair that evening and for his instructive speech and garlanded him.

The last item of the programme was social gathering. A series of interesting programme consisting of play on harmonium, fiddle and vocal musics. The 'Keerthanai' sung by the young pupils of Kodavasal. 'Thavaram' by the Municipal Silk Weavers' Street School, were much appreciated.

Finally Mr. A. Govindarajhuloo Mudaliar Avl., Sub-Assistant Inspector of Schools, Kumbakonam Range, proposed a vote of thanks to the gentlemen that were present at the meeting, andthe Town High School Committee for placing the hall at his disposal that evening.

Mr. K. Venkatarama Iyer, B.A., L.T., of the Town High School, proposed a vote of thanks to Mr. A. Govindarajhuloo Mudaliar and said that he was pleased to see that within a short stay at Kumbakonam, he was able to hold two successful meetings, wherein, he brought together the teachers of various grades and other gentries with a view to promote the cause of Elementary Education.

The Kumbakonam Elementary Educational Conference and Exhibition.

About 250 teachers and managers of Elementary Schools in the Kumbakonam Taluq met together recently in the Town High School hall. Thirty mistresses of Elementary Schools were also present. The following were among the gentries that were present on the occasion:

Mr. V. R. Venkataramier, B.A., L.T., Acting Inspector of Schools, VI Circle.
Rau Bahadur Mr. S. Appu Sastriar, B.A., Headmaster Native High School, Kumbakonam.
Mr. M. R. Swaminatha Iyer, B.A., L.T., Headmaster, Town High School, Kumbakonam.
Mr. K. Venkatarama Iyer, B.A., L.T.
Mr. A. Govindarajhuloo Mudaliar, B.A., L.T., Sub-Assistant Inspector of Schools, Kumbakonam Range.
Mr. V. C. Streenivasachari, B.A., L.T., Sub-Assistant, Inspector of Schools, Tanjore Range.
Rau Bahadur Mr. A. Krishnaswamy Iyer.
Mr. K. Doraiswamy Iyer.
Mr. Kalpaghanayagam Pillai, Police Inspector, Kumbakonam.
Mr. E. N. Ramachandra Iyer and Mr. R. Rungaswamy Iyengar, and others. } Supervisors of Primary Schools in the Kumbakonam Range.

Mr. V. R. Venkatarama Iyer presided over the Conference. The proceedings began with the National Anthem sung by the girl pupils of the Dabir Street Elementary School.

The Chairman in his introductory speech referred to the benefits of such conferences of Teachers and Managers, and impressed on the assembly the advantages of Educational Exhibitions and formally declared the Kumbakonam Elementary Educational Exhibition open.

The Headmaster, Yanaiyady School, gave a model lesson on correlation of studies. He first gave a lesson on Nature study on monkey: afterwards he taught the story of two cats and the monkey adopting the Kindergarten method of teaching. This story was intelligently dramatised by the pupils with the appropriate songs. Then one of the pupils made a clay model of a monkey, one spread the seeds in the form of the cat. One drew the picture of the monkey and two cats on the blackboard, illustrating in the free-arm drawing and another drew on paper the coloured picture of the monkey and the scale; while a paper was cut in the form of a monkey by another. These kindergarten occupations were much commended by the audience. Mr. A. Govindarajhuloo Mudaliar explained briefly the principles of correlation and how, and when various lessons to be correlated should be dealt with in the time of school work.

In this lesson, the eye, the ear, and the hand had all been at work throughout and considering that the short time, that the new educational rules have been in force, the progress made is ample evidence of the ability of the teachers to adopt themselves to the changed methods of teaching. The lesson was interesting and successful.

Mr. Appathorai Pillai, Municipal Gymnastic Instructor, gave a model lesson on physical and kindergarten drill. It was highly appreciated. He showed how drill can be conducted with the help of a gong without giving instructions orally to the pupils.

Then a model lesson on Civics "Railway" was given by the Headmaster, Kumbesvaran Koil South Street A.-V. Primary School, with his pupils. The functions of the various employees in the Railway were well enacted. The formations of trains, railway-station, railway-gate and booking office by the pupils themselves elicited the admiration of one and all.

A model lesson on Civics "Hospital" was given by the Headmaster, Municipal Elementary School, Silk Weavers' Street, Kumbakonam, with his pupils. The functions of the various officers in the Hospital were dramatised by the pupils with suitable songs, so as to elicit the applause of the audience. The urchin that played the part of the doctor was much applauded. These two lessons on Civics showed clearly to the audience, the part which dramatisation has to play in impressing firmly the various lessons on the minds of young pupils in Elementary Schools.

The 5th item on the programme was a lecture on science and demonstration by Mr. M. R. Swaminatha Iyer, Headmaster, Town High School, Kumbakonam. The lecture was upon the physical properties of air, and was listened to with rapt attention. The experiments performed well impressed upon the teachers assembled; many scientific truths of which they must have been profoundly ignorant before. The lecture was clear, eloquent, and impressive so as to be easily comprehended by the Elementary teachers. It may not be out of place to mention here that this gentleman is evincing much interest on the cause of Elementary education and has kindly undertaken to deliver a series of lectures on science at the Kumbakonam Elementary Educational Teachers' Association.

Three-quarters of an hour was allowed for the ventilation of grievances, if any, of Elementary Teachers and Managers of Elementary Schools. These were presented in writing to the Inspector of Schools, who with rare tact and sympathy, admitted the grievances to be real, but pointed out that the remedy lay in their own hands. The teachers, the Inspector observed, should work harder to entitle them to the concession provided in the Grant-in-aid Code. As it is, the bigger an elementary school is, the less is the grant. This substantial evil may be removed when the Code comes up for revision. He explained the solicitude with which the Government was making the arrangements for instituting the Provident Fund for the benefit of teachers and elucidated the rules regarding the Fund. All the teachers assembled were for the enforcement of the contribution towards the Provident Fund, even on those who were employed in Elementary Schools that are under the management of the Teacher Managers. He compared and contrasted the old method of teaching with the new and defended the latter against the critics, who held that the new system was, all a waste of time and energy. It was, as he added, the duty, if not the interest of the teachers, to convince the public and the parents in particular of the advantages of the new method. Referring to modern methods the Inspector of Schools observed that the word modern should not frighten the teachers, for modern methods were only a return to the natural methods pursued in indigenous schools a quarter of a century ago. Allusion was made to the Mahanavami festival of our country when boys learnt to sing to the accompaniment of instruments and to the dramatic performances improvised by school boys on the Sivarathri and Srijhayanthi days' modern methods. The enthusiasm that prevailed was a clear indication of the zeal and earnestness invoked by the presiding officer. He complimented Mr. M. R. Swaminatha Iyer for his able lecture and his interest in the cause of education and thanked Mr. Govindarajhuloo Mudaliar on his great efforts to make the Conference and Exhibition a success.

Rau Bahadur S. Appu Sastriar, Headmaster of the Native High School who was present throughout proposed a vote of thanks to the President and other officers concerned in the Conference and addressed a few words of encouragement to the assembled teachers. It is the first Elementary Educational Conference and Exhibition ever held in the Kumbakonam Taluq. Mr. A. Govindarajhuloo Mudaliar, B.A., L.T., Sub-Assistant Inspector of Schools, Kumbakonam Range, is to be congratulated on the success of his endeavours for the same.

This report will be incomplete without a brief account of the Elementary Educational Exhibition held on the occasion

The Elementary Schools in the town are well
ith appliances for realistic teaching.
by teachers and pupils occupied a
modelling as well as wax model-
ling had been attempted by the pupils with a fair degree of success. The Exhibition attracted a good number of spectators, on the whole, the Conference and Exhibition must be pronounced to have been a success, and great credit is due to Mr. A. Govindarajhuloo Mudaliar, the Sub-Assistant Inspector of Schools, and E. N. Ramachandra Iyer, Supervisor of Elementary Schools, Kumbakonam Range. The spirit of mental help which was discernible in the whole body of teachers augurs well for the future of the country. The meeting was enthusiastic throughout and it dispersed.

The following is a report about the Educational Exhibition submitted by the judges :—

The Exhibition presents undoubtedly many features of interest. To the credit of the Exhibition must be set down the earnestness shown by many of the teachers and managers of rural schools as well as the Inspecting officers in getting up the exhibits under great difficulties. Many of the exhibits were really good and demonstrate which teachers are capable of when they take serious interest in such matters. This is the first exhibition of its kind in these parts and the appreciation of the public is ample guarantee for success of future exhibition.

Going to details two Panchama Schools, two Girl Schools, five Board Schools for boys, were represented and the aided Elementary Schools were nine in number.

The Yanaiyadi School, Kumbesvaran Koil South Street School, Dabir Street School, and the Melakkaveri School were fairly well equipped for teaching object lessons. Free-arm drawing was done mostly by teachers. The few done by pupils were wanting in accuracy.

Drawing to illustrate story was done fairly well in some schools.

Seed spreading was attempted only in one school.

Modelling in relief might have been more largely attempted.

Coping should have been done directly from objects, and not from pictures.

Appliances for teaching arithmetic were found indifferently provided in almost all schools.

As regards the School Museum there was nothing worth the name, with the exception of a pretty poor collection in the Town High School. The attention of teachers may be usefully drawn to the importance of the development of the powers of observations by encouraging and guiding pupils to make varied and interesting collections for the Museum. There was one remarkable feature to be observed in the exhibits of the Aduthorai School, the leaf work of Alameloo, a girl of 10, was particularly attractive and the fabric showing the various stages of dycing were specially noteworthy. This circumstance clearly indicates the possibilities of progress in industries, if encouragement of the right sort be given to local industries taught in rural schools.

Hereto is annexed a list of schools, teachers and pupils, who have won Certificates of Merit in connection with the Exhibition.

Brush-work.

1. Kunjhu, 4th standard student, age 14, Municipal Board School, Silk Weavers' Street.
2. S. Komaraswami, 4th standard student, age 10, Kumbesvaran Koil, South Street A.-V. School.
3. Mahalingam, 3rd standard student, age 9, Kumbesvaran Koil South Street, A.-V. School.
4. R. Narayanasamy, 4th standard student, age 12, Melakkaveri School.
5. S. Govindaswamy, 4th standard student, age 11, Darasuram Melakkaveri School.
6. Thakshnamoorthi, 4th standard student, age 9, Kumbatta Visvanathaswami Koil, North Street School
7. Sundararajhooloo Naidoo, Teacher, Melakkaveri School.

Brush-work Illustrating story.

1. R. Valayudum, 4th class, age 10, Yanaiyadi School.
2. T. Rajagopalan, 4th class, age 10 Big Street School.

Colour and Brush-work.

1. S. Chokkan, 4th class, age 11, Big Street School.

Drawing.

1. V. Kaliya Perumal Naidoo, Teacher, Kumbatta VisvanathaSwami Koil, North srreet School.
2. T. R. Venkatarama Iyer, Teacher, Dabir Street School.
3. S. Rajagopala Iyer, 2nd Assistant, Papanasam Board School.

Free-arm Drawing.

1. Ramachandra Row, Headmaster, Big Street School.
2. Sabastin, Teacher, Devamangalam Panchama School.

Free-arm Drawing Story Illustrate.

1. S. P. Venkatarama Iyer, Headmaster, Kumbesvaran Koil, South Street School.

Free-arm and Chalk work.

1. K. R. Venkatarama Iyer, 3rd class Teacher, Kumbesvaran Koil, South Street A.-V. School.
2. S. Krishnaswamy Iyer, Headmaster, Yanaiyadi School.
3. Pichai, IV class student, age 10, Darasuram School.
4. S. Narayanaswamy, III class, age 10, Kumbatta Visvanathaswami Koil, North Street School.

Crayon-work.

1. R. Subramaniyan, IV class student, Melakkaveri School.

Map-Drawing.

1. P. Narayanaswamy, IV. class age 10, Yanaiyadi School.
2. Sabastin, Teacher, Devamangalam Panchama School.

Drawing to illustrate story.

1. Konda Rangaswamy, I. class, age 10, student, Municipal Silk Weaver's Street School.

Space and Number work.

1. S. Rajagopala Iyer, Teacher, Papanasam Board School.

Clay Modelling.

1. A. Setharama Iyer, Teacher, Tirubuvanam Board School.
2. Savarimuthu, Teacher, Vappathoor Board Panchama School.

Leaf-work.

1. R. Alameloo, girl, II. class, age 10, Aduthoorai School.

Wax Modelling.

1. V. Parisupathan, age 9, student, Kumbatta Visvanatha Swami Koil, North Street School.

Seed Spreading.

1. Nanuveriyan, III. class, age 10, Amman Koil Street School.

Ring Laying.

1. K. Lakshmi, girl, I. class, age 7, Dabir Middle Street School.

Wool-work.

1. Head Mistress, Government Girls' School, Kumbakonam.

Bead-work

1. Miss Muthammal, Head Mistress, Saraspathi Padasala, Banadurai.

Model School House.

1. T. V. Rajagopala Iyengar, Headmaster, Darasuram School.

Different stages of Dyeing.

1. Ramachendra Iyer, Headmaster, Aduthurai School.

Apparatus and Appliances.

1. Kumbesvaran Koil, South Street School.
2. Yanaiyadi Upper Primary School.

Appliances.

1. Melakkaveri School.
2. Dabir Street School.

Small Museum.

1. Dabir Street School.
   Graphic Illustration of Tamil.

Grammar in colours.

1. Chetty, New Street School.

The students of the Madras Christian College assembled on Friday, 13th inst., in the Anderson Hall, to bid farewell to Mr. P. Lakshminarasu Naidu

B.A., Assistant Professor of Physical Science, on his leaving the institution after fifteen years' service. The Rev. A. Moffat, M.A., B.Sc., presided, and a farewell address was read by P. Govinda Rao, student of the Fourth Class. As a token of their profound respect and sincere good wishes, the students also presented him with a gold watch and chain. Mr. Lakshminarasu thanked the students for the address and the valuable gift, and said that it gave him much satisfation to see that they had appreciated his lectures. The Chairman expressed his own regret at losing such an able assistant, and congratulated him on his appointment as Professor of Physical Science in Pachaiyappa's College. The Chairman and Mr. Lakshminarasu were then garlanded and the meeting came to a close.

The Government have had the matter of the establishment of a Secondary school for caste girls in the City of Madras under their consideration for some time and have had before them various opinions that have been offered upon the subject.

2. The first suggestion was that a school for caste girls would in all probability be largely attended if it were situated in a populous neighbourhood, such as Triplicane, but on further enquiry it was found that the opening of a new school by Government either in Triplicane or Mylapore would interfere with one or more of the existing girls' schools in those localities. The proposal was then made that the Government should take over and develop into a complete Secondary school the caste girls' school at Mylapore originally started in 1869 by the Maharajah of Vizianagram and now maintained by a Committee of native gentlemen resident in Mylapore.

3. The Government already maintain a Secondary school for girls in connection with the Presidency Training School for Mistresses at Egmore, which, it is in contemplation to reorganize and strengthen. The institution is open to all classes and it is at present largely attended by children of the higher castes. When this school is reorganized, the Government hope that it will supply all that the advocates of a high school for caste girls represent as required. The Government therefore do not think that they would be justified at present in establishing a second high school in Madras which would be entirely confined to caste children.

A deputation of Uriyas which waited on His Excellency the Governor at Chatrapur on the 3rd February 1909 made the following requests, namely—

(1) that the Entrance examination of the Calcutta University should be recognised as equivalent to the Matriculation examination of the Madras University as a qualification for admission into Government service;

(2) that the Government scholarships sanctioned for Uriyas might be made tenable at the Revenshaw College, Cuttack; and

(3) that a test in Uriya might be prescribed for certain appointments in Government offices in the Ganjam district.

2. The Governor in Council is pleased to direct that the Entrance examination of the Calcutta University shall, in future, be accepted as equivalent to the Upper Secondary examination or the Matriculation examination of the Madras University for the purposes of article 1. of the Public Service Notification. The Commissioner for Government Examinations will be requested to submit a draft amendment to the Public Service Notification giving effect to these orders.

3. The Government are also pleased to grant the second request of the deputation and the Director of Public Instruction will be requested to alter the the Government Scholarship Notification so as to make the scholarships intended for Uriyas tenable at the Ravenshaw College, Cuttack.

4. As regards the third request of the deputation the Collector of Ganjam will be requested to report whether a test in Uriya may, in his opinion, be prescribed with advantage as a necessary qualification for any, and if so, what posts in the various public offices in the district or any specified portions of it.

The Government consider that the existing arrangment, under which the Chemical Examiner lectures on Experimental Physics to the students of the Medical College, is incompatible with the proper discharge of his other duties as Chemical Examiner, which are sufficiently onerous. The best method of providing for these lectures appears to be, to make an additional appointment in the Subordinate Educational service to be held by a graduate in Physics of the Madras University. The appointment would be permanent and the holder of it would be required to assist the Professor of Physics at the Presidency College during the days when he is not lecturing at the Medical College. The proposed appointment will have effect from the beginning of the ensuing year, and the meantime the arrangement already approved for the delivery of the lectures on Physics at the Medical College during the current session will continue.

The Government of India have sanctioned the award of a State technical scholarship to M R Ry. A. Kesava Menon to enable him to study in England the chemistry of soap-making and the use of native oils.

Government have passed the following order on the papers relating to the question of the teaching staff and the clerical and menial establishments required for the School of Arts, Madras, under the scheme of reorganization sanctioned in G. O., No. 504, Educational, dated 8th July 1908:—

The Government have carefully considered the proposals submitted by the Director of Public Instruction with his letter, dated 8th October last, but are not satisfied that the whole of the staff he has proposed need be employed at once, although ultimately, when the various art and industrial classes have increased in strength, it may be necessary to employ it. As the reorganization of the school has been long under consideration, the Governor-in-Council does not wish at this stage to postpone the matter further by any attempt to find out precisely what staff will be required to meet present needs and accepts the proposals of the Director of Public Instruction subject to the following modifications:—

(*a*) With regard to the Women's Drawing class it is not at present necessary to employ a full-time teacher and the existing arrangement under which a part-time instructor is employed should continue.

(*b*) The proposal to remove the post of Assistant Superintendent from the cadre of the Provincial Educational Service requires the sanction of the Government of India and will be separately dealt with.

(*c*) In view of the contingency that the whole of the proposed staff may not be required to be employed at once, discretion will be given to the Director of Public Instruction to employ fewer teachers than the full sanctioned scale, if he considers that the attendance does not justify it; the sanctioned scale may be introduced gradually as the attendance increases.

(*d*) As it is doubtful whether all the members of the existing staff are fully qualified to perform the duties which will be required of them under the new scheme, the higher pay now sanctioned should not be given to them as a matter of course; it should be granted with great care and withheld from those who are not in the opinion of the Director of Public Instruction fully qualified.

As it is apparent that effect has already been given to Mr. Hadaway's proposal sanctioned in paragraph 3 of G.O., No. 504, Educational, dated 8th July 1908, that no general education test should be prescribed for the admission of pupils into the School of Arts and that the selection should be left to the Superintendent, the Government desire to have information as to the general educational attainments of the pupils who are now attending the school. The information may probably best be procured by deputing a Sub-Assistant Inspector of Schools to visit the institution and find out how many of the pupils hold a primary school certificate; while in the case of those pupils who do not hold any education certificate he should be able to ascertain by a few simple questions their general attainments in reading, writing and arithmetic.

Mr. N. Venkataswami, M.B., and C.M., is to act as Assistant to the Professor of Hygiene and Bacteriology, Medical College, Madras, *vice*., Mr. P. S. Chandrasekhar on leave or until further orders.

Mr. N. Venkataswami, M.B., and C.M., is to act in the ninth grade of the Provincial Educational Service.

Mr P. S. Chandrasekhar Assistant Professor of Hygiene and Bacteriology, Medical College, Madras, has combined privilege leave and furlough leave for six months from or after the 5th July 1909.

The Government have communicated to the Director of Public Instruction and the Syndicate of the Madras University the Resolution of the Government of India regarding the measures adopted for ameliorating the position of Indian Students in England, and requested the Director of Public Instruction to submit proposals for the constitution of a local committee and of subcommittees and for the appointment of a Secretary to the former.

The Government of India have sanctioned the addition to the cadre of Madras Provincial Educational Service of two Lecturers, one for the Rajahmundry College and the other for the Kumbakonam College.

The Madras Government propose to award the State Technical Scholarship alloted to them for the current year for the study of the chemistry of soap making, and the use of native oils. Applications have been invited from candidates qualified for the scholarship in the Presidency.

An ordinary meeting of the Mahomedan Educational Association of Southern India was held at the Anjuman Buildings recently, with the Hon'ble Mr. Justice Abdur Rahim—in the chair. Among others the following were present:—Col. Lovery. I. A., Messrs. Ghulam Hasan Ali Khan Bahadur, Raoof Khan Bahadur "Perthon," Waljee Laljee Khan Bahadur, Hajee Meer Abbas Ali and A. Hameed Hasan (Secretary). Five new members were elected and two applications were recommended to the Deputy Commissioner of Salt and Abkari and Collector of Customs for employment. The Secretary announced the receipt of Rs. 360 from Messrs. Hajee Fakir Mahamad Sait and Sons, Ootacamand, towards the scholarship fund of the Association, and Rs. 84-12-2 as interest on the Government paper. The Committee resolved to thank the kind donor. A Government paper for Rs. 400 has been purchased out of the uninvested sums of the National Fund and Service Corps, costing the Association Rs. 385-1-11; the Association now possesses Government paper of the face-value of Rs. 11,600.

The Valia Tirumalpad of Nilambur is starting an Elementary School at Nilambur, and the building which is being constructed for the purpose is nearly ready and will be opened by Mr. R. B. Wood, the Collector of Malabar, during the course of the month. By kind permission of H. E. the Governor, the school will be named the "Sir Arthur Lawley Elementary School." His Excellency has also been

pleased to send a portrait of himself to be hung in the school hall.

The proposal of the Municipal Council Palghat not to increase the fees in the two intermediate classes of the Victoria College from Rs. 35 to Rs. 38 per term until a general enhancement has been ordered in all the second grade Colleges in the Presidency, has been negatived. The Council further asked the Madras Government to make the grant of Rs. 3,000 a perpetual one, and to sanction the increased scale of salary to the teachers, already approved. The Government has refused the request until the finances of the College are put on a sound basis.

Under the advice of the Inspectress of Girls' Schools, the Cannanore Municipal Council is considering the desirability of opening an Elementary Girls' School in the town, abolishing one of boys' Schools.

Mr. Braithwaite, School Inspector, opened recently the Tottenham Elementry School, Mankada, section B. The President was taken in procession from the bungalow to the school with Indian music, children singing songs and a large concourse of people following. The building was opened with a silver key handed over to Mr. Braithwaite by Mr. Krishnavarma Raja, the proprietor of the school. Mr. Braithwaite unveiled a mural tablet which showed that the building was opened by Mr. Braithwaite. Then followed Mangalam. The Rajah then read the report which showed that the school named after Mr. Tottenham is free, and poor children are supplied with books, slates and even food. The school was started with 37 pupils; and the present strength is 200. Then there was *kolattam*, recitations and the excellent performance of he Malayalam drama, 'Devivilasam' by the school children. Mr. Braithwaite then occupied the chair. In his speech he thanked the Rajah for the excellent management of the school, exhorted the people to consider educational officers as friends. The ideal of the department was to provide every hamlet or group of houses with a school. This ideal, he said, was attainable only by the people's co-operation. Poor teachers might be given a site free or on easy terms, or they might be helped with building or fed during the time they awaited their grant. He pointed out that North Ernad and North Walluvanad badly wanted schools. Education being a national asset, he exhorted people to come forward and help the department. At the conclusion of the speech Mr. Subbier, the District Munsiff thanked Mr. Braithwaite and the proceedings were brought to a close by the singing of the National Anthem.

CALCUTTA.

The Secretary of State has appointed Mr. Joseph Andrew Taylor, M. Sc., to be a member of the Indian Educational Service and to hold the appointment of Vice-Principal of the Training College at Dacca.

The Secretary of State has appointed Mr. Edward Farley Oaten, B.A., L.L.B., of Sidney Sussex College, Cambridge, to the Indian Educational Service in Bengal. It will be remembered that Mr. Oaten won the Le Bas prize at Cambridge in two successive years.

We understand that the appointment, of an Indian Medical Service officer as Professor of Biology at the Calcutta Medical College has been sanctioned.

The Eighteenth Anniversary of the death of Pandit Iswar Chandra Vidyasagar was celebrated recently at the Star Theatre. There was a very large gathering at the meeting. Raja Binoy Krishna Deb Bahadur presided, and delivered an excellent address.

The Rajkumar of Kakina has established a High Class English School at Kakina, Rangpur, to commemorate the memory of his late father, Raja Mahimaranjan Roy Chowdhury, after whom it was named and lately opened.

Mr. Madhava Shankar Rao Pandit, B. A., of Jesus College, and Mr. Sri Ratnasabapathy, of New College, have been placed in the third class by the examiners in the Final Honours of Jurisprudence at Oxford.

Professor J. Samaddar, of Tangail, has been elected a Fellow of the Royal Economic Society of London. Professor Samaddar was the first Bengali, and seventh Indian, to gain the coveted F. R. H. S.

A Gratifying record of successful effort in indigenous educational enterprise was presented at the recent distribution of prizes to the successful students of the Bengal Technical Institute, over which the Maharajah of Cossimbazar presided The three years work of the Society for the Promotion of Technical Education in Bengal is a striking example of sound effort in the sphere of industrial advancement and shows what can be done by good organisation, intelligent direction and, last but not least, generous purses. The Institute is doing really great work and nothing could be more admirable than the tone and matter of the address delivered to the students by the Honorary Rector, Mr. P. N. Bose, B. Sc., F. G. S.

A Conference was held at Belvedere to consider the Ranchi College Scheme. His Honor the Lieutenant-Governor explained the objects of the Conference and then retired from the meeting. The Hon'ble Justice Ashutosh Mookerjee, Vice-Chancellor of the University, then took the chair. It was resolved that for want of the necessary funds at the disposal of the Government, the erection of buildings for the proposed College at Ranchi is to be indefinitely postponed. Proposals had been made in certain quarters to utilise the funds for some other useful public purposes, but the donors to the proposed College fund have not so far signified any willingness to divert their subscriptions to some other objects. If, however, any of the subscriber so desires, he is to be allowed his own choice in the matter.

BOMBAY.

His Excellency the Governor in Council is pleased to approve the following rules of discipline for Government schools:—

[*N.B.*—A copy of these Rules is to be given to the parent or guardian of each boy on his first admission to the school]

Parents or guardians who send their boys to Government schools must understand that by so doing they agree to delegate to the Head Master and the Educational authorities the control which they are entitled to exercise over such boys in all matters connected with such schools and that in all questions of school discipline both inside and outside the schools the decision of those authorities is final. Every application for admission or withdrawal should be made to the Head Master by the parent or guardian of a boy in person or by letter. Applications for admission must be accompanied by a leaving certificate from the school last attended. The school fee must be paid monthly in advance on the day fixed for that purpose. If a boy wishes to leave the school his parent must give notice of his intention before the end of the month; else the fee for the following month will have to be paid. The Head Master will exercise his discretion in admitting a boy or retaining him in the school. For breach of the school rules a boy may be fined or otherwise punished at the discretion of the Head Master. Boys are required to be regular and punctual in attendance. Leave of absence should be applied for either in person or by a note signed by the parent or guardian and it will lie with the Head Master to grant or refuse such leave. If a boy is absent without leave he will be required to bring a note from the parent or guardian explaining his absence, but it will be for the Head Master to decide whether the reason assigned is sufficient. Parents or guardians will be held responsible for any damage done by boys to any part of the school property. Boys are required to be clean and tidy, orderly and respectful, both in class and in public. Rude, disorderly or other objectionable conduct out of school will be punished. No boy is to attend or take part in the organization or conduct of any public meeting of any kind, or, without the express permission of the Head Master, in the collection of any fund.

The Baroda State spends Rs. 7,000 a year on education in music.

The following Press Note was issued on the 7th August 1909:—

One of the resolutions passed at the Maratha Educational Conference held in Bombay on the 31st December 1908 was as follows:—

4 "That this Conference tenders its thanks to the Government of Bombay for founding special scholarships to enable the sons of agriculturists to prosecute their studies in the Agricultural and Veterinary Colleges. These, it is expected, will be largely availed of by Maratha boys. This Conference also requests the Government to establish such special scholarships to encourage the sons of agriculturists in other branches of education."

Government have already reserved a certain number of Middle and High School scholarships for backward classes. It has been the custom to include the Marathas among these classes. His excellency the Governor in Council is further pleased to direct that one scholarship should be reserved next year and each subsequent year for Marathas at—

(1) the Elphinstone College,
(2) the Deccan College,
(3) the Workshop class attached to the College of Science, Poona,
(4) the Grant Medical College.

as an experimental measure. If it is found that the Marathas take advantage of this concession, Government will consider whether the number of such closed scholarships should be increased. The Director of Public Instruction should note briefly the result of the experiment in his Annual Report, and should submit a special report to Government on the working of the same after three years from the first allotment of the scholarships.

PANJAUB.

The Secretary of State has approved of the establishment of a Government School of Engineering for the Punjab. The Principal will be an Executive Engineer of the Provincial Public Works Service.

The proposals of the committee which assembled to consider the best way of repairing the damage done to the Aitchison College by the earthquake of 1905, have been accepted by the Financial Commissioner and steps will be taken to carry out the recommendations as soon as possible.

Under the revised regulations of the Punjab University, a special sub-committee of experts is appointed by the Syndicate every year to inspect the various Colleges affiliated to the University. A continuance of the affiliation already granted depends on the report of the sub-committee being satisfactory, and no application for an extension of

affiliation is considered without reference to the sub-committee. The authorities of the D. A. V. College, Lahore, have been called upon to complete the construction and equipment of a science block, so as to be in use by the end of October, 1909, and to commence the construction of the main building by the 1st of April, 1910. It has also been resolved that the Islamia College, Lahore, be called upon to proceed with the building of a main building so as to complete one wing by the 31st October, 1909. The authorities of Lahore Medical College have been called upon to take immediate steps to provide some kind of hotel accommodation, and to institute some procedure for the inspection and approval of lodgings for students not living with near relatives, such accommodation or procedure to be in proper order not later than the 31st of October, 1909. The Hindu College, Delhi, which was threatened with disaffiliation only two years ago, has been required to furnish a new building and move into it, and properly to equip a science laboratory if it is intended to continue teaching science.

THE opening of the Agricultural College at Lyallpur has been postponed till 1st September.

THE Syndicate of the Punjab University has resolved to recommend to the Senate that the degree of Doctor of Laws be conferred *honouris causa* upon Sir Protul Chandra Chatterjee, M.A., C.I.E.

Two candidates in the Matriculation examination, two in the Intermediate examination, and one in the B.A., examination have been disqualified by the Punjab University for 2 years in the case of the Matriculation candidates, and for all time in the case of the Intermediate and B.A. candidates.

MR. Jamal, of Rangoon, visited the Aligarh College recently and laid the foundation stone of a hostel named after him and to be erected with his munificent donation of Rs, 50,000. The Trustees heartily welcomed and thanked him in a largely attended meeting held in the Strachey Hall. Nawab Mushtaq Husain Vikar-ul-Mulk took the opportunity of announcing the princely donation of one lakh of rupees given to the Aligarh College by an unknown donor through the kind efforts of His Highness the Nawab of Rampur for a Science College to be established at Aligarh. A hearty vote of thanks was also passed for His Highness the Nawab Sahib of Rampur and his benevolent friend. The meeting closed with a recitation of poems and three cheers for His Majesty the King-Emperor.

WITH reference to the differences between the Aligarh College Principal and Secretary, the Trustees have issued a declaration pointing out that the idea abroad that there is to be a change in the old established policy of the school is far from the truth. It is true, they say, that there are differences of principle between the European staff and the governing body of the College, and some of the points of difference are of vital importance, affecting the very foundation of the Institution; but such differences are always liable to arise in such living institutions as the Aligarh College, and every effort is being made to settle them as soon as possible. But to regard such differences as a sign of any new departure from the old established policy of the Aligarh school is as unjust as it is unfounded. It is not the first time in the history of the Aligarh movement that its leaders have taken an independent line in matters educational and have differed not only from the staff, but even from the educational authorities of the Government. No one did it so freely as the late Sir Syed, whose action and example are always before the Trustees. The late Mr. Beck's views did not always coincide with those of the powers that be, and his criticisms of the system on which University education was based in those days should not be forgotten; and the late Nawab Mohsin-ul-Mulk, when he was in charge of the College, never failed to do his duty when occasion demanded. Among the chief objects of this College the implanting in the minds of its students a just appreciation of the blessings of British rule and admiration for the English character was one of most importance, and the Trustees would not be true to their trust or to themselves if they were to deviate from it in the sligtest degree. It is to keep this feature intact and unimpaired that they have been so anxious and careful in maintaining their position with regard to the differences between them and the staff, whose co-operation and right attitude are so essential in maintaining the traditions of the College; and to interpret their action, which is inspired entirely by a high and strict sense of duty, in any other way is cruelly unfair without justification.—*Madras times.*

UNITED PROVINCES.

BABOO Ram Sarup, a Rais of Furrakhabad has given a village, named Khudaganj worth Rs. 25,000 to the Arya Pritindh Sabha of the United Provinces to be devoted to educational purposes.

The *United Provinces Gazette* publishes the following resolution:—

In their resolution of July the 1st, the Government of India announced that His Majesty's Secretary of State for India had decided to establish a Bureau in London for the supply of information to Indian students in Great Britain, and also to appoint a Standing Committee for general advisory purposes. The Local Governments were requested to establish local committees, consisting of representative European and Indian gentlemen, which should place themselves in direct communication with the Central Bureau in England.

2. In pursuance of these orders the Lieutenant-Governor has now resolved to appoint a Committee for the United Provinces to consist of the following persons:—

The Hon'ble Mr. Justice Richards, K.C., Vice-Chancellor of the Allahabad University,—*President.*
The Hon'ble Sir George Knox, Officiating Chief Justice.
The Hon'ble Mr. Justice Karamat Husain.
The Hon'ble Mr. D. C. Baillie, Indian Civil Service.
Maharaja Sir Bhagwati Prasad Singh, K.C.I.E., of Bairampur.
The Hon'ble Raja Muhammad Ali Muhammad Khan, Khan Bahadur of Mahmudabad.
The Hon'ble Nawab Mumtaz-ud-daula Sir Muhammad Faiyaz Ali Khan, K.C.I.E., C.S.I., of Pahasu.
The Hon'ble Rai Sundar Lal Bahadur, C.I.E.
The Hon'ble Mr. C. F. de la Fosse, Director of Public Instruction.
Mr. F. W. Brownrigg, Indian Civil Service.
Mr. H. V. Lovett, Indian Civil Service.
Mr. E. H. Radice, C. I. E. Indian Civil Service.
Major G. T. Birouood, Indian Medical Service.

Mrs. Besant.
Mr. A. Venis, Officiating Director of Public Instruction.
Mr. J. G. Jennings, Principal, Muir Central College, Allahabad.
Mr. A. H. Pire, Principal, Canning College, Lucknow
Canon G. H. Westcott, Principal, Christ Church College, Cawnpore.
Mr. W. A. J. Archbold, Principal, Mahomedan Anglo-Oriental College, Aligarh.
Mr. T. Cuthbertson-Jones, Principal, Agra College.
The Revd. H. B. Durrant, St. John's College, Agra.
Babu Bhuban Ranjan Mukerji, of Shankarpur.
Mr. Yusuf Ali, Indian Civil Service.
Mr. A. C. Chatterji, Indian Civil Service.
Mr. Panna Lal, Indian Civil Service.
Rai Gyanendra Nath Chakrabarti Bahadur, Inspector of Schools.
Saiyid Mahdi Husain Bilgrami, Inspector of Schools.
Mr. Abdul Majid, Barrister-at-Law.
Kunwar Shivanath Singh, Barrister-at-Law.
Mr. Hamid Ali Khan, Barrister-at-Law.
Mr. Aftab Ahmad Khan. Barrister-at-Law.
Shaikh Shahid Husain, Barrister-at-Law.
Mr. S. N. Sinha, Barrister-at-Law.
Pandit Moti Lal Nehru, Advocate, High Court.
Rai Mahendra Nath Obdedar Bahadur.
Rai Ram Saran Das Bahadur.
Munshi Gokul Prasad, President, Kayasth Pathshala, Allahabad.
Shaikh Habib-ullah, Deputy Collector.
Kunwar Moharaj Singh, Officiating, Registrar; Co-operative Credit Societies.

Mr. R. K. Sorabji, Barrister-at-Law, is appointed Secretary to the Committee for the term of one year with an allowance of Rs. 200 a month.

3. The Provincial Committee need not, it appears to the Lieutenant-Governor, be called together except at stated intervals or when business of a serious nature has to be placed before it. But it will be necessary for a small Executive Committee to meet with some regularity at Allahabad, the seat of the University, in order to conduct the duties mentioned in paragraph 5 of the resolution of the Government of India. The Lieutenant-Governor trusts that the Provincial Committee will lose no time in entering on its business and in constituting such an Executive Committee from among its members.

MR. Binderhwari Prasad, M. Sc., is most likely the recipient of the State scholarship this year awarded to the Allahabad University.

INDIA GENERAL.

A CORRESPONDENT writes to the *Telegraph* to intimate that Haffiz Ahmeddin Aga has been appointed Director of Public Instructions of Afghanistan and put in charge of the Habibiya University *vice* Dr. Abdulgani. He is thoroughly acquainted with the theory and practice of teaching, having been trained in the Lahore Training College after graduating from the Foreman Christian College. He knows the whole Qoran by heart and is a devout Musulman and scrupulously avoids politics. He officiated as Director during Dr. Abdul Gani's visit to India on leave, and as Head Master of the Habibya Collegiate School, he won golden opinions from all persons. Since Dr. Abdul Gani's return, he worked as Secretary to the Amir and accompanied His Majesty during his Indian tour.

FOUR more students of the Association for the Advancement of Scientific and Industrial Education of Indians, Messrs. B. Mukerjee, S. C. Ghose, N. K. Bose, and S. Roy, started per. S. S. *Golconda* on Thursday, the 22nd ultimo for Europe. Mr. B. Mukerjee will take up Pharmacy in Paris University, and Messrs. S. C. Ghose and S. Roy will join the Mechanical and Electrical Engineering Department of Glasgow University, respectively, and Mr. N. K Bose will learn Pharmacy in Edinburgh University.

THE appointment is notified of the following to constitute the Council of the Indian Institute of Science: The Hon. the Resident in Mysore, representative of the Government of India; the Dewan of Mysore, representative of the Government of His Highness the Maharaja of Mysore; the Director of the Institute (*ex officio*); H. J. Bhabha, Esq., M. A., representative of Mr. D. J. Tata; B. J. Padshah, Esq., representative of Mr. R. J. Tata; Dr. A. Hay and Mr. N. S. Rudolf, professors of the Institute, representing the Senate of the Institute.

The Court of Visitors, when formed, will be moved to nominate three members of the Council.

MR. Harinath De the Imperial Librarian, who has just passed in the first class of the Government test for the degree of honours in Sanskrit, is an astonishing person. He has obtained the highest honours in no fewer than five languages, Greek, Latin, Pali, and classical and Vedic Sanskrit. He has also passed the higher proficiency examination in Uriya, taken honours in Arabic, and is a proficient scholar in German, French, Spanish and Russian, not to mention English, that is, eleven languages in all besides his own, and he is only 33 years old. The Government of India have awarded him a prize of Rs. 5,000 for his Sanskrit success.

THE Government of India have sanctioned the award of a State technical scholarship to Mr. A. Kesava Menon to enable him to study in England the chemistry of soap-making and the use of native oils. The Secretary of State will arrange that the scholar shall be afforded the necessary facilities for study under proper supervision.

Foreign Notes.

AMERICA.

ACCORDING to the New York correspondent of the *Times*, Mr. John D. Rockefeller has celebrated his seventieth birthday by giving £2,000,000 to the General Education Board, which was founded by him in 1907 for the purpose of endowing American Colleges and Universities. This body had already received £5,600,000 from Mr. Rockefeller. Some 40 institutions of learning are under obligation to the Board, including Harvard and Yale Universities, and one Catholic College. The Board's policy is governed by the belief that every city of more than 100,000 inhabitants should possess a college; it considers that the chief need of New England and the Middle West is women's colleges. It is estimated that Mr. Rockfeller's benefactions now amount to £24,000,000 as compared with Mr. Carnegie's total of £27,800,000. The Standard Oil Trust magnate in a recent newspaper interview reminded his countrymen that there are better things than money-making. Meanwhile, the representatives of the Trust in England have been endeavouring to impose upon British traders an agreement containing a penal clause under which the latter would be subjected to heavy financial penalties if they purchased oil from any other Company. There are certainly "better things" than making money by such methods, and it is satisfactory to find that owing to the opposition evoked by the penalty clause the Trust has found it desirable to withdraw it.—*Statesman*.

GREAT BRITAIN.

PROFESSOR Lees Smith, in an interview regarding his scheme for the political education of Indian students, said that a series of lectures had been arranged explaining the British constitution and local government.

There would also be lectures on what might be called Indian sociology concerning the extent to which British political principles were applicable to India.

The scheme includes arrangements for bringing Indians into contact with representative Englishmen and English families, to bring about a better understanding between Europeans and Indians.

A good number of young Indians of all classes are coming over in October :—

SYLLABUS OF LECTURES.

The lectures will begin on Monday, October 4th, 1909, and will continue until the third week in June, 1910.

There will be two vacations, (1) from December 18th to January 9th; (2) from March 24th to April 20th.

The minimum expense of the course, including travelling to England and back, living in England, etc., will be about 3,000 rupees.

A certificate will be granted at the close of the course to those who have attended the prescribed lectures and classes and have passed an examination in the subject of study.

LECTURES AND CLASSES.

Monday. Indian Sociology, Sir Courtenay Ilbert K. C. S. I. Mr. Theodore Morison, Member of the India Council. Dr. Roberts and others. Social Institutions.—Prof F. A. Westermarck.

Tuesday—Social Evolution—Prof. L. T. Hobhouse. Banking and Currency—Prof. H. S. Foxwell. Political Ideas—Mr. G. Lowes Dickinson.

Wednesday—Ethnology—Mr. R. A. Brown. Social Structure of the United Kingdom Prof. H. K. Lees-Smith.

Thursday—Some Sociological Problems. Prof. L. T. Hobhouse. The Psychology of Government, Mr. Graham Wallas. Social Institutions Prof. E. A. Westermack. Local Government Prof. H. B. Lees-Smith. Statistics, Mr. A. L. Bowley.

Friday—Social Evolution—Prof. L. T. Hobhouse. Parliamentary Institutions, Prof H. B. Less-Smith. National Finance, Prof. E. Cannan. Economics, E. Cannan. Ethnology, M. R. A. Brown.

In addition to the above, students should attend one or more of the following optional courses :—

Monday—Accounting, Prof. Lawrence R. Dicksee. Industrial Law, Mr. R. A. Wright.

Tuesday—Economic History, Dr. L. Knowles. Commercial Geography, Mr. A. J. Sargent.

Wednesday—Business Organisation, Prof. Lawrence R. Dicksee.

Thursday—Logic Dr. A. Wolf, Foreign Trade, Mr. A. J. Sargent.

Friday—Economic Geography, Mr. H. J. Mackinder. International Law, Dr. A. Pearce Higgins. Constitutional Law and History, Mr. J. H. Morgan. Law of Contract, Mr. R. A. Wright.

For further information apply to the Secretary, London School of Economics and Political Science, Clare Market, Kingsway, London, W. C.

OLD students of Glasgow University will be interested to know that a movement is on foot to create a memorial of Miss J. A. Galloway, LL.D., who was from the beginning closely identified with the movement for the higher education of women in Glasgow, and who acted as Honorary Secretary of Queen Margaret College from the date of its incorporation in 1883 until her death on the 23rd of of January, 1909. It has been resolved that the memorial should take the form of a window in the Bute Hall in the University Buildings. The estimated cost is about £1,000, and if, as is hoped, there should be a surplus after the completion of the window, it is proposed to devote it to a memorial closely connected with Queen Margaret College. A Committee has been appointed, and contributions will be received and duly acknowledged by the Honorary Treasurer, Mr. G. D. Gairdner, C.A., 115, St. Vincent Street, Glasgow. Mr. W.R. Gourlay will be glad to give any further information to old students of the University in Calcutta.

THE jubilee of Wellington College was celebrated on July 20 when a large number of Old Wellingtonians visited their former school.

In giving the toast of "The King" the Duke of Connaught said :—"His Majesty was President of the College for nearly 40 years, and ever since the King had been on the Throne. His Majesty had never ceased in taking the deepest interest in everything that could promote the welfare and the happiness of Wellington College. The Duke of Connaught thought the King's position was almost unique in connexion with any schools in this country. The association between the Sovereign and Wellington College was probably the closest that have ever existed between any King and any public school. His Royal Highness added that he had sent the following telegram to the King ":—

"Four hundred Old Wellingtonians drink Your Majesty's health and loyally and gratefully remember your constant interest in the school."

The Archbishop of Canterbury, in giving the toast of The Queen and the other Members of the Royal Family," mentioned that when he first joined the governing body there was a discussion on the particular type of drain-pipe to be used in a portion of the building. The governing body at the time were four Members of the Royal family, a Lord Chancellor, an ex-Lord Chancellor, the Commander-in-Chief, the then Archbishop of Canterbury, two Bishops, and a very large number of other eminent men. The whole apparatus for bringing weight and force to bear upon a momentous decision seemed at least adequate. The Archbishop stated that five Members of the Royal Family had been scholars at the college.

The Duke of Connaught, in reply, said :—"I have very often to return thanks for this toast, and I sometimes find a difficulty in finding anything new to tell you on this subject, but on this occasion perhaps we are lucky in that the associations between Wellington College and the Members of my family have been so very close. We know that Her Majesty takes the deepest interest in the college. She has recently been here on two occasions, and everybody was charmed with the interest she showed in everything she was shown. The Prince of Wales, who, I regret is not here to-night, is also a Governor of this college. You are well aware that it was chiefly due to the initiative of my dear father that the college was built. It was his great affection for the Army that originated the wish that a college should be formed in which the incentive was Military, and the name borne by it was that of the distinguished Field-Marshal the Duke of Wellington. I am personally connected with this college in many ways. I am a godson of the Duke of Wellington. I bear his name and was born on his birthday. I was present at the foundation-stone laying of this college and at its opening, and I have visited it on many subsequent occasions. In myself, therefore, I show the close association which has always existed between the Royal Family and the college. It is a happy fact that my own family share the great advantages of education in this college. I am certain that the excellent tone of the school, and its splendid feelings of good fellowship, to say nothing of its fondness for sport, have done a great deal for those of my family who have been here. We all regret that one of us who was a very devoted Wellingtonian is no longer alive, but he had the advantage of giving his life for his country, and he now lies buried in South Africa, I am not using any common phrase when I say that every member of the Royal Family takes the deepest interest in this college."

Lord Rosebery, proposing the toast of "Floreat domus," said :—"I once heard Mr. Reed of *Punch*, declare that an after-dinner speech consisted of two parts, in the first of which the speaker proved that of all human beings he was the one who ought not to have been called upon to speak, and in the second of which he proved that he was the only human being who could possibly have made the speech. You will forgive me if I leave out these nicely balanced arguments on the present occasion. As I came here I drove past a signpost that pointed to Chiswick Mall. It was at Chiswick Mall that there existed the immortal school commemorated in "Vanity Fair," where Miss Pinkerton presented to each of her departing pupils a copy of Dr Johnson's dictionary. She refused it, however, to Becky Sharp. When Becky received it privately from a more soft-hearted sister of Miss Pinkerton, she threw it contemptuously out of the window. Here, I said, is a topic. We value the prizes we receive too little because we do not care about the way in which they come—they are not of the kind which we value. I proceeded onward in my journey, and I came to the conclusion that that would form an admirable topic for the headmaster's next sermon, but would not be appropriate for the present occasion. I am, it is true, a Governor of Wellington, but the least of all the governors, and not worthy to be called a Governor in experience—in these matters of detail to which the Primate has so feelingly alluded. My own first vivid recollection of Wellington marks me as a patriarch, I was at private school when Wellington College was opened, and a private school in my day was a very miserable place and we always looked forward to the moment when we should go to some great public school. Wellington was the rage of the moment and all were mad to go to Wellington. When Wellington had been open a year or two this inclination seemed to die away, for it was rumoured that the last penalty of the

law was inflicted at Wellington with vigour. I remember perfectly well how our blood froze its genial current in our veins when we heard that news. How we trembled in all our miserable little limbs, and how the zeal to go to Wellington died away in our private school. Shortly afterwards a well-grounded suspicion began to develop in my mind—which subsequent experience has made almost a certainty—that these sinister rumours were composed and propagated by the headmasters of the more ancient foundations who were jealous lest the cream of youth should be diverted from their own more antiquated establishments. That is my recollection of Wellington, and it is as keen to-day as it was 50 years ago and so perhaps as parish boys used to be whipped in order to make them remember the boundaries of the parish on a fixed day every year, my recollection of the first year of the foundation of Wellington may be as vivid as that of any person present. But this is no moment for remembrances, however humorous they may be. This is a very solemn stage in the life of the great school. To-night we meet to take stock of your life and your work, to look back to the past and see what success you have achieved to cherish new ambitions for your next jubilee.

THE GROWTH OF THE SCHOOL.

You have had undoubtedly great success, and you began with one or two great advantages. You had a fair field before you and a scope of operations which had not been overtaken by any of the older schools, and in which you could endeavour to fit your boys for the business of modern life. You have done this, it seems to me with consummate success You have had the great advantage of the countenance and interest of your Sovereign and your Princes. You have not those names which Eton and Harrow are accustomed to reckon up for Harrow lives on its Byron and its Peel and Eton is accustomed to reckon up a long list of heroes and statesmen with whom Etonian is too apt to trouble his audience, and which I may spare you on this occasion. But you have the great name of Derby, illustrious in history for centuries, and you have the name which has given to its bearer the title of "the Duke of Duty." I am not at all sure that I have reached an age at this moment when one is supposed to cease to take an interest connected with schools. We are seldom useful or beautiful at the age which I have attained, and I cannot overlook the immense convenience it would offer to the Chancellor of the Exchequer to listen with eager attention to hear the last rattle in an opulent throat. But there is an advantage in addressing a school on attaining my age, because, if your time or energy is well-nigh past, you look to the generations in the future to carry on the work of the Empire. More than that, you will remember the intense vividness of your impressions of youth. We feel we cannot overestimate the enormous importance of the impression a boy receives at a school like this. You are in the foremost rank of public schools—you will forgive me if I do not say you are the first. I should be torn to pieces when I went to my old school if I did so but you have the enormous work, as a great foremost school of England, of moulding the men who are to carry on the work of Empire. No school perhaps of its size, or of any size, has more to do with the work than this. I is not merely the illustrious name which it bears that gives it that inspiration, but the fact, which I believe is true, that no school sends so many of its boys abroad or throughout the Empire as this Wellington College.

PATRIOTISM AND DUTY.

I venture to think that the boys will have harder work to do in their generation than we had in ours. There is a lesson not taught in schools; it is taken for granted. It is a lesson which will have to be impressed more and more on the rising generation of this country. The stress that patriotism will have to bear in days not distant, and perhaps imminent, will be greater than has yet been known in the history of this country. There never was a time when men were more needed to speak and act up to their faith. I think that men will have to be more universally armed in the future than they are now. In the days near upon us every man, whatever his calling, however humble or obscure his condition, will have to ask himself, how he can serve his country as part of the essential labour of his every-day life? There are encroaching opinions which threaten patriotism menace our love of country and imply the relaxation, if not the destruction of all the bonds which hold our Empire together. I would urge that as far as possible the study of patriotism should be promoted. If that is done daily and sedulously in this college, it will live up to the conditions of its foundation and the illustrious auspices under which it has hitherto done its work."

MATTHEW ARNOLD:
SOHRAB AND RUSTUM
WITH INTRODUCTION AND NOTES
By T. O. HODGES Esq., B.A.,
Principal and Professor of English,
KUMBAKONAM COLLEGE.
PRICE Re. 1.
Srinivasa Varadachari & Co, Triplicane & Esplanade, Madras.

The Educational Review.

Continuation Schools.

The question of continuation schools is receiving serious attention at the hands of British educational administrators. The question is discussed exhaustively in a valuable report on attendance at continuation schools recently issued by the Consultative Committee of the Board of Education. From the report it appears that recent inquiries render it highly probable that a very large proportion of boys and girls in wage-earning occupations are employed in purely mechanical work of a monotonous, uneducational character, of no industrial value when the child becomes an adult. The natural consequence of these conditions is that the education given in the elementary school is soon forgotten. Being almost entirely exempt from parental control, the boys and girls fall victims to the prevailing passion for cheap amusements and to the attractions of the streets. There remains in these young people none of the benefits of elementary education except a certain facility in reading, writing and very elementary arithmetic. Matters are not better, even when the boys are definitely apprenticed to a trade. Under the older industrial regime the boy was given by the employer an all-round training, but under the present industrial conditions which involve the minutest possible specialisation in the works, the employer cannot afford to give his apprentice an all-round training. At the present day industry requires not only manual dexterity but also a general industrial knowledge and a trained intelligence which will enable the worker to adapt himself to ever-changing industrial conditions. Hence an education outside the workshop but concurrent with it is essential. The problem therefore is, what can be done (*a*) to carry on the education of the wage-earning youth during the years from thirteen to seventeen, (*b*) to bridge over the present gap between the elementary school and the centres of higher evening instruction, such as the technical school? The solution lies in the development of the increased efficiency of the evening continuation school. The Consultative Committee therefore make the following recommendations: (1) The leaving age should be raised to thirteen years, and after a short period to fourteen years. (2) Full-time exemption from the day school should be given to boys and girls under sixteen when the parents or guardians can show that the children in question are suitably employed. (3) It should be the stationary duty of each local education authority to make suitable provision of continuation classes for the further education of young persons up to the age of seventeen. (4) Local education authorities should be empowered to make bye-laws compelling attendance at continuation classes for young persons up to the age of seventeen, and employers should be compelled to make provision enabling such young persons to attend the continuation classes. (5) Employers should be forbidden under penalty to employ any young person under seventeen years of age who fails to attend the evening continuation classes regularly. (6) The curricula of the continuation schools should be such as to continue the general education given in the primary school. It should have reference to the crafts and industries in the district, and prominence should be given to the practical and manual instruction.

These recommendations will receive the hearty support of most educationists, and we

think that the adoption of these recommendations would bring about not only important educational results but also sociological benefits. They would tend to the development of a complete national system of education, and would eliminate one of the main causes of unemployment. The report summarises the direct and indirect gain to the community accruing from these continuation schools as follows:

"An increasing stock of practical ability in a nation enlarges the range of its economic abilities and rapidly adds, through all the gradations of directive responsibility, to the number of well-remunerated posts which could never have existed if men had not been forthcoming to fill them."

"A rising level of education among the mass of workers increases the real level of their wages, though this may not be accompanied by a rise in their nominal amount. It conduces to wise expenditure of income and to the avoidance of thoughtful or harmful waste."

"Improvements in educational opportunity make possible forms of Government which give rise to the working class in the community an effective voice in policy and administration."

"The temper, the outlook, the recreations, and the ideals of a nation may be so refined and raised by the right kind of training as to secure for the mass of the people a more choice-worthy life."

Educational Progress in the Native States.

We have read with the greatest pleasure the reports of the progress of education during the year 1907-08 in the Native States of Baroda and Mysore. The year is one of substantial progress in both the States. The rulers of both the States are cultured and enlightened princes, and no wonder that under their benign care great attention is paid to the spread and development of education in all possible directions.

In Baroda there were in all 1281 educational institutions. The total expenditure incurred in connection with these schools including expenses under other heads connected with education was Rs. 9,98,212-7-6 against Rs. 8,15,390-10-9 of the previous year, and the total receipts were Rs. 94,582-10-11 against Rs. 96,030-15-3. The net expenditure on vernacular education amounted to Rs. 6,83,704-6-2 against Rs. 5,31,848-3-11. Adding to this the net amount of expenditure on English education, the net cost to the State was Rs. 8,20,002-13-7 against Rs. 6,51,444-14-2. Thus the annual average cost of each pupil under education of all kinds was Rs. 7-10-0 against Rs. 6-12-0. Roughly speaking the State spent one-sixteenth part of its gross revenue on education. If to this net expense, the figures supplied by the Local Boards for the village schools were added, the total net expense on education would be Rs. 9,89,286-4-2. While these are the actual figures of net expenditure, it is gratifying to note that the State was prepared to spend a little more than one-tenth of its total revenue on education, as the educational budget grant was Rs. 13,000,000, the total revenue of the State being Rs. 1,35,000,000.

In Mysore the number of institutions increased from 3,924 to 4,146 and their strength from 117,951 to 123,106. The total expenditure increased from Rs. 14,44,311 to Rs. 14,64,914. The average cost of education per head of population met from State Funds was 2 annas 5 pies as against 1 anna 9 pies in the Madras Presidency. The

following were some of the noteworthy changes during the year. With a view to encourage primary education the Government sanctioned the abolition of fees in the upper primary classes of Village Elementary Schools, the lower primary classes being already free. A number of teachers were trained in Kindergarten principles and manual training, and it is hoped that in the course of a few years almost all schools in the State will provide training in Kindergarten or Sloyd. Industrial education is still in an experimental stage, and the expenditure of Rs. 81,215 on Industrial Education is comparatively poor. Though female education is popular, the total number of girls under instruction decreased slightly from 19,261 to 19,009.

Educational Progress in Japan.

The thirty-fourth annual report of the Minister of Public Instruction for the year 1906-07 has been recently published. The following information will be found useful by our readers. The total number of schools was 34,461 against 32,989 for the preceding year; therefore 1,500 new schools were opened. There were 27,269 primary schools, 281 lower secondary schools and 5 high schools for boys, 114 high schools for girls, 74 normal schools for boys and girls, 4,537 technical schools, and 2,093 schools of different denominations. The total number of pupils was 6,038,281, which is 250,000 more than that of 1905-06. The elementary schools were attended by 96 per cent. of the children of the country (98 per cent. of the boys and 95 per cent. of the girls approximately). This result, of which any country may be proud, has been attained by a steady and continuous progress, of which the following figures will furnish an idea. The percentage of pupils frequenting these schools was 27 in 1873, 51 in 1883, 59 in 1893, and from this year it rose rapidly till it became 93 in 1903. The proportion of boys and girls has remained sensibly the same during a period of twenty years. In 1873 the percentages of boys and girls were respectively 39·5 and 15; in 1895, it was 76 and 43. From this year the percentage of girls has risen rapidly and tends to become equal to that of boys; it became 50 against 81 in 1897, 58 against 84·7 in 1899; 70 against 90 in 1901, and 87 against 96 in 1903.

The school-going population is under the guidance of 139,561 teachers. This number is found insufficient, especially as regards the work in the primary schools in which every teacher has about 47·51 pupils to instruct. This average is lower than that of the previous year (48·63) and considering the rapid increase in the number of pupils this diminution is a sign of the serious effort made by the Government to cope with the educational question. The year also shows an increase in the number of free schools which rose from 1,792 to 1,920. This increase relates specially to technical schools and schools of different denominations numbering about 1,534; the great majority of these are only small establishments without any importance. The attitude of the Minister of Public Instruction is not in general favourable towards these free schools, especially as regards primary education. The report mentions more than 249 free primary schools, and the department is endeavouring to replace them by State schools.

Healthy reading for the Young.

What the young should be allowed to read is a subject whose importance cannot be too much exaggerated. In other countries this question has been tackled

with great vigour and determination. In England, the National Home Reading Union has done much good work in this direction. In Germany, a regular campaign is being carried on against the circulation of books and magazines of the sensational and exciting type. In Frankfort-on-Main, children's reading rooms have been established for the supply of wholesome and entertaining matter in much the same way as has been done in several of the public libraries in England. In Hanover, the headmasters of some of the higher schools have sent a circular to parents asking them to keep a watchful eye upon what their boys and girls read; and the Hessian Ministry is being urged to issue an order empowering school managers to forbid the children from entering shops where the pernicious trash is sold and to supply every boy once a week with an entertaining book. In spite of the many difficulties surrounding this subject, it seems to us possible that parents and teachers are in a position, if they will only take the trouble, to direct the reading of the young on right and beneficial lines. It is unfortunately only too true that there are few books of a satisfactory character in our vernaculars which can be unhesitatingly placed in the hands of the young.

Teaching of Elementary Mathematics.

In its circular the Board of Education suggests that "instruction in arithmetic should be made as realistic as possible". If this suggestion is adopted, the teacher must find practical ways of realising the meaning of questions in arithmetic and mensuration and of easy methods for their solution. How this may be done has been shown by Mr. J. Eaton Feasey in his book entitled *In the Open Air*. He begins with the straight line using as an example the work of the ploughman; then he proceeds to areas using as an illustration the carpeting of a floor, and next to the consideration of volume as exemplified in the building of a wall. Units for the measurement of time are then treated and this section is followed by elementary arithmetic and geometry of triangles. Some of the propositions in Euclid are then dealt with and these are followed by the determination of the heights of trees and buildings and of the width of rivers, which naturally involve the treatment of several elementary questions of plane trigonometry. The book closes with chapters on keeping records of the rainfall and on familiar examples of comparative weights and volumes. The author's aim is very practical. The lessons are to be given in the open air—in the field, in the public park, and in the play ground—and they are to be given in such a way that the children would understand from the very beginning the practical value of the steps they take and the results they arrive at. The photographic pictures in the book which show the children at work vividly place before the reader the author's aim and method.

Music in the Elementary School.

A valuable memorandum has been issued by the Scotch Education Department on the teaching of music in primary schools. Though no music may be taught in our primary schools, yet we think that the time will soon come when our teachers will feel the necessity of teaching music with a view to train the ear and then this memorandum will serve as a guide. Rightly the memorandum does not aim at prescribing in detail the course of instruction to be followed; any such scheme must necessarily be relative and cannot be fast and rigid. The authors of the document have therefore sought to formulate the general aim and purpose of musical instruction and the leading principles which should be kept in view. For school children vocal music is the only form of musical study that is possible during school hours, although instrumental music may form a valuable adjunct. But the teaching of vocal music comprehends the most fundamental and the most educative elements of musical instruction, such as the pitch and compass of children's voices, voice production, and the training of the ear. The folk-song is commended as the natural music food for the young, but with some necessary reservations. The songs of noble deeds and lofty sentiments, of nature in her infinitely varied phases, of man and his joys and sorrows, his hopes and fears, his work and his play, should be encouraged, while those of a ruder type, the drinking song, the love song, and the song that smacks of savagery should all be eschewed. The memorandum points out the chief mistakes that may be made, in the various branches of musical education and how they may be avoided. For this reason the document deserves the study of our readers.

Science teaching in Public Schools.

The Board of Education issued a circular of questions to seventy-one schools and on the basis of answers received from forty-six of them a useful pamphlet on science teaching in public schools has been prepared. The pamphlet says that science teaching has been revolutionised in recent years. In many schools the science staff has been augmented, and new laboratories and science class-rooms erected. Some of these new laboratories have been designed by specialists and are thoroughly equipped for science teaching. In every one of the forty-six schools there is at least one chemical laboratory and in forty-five at least one separate physical laboratory. When the systematic course is reached, experimental work is directly done by the boys in all schools, and the number of boys doing no laboratory work is said to be very small. Of the 1011 teachers employed in the forty-six schools 112 are virtually engaged in teaching science only. The total number of boys is 14,714; out of these 9 013 or just over 61 per cent. are receiving some instruction in science as part of their regular school course. It is said that even on the classical side there are few schools in which no science is taught. In no case is specialization allowed until a boy has reached the higher classes of a school.

Manual training

In all modern systems of education manual training is regarded as an essential and necessary accompaniment of theoretical teaching. In India teaching is at present too much on text-book lines and too little importance is attached to the qualities of self-activity and self-expression. There is a show of kindergarten work on the lines of Frœbel's teachings in our primary schools, but not even this show is kept up in the case of the older children. The results are indeed very disastrous. Children leave school with a lot of facts stored up in their memories, but the teaching has neither aroused vital interests in them nor has it imparted to them the power to find out facts for themselves, or to apply those they may have acquired to the circumstances of their daily life, or to use their hands. It is an established fact that manual dexterity acquired in early years tends not only to greater alertness in school work but to greater efficiency after the school age. An early training is absolutely necessary to attain a high degree of manual skill. This training should therefore be provided either at home or in the school. Under modern conditions the possibility of acquiring it at home is remote. Consequently provision must be made for it in every school curriculum. It is strange that the Government of India has done nothing in this direction. We think that

some definite steps should be taken to improve the kindergarten instruction in our infants' schools as well as to link up the kindergarten with the more advanced forms of manual training. It seems to us that the British Government has done in this direction not even that little which the Native States like Mysore and Baroda have done.

School Methods and Home life.

At one of the sittings of the National Health Congress which met this year at the University of Leeds the question of the relation of the education of children and the housing of their parents was discussed. The trend of the discussion was on the whole to regard the subjects as so closely related as to make them as alike as possible. Sir James Crichton Browne, a medical expert and scientist of worldwide reputation, presided over the meetings of the Child Study section and in this section great emphasis was laid on the necessity of synthetising the methods and aims of teacher and parent. It was rightly contended that "the school should be a glorified home rather than a palace of strange contrivances. It should show the child, and more especially the girl, what the home may be made, and not merely what a public institution can do with means which will never be within the ordinary child's attainment." The question seems to be one mainly bearing upon the duties of women and till Indian women receive proper education, it is not likely that the functions they perform in domestic and social life will be of a high order. Those that are engaged in the great work of national education ought to give all their attention to the important question of female education. Many other questions will find easy solution, if once this problem of problems be properly tackled.

Trade Schools.

The London Arts and Crafts Section of the Association of Teachers in Technical Institutions has passed a number of interesting resolutions with reference to trade schools. They press for the larger establishment of day trade schools for training boys in the principles and practice of the crafts. They urge that teachers in such trade schools should have had workshop experience and that they should not be debarred from appointment by any lack of academic or technical certificates, but that they should be men of reputation in some trade or profession other than the teaching profession. They desire the appointment of an advisory committee to each trade school, including representatives of both craftsmen and employers. They also urge that every parent, should he desire it, should be given the opportunity of providing training for his boy at a day trade school. This naturally demands the establishment of a larger number of trade schools as well as the provision of stipends and free scholarships. It is further contended that such training should be regarded as a period of apprenticeship, or shorten its duration by allowing the boy from the trade school to go directly into the craft. While such things are still wanting in England, it is not likely that the Government of India will do these for this country. The salvation of India would seem to lie in the hands of its own people rather than in its government.

Education in India.

It is gratifying to note that the question of Indian education received due attention during the discussion of the Indian Budget in the House of Commons. Mr. Hart-Davies, speaking with experience as an Education Inspector in India, urged the importance of providing more money for educational purposes. The system of education in India was, in his opinion, in a very unsatisfactory condition. It was not easy to see the remedy, but there was one defect which might easily be remedied, and that was the neglect to sufficiently enlist local interest. To secure any real reform it would be necessary to decentralize educational authority a good deal and to give a great deal more power to local committees. In India there were both Government schools and grant-in-aid schools. A large number of the latter were denominational, and the grant represented the secular side of the education given. He believed that that system might be extended a great deal and that it would be, if it were left to local management. Technical education was a crying want. Further provision for agricultural instruction was needed. Although some agricultural colleges existed, the teaching did not descend into the villages to the actual cultivators of the soil. He would like to see district boards have real authority over education and their funds helped by considerable grants from the Government. Mr. Laidlaw also regretted that a larger amount of money had not been devoted to education in India. Only fifteen per-cent. of the children in India are receiving education, and the money spent annually upon education by the British Government is only one rupee and ten annas per head. Mr. Laidlaw hoped that the time was not far distant when primary education would become compulsory in India. In this connection we may mention that the Native State of Patiala is preparing to follow the example of Baroda in providing free primary education for its people. While the Feudatory States are gradually adopting the principle of free primary education recognised as essential in all modern States, the British Government has done nothing in this direction. It looks as if the Government hesitates to place in the hands of the people such a formidable weapon as education. Would that a portion of the military expenditure were spent on education! England seems to have more faith in *Dreadnoughts* than in Education.

Infants' Schools in Italy.

An interesting experiment is being tried at Rome and Milan in instructing infants on neo-Frœbelian lines. The method is the invention of a lady doctor. It has been viewed with favour by the Government and has been put in operation by the building societies for the benefit of their tenements. The building societies have come to the help of the poorer classes to take care of their children while the parents are out at work during the day. In a number of large blocks of working-class dwellings, the building societies have set apart a large room and appointed a mistress who must live in the block. Children are taken from the age of two and upwards to six. They are given wood-letters, blocks of wood and weights of varying size, circles, triangles, shapes fitting into others—frequently in a series—and left to handle them, much in methods of their own devising, but under the superintendence of the instructress, whose chief business is to keep watch over all, and change the toy when any child is seen to be tired of the one it has. By the experience of feeling the shapes of letters and knowing them before they touch pencil or chalk, the children come to write with greater accuracy upon black-board or floor; and the production in writing of letters they know by feeling is not a labour but a pleasure. The attraction

of the school is so great that children frequently return to these schools, when they go to the Government school after passing at the age of six.

The moral influence of these schools on parents seems to be immense. Mothers, who leave their babies in the school room on their way to work, are satisfied that the children are in safe care till the time of work is past and they return home for meals. Fathers are said to take so keen an interest in the play-work of the children that they refrain from spending their evenings out of doors at the centres of gambling and drink. The result is that a general carefulness and tidiness pervades the whole block of buildings, lest they might be required to quit them.

The experiment began with three schools in Rome and one in Milan. Sixteen more have been ordered in Rome, and the Swiss Government have sent over an inspectress to study with a view to adoption. The success of the method as an educator and a beneficent influence on home life is said to have attracted the attention also of America.

The Health of School teachers.

In an article contributed to the *Medical Chronicle*, Dr. R. T. Williamson writes on the causes that are likely to impair the health of the teacher. The health of the teacher is liable to be impaired (*a*) at an early period of his or her career through the course of training at college, and (*b*) afterwards through school teaching and work under unsatisfactory conditions. At the training college the students' health may be impaired by excessive study, and this risk is greater at those colleges at which the students work for a university degree in arts or science in addition to the ordinary teacher's certificate. From the point of view of hygiene it is suggested that the degree must be taken first and the teacher's certificate a year after. Students who are very ambitious, and work specially hard for some prize or scholarship, who have to do other work in the evenings, who work absurdly long hours, who arrange their work badly and devote a large proportion of their time to one subject, and who do not work regularly suffer in health. After the period of training is over, when the teacher enters upon his profession, there are many causes of impairment of health. A common one is mental overstrain through the very long time devoted daily in teaching. In addition to the school work, there is often great mental strain caused by the correction of a large number of the written lessons of the pupils, which has to be done after school hours are over, in the evening, in the interval between morning and afternoon school, or in the play-time. Evening classes and private tuition, in addition to the daily school work, are causes of great strain. But many teachers in poor circumstances have to take this extra work. Private study in the evening for higher examinations, etc., is another great strain. During school hours also there is much mental strain when the classes are large. Loud speaking in noisy school rooms causes great strain of the voice. The bad ventilation of school rooms predisposes to phthisis and tubercular diseases. Working in defective light causes myopia. From a review of the diseases and affections from which school teachers suffer, the doctor is of opinion that many of these ailments are due, indirectly or directly, to the teacher's work. (1) Overstrain of the nervous system predisposes to neurasthenia, neuroses, several forms of headache, diabetes mellitus, etc. (2) Overstrain of the voice leads to various affections of the throat. (3) Overstrain of the eyes is a most important factor in the causation of myopia. (4) The bad ventilation of the school room, insufficient open-air exercise, over-work, and other unsatisfactory hygienic conditions associated with the teacher's profession, predispose to tubercular diseases.

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EXTRACTS FROM THE PREFACE.

BEFORE proceeding to say anything about the book. I must acknowledge my indebtedness to R. Littlehailes Esq., M.A., Professor of Mathematics in the Presidency College, Madras, and one of my former masters, who, at the expense of much time, has helped me in its preparation by making suggestions while it was in embryo as well as when it was in manuscript and proof, and who has been good enough to express the following opinion thereon.

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(Sd.) M. O. PARTHASARATHY AIYANGAR, *District Judge*.

TRIPLICANE, MADRAS, 1st July 1908.

VELLORE LAKSHMIDAVAMMAL has been known to me as a Lady Doctor for some time past. My son has been under her treatment for some time past on account of weak sight. He has received benefit from her treatment. From what I hear of her I am able to state that she possesses a good reputation for skill in treatment of eye diseases.

(Sd.) T. P. KODANDARAMA IYER, B.A., B.L.,
High Court Vakil, Triplicane.

The Educational Review

A Monthly Record for India.

VOL. XV. SEPTEMBER 1909. NO. 9.

THE VICISSITUDES OF THE PASSIVE VOICE.

WHEN a student of Sanskrit first meets with verbal forms like *vrinute* and *vrinotī* and learns that the former has a reflexive meaning but, in the case of the latter, the result of the action passes on to a person other than the subject and that the former is called in Sanskrit grammar an *ātmanepada* form and the latter a *parasmaipada* form, he infers that *ātmanepada* is a kind of reflexive or middle voice and *parasmaipada*, the corresponding active. But very soon he is undeceived. He notices that not all verbs have both forms, that some verbs are always *ātmanepada* and others always *parasmaipada*, and that the distinction in these cases is a purely formal one, as pointless and puerile as the distinction of "grammatical gender." The multiplication of noun and verb forms without any rational function or meaning is a self-inflicted torture which may help to accumulate grammatical *punyam*; but the English language has rid itself of such trammels though its European cousins have not.

As one goes on with his Sanskrit and notices that all passive verbs are *ātmanepada* (*e.g.*, *kri-ya-te*), his hopes revive of running to earth the meaning of this strange *ātmanepada*, this *self-ward-word*; but it proves a slip again, for he soon learns that in Sanskrit, the passive voice is another grammatical form without any consistent meaning. All verbs transitive or intransitive, have a passive voice and it is more orthodox, more gentlemanly to say 'by him it is existed,' *tena bhūyate*, than 'he is,' *sah bhavati*. Gradually it dawns on him that to the people who used Sanskrit language was not a tool but a toy, not a means of the expression of ideas but, as it were, a dress of the mind to be spread out with as much childish display of colour as possible.

Herein the genius of the Sanskrit language is at one with the spirit of all Indian art. In India, music is not the means of the expression of the varying emotions of the human mind, but affords the artist an opportunity to display his skill in conquering the limitations of his instrument—whether it be the human throat or a vīṇa or a fiddle. Music is all technique, all skill and no art. So in wood and metal carving, in poetry, in architecture, one cannot see the wood for the trees, the wealth of unnecessary, unmeaning, but skilfully wrought detail smothers out all soul from the work.

But the *ātmanepada* and the passive voice were invented long before Indian art developed this preoccupation with minutiæ. They are based on a fundamental characteristic of

the Indo-Germanic tongues—an unwillingness to image actions clearly, to distinguish sharply between the subject and the object of an action. That this tendency existed in early times is proved by the fact that though in Sanskrit a fairly scientific grammar was worked out in very early times, yet the idea of a 'grammatical subject' and a 'grammatical object' opposed to a 'logical subject' and a 'logical object' was not reached. '*Kartà*' is the doer and '*Karma*' the one affected by an action, whether the action is described in the active or the passive voice. '*Saḥ paṭam vayati*,' ('he weaves cloth),' '*tena paṭo viyate*' ('by him cloth is woven'); here the *karta* (logical subject) is either *saḥ* ('he),' or *tena* ('by him') and the object is either '*paṭam*' ('cloth,' in the accusative case), or '*paṭaḥ*' ('cloth,' in the nominative case), independent of the case of the noun. '*Tenachalyate*,' 'he moves,' lit., 'it is moved by him'; here '*tena*,' 'by him,' is *kartā*. This is called the '*Bhāve prayogam*,' the use of the passive voice in describing a state of rest and not of action, while the passive inflection, though so superfluously prevalent, has no name in Sanskrit grammar.

Every action of the kind that is described by a transitive verb, has two faces; it looks to the actor on the one hand and the object on the other; and if it is clearly imaged, it involves the realization of the fundamental distinction between ego and non-ego. Transitive verbs have, thus, an importance in metaphysics, because they alone make possible the distinction in consciousness between the active agent and the effect produced, between *me* and *not-me*.

Yet this fact—that every action has two handles which must be held apart in the imagination has not impressed itself strongly on the minds of the users of the Indo-Germanic languages. Thus, in Lat. "*Opinio* means both *opinion* (from the point of view of him who *has* it) and *reputation* (from the point of view of him concerning whom it is held); and the same is true of the English word *opinion* in Shakespeare." (Greenough and Kitteridge. *Words and their ways in English speech*, p.272). In modern English, too, this unwillingness to distinguish between the active and the passive, or rather, the transitive and the intransitive conceptions of actions is powerful; You can 'spatter blood upon the floor,' or 'spatter the floor with blood' and, itself, 'the blood spatters all over the floor.' '*Amor Dei*,' 'Love of God,' may be God's love for me or my love for God. In Sanskrit, *tasya kritam* may be 'his doing,' or 'the thing done by him.'

One of the chief results of this shuffling between the "subjective" and "objective" views of action is the extreme facility with which the object of an action can be turned into the (grammatical) subject of the verb that describes it. This ultimately led to the development of the impersonal passive, as in, 'it has been remarked,' 'it is well known,' 'it is said,' 'thus has been heard,' a feat possible in the Indo-Germanic languages but impossible in the Dravidian languages of Southern India. The passive voice in these cases enables one to refer to actions without committing oneself to a reference to the doer of the action—a form of speech very useful to the lawyer and the diplomat: but what it gains in convenience it loses in clearness. You can form a clear mental picture of somebody doing something, but the action without the actor is an abstract tion which can scarcely be imaged, 'the gift without the giver is bare.'

This passive construction, though not an unmixed blessing, is yet a legitimate development of earlier tendencies inherent in the Indo-Germanic languages but becomes a monstrosity when attempted to be forced on the Dravidian languages whose genius is opposed to it. Sanskrit has a special inflectional device, though no name, for the passive voice—the addition of '*ya*' to the verbal root and giving it the *ātmanēpada* terminations. Old English passive inflectional changes died before the English reached England, and their place was taken by a logical passive—that in which the object of a transitive verb is regarded as a subject existing in a state in which he undergoes an experience. 'He is killed by a tiger'; here 'he', the original object of the tiger's attentions is regarded as a subject in the state of undergoing killing. The English passive voice has thus travelled far from the Sanskrit passive voice where the object persists as an object in the imagination of the speaker and the passive form a mere 'elegant' variant of the active. In the English passive voice, the original action has lost its verbal nature and become an attribute, descriptive of the state of the person originally affected by the action, now the (grammatical) subject furnished with a grammatical predicate, 'is,' of course other than the predicate of the active form.

The genius of the Dravidian languages is peculiar in that the subject of an action so predominates a sentence that the sex of the subject furnishes the verb with gender-terminations '*avan vandān*', '*avaḷ vandāḷ*', '*adu vandadu*', '*vāḍu vachchināḍu*', '*adi vachchinadi*.' In all these cases, the fact that the verbs are inflected for gender shows that the subject and not the predicate is the predominant partner of the sentence. From this, one may, *primâ facie*, conclude that the passive construction, that in which the subject is negligible is impossible in these languages. As a matter of fact, one may spend all his life, trying to *hear* passive forms in Tamil or in Telugu, but he will never meet with them. It is against the genius of these languages. Even pandits—Sanskrit pandits of the old type, or English pandits that the University manufactures in such large numbers year after year do not use them in their talk, for we are less artificial when we talk than when we write and in natural Tamil or Telugu speech the passive construction does not occur.

But in the so-called grammar of these languages and in the books written by the pandits especially of the second type—barring the folk songs and other real poetry springing from the hearts of the people, there occurs prominently a form of the verb, supposed to be the equivalent of the passive voice of English and of Sanskrit. Before analysing that form, we might raise a preliminary objection that as the passive belongs both to the transitive and the intransitive in Sanskrit and as the passive of the transitive would be considered lunacy in English, as well as in Tamil and Telugu, no verb-form of the Dravidian languages can be reasonably equated to a Sanskrit and also to an English form.

The so-called passive voice in Tamil is an artificial form, invented by grammarians and used by pandits but notwithstanding such a frequent use, it has not stuck to the language, because being against its genius, it cannot gain the suffrages of the people. The sphere of language is a thorough going democracy, in which an aristocracy of caste, of learning, of wealth or of temporal power is absolutely impotant. It is said that the Roman Emperor failed to alter a single Latin verb inflection when he tried to do so by an impotent edict;

but a wit of the 18th century, was able to introduce the word 'quiz' in a single night into English. Changes in language depend for their adoption on a form of unconscious plebiscite. In the case of the passive voice an age-long "protection" by pandits has proved ineffective.

Let us now analyse this form of the verb invented in Tamil as the equivalent of the passive voice. When we say of a dog, '*Adu aḍikkappaṭṭadu*,' 'it was beaten,' *sah atāḍyata*, a mere inspection will disclose the fact that that the Tamil form partakes of the nature of a dodge; there is no real inflection as in Sanskrit; nor is there a change in the point of view as in English. Analysing it, we get *adu aḍikka paṭṭadu*; 'it, having beaten, fell,' *paḍu* (to spell it as we pronounce it), means 'to fall,' and hence metaphorically, 'to experience,' imagining experience to be a foreign entity falling on a man, or befalling a man, who undergoes it. Taking this sense of *paḍu*, our passive form means, 'it, having beaten, experienced.' Analysed thus, the unidiomatical nature of the sentence is evident. If expressed in idiomatic Tamil, it would run thus:— *nān* (or any other subject) *aḍikka adu paṭṭadu*, 'I beating, it underwent (the beating), It will be good Tamil to say, *adu aḍi paṭṭadu*, 'it underwent beating'; this is the proper Tamil for *saḥ atāḍyata*. The attempt to import the Sanskrit passive form into Tamil results in a monstrosity. The pandit imagines that Sanskrit is a perfect language and that other languages move towards perfection if they approximate to Sanskrit as much as possible. He does not know that different languages represent different mental structures (as it were) and the genius of Sanskrit is different from the genius of the Dravidian languages.

The same thing took place in Telugu; *adi koṭṭa* * *baḍḍadi* (* being used to mark the half-circle, *arddhānusvāramu*, which in Telugu writing marks a lost *n*). This is really *adi, koṭṭan, paḍḍadi*, 'it, having beaten, experienced.' The loss of *n* and its retention as the half-circle in writing is an eloquent testimony of the fact that the so-called passive is two whole words written as one and not an inflection of the verb in any sense.

Now in translating from Sanskrit or English into the languages of Southern India, it requires a slight exertion of the mind to find the idiomatic expression of an idea expressed in the passive form in the former languages. The pseudo-passive forms in *paḍu* are not only barbarous but absurd and it is not very difficult to avoid them, if translation were not by most people done quite as mechanically as school-boys do that stupid exercise called 'paraphrase,' by a mere substitution of word for word. This mechanical word-for-word substitution is a brain-killing work, but our children are trained to do it, because vernacular poetry cannot be taught otherwise. Whether any poetry that cannot be taught except by a word-for-word treatment is worth teaching at all in another question and does not concern us here. But the habit of thinking only of one word at a time and not of whole sentences or stanzas in literature classes is the main cause why the Tamil and Telugu prose books that are written for the use of school-boys are so charged with Sanskrit constructions and English idioms as to remind one of the knight whose speech

> "In loftiness of speech was rich;
> A Babylonish dialect
> Which learned pedants much affect:
> It was a party-coloured dress
> Of patched and piebald languages."

P. T. SRINIVAS IYENGAR.

ON THE TEACHING OF MATHEMATICS.

II.

IN order that a student may well understand any process, it is essential for him to know something of the *rationale* of those processes. The reason why in mathematics is no less important than the reason why in science, and it is regrettable to find that this is not so well recognised as it ought to be, nay, I doubt whether any teacher of mathematics in the High School classes recognises this at all. Let me take the most common process in arithmetic, multiplication.

In the margin, I have worked out two sums. The way in which the teacher sets himself to teach this is as follows.

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He asks the student to first multiply by 3, and then by 6. In the latter multiplication however, the student is asked to shift the first digit of the product one digit to the left, *i.e*, instead of inserting 2 under 1, he is asked to place it under 4. Again in the next example, there is a cypher previous to the 3, *i.e*, in the tens' digit of the multiplicand; and the student is asked to shift the first digit of the product one more place or two places to the left. "But why should I do this, I can as well place the 2 under 1." The teacher never cares to tell the student why this should not be done; and it never enters the student's head to question his master as to the propriety of the procedure dictated to him. The fact that merely mechanical questions as in multiplication are done quite well by the student reflects credit upon the teacher, not for his proficiency in making the student understand the work, but for his proficiency in drumming the procedure into the student's head. If the student is explained why the 2 should not be put under the 1, 99 per cent. of the drumming can invariably be avoided; and there should never be any risk of the student's blundering.

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Take another process, finding the H.C.F. The student is merely taught to perform a number of mechanical divisions, but why? Heaven and the teacher (?) only know. Such modes of instruction are surely not in consonance with the accepted modern tendencies, and it is highly useful and desirable for the pupil to be taught the reason why from the earliest stages.

In some cases, especially in Algebra, unless the student knows the *rationale* of the process, it is not possible for him to understand the same. The University have done well in introducing the principles involved in the solution of equations as a part of the curriculum, but it is a pity that they have not done so for all the algebraical processes. In this connection, I must also emphasise the fact that correctness of ideas is nowhere more essential than in mathematics. A simple illustration will explain how erroneous ideas may, inadvertently or otherwise, be instilled into the student's mind. When asked to work an equation in which the coefficients of the unknown quantity (or quantities) on both sides of the equality are the same, the student is taught to say that such an equation has no solution. *E.g.*, if the equation be $2x+7=2x-4$, the student proceeds as follows. Transposing, we get

$$2x + 7 - 2x + 4 = 0$$
$$\therefore \quad 11 = 0$$

which is absurd.

$\therefore$ there is no solution.

This is wrong. In such cases the student should be told that the equation has no *finite*

root. (There is a good deal of difference in saying that there is no root and that there is no finite root). If the graphs be drawn, they are parallel. The abscissa of the point of intersection of the graphs is the value of x satisfying the equation, and if the student's conception of parallel straight lines be modified a little, there will be no difficulty in making him understand that, in such an equation, x has an indefinitely large value called infinity and denoted by ∞. If at an earlier stage, the student is taught thus, it will be practically impossible at a later stage to persuade him that such is not the case.

A few days back I set the following question in a paper on Algebra for the VIth form.

"The prices of mangoes per hundred on certain dates are given in the table below :

Date—June.	1	4	10	12	18	25
Price of mangoes Rs.	5	7	6	4½	4	6½

Illustrate graphically.

Can you use the graph to determine the price at an intermediate date, say the 20th of June ?"

The answer given by all the students to the latter part of the question was in the affirmative. Such an answer could not have been given if the student had known the principle of continuity in a graph, *i.e.*, in order that we may find the value of the ordinate for a given value of the abscissa, the graph must be a uniformly continuous one, though not for all values but at least between certain stages of the abscissæ. Again in this case, we are not given sufficient data to enable us to construct a graph. What we are given is 6 unconnected points and for the sake of illustration, these points are joined by broken lines ; and unless we know something more, we cannot say that this series of broken lines is the graph showing the price of mangoes at any date. It certainly is not. From the data we cannot infer anything; and the utmost we can do is to plot the points and join them by broken lines. Any further inference that we draw from this quasi graph is unwarranted, and for aught I know the price might have been Rs. 2 on the 20th instead of Rs. 4-12 or so as given by some students.

My aim in giving this question is to point out the mischief that may be caused by the students being allowed to accumulate similar impressions. They are apt to run away with the idea that given a number of stray points they can construct any graph out of it. In one sense they certainly can, but not in the sense required by mathematics. A uniform relation is necessary. For instance, if in this example, the prices had been Rs. 5, 6, 7, 8, 9, 10 instead of Rs. 5, 7, 6, 4½, 4, 6½ as given, we would certainly be justified in forming a continuous graph with the given points and in inferring the price on the 20th. But as it is, we cannot do so.

There is one another thing which the student should be told, and this is that mathematics too has its limitations like any other subject. The branch to which this remark is applicable, so far as High School classes are concerned, is Algebra and in that to Factorisation. All the expressions which the student is asked to resolve can be resolved. The student is apt to presume therefore that any algebraical expression can be resolved, and is therefore quite likely to waste a good deal of time in trying to resolve expressions which couldn't be resolved. He must be told therefore that any expression cannot be resolved ; and that he is able to resolve all expressions set for him simply because his teacher or examiner gives him only such as are resoluble. Let him try, if he wants, to resolve $x^4 + y^2 + 1$. He couldn't and this could be proved quite easily. But if the student thinks the processes for resolution known to him to be infallible, he may waste hours and even days in attempting to factorise this expression without any result.

I have not been able to indicate anything more than the bare outlines of the subject but I will be so sanguine as to trust that what I have done will open the eyes of teachers to the necessity of a more rational method of teaching than is at present in vogue in these parts.

B. KRISHNAMACHARI.

MATHEMATICS.

[Conducted by B. KRISHNAMACHARI, M.A.]

THE following method of finding by inspection the cube root of an integral cube containing six digits or less, is furnished by T. SUNDARA RAO, B A.

The cube root must contain one or two digits. If the cube contains one, two or three digits, the root contains one digit ; if it contains 4, 5, or 6 digits the root contains two digits.

The cubes of the first ten numbers are :—

1	2	3	4	5	6	7	8	9	10
1	8	27	64	125	216	343	512	729	1000

Hence it is evident that the units digit of every integral cube is either the same as that of the cube root or its complement of 10, the former being the case for 4, 5, 6, 9 and 10.

To find the second digit of the cube root, we have only to see between which of the above cubes, the thousands of the given number lie.

To find the cube root of 380,017.

The units digit of the root is the complement of 7, *i.e.*, 3. The second digit is 7, as 380 lies between 343 and 512, *i.e.*, between 7^3 and 8^3.

QUESTIONS FOR SOLUTION.

78. [T. SUNDARA RAO, B.A.] Prove the rule for checking arithmetical calculations by "casting out the nines."

79. [T. SUNDARA RAO, B.A.] Take an integer and the integer formed by writing its digits in inverse order. Then

(1) The difference of the numbers is always divisible by 9 ;

(2) Their sum is divisible by 11 when the given number contains an even number of digits.

(3) Given the remainders after casting out the nines from the sums of all the digits of the given number and of all but one of the digits of the sum or difference, we can name the omitted digit without looking at the numbers. How is that ?

80. [From the "EDUCATIONAL TIMES"]. If in a triangle ABC, $2(3b^2 - 2ac)\cos A \cos C = (5b - 4c)(4c - 3b)\cos B$, prove that a, b, c are in H. P.

81. [B. KRISHNAMACHARI, M.A.] ABC is a triangle of area Δ. Another triangle $A_1B_1C_1$ is formed by joining the middle points of the triangle ABC ; $A_2B_2C_2$, is similarly formed by joining the middle points of $A_1B_1C_1$ and so on. Find the sum of all the triangles so formed.

82. [G. R. KAYE]

If $n = 4a + \frac{1}{4}$, $3a = 4b + \frac{1}{4}$, $3b = 4c + \frac{1}{4}$, $3c = 4d + \frac{1}{4}$, $3d = 4e + \frac{1}{4}$ where n, a, b, c, d, e are integers find the smallest integral value of n that satisfies the conditions.

A JUNIOR GEOGRAPHY OF INDIA,

BY MORRISON.

IT is significant that the first incident reported in the life of mother Eve is the attention she pays to the serpent 'which was more subtle than any beast of the field.' Man as well as woman has a capacity to begin at the wrong end. Various experiments and years of anxious waiting alone bring him to light, though the light when reached seems to be so clear and attractive that it is a wonder that it could have been missed for so long. Geography is to be read and understood in relation to the world and its inhabitants: but teachers as well as pupils, being of the human species, keep up the best traditions of the race they have the privilege to belong to, and have been very rarely reading geography with reference to the world or a representation thereof and man. Being misled by the prominent, the superficial or the immediate, man forgets the substantial, the deep or the permanent and errs, whether it is religion or geography that happens to be the subject of interest In most of the text-books we have, the political divisions—very attractively coloured on maps so as to mislead that a continent is the product of a few irregular squares or triangles arrayed in a particular order—are severally treated: and the author moves on, from country to country, in a manner which does not give an opportunity either to teacher or pupil to deduce any law from the operations of man or nature. In recent years, it has been acknowledged that radical changes were necessary in the handling of geography: and the book, just now before me, is a very satisfactory expression of the change of ideals in the teaching of the subject.

The most striking feature of the publication is the relegation of the political geography of India into a very unimportant corner: out of the one-hundred and forty pages in the book, not more than seven pages are devoted to the political geography. This is a very proper step, in a book meant for the Lower Secondary classes, but a bold one to make, at the present time, when political matter has, for long, been the main contents of all publications on geography. Mr. Morrison, the author also of a bigger volume on the subject, very deservedly popular in India, takes, in this publication, a bird's-eye-view of the Empire he writes on, and gives a succinct account of each of the several natural divisions of India —the mountain regions, the plane regions, the table-land regions and the seacoast-strips. A chapter is written on each of these heads: that, on the table-land regions of India, describes, for instance, the boundaries of the Deccan as may be read in a map, the drainage, the rivers, the crops, towns and trade. He does not consider that some of the towns or rivers, he writes about, are in different political divisions, but presents to us the natural region of the table-lands as a whole—as the same general principles operate upon the whole region—and make us see that similar causes lead to similar results. Most teachers are, perhaps, not aware of the depth of misery their pupils feel, on account of the pressure of the unintelligent jargon they are to master from year to year, and how much relieved and thankful they would feel, for an occasional dash of reasonableness in the facts or figures they have to deal with. Once, when I was explaining 'The Pacific Islands' to a fifth form at Trivandrum, I remember that, before we began the paragraph on productions, I asked the pupils to mention some of the productions of Travancore. For a few minutes, they would not mention any; for, thought they, that a reference to the productions of Travancore was uncalled for on the occasion or an enumeration of the well-known roots and fruits was 'vulgar'; but, after a time, one in one corner and another in another, blurted out, 'Rice, cocoanut, sugar-cane, teak, yams, &c., &c. The pacific products were then refered to: and the pupils were very much surprised and felt quite at home when they read in their text-book "German Islands; the chief exports are, copra and cocoanut fibre. Polynesia: bread-fruit, cocoanut and yams are the food of a great number of people. Fiji Islands: the chief products are sugar, cocoanuts and bananas" Explanation followed: and I shall never forget the gleam of pleasure that flashed on several faces in the class. Mr. Morrison's book is a series of sugar-coated pills. At every step the author takes particular care to excite thought. Regarding the productions of India, most of the books on Geography may say something like the following—"Products—Western Bengal: rice, oil-seeds, sugar-cane. The Madras Presidency: millets, gram, cotton and rice." It may suggest to an intelligent child that there is some Act of Parliament or Government of India ruling that certain plants should or should not grow in certain political divisions. But observations such as the following in the book under review cannot fail to excite thought in a class, provided that the teacher is not uncommonly dry or dull. "In the Ganges plains the ryot irrigates the fields from many rivers, canals and wells and so can grow paddy crops everywhere. In the Deccan he uses tanks and few wells and so on the whole, grows 'dry' crops such as millets, gram and cotton: but paddy only where he can make a tank or dig a well or get water from a river-bed." What a refreshing difference, the form of the statement shows, from the traditionary method!

Another successful feature is the human interest displayed in every page of the book. The want of such an interest is a very serious defect of most of the text-books on Geography. Reading through one of the text-books that are now in use, one does not feel that the earth we read about has, at any time or in any degree, been influenced by man. Tobacco grows in certain countries just as naturally as the Simoom blows in certain other countries. Paddy suggests as much of human agency as a stratum of laterite. This colourless presentation chills the imagination and distorts the vision of pupils. The Junior Geography presents very vividly the 'life' on the earth, the struggle for food and the energy of commerce. The section on 'What man has done' is a powerful instance of how commonplace and 'soul-less' matter may be made vitally interesting to pupils. A vein of 'life' pervades the whole book. Read for instance these few lines on Burma "River-ports and sea-ports: Burma has only become an important country since it came under British rule. In former days, it was badly ruled by its kings, so that, although it is a fertile country, the population is very thin. Even yet it is not thoroughly opened out by roads and railways. We can easily understand, therefore, why the towns of Burma have grown up at places where trade takes root most quickly, that is either on the rivers or on the sea-coast. On the Irrawady, there are many river-ports. The following should be pointed out on the map Myitkina, Bhamo, Mandalay, Prome and Henzada."

The main defect of Morrison's bigger edi-

tion of the Geography of India was, that the illustrations and maps were mostly unsuitable. It is very happy to find that this volume shows considerable improvement in the line. But more care may have been paid. I am afraid that, of the illustrations there are several that are not illustrative and hence may create an opinion in the child-mind that the illustrations in general in the book need not be carefully studied. Pupils being accustomed to what they consider to be useless material in the text-books, great care is necessary to avoid anything that may not be conducive to the grasp of some fact or other. Madras and its harbour (p. 100) Udaipur (p. 121)—these and a few others, I am afraid, will convey no idea to the pupil. Among maps also there are a few that may have been more striking. The Railway map of India and Burma is, for instance, a rather poor specimen. But such maps as the density of population with rainfall, Rangoon, &c., are very suggestive and may form the subject of several useful lessons. The Gangetic plain (p. 63) Burma (p. 107), &c., are very striking and impressive. There are over thirty maps in the book each of which is graphically illustrative of some fact or other and may be made the centre of attraction in the course of an intelligent reading.

This publication of Mr. Morrison is undoubtedly the best text-book on Indian Geography that has ever been published and being immensely suitable for the Lower Secondary classes for which it is intended will certainly be a great success which it so well deserves. Messrs. Nelson & Sons should be congratulated for the beautiful get up and the moderate price—as. 12 per copy—at which it is offered for sale.

O. M. Cheryan.

UNIVERSITY VAGARIES.

I.

THE conduct of higher education is in all civilised countries vested in a body or corporation, the guiding principle of such a policy being, that all matters affecting the interests of a true and liberal system of education might receive the calm and dispassionate consideration of the members of such a corporation and that affairs involving high issues might not be mismanaged by personal idiosyncracies or by acts of jobbery or weak mindedness. The organizers of Indian Universities seem to have scrupulously acted upon the consciousness of such a policy in maintaining the dignity of their deliberations, in the framing of rules for orderly conduct of their proceedings; in prescribing courses of study and text-books for the several examinations and last but not least in the appointment of suitable men as examiners, whose very name was a guarantee for the maintenance of the high standard, excellence and dignity of such examinations. But for sometime past, the lessons left by the learned predecessors seem not to have been duly borne in mind by some of their less scrupulous successors. We have no mind either to impute motives or cast any slur upon the good intentions and single-heartedness of purpose of the august members of the Syndicate. But, out of a deference and regard to the high and privileged position they occupy as the accredited trustees of national education and out of a fervent desire that the cherished institution should not fall below its honourable and learned traditions, we are constrained to point out that some of the recent instances of appointment of University Examiners do not tend to create a confidence in the public mind that

the University is an exemplar institution where at least, in conformity with its professions and principles, jobbery and favoritism could find no play. The way in which Examiners of the Madras University have been appointed for some years past, has created a general impression in the public mind that it is not above reproach and reminds one of the state of affairs in Tierra del Fuego and the Cannibal Islands, where we are told briefless Barristers are provided by their Senate friends with decent income by way of University Examinerships. In the days when Sir T. Muthuswamy Iyer presided over the Legal Faculty, Examiners in law were men, who had either ripe experience in the legal profession or men who were acknowledged experts in the subjects they examined. Men like the late Sir V. Bashyam Aiyangar, Messrs. M. O. Parthasarathy Iyengar, Ramachandra Rao Saheb, R. C. Mitchell, H. H. Shephard or P. O. Sullivan were not only eminent lawyers, but had also carried on a systematic, extended, and advanced course of legal studies before they were appointed Examiners. Although the M. L. Degree of the Madras University has been remodelled into four branches, each involving in itself a close study of the higher branches of Law, still some of the Examiners appointed in these branches of late have been and are men with no exceptional knowledge in the subjects they have been appointed to examine. Persons who have themselves only passed the B. L. Degree Examination have no claim and are disentitled to be examiners for a higher degree—the M. L.—unless they can be credited with possessing sound and deep knowledge of the advanced branches of Law. Will some of the gentlemen who have been of late selected to be examiners for the M. L., stand this reasonable test of efficiency? We think not. We have no desire to refer to particular names but it may be taken as an indication of the hollowness of a statement, unless it is supported by specific instances. Mr. P. R. Ganapathi Iyer, is only a third class Law Graduate, the extent of whose practice may be gauged by the circumstance that he accepted an Assistant Professorship in the Law College on a monthly salary of only Rs. 250. Can the University say for one moment there are not men with higher University qualifications and better knowledge in Law?—This gentleman is not only appointed an Examiner for B. L., but also for the M. L. Examination.

We learn that Mr. Salem S. Subramania Iyer, who commanded extensive practise in Salem, who held the post of the Government pleader there for a long number of years and who has recently settled in Madras, is also appointed an Examiner for the M.L. We have our own regard for him as a tactful and most successful mofussil pleader. But is it fair on the part of the University to expect him to go back to his legal studies to make himself an expert in some branch of law for the M. L. Degree, when he has attained an age to prefer an easy life?

The curriculum of M. L. studies now embraces an advanced study of the Roman Law, Jurisprudence, Mercantile and Maritime Law, International Law—Public and Private,—English Law of Real Property, Law of Mines, Foreshore, High Ways, and Hindu Law in its higher branches, and as such only experts could do justice to the curriculum as Examiners. But one thing appears patent, that it is very doubtful whether these gentlemen would have become Examiners but for the kindly offices of some of their Senate friends who are

reported to be most influential in the Syndicate and whose voice there, secures the success of their candidature for the University Examinerships. The extent to which favoritism finds scope in the choice of Examiners in other faculties is equally noteworthy. We learn that Mr. G. Venkataranga Row M. A., Secretary to the Land-holder's Association has been very recently appointed as the Chairman in Telugu. The gentleman referred to passed his B.A. in Philosophy with his optional language as Telugu in 1886 and his M.A. in Philosophy in 1888. It appears he was the Headmaster of the Pothamari High School, Kumbakonam, and subsequently for about a year a Philosophy Assistant in the Pachaiyappa's College and then Secretary to the Pachaiyappa's Charities and eventually Secretary to the Land-holders' Association, Madras. None of these capacities seems to have presented him with opportunities for the cultivation of his Telugu studies so that we must take it that the University must have been actuated by the high standard of excellence attained by him in Telugu language in his B.A. Degree Examination in the year 1886. And the University in fairness to the public would best secure the public confidence by publishing the marks obtained by him in Telugu in the B.A. Degree Examination of 1886. Mr. Venkataranga Row was appointed an Assistant Examiner in English in 1895 which ceased with that year. Again he was appointed an examiner in Telugu in 1903 and in this capacity also he was not continued for the succeeding years. The late Mr. Rungiah Chetty, B.A., was for a long number of years chairman in Telugu. With a profound knowledge of the Telugu language, he combined in him the rare advantages derived from being Superintendent of Vernacular studies in one of the foremost and leading institutions of the Presidency. Nor are men of acknowledged merit and of sound scholarship in Telugu wanting. Mr. Rama Rayaningar is a Master of Arts in Telugu well known as a reputed Telugu scholar, a member of a respectable family of Kalhasti Zemindari who had been an Examiner in Telugu for over ten years. Many other names could easily be suggested. The University have ever been careful that the Vernacular examinerships should be held by men deeply versed in the languages and of great general culture. At a time when the soundness of the policy of the appointment of even Pandits as examiners is doubted, it shows an utter disregard of the interest of all sound education to appoint persons as examiners whose attainments are not known to be of a high order. Another appointment belonging to the same category is that of Mr. Bavanundham Pillai a Chief Examiner in Tamil. The public have yet to know his exceptional proficiency in Tamil. There seems to be a wide gulf between the appointment of such men as the late Mr. Damodharam Pillai B.A., B.L., as examiner in Tamil and that of Mr. Bavanundham Pillai. We do not mean to cast any slur on Mr. Bavanundham Pillai, for what we know, he is an able, shrewd and energetic police officer and has distinguished himself in his own department.

A UNIVERSITY WELL-WISHER.

CEYLON ADMINISTRATION REPORT.

PART IV.—EDUCATION, SCIENCE AND ART.

THE Administration Reports of Ceylon, Part IV concerned with the Public Instruction of the Island present a continuous record of progress in the several branches of education. A noteworthy feature of the report is the marked success of the technical and industrial education as tabulated by the Director in A. 8 of the Report. It is particularly instructive to note that the number of girls attending Government and Aided Schools shows an increase of 8,250 over (the number that attended) in the preceding year. A step in the right direction which is worthy of the emulation of the Madras Government has been taken in the direction of subsidizing Public Libraries in all the important centres of the Island. No small credit is due to Mr. J. Harward, M.A., Director of Public Instruction for the high level of efficiency attained in the attempt of the Ceylon Government in furthering the cause of general and industrial education of the province. The sympathetic and energetic Director of Public Instruction will only be keeping abreast with the times if he strenuously exerts himself in the direction of restoring to the masses a free Primary Education.

A PRIZE DISTRIBUTION AT BARODA.

H. H. The Maharaja's Address.

The ceremony of distributing prizes to the successful students of the Baroda College and High School was performed recently by His Highness the Gaekwar of Baroda before a distinguished gathering. Mr. Clarke the Principal, read his report and in reply His Highness the Maharajasaheb said :—

THE PROGRESS OF THE SCHOOL.

Ladies and Gentlemen :—It is a great pleasure to me to be able to attend this very agreeable function of distribution of prizes at the Baroda College in the present year, and I sincerely appreciate the kind welcome which the College, through its Principal, has accorded to me. The progress of this institution,—the highest Educational Institution in my State—always enlists my sympathy : and it is a source of personal gratification to me whenever my many duties permit me to come among you, Professors and students of this College, on such occasions as this.

I have listened with much interest to the Report which Principal Clarke has read on the progress of the last year. He has referred to the new endowments which have been added to the College within the last few years, and I am glad to learn that men who are associated with this institution, or who are interested in the cause of high education in Baroda evince in this manner their desire to promote the welfare of the College. Encouragement is given to students in other ways also, beside the grant of scholarships. To provide education for poor but meritorious boys, the Principal is empowered to admit 10 per cent. of students free.

GROWING REQUIREMENTS.

Mr. Clarke has alluded to the growing requirements of the institution which necessitate larger room than is at present available. The precise extent of these requirements on some points, such as scientific education, will be ascertained by the Education Commission which I have appointed and over which Mr. Seddon presides. When the Commission submit their proposals, and other proposals come in due form, they will receive my attention, with due regard to financial considerations. In the meantime the boarding houses already built afford accommodation for over a hundred and fifty students, and I am glad to receive the Principal's assurance that the house built for a Resident Professor will be occupied before the commencement of the next term.

Sometimes when visiting these boarding houses, I wonder whether the students avail themselves of all the facilities afforded by these houses. They do not exist merely to shelter you, and to satisfy

your bodily craving for food and sleep, in as cheap a manner as possible. They give you an excellent opportunity to know one another, to broaden one another's views, and by social intermingling to polish off rough edges as it were. It can train you in mutual trust and thus break down the barriers of suspicion due to ignorance of each other's ways and manners of life. While you are yet unacquainted, differences on the surface are the only things you see, whereas if you but took the trouble you would find beneath that surface that you have hopes, aspirations and characteristics in common. It appears to me that among the younger generation there is even less of that healthy curiosity that seeks to know the character of the people around them, than there was a generation or two ago. I trust I am wrong; for mutual isolation would postpone and even nullify our efforts towards unity.

Study each other intelligently and sympathetically. Rid yourselves of your provincial and racial prejudices. Cast off without delay those harmful customs and superstitions which impede your progress. The Gujerathis and the Deccanis, the Hindus, the Parsees and the Mahomedans should all mix freely, and they will be astonished when they realise how greatly they had previously exaggerated the importance of insignificant differences; and how little they understood and appreciated their basic similarity and unity.

STUDENTS' TOUR.

Tours to different parts of India have been arranged, and I trust students in increasing numbers will perceive the great and real help which such tours afford to the education of the mind. I watch with much interest also the varying successes of our students on the cricket field; such games develop their physique and also teach them the high virtues of patience, endurance and fairness to opponents.

Lastly, I am much gratified to learn from Mr. Clarke's Report that the general behaviour of the students has been good during the year under the report, and that the results of the examinations have been eminently satisfactory.

But while I congratulate those students who have shown much aptitude for learning, and made such progress in different branches of knowledge, let me remind them, and all of you, that the highest and the noblest object of education is not the acquisition of knowledge itself, but the formation of character. The study of the world's literature and history is vain, unless it inspires you with aspirations towards that which is honest and true in life, towards the great and the noble. The pursuit of science or the knowledge of the laws of nature is vain, unless it moulds your mind in accuracy of thought and observation, in steadfastness of purpose and endeavour. And all the laborious studies to which you are devoting the best portion of your young lives will be to no purpose, if they do not make you better and abler men, stronger and more determined to perform your duty during the years which lie before you.

Look around you, and mark the successes of those who have distinguished themselves. You will find that it is not book-knowledge alone, but solid worth of character, which has led to their success. It is not the man deeply versed in the history of commerce and trade who has risen to be a successful merchant; it is the man of sober thought, of industry and of steady persistence, it is not the brilliant scholar who stands highest in Government service or in the liberal professions; it is the man who to a liberal education and strong intellect adds the higher virtues of conscientious work, courage of conviction, honesty of purpose and devotion to duty. Gather all the learning which schools and colleges provide for you; spend your young years in acquiring useful knowledge but let that learning and knowledge so mould your character, that you may turn out stronger and truer men, men of sound sense and good manners, better equipped for the battle of life which awaits you. For those of you who will thus profit by the education you are receiving success is assured in the future.

NEED FOR ACTIVE CITIZENS.

India has need of active citizens to-day. We

could profitably exchange much of our meditation, for Western activity. Metaphysical contemplation may be admirable 'per se.' But what we require is more of the study of the actual conditions of this life than of the future existence, if we are to hold a place in the van of civilization; and I trust that those who go forth, year after year from this institution will find careers of usefulness for themselves and of benefit to their country.

Steady, continuous progress has been the only true progress in the history of the world and the path of steady progress lies open in all directions. Foremost among our present needs is an improvement in the condition of the masses of the millions of cultivators and labourers who live in villages and towns. Some of the young students that I see before me may decide perhaps to settle down in the country as farmers, to adopt improved methods of agriculture, to start co-operative credit societies and to introduce in villages something of the civilisation of the age. Your example will leaven the cultivating classes, will introduce among them improved ideas of health and sanitation, and will help them to take an interest in the management of their own village concerns. More than this there is need for the subordination of individual interest to the interest of the community. I would rather say that it is of the utmost importance to realise that in order to further and safeguard one's individual interest—in order to make them stable and progressive in character the object can in no way be better accomplished than by furthering the public welfare. It is a mistake to suppose that corporate life must be at the expense of the individual. The welfare of the community as a whole is consistent with, nay more, it is dependent on the well-being and development of smaller bodies of sects and castes and guilds and of the full realization of individual capacities.

BETTERMENT OF THE PEOPLE.

If you can realise this principle, if you can achieve these results in a limited extent in your life time, if you can inspire the village population with the utility of common aims and endeavours, you will have gone a considerable way towards curing that social disintegration from which our country and our people have so grievously suffered. Those who have studied history to any purpose will know that in every country in Europe—in Germany, in France, in England, this work of elevating the humbler classes has been effected within the last century. It is your mission to help the Government in its efforts towards this amelioration. More than that, there is the enormous field open to you which is beyond the sphere of Government. I mean charitable and social work. The success of our endeavour to raise the educational standard of our women depends largely on your co-operation and encouragement in the home. It would be difficult to over-estimate the advantage that would accrue to the youth of India if their mothers and sisters were better equipped for influencing their impressionable years. Elevate the condition and lives of our villagers and you have a solid foundation for national greatness. Surely the success of the individual is not inimical to the well-being of the family. Improve the Cottage and you improve the Empire.

Passing from agriculture to industries and trade there is scope for persevering educated men in that direction also. There is a popular fallacy that it is less dignified for an educated man to occupy himself in business than in the professions. You have but to turn to the United States for example to see what little ground there is for this fallacy. Many more American graduates go into industries than do into professions. Happily more attention has been paid during the past generation to manufacture and trade. Cotton industry has sprung up in the large towns of Western India; and smaller industries are also attracting numbers of educated men. The *Swadeshi* movement which rightly understood, means a commendable and patriotic partiality for home manufactures, has also given a great impetus to manufacturing industries all over India. The Government of India and the Governments of different provinces are doing much to foster various industries and the people are responding to their call. Within my limited

sphere I have for many years, devoted my attention to this subject, and the extension of my railways, the encouragement given to Cotton Mills and other enterprises, the establishment of the Bank of Baroda, and lastly the recent abolition of Customs-duties will, I hope, facilitate the industries and trades of my State. After all a Government can but grant facilities; it remains for the people themselves to take advantage of those facilities and thereby raise their general status and well-being. What is wanted is patient application, prolonged preparation, and persevering effort.

LORD MORLEY'S REFORMS.

I have spoken of agriculture, industries and trade; but cast your eyes on the various learned and liberal professions, and young men of education and perseverence need not despair. No doubt the professions are overcrowded, and the path to Government service is somewhat circumscribed. But for all that no man with a sound mind and a stout heart need fear the lack of useful employment in India. As Government should not only identify itself with the interests and the legitimate ambitions of the people to better themselves but should also give a healthy direction to the activities of the rising generation, the sphere to usefulness must expand with the progress of the times. Obstacles which prevent the utilisation to the full of our talent will gradually disappear. The recent reforms of Lord Morley form a step in this direction. The British Government in India require the help and co-operation of the most talented sons of the country in the task of administration and legislation, and are to-day welcoming to a larger extent such help and co-operation. This is a wise policy fraught with great results in the future.

I believe the best form of Government is Government through the people themselves such as the village communities of India enjoyed from ancient ages. In modern times the State has assumed many of their functions and this centralisation of administrative duties has told on the village population who in the present day, are lacking in initiative, in self-help and self-reliance and in co-operative action. The best remedy for this is decentralisation. The people should be trained to look after their own concerns to a greater extent. How desirable it is that the villagers should undertake the sanitary improvement of the villages, the provision of wells, the laying out of roads, the management of schools, and the settlement of small disputes, civil and criminal, in their villages. It may be true that some of the functions instanced had not been exercised before by local Government bodies, but then Government in all its ramifications has become more complex, and includes within its scope the duty of satisfying many new wants. Among these new wants can be classed a large number of other functions which from their very nature could be best carried out by local bodies. Such delegation of powers if rationally carried out would form part of a complete system of decentralisation and representative Government. But the mere delegation of powers to villagers will not secure the object in view. A sense of responsibility must be ingrained within the people—they have to be taught to know what is good for them, and how to secure it; and this can be effected only by education and by long experience in administrative work. And it is for this reason that I lay great stress on the general Education of the masses.

POLITICAL UNREST.

But we sometimes hear it said that the progress of education is partly responsible for the feeling of political unrest. That there should be discontent is not necessarily an evil, for as education broadens men's ideas and as educated men will necessarily form high aspirations, which they will strive to realise, there will be a discontent with present conditions. A consciousness of the possibility of improvement is a necessary prelude to any advance. In fact, the absence of all dissatisfaction is symptomatic of decay. If any of this unrest has shown itself in the form of sedition, anarchy and crime, it is due not to education but to its abuse; for, when a system

of education leads to anarchy and crime that system is unsound. Crimes have been committed recently in India and in England, which have sent a thrill of indignation throughout the Empire and men whose lives were one long devotion to duty have fallen at the hands of criminal fanatics. It is obviously the duty of civilized Government to stamp out such crimes. To remove this new danger effectively—this tendency to anarchy and violence,—one must diligently look for its true explanation, and one must remove its root causes.

Fortunately, there has been no trouble in Baroda; sedition and anarchy find no place in my State and my subjects are peaceful, law-abiding and engrossed in their own occupations, I have been in close touch with my people during the last thirty years and no one has greater faith in their good sense than I have. I trust that the same good sense will keep them safe in the future from acts which are foolish and criminal, and that it will not be necessary for the State to adopt measures for their repression.

In the path of true progress based on sound and universal education, I hope to see my subjects progressing from day to day. I wish all students present here a happy career in life. Under the blessings of God, may their duties be pleasant and may their lives be happy.

OUR ENGLISH LETTER.

LIVERPOOL, *September* 1909.

The *Daily Telegraph* is giving its readers their annual opportunity. Their public suffers many things at the hands of the staff through the year, and why should there not be reciprocity in these things? This year it is Church and Stage. And as we turn to our *D. T.* we can see clerics drawing about themselves the cloak of exclusive sanctity, and actors denying any desire for an intercourse that is refused them. But the correspondence does not concern us, save as a mark of time. This is the time of the year, and such is our mental pabulum, despite the fact that the omnibus Budget is still being fought in the Commons by dreary members whose families are disporting themselves in sunnier climes. Here sunshine is at a discount: a fortnight in May and a fortnight in August—and for the rest the less said, the better.

Lord Hugh Cecil is not to be allowed a walk over. A competitor has entered the field, and he is Dr. Arthur Evans. It would be hard to say which candidate will be elected, it would be even harder to say which deserves to be elected. Their claims are entirely different. Dr. Evans stands for the letter, Lord Hugh Cecil for the spirit of Oxford. Academically, Dr. Evans is a worthy representative, worthier than his opponent, but perhaps Lord Hugh Cecil could better voice the sentiments and opinions of the typical Oxonian, hard to discover though that person be, nowadays. The next Reform Bill, by the way, is practically certain to abolish the privilege of Parliamentary representation which the older Universities have enjoyed. It would not be practicable to extend the privilege to the younger institutions, and their elders will have to suffer accordingly.

The Half-Timer is doomed. But not to immediate execution. Most of us thought he was dead long ago. But the agricultural and certain manufacturing districts permit his existence under certain restrictions. This state of things has continued so long that it is thought inadvisable to abolish it forthwith. But the Inter-Departmental Committee, which has for some time been considering the matter, advises the ultimate abolition of any half-time system. The minimum age for total exemption is to be not below thirteen, and this exemption is only to be granted for the purpose of really beneficial employment, and then only on the condition of attendance at an evening continuation school. That we should have to proceed thus cautiously in an attack on an undeniable blot on our educational system gives us another illustration of how slowly we must make haste to get reform. If only we had Lord Rosebery's clean slate, what marvels we could work. But as ever there is another side to all this. The refusal of half-time means the enforcement of double time. The State sees to it that the boy puts in full time at school, the parent sees to it that he puts in full time out of school. Many cases have recently come under our personal notice, in which the boy has done two or three hours' work before he goes to school and has to do the same or more after he comes home at night. Hard driven and hardly fed, the boy does not go to school in a fit state either of mind or body to profit by the instruction that is there given him. The State may do as it will, but so far the parent remains

the master of the situation. If we could only graft into him a little foresight and a little altruism, we might achieve something for his children. But so long as unskilled labour brings an immediate and proportionately considerable return, the father will clutch at the five shillings he sees his boy can earn, and is blind to the comfortable wage of the skilled artisan which he is rendering permanently impossible for the boy. And so John "carries out" for the shop at the corner, and his earnings cover his father's weekly bill for beer and tobacco. He has this job before he leaves school, and takes it over through the day when he has finished with school. It lasts for three or four years possibly, and then John is one of the unemployed, shortly to become one of the unemployable. We could educate the sons, but it is impossible to educate the parents, and the result is we have not yet had the chance of educating the sons. But elementary education in the modern sense of the term is young yet in England, and a few more years may see the working out of a gradual change.

You will have heard of the death of Sir Theodore Martin. In a very real sense he was a link with the past. His generation was not even the one preceding ours. He had seen Sir Walter Scott. He was contemporary with Thackeray. He was a friend of Froude. And he lived on into the twentieth century, and his life was much more than a living death. It would perhaps be too much to say that his sympathies were with our new ways and new ideas, but he understood them, if he did not accept them. He had made a romantic marriage, and the glamour of the first days had not faded. To his lady he was till her death a very perfect, gentle Knight. Literature represented only part of his strenuous life work, but it is as a man of letters that he will be remembered. The Bon Gaulties Ballads in which he collaborated with Aytoun made his name. The co-operation was a very happy one. Their styles so blended that Aytoun once wrote him a letter in which he said of a poem of Martin's that he would most certainly have claimed it as bearing the marks of his own composition, had he not unfortunately remembered that it was his friend's. But Martin's *magnum opus* was his Life of the Prince Consort. It took him fourteen years to write it. He had recourse to the most private documents. The Queen trusted him absolutely, and for years he was her confidant and adviser, and it is certain that she owed much to his shrewd counsel. He was indeed a great Victorian. His translations of the classics are known to all educationists. Nothing changes more than fashion in translation: there is a great gulf fixed between Pope Butcher and Lang: but his translations will continue to be known as some of the most successful of their kind.

It is announced that Mr. W. H. Hadow has been appointed Principal of Armstrong College, Newcastle-on-Tyne. This is a great loss to Oxford in general and Worcester in particular. Many Mods. men will remember his Logic lectures. Unlike most lecturers he was in no way tied to his manuscript and used to wander at large round the Hall while he lectured. It was impossible to sleep with his shrill voice in your ear: there was no music in it. If spy had caricatured him, he would have written underneath his drawing 'Logic and Music: this is a vulgar error.' The phrase used to occur every five minutes. His services to music at Oxford were very great. None was more versed in the theory and history of music, and in addition he was no mean performer.

Mr. Runciman has been speaking again on the General Education Policy of the Government. He has once more asserted that the compromise of last year will not be attempted again. The offer was refused and will not be repeated. This means that nothing further will be done in the way of legislation during this present Parliament. A few months ago this would have meant the maintenance of the *status quo* for another ten years. The Liberals seemed to have shot their bolt: the country was against them. But there has undoubtedly been a revival of Liberalism. The democratic Budget is popular in the country, and if the dissolution is not too far distant the Liberals will go in again. At any general election their assurances will need to be very definite and precise if they are to receive the Nonconformist vote on which they depend. Accordingly we may expect a very clear pronouncement of policy when they go to the polls, and, if they go in, the Lords will hardly be in a position to treat their measure as they have treated their previous proposals. Hence we may expect a settlement. But will it be a final settlement?

Ministers have never been more busy in receiving deputations or so busy in avoiding them: *cave feminas*. The secondary schools are afraid of the land clauses of the Budget and have laid their grievances before the Chancellor. As yet they have not received satisfaction, but we presume that they will, before the Budget goes through. It can hardly be the object of the Government to penalize institutions whose tenure of land works so much good to the community.

Their playing fields are at least as beneficial as the public parks. The good they do may not be so extensive but it is more intense. The battle of Waterloo may not have been won on the playing-fields of Eton, and Wellington may never have said that it was. But the school grounds have done something for us, and we hope Mr. Lloyd George is not going to throw them into the hands of the speculative building by putting on a financial pressure which the schools cannot withstand.

The Board of Education at any rate believes in physical exercise. They have just issued a revised syllabus. They have adopted the Swedish system of drill The children are to experience the joy, and embody the poetry, of motion. The drill is to be made recreative. Too frequently it has been punitive. (Your correspondent once was a master at a school where "drill" was the recognized term for punishment). Provision is to be made for the training of teachers as drill instructors. We hope the scheme will really be worked, because it ought to succeed, and achieve something especially for the girls and children. The War office has done something for the boys in encouraging—though not by direct financial aid—the formation of Cadet Corps. The old established cadet corps, mainly connected with the public schools, are now called Officers' Training Corps. The new cadet corps are connected with the smaller secondary schools. They are to be affiliated with the local Territorial Associations, and the War office is to supply a certain proportion of old rifles and side arms, and also ammunition for class firing at the butts. The *Spectator* has been singing the praises of these new regulations, and defends itself, as a supporter of universal compulsory service, against the charge of welcoming such palliatives as this. Mr. Strachey takes up the positive that every boy and man who has had this military training will become a zealous advocate of universal training, and so the great day is being brought nearer by every such step as this. But we have a long way to travel yet. Lord Roberts' appeals have fallen on the deaf ears of sceptics. Conscription is not yet in sight. And for our part we consider the German technical schools have more to teach us than the German army.

Oxford and Cambridge have not got the money for which their Chancellors have been pleading, and now an influential committee has been asking for money for an English University in China. Truly there is such a thing as the White Man's Burden, and our shoulders are broad. £50,000 is wanted to establish a really modern University in the Wuhan towns district where the great waterways and railway system intersect. Eight professors, four of them unmarried, are to be secured, and after the initial outlay an income of £5,000 a year will be wanted. This money will be forthcoming before Oxford and Cambridge have been satisfied: take our word for it.

Reviews and Notices.

ELEMENTARY MECHANICS OF SOLIDS AND FLUIDS, BY A. CLEMENT JONES, M.A., PH.D., AND C. H. BLOOMFIELD, M.A., B.SC. EDWARD ARNOLD. 4*s.* 6*d.*

In this book, the authors have adopted an innovation, and that a welcome one, in arranging the more elementary parts of Statics, Dynamics, and Hydrostatics so that they could be studied together. This arrangement will not only enable the student to grasp the connection between the different subjects but will also enable him to better understand each of them.

The authors have also attempted to discourage cramming, which is especially mischievous in a subject like mechanics. As the authors say in their preface "one of the chief reasons for the failure of so many pupils to grasp the fundamental principles of the subject is their misconception of the intention of book work. They are prone to take all results found as formulæ and the problems then become mere algebraical drill in substitution.* * * We have to a large extent developed the subject by numerical instances, boping thereby to make the pupils fall back on fundamental principles for their solutions." We are quite sure that the hopes of the authors will be realised, if only the students study the book in a proper manner.

Graphical work is introduced wherever possible and explained very well. On the whole the subject is treated in an excellent manner. The number of examples given for solution is quite ample, the proportion of illustrative ones being comparatively large.

We have no hesitation in recommending the book for all who wish to get a sound and thorough knowledge of the fundamental principles of mechanics.

PRELIMINARY MECHANICAL DRAWING, BY JOSEPH T. TRELEAVEN. LONGMANS, GREEN & Co. 1s.6d.

We recommend this book to all who wish to obtain a knowledge of preliminary technical drawing. Construction of regular figures with instruments, chiefly with set squares, adaptation of such figures to simple pattern drawing and coloured designs and drawing simple solids are well illustrated in this book, which also indicates how the knowledge of plane and solid geometry may be applied to the scale drawing of nuts, screws, bolts, &c.

The book contains a large number of excellent drawings, many of them being coloured. It is likely to prove especially useful to students of Engineering classes.

STEPMANN'S PRIMARY FRENCH COURSE. PART III. BY OTTO STEPMANN. MACMILLAN AND CO., LIMITED, ST. MARTIN'S STREET, LONDON. 1909.

This book completes Otto Stepmann's Primary French Course. The plan is the co-ordination of conversational, grammatical and literary teaching so as to lay a sound foundation for a thorough and practical study of French. The present volume is intended to be worked through in two years. We are sure that this part will be accorded the same favourable reception as the first two.

A SHORT HISTORY OF MODERN INDIA, BY V. RANGA CHARIAR, M.A., L.T. MADRAS: V. KALYANARAMA IYER & Co. 1909.

The author is of opinion that there is no book on *Modern India* which combines in it a style suitable to the Matriculation students and matter copious enough to satisfy the Madras University Examination. This book has been written with a view to supply the want. We consider it a useful compilation which will be found useful by those for whom it has been specially written.

THE GIRLS' SCHOOL YEAR BOOK, 1909. LONDON: SWAN SONNENSCHEIN AND CO., LTD.

This is the fourth annual issue of *The Girls' School Year Book* and forms a concise and comprehensive record of all matters of interest to parents, school mistresses and girls in connection with secondary education. The book is divided into two parts, the first of which deals with the leading Girls' Public Schools in Great Britain. The schools are arranged in alphabetical order of towns, and gives all details of interest to the public and the profession. The second part of the book deals chiefly with the future career of girls on leaving school. Copious particulars are given of various professions, and openings for girls. Miss A. Ravenhill, the well-known expert, has contributed a valuable article on Domestic Science. The book may with advantage be added to the libraries of all European girls' schools in India.

DIRECTORY OF TECHNICAL INSTITUTIONS IN INDIA INCLUDING AGRICULTURAL, INDUSTRIAL, TECHNICAL, COMMERCIAL AND SCIENCE SCHOOLS AND COLLEGES, COMPILED IN THE OFFICE OF THE GENERAL SECRETARY, INDIAN INDUSTRIAL CONFERENCE, AMRAOTI. AMRAOTI: OFFICE OF THE GENERAL SECRETARY, THE INDIAN INDUSTRIAL CONFERENCE. PRINTED BY RAMNATH BHAGAVA AT THE STANDARD PRESS, 1909. R1-4-0.

This is a very useful compilation for which the public must feel thankful to Rao Bahadur R. N. Mudholkar, General Secretary, Indian Industrial Conference and his able Assistant Secretary, Mr. C. Y. Chintamani.

DEATH OR LIFE—A PLEA FOR THE VERNACULARS, BY P. T. SRINIVAS IYENGAR, M.A., L.T. MADRAS: SRINIVASA VARADACHARI AND CO. 1909. As. 4.

We do not exactly understand to whom this little pamphlet is addressed. It is certainly beyond the comprehension of the ordinary man and seems superfluous for the scientific student of the growth and development of languages. The main point of the whole essay is that the written language should, as much as possible, approximate to the colloquial dialect spoken clearly. This is a truism which needs no special proof and the author seems to labour his point too much by a series of quotations from philologers. We fear that in spite of the various attempts to push them forward our vernaculars will meet with a very sad fate. In the struggle between the English language as the *lingua franca* for all India and as the language of the State and the Universities in India on the one side and the vernaculars on the other side, the odds in favor of the latter are very small. Instead of wasting one's energy on finding the methods of vivifying the vernaculars whose literatures contain almost nothing to advance the prestige of those that speak them, it would be better we think to find the means by which we could, at a swifter rate, make the English tongue the universal language of India.

Indian Educational Notes.

MADRAS.

THE following notification embodying a modified scheme for the administration of the Victoria Jubilee Hostel, Kumbakonam, has been ordered to be published in the *Fort St. George Gazette*:—

Under sub-section (2) of section 5 of the Charitable Endowments Act, 1890, His Excellency the Governor in Council is pleased to direct that paragraphs 1 to 8 of the second schedule to notification No. 37, dated 30th May 1899, published at pages 301—303 of Part I-B of the *Fort St. George Gazette*, dated 6th June 1899, as modified by notifications No. 19, dated 28th February 1901, and No. 30, dated 12th March 1906, published at pages 177 and 174 of Part I-B of the *Fort St. George Gazette*, dated 5th March 1901 and 20th March 1906, respectively, shall be cancelled that the following paragraphs 1 to 10 shall be inserted in the said second schedule and that such cancellation and insertion shall come into force on the 1st day of October 1909:—

The said Treasure of Charitable Endowments do and shall permit the Committee to be constituted as hereinafter provided to receive and to use and apply the interest and income to arise from and be produced by the Government securities specified in the first schedule above written and of any other securities for the time being vested in the said Treasurer of Charitable Endowments under these presents and also the said sums of Rs. 3,545-3-4 and Rs. 6,434-6-3 and also, if need be, the moneys to arise from the sale of all or any of the said Government securities or such and so much of such several moneys as shall be necessary for the erection, construction, maintenance, up-keep and preparation or enlargement of a students' hostel to be established at Kumbakonam in the district of Tanjore in the Presidency of Madras for all classes of students in connection with the Kumbakonam College and the building to be attached to such hostel and payment of the staff and establishment thereof and on other expenditure connected with the objects of the said hostel from time to time sanctioned by such Committee.

2. The management of the said hostel shall be entrusted to a Committee of seven persons subject to the general supervision and orders of the Government of Madras. Such Committee shall consist of—

(1) The Revenue Divisional Officer for the time being in charge of the Kumbakonam division who shall be the President of the Committee and in the event of an equality of votes at the meeting of the Committee shall have a casting vote;

(2) The Principal for the time being of the Kumbakonam College who shall be the Secretary of the Committee;

(3) The Subordinate Judge for the time being of Kumbakonam;

(4) A member of the Municipal Council of Kumbakonam selected by that body from among themselves;

(5) A member of the Kumbakonam Taluk Board selected by that body from among themselves;

(6) M.R.Ry. Krishna Rao, Ranganatha Rao Avargal, B.A. of Kumbakonam; and

(7) M.R.Ry. Narasimhachariyar, Krishnaswami Aiyangar Avargal, B.A., B.L., of Kumbakonam.

3. When a vacancy occurs among the members of the said Committee appointed by Government by name it shall be at once reported by the President of the Committee to the Government of Madras who will appoint a successor to fill the appointment. Provided that one of the two members so appointed shall always be a non-official.

4. The Committee shall meet at least twice a year: and the President shall have power to convene a meeting at any time after a week's notice.

5. At all meetings of the Committee three members shall form a quorum of whom the President shall be one.

6. The Collector for the time being of the district of Tanjore shall be an official visitor of the hostel.

7. The Principal for the time being of the Kumbakonam College shall also be the Warden of the hostel and as such he shall have entire charge of the domestic administration of the hostel and the expenditure of its funds subject to the orders of the Committee. He shall be assisted

by a Sub-Warden who should be a Hindu member of the staff of the Kumbakonam College.

8. The Committee shall have power to frame rules for the conduct of the business of the hostel not inconsistent with the rules sanctioned by the Government and a copy of all such rules when framed shall be submitted to Government for information.

9. The Committee shall make a thorough inspection of the hostel at least once a year and then prepare a report on the working of the hostel and submit it to the Government of Madras through the Director of Public Instruction, on the 15th of April in each year.

10. The Committee shall at all times conform to and abide by any rules relating to the administration of endowments under the Charitable Endowments Act 1890, which the Governor-General of India in Council, in exercise of the powers conferred by section 13 of the Act, may from time to time make, and in particular they shall from time to time submit to such public servant as the Government of India may from time to time appoint in that behalf in such form and at such times as the Government of India may from time to time prescribe, such abstracts of the accounts of the hostel and such reports as to other matters relating to the management thereof and the administration of its funds as the Government of India may from time to time require.

MR. Rammuni Pannikkar, M.A., of Madras, who went to Europe as a Government of India Scholar, has passed the London B.Sc. examination standing first in the first class.

THE annual distribution of prizes to the pupils of the B. G. M. Girls' High School, Calicut, took place recently.

THE Madras Government has given the Palghat Municipal Council a Provincial grant of Rs. 18,000 and a 4 per cent. loan of Rs. 20,000 towards the cost of constructing a building and a hostel for the Victoria College.

SOME time ago, the Government considered it unnecessary to make any special provision for the training of chauffeurs in the College of Engineering, Madras, and suggested that an examination might be added to the Government technical examinations for testing the qualifications of chauffeurs. They then requested the Director of Public Instruction to submit a draft of the necessary modifications to be made in the notification relating to Government technical examination. Since then, the Director of Public Instruction reported as follows:—"I regret that I have been unable to formulate a satisfactory scheme for an examination to test the qualifications of chauffeurs as to their ability to drive and to repair motor vehicles. I have on two occasions endeavoured but unsuccessfully to ascertain through friends in England how such examinations are conducted there. I consulted one of the firms in Madras but the difficulty of arranging for the practical part of the examination—the only valuable part—seemed insuperable. The large number of candidates and the high fee which they are prepared to pay render it pecuniarily possible for certain agencies in England to maintain cars to be thus experimented upon, the position is very different here in both respects. If the examination is to be carried out by the Commissioner for Government Examinations, specimens of two or three types of car should be procured and maintained for examination purposes. The only other method that I can devise for carrying out the wishes of the Government as expressed in the Government Order under reference would be to agree to accept the certificate given by certain firms. The setting of the formal seal of approval by the Government upon such a certificate seems to be of doubtful utility. In these circumstances, I have the honour to enquire whether the Government desire me to proceed further in the matter." The Government have now finally issued the following order :—"The Director of Public Instruction will be informed that in view of the difficulties set out in his letter read above, the proposal to institute an examination for testing the qualifications of chauffeurs and for granting certificates to those who attain a prescribed standard may be dropped."

THE Government have approved the proposal of the Director of Public Instruction that the Presidency College, Madras, should be affiliated to the Madras University for the Honours Degree Courses in branches I, II (*a*), II (*b*), III IV, V, VII and VIII. The Director of Public Instruction has been asked to inform the Syndicate of the University accordingly. This order is based on the following representation of the Director of Public Instruction:—"At the Conference of the Principals, Professors and Chief Lecturers of the Government First-grade Colleges held at the Presidency College in April 1907 to discuss the questions connected with the new University Regulations, it was resolved that the Presidency College should be affiliated for the Honours Degree Courses in branches I, II (*a*), II (*b*), III, IV, V, VII and VIII, and that the Kumbakonam and Rajahmundry Colleges should not undertake Honours Courses for some time to come. The Principal, Presidency College, reports that the Syndicate of the University have asked him to expedite the application for affiliation of the College in the Honours Courses. As the Honours Courses commence in July 1911 and as Government is making arrangements to that effect, I have the honour to request that I may be permitted to inform the Syndicate of the University that it is intended to apply for the affiliation of the Presidency College for the Honours Courses in the branches specified above."

MR. P. R. Sundara Aiyar, while at Calicut recently on professional business, visited the Zamorin's College, his old *alma mater*, and generously contributed Rs. 1,000 towards its Hostel Fund.

THE proposal to strengthen the staff of First-Grade Colleges in the Madras Presidency has been sanctioned.

THE Government consider that fees should be charged for private pathological work undertaken by the Professor of Pathology at the Medical College, Madras. The Director of Public Instruction has been requested to submit to Government annually a report on the amount of private work done and the fees earned by the Professor of Pathology and the amount credited to Government.

THE ordinary meeting of the executive Committee of the Muhammadan Educational Association for South India held recently was well attended, amongst others the following were present:—The Hon'ble Nawab Syed Muhammad Sahib Bahadur in the Chair; Khan Bahadur Waljee Laljee Sait, Raoof Ahmed Khan Bahadur, Messrs. Yakub Hasan, Mir Asad Ali Khan Bahadur, Haji Mohammad Hanif, Haji Mir Abbas Ali, Rahmatullah Veerji Sait, Haji Moulvi Ziauddin and A. Hammed Hason (Joint Secretaries). Two new members were elected and the Committee approved of the proposal of the Haji Committee of Bombay to charge a fee of four annas for each passport issued to pilgrims proceeding to the Hedjaz and to utilise the proceeds thereof in assisting indigent pilgrims to their home from Bombay and in affording relief to other deserving cases. Three new scholarships were granted for the current year and one B.A. student was granted his examination fee. The receipt of Rs 35 being interest on some of the Government securities was announced in the Committee. The donation of Rs.10 from Mr. Abdul Ghafoor, Sub Inspector of Police, C.I.D., Madras, given in aid of the Service Corps Funds, on the occasion of his marriage, was accepted with thanks.

IN their order reviewing the report (1908-9) of the Curator, Government Oriental Manuscript's Library, the Madras Government observe :—

The purchases made for the Library were far more numerous than usual. In making future purchases, the Curator will be requested to see that manuscripts in the Dravidian languages are not neglected in favour of those in Sanskrit, with which latter the Library is already somewhat disproportionately supplied. It is no doubt the case that 210 Tamil manuscripts were purchased during the year under review, but one-third of these dealt with the single subject of medicine. During his annual tours, the Curator should direct his searches towards manuscripts in the Dravidian languages as well as to those in Sanskrit. He will be requested to give in future, annual reports, statistics of the languages of works consulted by readers at the library, as well as of the subjects of them. In past years the purchases, again, have related chiefly to Philosophy and Religion, while History and Local Records, which the statistics show to be of considerable interest to the readers who use the Library, have been but little represented. Of the 757 manuscripts purchased in 1908-1909, 366 dealt with the former two subjects and only nine with the latter. Finally, seeing how largely the Library already consists of duplicates, the Government consider that in future additional copies of works already in the Library should not be bought from the small allotment available for new purchases except on special grounds, such as the excellence of their condition.

BOMBAY.

WE have elsewhere printed the interesting and instructive speech of His Highness the Gaikwar of Baroda delivered a few days ago on the occasion of distributing prizes to the successful students of the Baroda College and High School. His Highness has been giving his best attention to the problem of education and has made primary education compulsory in his dominions. The speech is well worth a careful perusal of all real educationists.

MR. Justice Chandavarkar recently addressed the students of the Government Law College before they dispersed for the autumn vacation. In course of a lengthy address the speaker observed that an honest study of law consisted not merely in mastering the principles of different branches of Law prescribed for the examination but also acquiring the true as distinguished from the false legal habit of mind. In conclusion, Justice Chandavarkar said, over-subtlety and over-technicality based by our prejudices and preconceived notions of colour, race or creed or caste are not true legal habit of mind. They do not constitute a legally-minded man. The lawyer who is over-subtle and over-technical and regardless of truth, may be a clever lawyer but, as Sir Henry Maine has said, a clever lawyer is but a poor third rate lawyer. He may flourish but his prosperity means poverty of the profession. He may prey upon his kind and suffer no loss, but he may, even as he does, often prosper but the profession, and through it the community of which it is part cannot. It is only in fiction that villain comes to end. In real life he not seldom dies in odour of sanctum but for sins of the society. The lawyer is meant to help the society in protecting its rights and redressing its wrongs. The lawyer's profession is a noble one, divine in its dignity and its duty. When you are engaged in study of law, bear this in mind and learn to acquire scientist's love of truth and literary artists' intellectual temperance in his habit of restraint and reticence and form saintly spirit of charity and the study of law will be a power for good high ideal. Some will say yes, "it is high." But if he falls below it, the lawyer becomes not a protector of the rights and redresser of the wrongs but a canker and curse of the society.

INFORMATION has been received that Benegal Narasinga Rão, who passed the last Cambridge Mathematical Tripos as 9th wrangler has successfully passed the recent I. C. S. Examination. He is the son of Dr. Benegal Ragavedra Rao of Vellore. After a brilliant career at the Madras University, winning a gold medal, as a double graduate, Mr. Narasinga Rao proceeded to England on the Government India Scholarship. At Cambridge he won the Major Scholarship of £100 a year. His elder brother, Mr. Sanjiva Rao, after a successful career at Cambridge has joined, with much self-sacrifice the Central Hindu College, Benares, where he is Professor of Science and Mathematics. Another younger brother, Mr. Rama Rao, who is also a double graduate of the Madras University has also proceeded to England and is at present studying at Cambridge with a view to compete for the I.C.S. The Benegals hail from South Canara and belong to a very intelligent family of Saraswat Brahmins.

THE Central Provinces and Berar Government technical scholarships tenable at the Victoria Jubilee Technical Institute, Bombay, are awarded annually to natives of the Provinces who are desirous of taking a course of technical training in textile industries at the Institute. Certain educational qualifications are required, and the scholarships which are tenable for three years ordinarily and may be extended to a fourth year are of the value of Rs. 30 per month and Rs. 25 per month, according to the qualifications of the selected candidates.

CALCUTTA.

IT has been proposed to hold annually an Educational Conference in connection with the Convention of the Indian section of the Theosophical Society. The first sessions of the Conference will be held at Benares this year in December under the presidency of Mrs. Annie Besant.

A PUBLIC meeting was held recently in the premises of the Puri Zilla School to consider what steps should be taken to remove the long felt want of a public library and reading-room at Puri. There was a fair attendance. On the proposal of Babu Dhanapati Banerjee, pleader, the District Magistrate, Mr. J. Clark, I.C.S., took the chair.

Babu Bidhu Bhusan Banerjee, pleader, Vice-Chairman of the District Board and President of the local Bengal Brahmin Association, explained

the object of the meeting. Babu Gopalandhu Das, pleader, proposed the establishment of a public library at Puri, which should be named after the President, Mr. T. Clark.

It was seconded by Babu Panchanan Ghosal, pleader. In doing so, the above-named gentleman especially dwelt on the antiquity, ancient grandeur and rising importance of the historic town of Puri. A strong executive committee was then formed with Mr. J. Clark, I.C.S., as President, Babu Atal Bihari Maitra, senior Deputy Magistrate, as Vice-President, and the proposer as Secretary, and some leading gentleman of the town as members. The meeting then separated.

On the 17th instant, a meeting of the executive committee was held and Babu Panchanan Ghosal was appointed as Assistant Secretary. A sub-committee was also formed to collect donations and subscriptions, Babu Surendra Nath Mittra, pleader and one of the Directors of the Puri Bank, Ltd., was appointed Treasurer of the fund. The donations up to date, amount to a little over Rs. 1,500.

THE Taltala M.E. School is on the road to efficiency and improvement. The school was visited by Prince Victor Nityendra Narayan of Cooch Behar recently, who was shown round the classes by the Proprietor, Babu Ashutosh Sircar, and expressed great satisfaction at what he saw. An illuminating address was presented to him by the students which was kindly accepted. The Prince was pleased to put down in the visitor's book that he was delighted to note the progress the school has made since it was started some years ago. It owes its present state, he was kind enough to note, "to the undaunted energies of all the teachers and above all to the Proprietor but for whom the whole idea might have been fallen through." In conclusion the noble visitor stated that he was delighted with everything he had seen, hoped the school would attain success in the future.

KHAN Bahadur Moulvi Abdul Jabbar, C.I.E., has been offered and has accepted the presidentship of the next Mahomedan Educational Conference, which meets at Burdwan on the 21st October and following days.

PANDIT Manohar Lal Zutshi, in the course of an article in the current number of the *Hindustan Review* on the Central Hindu College at Benares, complains of the ultra-orthodox principles which that institution encourages. "The authorities of the Hindu College," he writes, "have been no doubt disillusioned by this time but they are loath to give up the illusion which they have cherished so long. Hence it is that even today we see the trail of this mistake all over the institution. The section of the community to which the Hindu College appeals is no doubt rich, but it is played out and the sooner this unpleasant fact is realised the better it will be for the Hindu community and the Hindu College. The only two classes which can be roused to activity are the English-educated, who have been re-vitalized by the New Light, and the Sudras, who still possess a vast fund of latent energy which is waiting for the appearance of the master who will know how to utilise it." These are plain words but not plainer than were called for by the circumstances of the time. Mrs. Besant's view of the object of the College has shown a tendency to vary according to the character of the audiences she has been addressing. Now it was to revive the pristine glories of Hinduism, and, at another time, to help the formation of sound opinions on secular subjects. While we think that there is need for the spread of sound views on religious, social and political subjects, we think it is undesirable to mix up these questions as is often done now-a-days.

THE last issue of the *Sanjibani* publishes the following letter from the Registrar of the Calcutta University to the Headmasters of schools, dated the 3rd August last, "I am requested by the Hon'ble the Vice-Chancellor and the Syndicate of the University to invite your attention to the desirability, or more precisely, the necessity, of your making the fullest use of all legitimate means within your power to prevent the boys of your school from joining in political agitation or demonstration of any kind. The disastrous effects which premature meddling with Politics is sure to have on the minds and characters of young people, and how seriously it must interfere with the formation of habits of steady work and discipline, need not be dwelt upon at length; and it is known to all of us how sadly the prospects in life of many a promising Indian youth have been marred by such early misdirection of his thoughts and energies. There, however, is another aspect of the question on which a word may be said. The time evidently has come for teachers to make energetic efforts to check in every possible way, such conduct on

the part of the youths entrusted to their charge as might tend further to alienate valuable sympathies from the cause of higher education. There can be no doubt that the reckless rushing of School boys and College students into Politics constitutes at the present moment a grave danger to the advance of culture and prosperity in this country."

A MEETING of the Philosophical Society of the Calcutta College was held in the Philosophical Seminar, on Friday, the 27th August, at 3 p.m., with Principal H. M. Percival in the chair. The subject for discussion was, "The relation of morality to Religion" Two papers, advocating respectively the views, "morality is dependent on religion" and "morality can stand without any foundation in religion," were read by Srijuts A. Sircar, and G. K. Mittra. In the general discussion that followed, the following gentlemen took part:—Srijuts M. Chatterjee, P. Mukharji, K. M. Chandhuri, B. Bhattacharji, R. A. Subhan, and P. Sen. Among the Professors present, Dr. Mukherjee gave a discourse on the subject, which was followed by a nice little speech from the chair. With a hearty vote of thanks to the chair proposed by Srijut M. Chatterjee and seconded by Srijut P. Mukherjee, the meeting separated.

IT is directed that the Entrance Examination of the Calcutta University shall be recognized as equivalent to the Matriculation Examination of the Madras University and that the Government scholarships sanctioned for Uriyas shall be tenable at the Ravenshaw College, Cuttack. The Collector of Ganjam is requested to report on the question of prescribing a separate test in Uriya for certain appointments in the district.

PUNJAB.

THE Rajkumar College, Kathiawar, this term numbers 47 Kumars in attendance, the highest on record since the College has opened in 1871.

THE very important part the Mahomedan Anglo-Oriental College, Aligarh, plays in the intellectual development of the Indian Mussulmans gives much more than personal or even communal interest (says the "Times") to the circumstances in which Mr. W. A. J. Archbold, the principal, has definitely decided to adhere to the notice of resignation he gave sometime ago, on the ground of differences between himself and the honorary secretary of the Board of Trustees, Nawab Mushtaq Husain, respecting the internal affairs of the college.

The points at issue were discussed in the spring soon after the resignation was first tendered, at a conference between the Lieutenant-Governor of the United Provinces, Sir John Hewett, as ex-officio patron of the college, Mr. Archbold, Nawab Mushtaq Husain, and certain of the trustees, including their president, Nawab Sir Faiyaz Ali Khan. Among the reasons for resignation then formulated by Mr. Archbold were that the honorary secretary sat as a court of appeal to listen to complaints from students; that he interfered in respect to admissions to or exclusions from the college, claiming to be consulted before students were removed for disciplinary reasons; that he claimed the right to interfere in cases of disputed promotion, to settle the number of hours a professor should teach daily, and to negotiate with candidates for employment on the staff without reference to the principal. It was further alleged that the administration of the college was inefficient, great dilatoriness being shown in convening meetings of committees. The Lieutenant-Governor made a number of suggestions for composing the differences, but after various conferences with the trustees Mr. Archbold decided that his resignation, held in abeyance by request of the trustees themselves, takes effect, as he holds that the reservations made by them in respect to the compromise proposed by the Lieutenant-Governor do not ensure him the full internal control in matters connected with education and discipline to which he is entitled.

In a statement telegraphed to the Anglo-Indian Press after their last meeting, the trustees declared that recent events indicated no change in the traditional policy of Aligarh. This was not the first time that its leaders had taken an independant line in matters educational. Among the chief objects of the college, the implanting in the minds of the students of a just appreciation of the blessings of British rule and an admiration for the English character was one of the most important.

SIR Swinton Jacob recently paid a special visit to Allahabad to confer with the Buildings Sub-Committee of the University Syndicate and to inspect the site for the new university buildings. It is understood that he will shortly submit plans and drawings for the main block, which is to be more or less similar in arrangement to the Madras University Buildings.

The scheme includes three blocks and a University Hall which will be erected first and consist of a great hall, to seat twelve hundred people for such occasions as Convocations and five hundred candidates when used for examinations, a Law College and University Library. The University has about two and a half lakhs available for building purposes, and on a rough estimate the first block will cost nearly five lakhs. It thus seems highly improbable that much more than the first block will be accomplished in the near future unless some pious benefactor is discovered.

A DEPUTATION from the Aligarh College has been collecting subscriptions at Karachi for the establishment of a female Normal School at Aligarh for the training of women teachers from all parts of India. Rs. 40,000 has been collected for the building, which will be equipped with purdah arrangements.

A CLASS for teaching Sanskrit and Hindi to Mahomedans has been opened at the Darululum of the Nadwatulu Lama at Lucknow. Several Muslims desirous of acquiring a first hand knowledge of the Hindi and particularly the Arya Samajic scriptures have already joined the class, which is expected to fill rapidly. The popularity of the Sadwa has grown to such an extent that the State of Kolhapur has sent one of its Mahomedan subjects to Dur-ul-Ulam to complete his studies in Arabic and Persian. The student has been sent at State expense and will receive a stipend from Kolhapur.

MR. CORBIN, Professor of Agriculture, Lyalpore College, is understood to have resigned his appointment in the Indian Agricultural Service and to be proceeding Home.

THE burden of the money grants to schools for girls in Lucknow made by the Municipal Board has now been taken off their shoulders by the Department of Public Instruction, and thus the District Education Commiitee have been placed in a position to improve the existing schools and open new ones for girls. They have commenced operations at once, and two new schools are being opened.

ONE Mahadeo Prasad, a teacher of Chail School, District Allahabad, has, says the *Lucknow Advocate*, been arrested on a charge of selling a paper set up for the last teachers' certificate examination to students of Normal School, Lucknow. The fact of the sale of the paper was disclosed to the Inspector of Schools in May last who had taken severe notice of the conduct of the teacher who failed to give timely information. Two teachers were dismissed, one transferred and 35 students were rusticated for two years.

THE Matriculation Examination of the Punjab University shall in future be accepted as equivalent to the Upper Secondary examination or the Matriculation examination of the Madras University.

INDIA GENERAL.

THE Government of India has republished for general information its Proceedings, dated 8th December 1899.

Resolution:—The Secretary of State for India has brought to the notice of the Government of India that it not infrequently happens that natives of India, students or others, who have proceeded to England desire to obtain passports to enable them to travel to foreign countries in which the possession of a passport is necessary or desirable, and that difficulty often arises from want of evidence to show that the applicant is a British subject and therefore entitled to a passport. Appeals for assistance are also frequently addressed to his Lordship by destitute Indians who desire to return to their country and by students who, owing to embarrassed circumstances, are unable to complete their course of education.

2. In order to enable the Secretary of State to deal with such cases satisfactorily the Governor-General in Council has decided that it is necessary to press upon Indian students and others visiting England the desirability of providing themselves, before their departure from India with an authoritative certificate of identity, in the form appended to this resolution signed by the head of the district, in a Presidency town, the Commissioner of Police in the case of residents of British India

and by the Political Officer in that of residents of Native States. For a student the certificate should be signed by the Head of his last school or college and countersigned by the District Officer in a Presidency town, the Commissioner of Police or Political Officer as the case may be.

"THE Alleged Waste of Higher Education in India" is the title of a paper in the *Westminster Review* by the Rev. W. S. Urquhart, of the Scottish Churches College, mainly in reply to some articles that have lately appeared in Home journals. No one, says Mr. Urquhart, would pretend for a moment that the system of higher education in India is without its defects, or would attempt to deny the disadvantages under which it labours, or the difficulties with which it has to contend, but he maintains that there is no sufficient ground for passing a sentence of wholesale condemnation, or even for regarding the difficulties and disadvantages connected with the system as overwhelming. Analysing the objections, he finds that they assert that the medium chosen for the higher education is wrong, the subjects of study wrong, and the results disastrous. As regards the first, he asks what other language but English could be used. There is no vernacular which is in general use, and to translate the best modern text-books into the various Indian languages would, even if possible, be a task of great difficulty and expense, and in the end it would leave educated men in different parts of the country without the means of intellectual intercourse. Nor would it be easy to find more generally useful subjects than those which are already in the curriculum; even technical education can never serve as a substitute for the present system, for the practical and the theoretical must always go side by side.

WE are glad to be able to announce, says the *Tribune*, that the State scholarship of £150 for the scientific study of Sanskrit which the Government of India founded sometime back has been awarded to our fellow-townsman Pandit Prabhu Dutt Shastri, M.A., M.O.L., B.T., Professor of Sanskrit, Government College, Lahore. Pandit Prabhu Dutt has devoted a good deal of his time and energy to the study of Sanskrit and has steadily qualified himself, by taking the Diploma and Degrees in it, for the higher work of scientific and systematic study of the language on European lines. The scholarship was open to all the Provinces of India and it must be an additional source of satisfaction that at the very first start it has fallen to the share of the Punjab. We understand that Pandit Prabhu Dutt will proceed to Oxford in the first week of October where he will spend the main portion of his time finishing up with a few months in one of the German Universities. We wish the Pandit every success.

THE Rev. A. H. Francke, the well-known Tibetan scholar, who is exploring on behalf of the Archæological Department in the Rupshu district, on the borders of Western Tibet, has already made several notable discoveries. Amongst them is a whole library of manuscripts dating back to the Norman Conquest of England; also texts of a Treaty made in the sixteenth century between Bashahi and Tibet, and various pre-Buddhist hymns.

THE appointment of Agricultural Bacteriologist at the Pusa Agricultural Research Institute, recently vacated by Mr. Bergtheil, is being recruited for from England.

MR. K. R. Cama, the great Oriental scholar, died recently of heart failure at the age of 78. As a *savant* in Oriental research, he was well known in India and Europe.

THE Mysore Durbar have instituted an examination in Practical Agriculture, to be held annually in November at the Normal School at Mysore, beginning with the current year.

As it appeared to be necessary for Mr. K. Raghava Kurup of Cochin, who was selected for a technical scholarship tenable for two years in Germany, to undergo a course of preliminary training in tanning in India, arrangments have been made through the British Resident for affording the student every facility to acquire some theoretical knowledge of the industry and also practical instruction in tanning in the Government tannery under Mr. Cotton, Director of Industries. A maintenance allowance of Rs. 25 per mensem and a consolidated fee of Rs. 150 for a period of six months have been sanctioned by the Cochin Government.

A COUPLE of appointments have been made at Home to the Indian Education Service, and the officers will be posted in the Bombay Presidency.

MAJOR N. P. Sinha, I.M.S. (retired), brother of the Hon. Mr. S. P. Sinha, has written to his friends in India and desires it to be widely known that he will be happy to look after and help young Indian students in England and act as their guardian should their parents so desire. It will be remembered that he is a member of the Committee recently appointed to look after young students. The thanks of the community are due to him for this kind offer. All letters should be addressed to him, to 24, Florence Road, Ealing, London, W., or to the National Liberal Club, Whitehall Place, London, S.W.

REPORTING on the progress of education in India from 1902 to 1907, Mr. H. W. Orange, Director-General of Education in India, discusses discipline in Indian colleges, and says:—"the development of hostels, the establishment in them of supervising officers, and the enactment of stricter regulations concerning the migration of students, are the chief events affecting the ordinary discipline of colleges during the years under review. During this period, however, the colleges, together with the schools, have in some parts of India been brought under the disturbing influences of political excitement. The directors refer in general terms to the subject, and the only specific instances mentioned in any of their reports of indiscipline due to these causes relate to schools, not colleges. In general terms, it may be said that where there has been political excitement college students have partaken of it; that in some cases special efforts have been made by propagandists to infect college students with their views; that there may even be cases where colleges have acted as local centres of political movement; and that in some places both college teachers and college students have taken a part in political meetings, demonstrations, and agitation, which has caused Government to consider what should be the limits placed to the freedom of College teachers and pupils to engage in such movements. It has long been a rule in Madras for colleges under public management that no student shall take part in political agitation directed against the authority of Government; and in Bombay, after some disturbances in 1897, the local Government passed a resolution declaring that the instruction of youth should be wholly dissociated from politics, that as a consequence of this, teachers and professors ought not to take part in political agitation, and that Government would insist upon the observance of this rule in all institutions receiving aid from public funds. The Government of India have had the subject under discussion, and issued general orders upon it after the close of the quinquennium."

Foreign Notes.

GREAT BRITAIN.

FOR some years past, during the Long Vacation, lectures in elementary science for primary teachers have been given at Cambridge University. But this year, on the recommendation of the Board of Geographical Studies, it was determined to have a course on geography, and to invite secondary teachers as well as primary. The result was that the number of persons attending rose to upwards of one hundred, coming from all parts of England and Wales, and including several head-masters. The lectures have been given by Mr. H. Yule Oldham (King's), Mr. P. Lake (St. John's), and Mr. R. H. Adie (Trinity). In addition, some lectures on botany have been given by Mr. A. M. Smith (Emmanuel), assisted by Mr. H. H. Thomas (Downing). The course has been most successful. There have also been some interesting excursions, among others, one down the river to Wicken Fen, and another to Denver Sluice, besides a number of short botanical excursions in the neighbourhood of Cambridge.

£139,000 has hitherto been paid or promised to Lord Curzon for the Oxford Endownment Fund.

SIR ANDREW FRASER, K.C.S.I., writing in *Blackwood's Magazine* says, that he does not think it consistent with the interests of India that it should be necessary for Indian parents to send their sons to this country for education to the extent to which such a course is now necessary, and holds that it would be worthwhile to make a great effort, and even to spend much money, to complete in this particular direction the Indian educational system. An effort, he says, was recently made, the success, of which seemed assured, through the co-operation of a number of liberal leaders of Indian community, to found a college which would give a thoroughly sound education in the best climate in Bengal; and he earnestly trusts that this scheme will not be abandoned. Its initial cost and its subsequent annual maintenance would not be prohibitive, because there are many Indian parents who keenly feel the need for such

an institution and are willing to pay for it. Sir Andrew is also of opinion that the time is now propitious for providing in India the training in law, medicine, engineering, and the other learned professions which will enable Indians to take their place side by side with men from England. Recent events in this country have raised doubts in many quarters whether what England has done for Indian education has been altogether wise; and the views of Sir Andrew Fraser as an expert on questions affecting our great Eastern Empire are likely to win much sympathetic attention.

THE first honorary degree list of the University of Birmingham is a paper of more than passing interest. It has been decided to confer on Wednesday, October 20, the title of Doctor of Laws upon twenty distinguished persons, whose names will in turn reflect honour upon the university. Women will be represented by Mrs. Henry Sidgwick, Principal of Newnham College, Cambridge. Mr. A. J. Balfour, Mr. R. B. Haldane, Viscount Wolverhampton, Mr. Walter Long, and Mr. J. Chamberlain, Chancellor of the University, are notable names in political life. Mr. Andrew Carnegie shared in the initiation of the scheme which has now taken shape in the new University buildings. Dr. Warren, President of Magdalene College and Vice-Chancellor of Oxford University, is selected on account of the friendship which, in many different ways, he has shown to Birmingham University. Lord Strathcona stands for Imperial and Colonial services. The Bishop of Birmingham is a typical representative of activity in Church and State, and of the keen interest which so many modern Churchmen take in matters of moral, social, and industrial welfare. Lord Rayleigh is one of a group of scientists who have brought science down to the service of men. The Professor of Greek at Oxford, Professor Gilbert Murray; the President of the Royal College of Physicians, Sir Richard Douglas Powell; and Sir Joseph Larmor, Secretary of the Royal Society and Professor of Mathematics at Cambridge, are other chosen men of note. The whole list, indeed, is one which does credit to the selective power of the Faculties and the Senate, and to the consideration which they have brought to the task of its preparation.

MATTHEW ARNOLD:

SOHRAB AND RUSTUM

WITH INTRODUCTION AND NOTES

BY T. O. HODGES ESQ., B.A.,

Principal and Professor of English,

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The Educational Review.

Physical exercises for children.

The Board of Education has issued a Revised Syllabus of Physical Exercises for use in public elementary schools and in training colleges. The prefatory memorandum points out that it is not possible to secure a sound physique without physical exercise, even though proper nourishment, effective medical inspection and hygienic surroundings may not be wanting. In the case of children whose lives are spent in towns, physical exercise is indispensable as much for the development of the body as for the correction of the defects or evil habits induced by an unhealthy physical environment. The Swedish system of educational gymnastics, which is already in vogue in many European countries, forms the basis of the new syllabus. The exercises have been so chosen that they are adapted to children of school age and can be carried out effectively without the use of special apparatus. They have been arranged in appropriate progression with a view to the harmonious development of all parts of the body. If physical education is to produce lasting beneficial effects, it must be combined with freedom of movement and a certain degree of exhilaration. This fact has been recognised by the Board, and it emphasises that all lessons in physical exercises should be thoroughly enjoyed by the children. Hence to make the work less exacting the Board has modified in its syllabus some of the usual Swedish combinations and also introduced games and dancing steps into many of the lessons.

The memorandum points out in an introduction addressed to teachers that the purpose of physical training is not to fit the child to perform certain more or less difficult exercises, but to give him a stronger and more healthy body, and to aid him to approach more nearly to the ideal of perfect physical development. In infancy all that is required in the way of physical exercise is supplied by the natural free movements of the young child. But the restrictions imposed at school for purposes of organization and discipline stand in the way of the natural desire of the child for free movement. Hence the school must afford frequent opportunities for free movement in the form of play. The educational effect of exercises largely depends upon the acquisition by the child of habits of discipline and order, and of prompt and cheerful response to the word of command. The process of learning the successive steps strengthens the memory, and as the exercises become more advanced there is an increasing demand on the powers of concentration and initiative, and also on those of endurance and determination. The self-control and self-restraint as well as the co-operation and harmonious working with others, which are often called into play in physical exercises, help to foster unselfishness and to promote a public spirit calculated to be valuable in after-life. If properly taught, physical exercises should serve as a healthy outlet for the emotions, while the natural power of expressing thoughts, feelings and ideals by bodily movements is encouraged, a power which in ancient times received careful nurture but has tended to disappear under modern conditions.

Special breathing exercises are also provided for and it is directed that all children who habitually breathe through the mouth should be noted. Attention is also directed

to the various conditions which should be watched for, especially during the performance of the exercises such as breathlessness, signs of general fatigue, pallor and fainting.

Manual training.

At a meeting of the London Branch of the Educational Handwork Association, held at the Royal Society of Arts, Dr. Slaughter gave a very interesting lecture on "Manual Work as a means of Self-Expression". In the lecturer's opinion the present system of education is a decided failure. Education is not, as is usually taken for granted, a training, but getting experience in the best and fullest sense of the word. The object of education is a preparation for the occupations of adult life. Education means progress from infancy to the work of the adult. Just as a gardener does not do the growing for his plants, but only provides for them a suitable environment, hardens them and protects them against enemies, so must the school provide the child a number of proper environments, following each other in regularly graduated sequence and culminating at last in complete citizenship. The proper function of the teacher is the provision of opportunities. The natural function of the child is its play interests. The toy idea must be extended, and the toys must be approximated to the different ages of the children. In a properly graduated scheme this would culminate at the age of fourteen in the well equipped physical laboratory, its retorts and test-tubes being the toys at that period of school life. Hence the problem of modern education will find its solution in handwork. It must not be forgotten that the aim of handwork is not the acquisition of skill. If we aim at skill alone, we become mechanical, for skill is a habit. Technical excellence does not imply very much. It is a fact that people who never make mistakes are of the least value in the world. Technical excellence does not imply the ability to create in any original sense. The acquisition of skill always results from doing a thing over and over again. The boys and girls of thirteen or fourteen must be allowed to use their own constructive ability and not the ability to imitate others. Dr. Stanley Hall speaks of four kinds of knowledge. There is the knowledge derived from hearing, the knowledge derived from having seen something done, the knowledge derived from trying to do something oneself under the direction of some other person, and lastly, the knowledge acquired by one's having some end in view, and then setting about it himself in his own way. Surely this last kind of knowledge is the best, not to hear and repeat, not having an object lesson, not merely copying a model, but getting experience in the best and fullest sense of the word. The child should live as naturally at school as at home. Dr. Slaughter's views might seem very heterodox, but they contain ideals which each educationalist ought to endeavour to realise.

The place of history in Education.

Professor J. W. Allen, who occupies the Chair of Modern History at Bedford College, has given a highly interesting and lucid exposition of the function of history in education in his book entitled *The Place of History in Education*. According to Professor Allen, the aims and methods of the true scientific historian are as follows:

"He is concerned essentially and almost all the time with problems of causation. He must, of course, ascertain how things were superficially before he can even ask any question. But there are many facts and aspects

of fact with which he is not concerned at all. He needs facts only to explain other facts. What he is looking for is real relations—that is, causal relations. If he can find these, he wants no more; if he cannot find these, he has found nothing. A fact is only important to him because of its bearing upon something else. An event is only important so far as it has results, and the results of an event are, to him, an absolute measure of its importance. Everything to him is result first and cause afterwards, and so far as it is not cause it is unimportant."

If history is taught from this standpoint, the subject can surely claim a high place as an intellectual power. But Professor Allen does not put forward an equal claim for the practical value of the study of history. "The amount of 'practical usefulness' to be got out of the teaching of history is really minute. No doubt it may enable you to understand a certain number of references in books, newspapers, and conversation that otherwise would be quite dark. It may possibly enable you to understand why a certain class of people engaged in our educational controversies are called 'Cromwellians.' It may throw a humorous gleam upon some picture in the Royal Academy. It should certainly help you to appreciate the value of political references to 'feudalism' and of much current talk about the 'lessons of history.' Possibly these in their small way are practical values. Any real knowledge of history will certainly help you to take a rational view of current politics and of social and economic questions of the moment. But is this of practical value? If you are to be a professional politician, it may be doubted whether a knowledge of history will not be a positive hindrance to your career. Your references, your arguments drawn from history will be much more sharply pointed if you know next to nothing about it, than they can be if you have any appreciation of the elusive, complex reality. And if you have attained to the scientific point of view in matters historical, you will certainly never fit in nicely with any political party. So that, on the whole, we may conclude that the teaching of history can never to any serious extent become a part of technical education. Our questions, Why do we want to teach history? and, Why do we want to teach anything? must be considered without any reference at all to that kind of education. We do not want to teach history in order to enable people to understand journalistic allusions."

Research and Education.

The inaugural address of Prof. Sir J. J. Thomson, M.A., LL.D., D.Sc., F.R.S., at the meeting of the British Association at Winnipeg, contains many points of direct interest to the educationist. The President laid stress on the deleterious influence of scholarships. "The premature specialization fostered by the preparation for these scholarships injures the student by depriving him of adequate literary culture, while when it extends, as it often does, to specialisation in one or two branches of science, it retards the progress of science by tending to isolate one science from another. The boundaries between the sciences are arbitrary, and tend to disappear as science progresses. The principles of one science often find most striking and suggestive illustrations in the phenomena of another.....Again, the specialization prevalent in schools often prevents students of science from acquiring sufficient knowledge of mathematics; it is true that

most of those who study physics do some mathematics, but I hold that, in general, they do not do enough, and that they are not as efficient physicists as they would be if they had a wider knowledge of the subject.....The physicist who is also a mathematician possesses a most powerful instrument for scientific research with which many of the greatest discoveries have been made. Multitudes of the duplication of physical discoveries by mathematics could be quoted."

In this connection Sir J. J. Thomson drew attention to the indebtedness of pure mathematicians to the study of concrete problems for the origination of their most valuable conceptions. Whatever powers a man may possess, develop only when he tackles some definite difficulty. This is true even for school boys and school girls. The moral to be drawn from this is that the education given in schools should be made as little bookish and practical and concrete as possible.

"It is possible to read books, to pass examinations without the higher qualities of the mind being called into play. Indeed, I doubt if there is any process in which the mind is more quiescent than in reading without interest. I might appeal to the widespread habit of reading in bed as a prevention of insomnia as a proof of this. But it is not possible for a boy to make a boat or for a girl to cook a dinner without using their brains. With practical things the difficulties have to be surmounted, the boat must be made watertight, the dinner must be cooked, while in reading there is always the hope that the difficulties which have been slurred over will not be set in the examination.

"I think it was Helmholtz who said that often in the course of a research more thought and energy were spent in reducing a refractory piece of brass to order than in devising the method or planning the scheme of campaign. This constant need for thought and action gives to original research in any branch of experimental science great educational value even for those who will not become professional men of science. I have had considerable experience with students beginning research in experimental physics, and I have always been struck by the quite remarkable improvement in judgment, independence of thought and maturity produced by a year's research. Research develops qualities which are apt to atrophy when the student is preparing for examinations, and, quite apart from the addition of a new knowledge to our store, is of the greatest importance as a means of education."

Moral Education in Schools.

In a communication to the Educational Science Section of the British Association at its recent meeting, Prof. L. P. Jacks, the editor of the *Hibbert Journal*, discusses the *pros* and *cons* of moral education in schools. We shall give here some of the salient points in the paper. The virtues cannot be taught one by one to young minds, nor can morality be made one among a number of set subjects. All attempts to teach the virtues departmentally will probably fail to produce moral action when the subject of such teaching is confronted with the actualities of life. In education morality can be only the name of a method which should dominate the teaching of all subjects rather than an independent subject in isolation from the rest. Every attempt to teach the virtues to the young according to a fixed pattern leads inevitably to reaction against the idea of morality. The value of teaching can be measured only by the kind of re-action which it provokes in the mind of the taught. The greatest danger of the teaching of morality in schools lies in the fact, that the teacher cannot control the re-action of his pupils' minds. The proper task of the teacher is to present to young minds the facts of their environment in such a light that these facts themselves when so presented become incentives to moral action. All teaching must be dominated by the idea of an "end" which by becoming a principle, co-ordinates the purposes of life. No fact is truly explained until some element of ideal worth has been shown to exist in it. To show this is moral education. The demand for direct exposition of the moral law in schools has an unwelcome aspect in so far as it implies an anxiety on the part of parents to escape from responsibility. In the matter of moral teaching the school can never replace the home. These are points on which we have incessantly laid stress.

The State in English Education.

Professor Sadler, of the Victoria University of Manchester, has lately been delivering lectures to the University Extension students at Oxford upon "The Growth of the Authority of the State in English Education." No one in England is better qualified to undertake such a duty. Prof. Sadler carefully points out how the State, acting through Parliament, or the central departments, or local authorities, has been successful in many and varied ways, notably in the educational claims of girls and women and in the provision of educational opportunity for promising pupils whose careers would otherwise have been hampered by poverty. But Dr. Sadler also unhesitatingly affirms that England has comparatively failed in not a few of the applications of State control to education. To substantiate this charge he points out that it has tolerated excessively large classes in the elementary schools—it has failed to realise the unity of National Education and the interdependence of the work of the elementary and lower secondary and technical schools and has ignored the educational needs of adolescence. Professor Sadler seems to us to be eminently just and fair in his lines of criticism. His contention that the State has been dilatory in adjusting education to the needs of industry and agriculture is pre-eminently true of the State in India. The Government of India has almost done nothing to improve by education the economic condition of the masses of the people in India.

The Gaekwar on Education.

The ceremony of distributing prizes to the successful students of the Baroda College and High School took place on the 10th instant with H. H. the Gaekwar of Baroda in the chair. In reply to the report of Principal Clarke the Gaekwar made an interesting and elevating speech. Two points in the address are of great importance in the present circumstances and need to be emphasised unceasingly. "India has need," said His Highness, "of active citizens to-day. We could profitably exchange much of our meditation for Western activity. Metaphysical contemplation may be admirable *per se*. But what we require is more of the study of the actual conditions of this life than of the future existence, if we are to hold a place in the van of civilization." No better plea can be urged for the spread of scientific and technical education. His remarks on the widespread political unrest in the country are wise. "That there should be discontent is not necessarily an evil, for, as education broadens men's ideas and as educated men

will necessarily form high aspirations, which they will strive to realise, there will be a discontent with present conditions. A consciousness of the possibility of improvement is a necessary prelude to any advance. In fact, the absence of all dissatisfaction is symptomatic of decay." The reason put forward by His Highness for the general education of the masses ought to receive sufficient consideration from the British Government of India. "A sense of responsibility must be ingrained within the people—they have to be taught to know what is good for them, and how to secure it; and this can be effected only by education and long experience in administrative work." (Elsewhere the speech is reproduced *verbatim*).

The Teaching of Mathematics.

At the direction of the International Congress of Mathematicians which met at Rome in April 1908, a Commission to investigate the teaching of Mathematics has been formed. The scope of the work includes all schools in which mathematics is a subject of instruction, from primary schools to the university. The Commission will have to examine the plan of studies, the systems of examinations, the methods of teaching, the preparation of teachers, laboratory methods in mathematics, the correlation among the different branches of mathematics, and the correlation between the purely mathematical and the applied branches not only with regard to existing conditions but also with a view to ascertain the tendencies shown by the changes effected in the last two decades. The aim of the Commission is not to propose programmes which should be adapted to all countries but rather to suggest those general principles which should inspire the teacher.

For fifty years movements to humanize the work of the schools have been in progress. The aim of these movements has not been simply to humanize the work in the sense of making it correspond to the work of adults, but rather to vitalize the instruction by using material real to the child at his stage of development. Education is no longer recognised as a preparation for life, but as life itself. Hence the aim of the school is life in the largest sense, and the teacher's function is coming to be recognised as the development of high ideals of living. From this standpoint there can be no distinction between cultural and utilitarian aims.

The reforms in mathematics must be in harmony with the changes now taking place in other subjects. Rational study of the child leads in all kinds of work to arithmetical problems which effect a correlation between nature study, geography, history and mathematics. The course of arithmetic has to be abridged with an earlier introduction of algebra. Complicated exercises which obscure fundamental principles ought to be cut out and simple exercises which emphasise the reasoning must be substituted. Mathematical thinking, as required by life, ought to be cultivated in the study of mathematics.

Religious Instruction

We are at one with Professor Rein of Jena, the most honoured name in the world of pedagogy, in thinking that the function of the school is to develop religious sentiment in the young rather than to supply them with formulae. Prof. Rein lays down the following principles for the reform of religious instruction in schools:—(1) Religious instruction in the school should be put entirely on a historical basis. (2) The teaching of the catechism has no place in the scheme of study for the school; it is a matter solely for the church. (3) Neither the amount of matter which is presented nor the number of hours allotted to the instruction is of any great moment. Little in this case may mean much; it is in excess that the greatest danger to religious instruction lies. (4) The school of true education should tolerate no examinations in religious instruction; least of all ought religion to be made a subject of the Leaving Examination. (5) If religious instruction is governed by these rules, opposition between home and school is abolished, and the teacher gets pleasure, not pain, from his work; he is free to cultivate the religious interest of the child and the constraint of a prescribed belief is abolished.

The Matriculation Inquiry Committee's Report.

The report of the Committee appointed by the Syndicate of the Madras University in the early part of 1908 to investigate the causes of the large number of failures occurring year after year in the Matriculation examination has been sent to all recognised High Schools. The report summarises the causes of failure under the following sub-divisions: (1) Defects in high schools and classes. (2) Disabilities of candidates due to the exotic character of the course. (3) The nature and conduct of the examination. (4) Other causes such as arrested development. Under each of these heads the committee makes certain specific recommendations, on such defects as are in its opinion of sufficient importance to warrant some action being taken in the immediate future and which can be remedied by regulation. Stress is laid on the provision of well-trained teachers for the lower as well as the higher forms, carefully considered promotions, adequate supply of apparatus, all possible means to meet individual needs of pupils, provision of time in school hours for preparation work, vacations of more equal length, the enlistment of the sympathy of parents and guardians in the intellectual welfare of the pupils, the discouragement of every outside interference with school routine and discipline, the maintenance within the schools of a high moral tone and proper discipline, the addition of another year to the high school course, offer of inducements to those entering the teaching profession to undergo a preliminary course of training, the reduction of the number of compulsory subjects and the introduction of optional subjects, the introduction of optional questions into the mathematics, science, history and geography papers, and the conducting of the Matriculation examination by a special Board, on which the high schools are directly represented. All these suggestions are good in their own way, but we fear all these will not remedy the defects which are naturally concomitant to public examinations. The trend of opinion in all civilised countries is adverse to the holding of public competitive examinations, as these are in no way real tests of merit or of capability of success in the future.

Female Education in India.

The following culled from the statistics just published relating to education in India will be found of much interest by our readers. The total number of scholars in public and private institutions in British India in 1907-08 was 5,711,485, or an increase of 1,353,664 in the last decade, being at the rate of 31 per cent. Of this total aggregate only 711,375 were female scholars. Poor as this figure is, it is still encouraging to note that the in-

crease in the case of female scholars is at the rate of 78 per cent., while the increase in the case of male scholars is only at the rate of 26 per cent. It is also noteworthy that while 17 per cent. of the total number of male scholars are undergoing higher education, 11 per cent. of female scholars are seeking higher education. But it is a matter for regret that only 4 per cent. of the total female population of the school-going age receive any sort of education. The ratio of girls to boys under instruction is about 1 to 8 among Mahomedans, 1 to 2 among Christians and Parsis, and 1 to 6 among Brahmans and Buddhists. It is also interesting to note that as regards University education the number of girls in Arts Colleges is 175 which is greater than the number of girls in all other colleges taken together. There were 79 girls in the Medical Colleges. Turning to the figures as to special education, of 10,666 girls under instruction 1,706 were in technical and industrial schools, of whom all but 42 (being Europeans and Eurasians) were Indians.

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SPRACHGEFÜHL.

NIJA, meant in Sanskrit, 'inborn,' 'indwelling,' 'constant' hence, 'one's own'; but when the Dravidian languages borrowed the word, they gave it the signification of 'true,' because 'truth' is the constant, inborn, nature of things. Similarly, *idios*, in Greek, meant, 'proper or peculiar to one's self'; but in English it has come to mean, the nature or genius of a language, the peculiar turns of expression which distinguish one language from another. An Englishman says 'I am hungry,' a Tamil man says 'To me it hungers,' (எனக்குப்பசிக்கிறது), a Telugu man says, 'To me hunger beats' (నాకు ఆకలి వే*స్తుంది). A literal English translation of the Tamil or the Telugu idiom may not be unintelligible but is felt to be unidiomatic, a form of 'Babu English.' So, too, would be, an importation of English idiom into Tamil or Telugu. 'Rice is our chief food'; this, literally rendered, அரிசி நம்முடைய முக்கிய ஆகாரமாய் இருக்கிறது, బియ్యము మనుష్య ఆహారమునా ఉన్నది, though intelligible, is unidiomatic. The proper idiomatic rendering would be (ஜாஸ்தியாய்) சாப்பிடுகிறது அரிசி, మనము హో చ్చు గాలినేది బియ్యము.

* వే is originally 'to place'; it has acquired the sense of 'beat' in phrases, *e.g.*, గాలివేస్తుంది, &c.

It is interesting how the same action appeals differently to different people. When an Englishman offers you a cigar and says 'smoke,' he perhaps mentally furnishes the verb with an object, (tobacco), but the phrase புகையிலைப் புகைப்பவர் is bad Tamil, for, in Tamil, you 'drink' a cheroot and in Telugu you either 'drink' it or, more often, 'burn' (కాల్చు) it. You 'take trouble' in English; but 'கஷ்டம் எடுத்துக்கொள்,' either means nothing or means something unsavoury. எடுத்துக்கொள் suggests a definite picture of 'taking something with the hand' and you cannot handle an abstraction like 'trouble' or 'care.' Because 'take,' in Tamil associated with mere handling, you do not 'take' medicine in Tamil, but 'eat' medicine.

The harmless little English word 'have' is the cause of much tribulation to Tamil and Telugu people. When an Englishman says 'I have a book,' he does not specially think about the relation between himself and the book being one of owner and the thing owned; but when it is translated into நான் ஒரு புஸ்தகத்தை உடைத்தாயிருக்கிறேன், it is intolerable pedantry and bad idiom besides, as if one should say, 'I exist as one who is possessed of one book.' So in Telugu, నేను ఒక పు స్తకమును కలిగియున్నాను, is a similar idiotic expression. The proper idiomatic way expressing this idea is నాకిట్ట ఒరు పుస్

தகும் இருக்கிறது, நாவற்றி ஒக புஸ்தகமு சூசந்தி. Whether this avoidance of the first personal pronoun nominative is due to a desire to avoid the appearance of egotism or not, there is the idiom and we are bound by the *Sprach-gefühl*.

The connotations of words in living languages are always changing. Old associations die and new links are constantly forged. For a lucid discussion of this question the reader may consult Greenough and Kitteridge's *Words and their ways in English Speech*. But because a certain word has in one language changed its meaning along a certain line of thought, it does not follow that a similar word of another language should go the same way. Thus 'hard' means not 'yielding to pressure'; కఠినమయిన. Since a hard material like stone is difficult to work with, a hard work means a difficult work, కఠినమయిన పని. So far the Telugu keeps company with the English. But when an Englishman still further extends the meaning of 'hard,' as in 'I worked hard,' it would be absurd to say నేను కఠినముగా పనిచేస్తిని. This latter is as if we said in English 'I worked solidly.'

One of the causes of the attrition of the meanings of words is love of variety. Thus 'go,' 'travel,' 'progress' can all be used when speaking of the rates of propagation of light through ether, the specific connotations of these verbs being suppressed in this context; but 'run,' 'gallop,' and other such verbs cannot be so used. In Telugu, the verbs పో, నెళ్ళు, may be used in this connection, but to say that వెలుతురు ప్రయాణము చేయు చెన్నది is absurd, ప్రయాణము suggests the idea of a man's going to a distant land with a great deal of luggage etc. To say that వెలుతురు యాత్రచేయుచున్నది is more absurd, for it means 'light goes on a pilgrimage,' the verbs in question have in Telugu definite associations which have not been and cannot be suppressed. The English verb, 'to call' is used in various senses; it means 'to invite or command to come,' as well as 'to name'; but కడలని పిలువబడును, ஆறுகள் என்று கூப்பிடப்படும், is absurd, because it means, if anything, 'people shout, you, rivers.'

The English adjectives *a*, and *the*, have almost lost their original senses of *one* and *that* and are hence called articles. When we talk of *a man*, we do not necessarily mean *one man and not two*, and when we speak of *the sun*, we do not mean *that sun and not any other*, though in certain special contexts the original meanings of these words is still not lost. In translating from English, it will be absurd to translate every *a* by ఒక, ஒர், and *the* by అ, ஆ. "ஒரு ஜீவ ஜந்துவைப்போலவே ஒவ்வொரு செடிக்கும்ப்ராணன் உண்டு; this, if re-translated into English, would run, "every plant has life, just like *one* living animal"!

Almost all the Tamil and Telugu sentences quoted above are from books written by pundits, members of the Board of Studies in the Dravidian Languages. The very names of these books are an example of absurd translation. They are called வாசகபுஸ்தகங்கள், வாசகபுஸ்தகங்கள், 'readers.' The English word 'reader' means either 'one that reads' or 'a book intended for reading.' This is no reason why in very other language under the sun 'one that reads' should mean 'a thing that is read'. The word *Vachakah*, in Sanskrit, means 'one that reads or rather speaks'; and does not mean "a book of reading lessons". In the older days these school readers were called பாடபுஸ்தகங்கள், பாடபுஸ்தகங்கள்; but their names have been changed for the worse.

P. T. Srinivas Iyengar.

'CASE' IN THE DRAVIDIAN LANGUAGES.

"THE word *case* means properly a form or modification of a declinable word used to express a certain meaning or to denote a certain relation to other words." The Greeks called it *ptosis*, fall, because they imagined what we call the nominative case to be the erect form of a noun and represented the other cases by oblique lines *falling* down from the vertical and forming various angles with the vertical lines. The Romans borrowed the conception, translated *ptosis* into *casus*, but whereas with the Greeks it was an unsettled question whether the nominative was a case, the Romans called it the *casus erectus*, erect fall and each of the others *casus obliquus*. The Sanskrit grammarians invented the term *vibhakti*, modification, and this has been borrowed by the Telugus and Tamils, the former borrowing the idea and the name, and the latter, as usual in grammatical matters, borrowing the idea and translating the name into the Tamil *vērrumai* (வேற்றுமை).

Sanskrit grammar is based on the theory of roots. The forms of nouns and verbs that are used in speech are supposed to be produced by certain changes made on root-words. Whether these roots are abstractions from forms or were real entities in an earlier stage of the language, is a question which is difficult to decide and is not proposed to be discussed here. For purposes of this article, we may accept the convention of Sanskrit grammarians and treat forms of nouns and verbs as produced by a series of changes undergone by roots. Sanskrit noun-stems ending in-*a* (as well as those of the pronominal declension), undergo seven *vibhaktis* changes for case, in the singular, other noun-stems having six. The plural case-forms are six and dual three. But for the sake of uniformity, all noun and pronominal stems are treated as having seven forms—a grammatical fiction. The vocative is not treated as a case, because there is no *vibhakti*, change, of the root corresponding to it; but as it is a use of the noun for a specific purpose and indicates a special relation to the rest of the sentence where it occurs, there is no harm in treating it as a case of the noun (the English word case, not necessarily implying an inflection). The existence of these eight cases is a fact of the Sanskrit language; but not a fact of logic. If there are eight noun-relations for which inflections are provided in any language, that is no reason why the same number of inflections of nouns should exist in any other. No one has analysed all the possible relations nouns can enter into. The eight cases in Sanskrit are merely eight forms of the noun that exist in the language and not eight logically distinguished relations. In fact if we remember that the functions of case-forms are not clearly defined, we can infer that the evolution of case-inflections had no reference to a clear, logically formulated scheme of relations.

But the early writers of Tamil and Telugu grammar thought that as Sanskrit was a divine language, it was perfect and hence they imposed the framework of Sanskrit grammar on these languages. They translated Sanskrit nouns into Tamil or Telugu and whatever word or part of a word indicated the meaning of a Sanskrit case, they treated

as the sign of that case. Thus *Koraku* (*n*) is treated as the sign of the fourth (dative) case; in Telugu, though *Koraku* (*n*) is not an inflectional sign, not a 'formative' element of words but a 'predicative' element, meaning 'for the purpose of'; so, *lo (n)*, *lopala (n)*, mean 'inside of' and it is absurd to treat them as 'inflectional signs.' The various inflectional signs of the seventh case, given in Tamil grammar (*Nannūl*, 302) are all independent words. If *iḍai*, middle, *mēl*, above, *kiṛ* below, are to be signs of a seventh case, why not *viḍa*, except, be a sign of a ninth case? Why not invent a case for every word that can govern a noun?

Various absurdities have resulted from this imposition of Sanskrit grammar on Telugu. The cases of Sanskrit Nouns discharge various functions. The genitive in Sanskrit, as in Anglo-Saxon, sometimes indicated the object of a verb. Thus, *ramasya smarati*, he remembers Rama; again, a Sanskrit genitive represents a Tamil or Telugu dative; thus, Sans., *ayam tasya bhrātā*, Tam., *ivan avanukku tambi*, Tel., *vidu vāniki tammuḍu*. Straightway the Telugu Grammarian made *ki, ku* (corresponding to the English *to*) the sign of the genitive! *Nannūl* 295, defines the nominative case, or the first *change* (vĕṛṛumai) of the noun to be the *unchanged* noun. It is all right to call the nominative, in Sanskrit, the first *vibbakti*, for it is the first change of the *root;* but in Tamil or Telugu, it is not the root that changes for case, but the nominative itself, for these are not inflected languages. The change of *man* into *man's* is a true inflection but no one would dream of calling *to a man, in a man, from a man, than a man, with the help of a man, by the side of a man*, etc., inflections of *man;* but when such an absurdity is called Tamil or Telugu grammar, the University requires its alumni to learn it and calls it 'encouragement of the Vernaculars'!

The so-called case-signs in Tamil or Telugu are independent words like the prepositions of English, (but put *after* nouns) that indicate their relations to other words. No other proof of this is wanted than the fact that in the case of plural nouns these "case-signs" which ought to be called 'post-positions' are placed after the sign of the plural—a thing which does not happen in a truly inflected language like Sanskrit. On account of the accident of sandhi, *i. e.*, the habit of writing all the words of a sentence without spacing and rolling them into a huge sentence-word, these post-positions enter into a liaison with nouns and a pseudo-inflection results.

The derivation of some of these so-called "case-signs" is easy to discover, *e g.*, *cheta* (*n*), *valana* (*n*), *uḍaiya*, *irundu*, etc., and others like *ai, nu, in, il, ku, ki* are so worn down that their history is not recoverable, but all the same they are post-positions and not inflections.

P. T. Srinivas Iyengar.

"THE EDUCATIONAL VALUE AND THE METHOD OF TEACHING OBJECT-LESSONS".

Object-lesson is one of the subjects, which, during the past few years of educational renaissance in South India, has received the special attention of the educationists who desire to bring about through its medium the training of the senses and the development of observation in the wide sense of the term.

A special stress has recently been laid on object-lessons as its importance has been a little overlooked during the past and as the old system of education did not foster the natural order of development of the children's faculties. A "deductive" method of teaching was employed even in the lower classes. The teachers of these classes observed for the child and kept the children's faculties dormant while they should have drawn out the innate faculties of the child and given full scope to the development of the powers of observation and reasoning of the child.

Meaning of the term "object-lesson." The term implies a study of the object in all its details and in relation to its sorroundings. It implies the handling of the object by the children, a close examination of the structure of a given object, a modification of its environment by subjecting it to suitable artificial changes and thus a careful study of the object by itself and in relation to others.

The psychological aspect of the subject. Any study must tend to bring about the natural order of development of the child's mind. The senses are very active in the early stages and they, being the gateways of knowledge, abstract reasoning is quite out of place. Every child is to use his sense-organs properly and the teacher is to guide the observations of the child by presenting the subject in such a way that the salient points are in prominence and the minor points are in abeyance. The aim of the object-lesson, therefore, is to exercise the child's mind in full and close observation of the objects by means of the senses and to group such detailed observations into a clear and adequate total observation. The senses are to be trained because they are to be rendered quick and exact in seizing the precise shades of difference between the several sense-impressions. The necessity for the training of the senses is seen from the clumsy and inaccurate manner of their early use. Conception, imagination and reasoning have, for their materials, the sense-impressions.

The training of the senses can be divided into 2 stages:—

(1) Unsystematic training before the school-age.

(2) Systematic training during the school-age.

The teacher is less concerned with the first stage than the parent; still, there are some principles to be observed in both:—

(1) There should be a large number and variety of sense-impressions to create interest and there must be repetition of impressions for identification.

(2) The natural order of sense-development is to be followed.

(3) Broad contrasts must be presented first; then finer distinctions. Teaching by comparison is to be adopted. The senses should be exercised according to their relative importance, the most important being the *muscular sense'* in connection with touch and sight. The child should be given full scope to handle and examine the structure and form of the objects.

As regards the systematic training during the school-period, the teacher is to proceed from the more prominent to the less prominent qualities of things. Names should be given only when the child has observed the things and stored up ideas in his mind. Differences in likeness and kind must be perceived before differences in degree. Always proceed from the simple to the complex.

The following points must be borne in mind as regards the limits of sense-training:—in civilized life, over-subtle discrimination is not needed except in a few special arts. The training should not be much prolonged after

the ninth year. Exclusive sense-training is not desirable. Powers of imagination and conception must be developed as well. Individual notions should be grouped together and general notions should be elicited.

The various stages of object lessons. The training of the senses is effected through the medium of *Nature-Study* which is begun in the infant standard and carried on up to the third standard. The child is made to observe the broad distinctions in nature of animal and plant life and led to deduce suitable inferences. It is made to observe the different rocks in the neighbourhood. The teacher should make the child correlate nature-study and the various kindergarten occupations. The child observes a leaf and admires its bright green colour; it should be made to draw the figure of the leaf and colour it suitably, to scatter seeds in the ground in the form of the leaf, and study the different parts of the leaf. Besides Nature-study, a knowledge of specimens of objects which the child cannot then and there be made to observe, should be instilled into its mind. In the fourth standard and the first form, object-lessons proper can be taught. From the first form upwards, an elementary knowledge of the principles of science is to be inculcated, and lessons bearing on scientific subjects should be taught until the formal teaching of science begins in the IV. Form.

The subjects suitable for object-lessons are :—

1. Common objects at home or in school.
2. Objects from Natural History, such as animals, vegetables, the chief minerals and their uses.
3. The common tools and implements.
4. Objects connected with food and dress.
5. Objects of domestic and general manufacture.
6. Physical phenomena.
7. Physical and mechanical appliances.
8. The different parts of the human body; the first lessons being always chosen with due regard to familiarity and simplicity.

The appliances necessary for object-lessons are—

(*a*) A museum containing objects, specimens, models, pictures, diagrams, etc.

(*b*) The blackboard.

Where possible, the teacher in the lower classes puts each child in possession of an object and enables him to examine it under his guidance. It is a mistake in the use of the apparatus to resort to the more concrete when the less concrete will suffice the end in view. No doubt, the presentation of a real object creates interest by rousing the curiosity of the children; but there is a limit to this and the pupils should be trained to arrive at the stage when by the exercise of their imagination they can form a verbal description concrete in their minds of the objects described. The least concrete available for the teacher is the blackboard representation of the object or its parts and this he may utilise only if suitable pictures or diagrams are not procurable.

The following are the 3 points to be observed in the teaching of an object-lesson :—

(1) In every lesson, the pupils should be made to observe the objects under the teacher's guidance.

(2) The pupils must be made to infer with or without the guidance of the teacher from the facts of present observation and a knowledge of previous experience.

(3) The teacher mentions a few points here and there either for guidance or for information.

In the former case, he tells a fact now and then with a view to supply any link that may be wanting to make the impression complete and in the latter case he places before the class such facts as are beyond the experiences of the pupils and impresses them by comparison, illustrations, etc. Hence, the pupils should always be taken from the "known to the unknown" and from "the more familiar to the less familiar." The subjects of the lesson should be divided into such heads as provide for the curiosity and interest of the children.

The following scheme gives in a general way the order of treatment of the different classes.

(*a*) *Domestic animals*—general appearance, kinds, description of whole or part, food and drink, habits, uses and general remarks.

(*b*) *Wild animals*—general appearance, description of whole or part, where found, habits, food and kinds.

(*c*) *A tree*—general appearance—description—uses of the whole or parts—how grown and where found.

(*d*) *A mineral*—its appearance, qualities and uses—how and where got and kinds.

(*e*) *A manufactured article* what it is, appearance, from what made, how and where made, kinds and uses.

(*f*) *A building*—locality, appearance description of its parts, manner and object of construction.

(*g*) *A natural object*—position, size and direction, uses disadvantages and special facts.

(*h*) *A natural phenomena.*—What it is, appearance. Time and place of occurrence, causes, uses or disadvantages.

(*i*) *An event.*—What it is, description, Time and place of occurrence, advantages and disadvantages.

Method of teaching an object lesson.—Get all the appliances ready. Exhibit the object or its pictorial representation, make the pupils observe it and question on the different parts observed by them. Direct their attention to such points as they might have missed. Impress and emphasise such points as are connected with subsequent heads. Supply any information that may be necessary either to clear some doubts or give completeness to the lesson. Appeal to the previous independent observation and experience of the children and get from them similar examples of facts. Recapitulate at suitable stages.

In classes in which it is possible, make a good use of the blackboard for summary and in other classes for repetition and recapitulation. Do not omit to draw moral lessons wherever possible. Remember that the lesson should exercise their powers, give concrete and definite ideas and exercise them in the use of language.

A syllabus of object lessons for the 4th standard, *I, II and III Forms of a Secondary school.*

4th standard Animals.—The structure food, habits and uses of the following animals :—horse, ox, cow, ass, cat and dog.

Vegetable products.—The cultivation, the structure and the uses of the rice, ragi, cholum and sugarcane plants. Nature and uses of some common flowers.

Minerals—An elementary knowledge of iron, coal and gold.

Facts of general importance—Hot weather, rainy weather, their general indications.

I. Form. An elementary knowledge of botany, geology, hygiene, mineralogy and elementary science as detailed below :—

Trees—roots, trunk, branches, leaves,

flowers, and roots. Their functions illustrated with the aid of mango and tamarind trees.

Geology—An elementary knowledge of the nature of clayey, loamy and black cotton soils. The defects of marshy lands.

Hygiene.—Respiration necessity for good air, How secured? Why are towns insanitary? How rendered Sanitary?

Mineralogy.—Purification of coal, iron, copper and gold.

Elementary Science—Formation of winds, snow and mist.

II. Form. A wider knowledge of the above subjects, as detailed below :—

Botany—Plants useful in various ways. Illustrate with such trees as cocoanut, tamarind and palm-trees.

Geology and agriculture—How is the ground got ready before seeds are scattered? Difference in the planting of rice and ragi seedlings. Weeding, manuring etc.

Foreign plants.—An elementary knowledge of the growth of coffee tea and potatoes.

Hygiene and Science.—Pure water and good diet. Why necessary? Effects of heat on land and water.

III. Form *Honey*—how gathered by bees extraction—Toddy—how obtained—spider and silkworm.

Simple machines an elementary knowledge of the magnetism and pressure of liquids and gases.

S. K. Ramaswami Aiyangar.

Erratum to Q. 82 on page 365 in September number.

$4a + \frac{1}{4}$, $4b + \frac{1}{4}$, $4c + \frac{1}{4}$, $4d + \frac{1}{4}$, $4e + \frac{1}{4}$ should have read $4(a + \frac{1}{4})$,$4(b + \frac{1}{4})$ etc.

EDUCATION AT PONDICHERRY.

By an English Visitor.

THE education given to boys and girls at Pondicherry is exactly the same as the education that boys and girls receive to-day in France; that is to say, in Government schools there. We do not find, however, at Pondicherry the Maternal schools that correspond in France with the Kindergarten schools so popular in England and that are now being adapted to Indian children in British India. In France, children go to what are called "Maternal schools" from the age of three to five. At Pondicherry, children begin school at five years of age, and then learn from books and pictures chiefly, although the teachers illustrate the lessons of the little ones in what may be called "Kindergarten fashion."

We find in the Government schools at Pondicherry French, Creole (Eurasian), and Indian children side by side; and in the upper classes, the boys and girls are addressed as Monsieur, or Mademoiselle, be they French, or Creole, or Indian. No difference is made at-all. But the Indian children must wear shoes and socks if they go to the mixed schools; and the sari and the dhoti may not be worn there. French is the language used; and the children learn English as a second language. The Government has, also, schools for Indian boys and girls; and the castes are not mixed in these schools, each caste having its own school for boys, also for girls. In Indian schools Indian dress is worn. No charge is made for education in Pondicherry. All the Government schools are free. The Roman Catholic schools charge for education from one to five rupees a month; and in these schools religion is taught. The Government gives no grant to the Roman Catholic schools; and the Government Inspector of schools has the right to enter these schools whenever he sees fit, and to supervise and alter the education of the children there. In the Government schools no dogmatic religion is taught. A mistress who was found by the Inspector teaching dogmatic religion to the girls in a Government school in Pondicherry was severely reproved by him and in the Government Gazette her conduct was commented upon, and such teaching was strictly forbidden. The Inspector of schools comes direct from Paris; and he is a man of experience. His salary is about five hundred rupees a month; and he and the Minister, or Director of Education, in Pondicherry are said to be the only persons engaged in education there who receive decent salaries. It is extremely difficult to find mistresses for the girls' schools in Pondicherry because the salaries are so inadequate. In the boys schools, Indian Masters are chiefly employed. The pay for teachers varies—for both sexes—from thirtyfive to ninety rupees a month and cannot rise higher. The position of a school teacher carries no pension with it. Funds to pay the teachers are raised locally; and if Pondicherry were a richer place, then, no doubt, the teachers would receive better pay.

There is no denying that the French school books used in the schools at Pondicherry are very superior to the school books used in British India. The print, the paper, the illustrations and the matter are all better than anything we find in lesson-books in British India. The books are bound better, and will last a whole family, one child using them after another. They are very expensive, however, and parents complain that the cleverest boy cannot pay for his lesson books with scholarships. Each school imports its books straight from Paris, and receives concessions on large orders; and purchasers of school books are allowed two months' credit. The books are bound in stiff calico, and different Standards have books in different colours. Immense trouble is taken in France with the lesson books used in the Government schools; Professors and Inspectors meeting from time to time to consult about the books, to alter them or to make improvements. In Picture Stories for little children the French school books excel.

The course of instruction to be followed by each Standard is arranged by the Minister of Education in Paris, and must be strictly followed. No change can be made by teacher, or by Inspector at Pondicherry. For the B.A. examination the literature changes every three years; and the changes are announced a year beforehand. Thus for 1910-11-12 candidates for the B.A. will study in English literature the works of C. and M. Lamb, R. Kipling, Wordsworth, Tennyson, and Kingsley.

In the college, French, Creole, and native boys and young men work side by side. There all castes must mix together. It is said that the greater number of the boys pass the examination that corresponds with the English F.A. degree, and only a small number go in for the B.A. and M.A. degrees. It is the same in British India.

Girls can go to the college if they choose, but the writer of this article did not see a girl among the students there. The greater number of the boys were Creoles and Indians. Fees are charged in the college, but these are nominal. Scholarships can be obtained in both schools and college, and these vary from Rs. 72 to Rs. 144 a year. Students who hold

scholarships are provided with ink, pens, paper and slates. Other students must buy these things for themselves.

Thursday in each week is a whole holiday, also Sunday. The rest of the week is given up to work. At Christmas, three weeks are given as holidays, and in the mixed schools the Summer holidays extend over two months, from the first of June onwards. But in the native schools, the Summer holidays are not so long, because during the year the children have many holidays for native feasts and festivals. In the native schools French is taught as a second language, the whole of the education is carried on in Tamil. The head teacher in these schools is a French person, the rest of the teachers are natives.

A very important part of the instruction given is the so called Moral Lesson. In the classes for little children, this lesson is given each day, and stories are told with a moral attached. In the older classes, a Moral Lesson is given twice a week. This includes the duty of a man toward God; and the duties of men toward one another. The Moral Lesson is carefully prepared by the teacher; and in this way ideas concerning charity, truthfulness, honesty, kindness, and kindred ideas are implanted in the mind of boys and girls from the age of five until they leave school. There is no doubt that if the Moral Lesson had formed a part of the instruction given in English schools in British India, we should not have to regret to-day the results of an education that ignores the most important lessons that can be given to a child. Moreover, a course of Civil Instruction is given; and the boys and girls learn that they belong to a great Republic; and that there are in Paris, a Chamber of Deputies and a Senate; and that these assemblies carry on the work of the country by the will of the people. In Pondicherry every man has a vote. A coolie can have a vote; if he takes the trouble to apply for it. The children are taught from their infancy what a vote means; and their duties as citizens are explained to them. Then they learn about the Army, the Navy, the Courts of Justice, and other great State Departments. Such instruction is given in all the Government schools; and the Indian children, as well as the French children, have to pass examinations in civil matters. At College this instruction is carried much further; and by books, essays and questions, boys and young men are grounded in the duties that will come to them later on. The Indian students at Pondicherry seem to be satisfied with things as they are. But, apparently, very few of these young men leave India. The Government of Pondicherry does not encourage such emigration. In Saigon, the capital of (French-China) very strict regulations have been introduced with regard to young Indians who desire to visit France. Such young men must have certificates for previous years of good conduct and find sponsors for their good behaviour while they are away from home. This rule might, also, be copied in British India with much advantage.

We do not find in the schools at Pondicherry so much time given to drill and marching as in schools in British India. Gymnastics have a somewhat backward place in the French schools. Perhaps, this is because French people are naturally active and graceful. Sewing, knitting and crochet are taught to the girls; and in some classes, also music. The theory of music is a part of the school course. French children seem to like science better than any other study; while Indian children at Pondicherry show a natural gift for mathematics.

The course of instruction in the Elementary schools consists of three parts. From five till seven the children are in the Preparatory Class; from seven to nine in the Elementary Class; and from nine till eleven in the Middle class. A certificate of Study is given in the Elementary schools to children whose studies end at the age of eleven.

Afterwards follows a Complimentary Class from eleven to thirteen; and from thirteen to fifteen, or sixteen, there is a Superior Course of instruction which carries, if the student is successful in examinations, a degree corresponding to the F.A. degree given in British India. Afterwards come further studies leading to the B.A. and M.A. degrees given in British India. Boys at Pondicherry seldom remain at school after sixteen or seventeen. Then most of the French boys go to Saigon and enter there into the Government Service, or offices of merchants. Military service has lately been made compulsory at Saigon, but from this, boys at Pondicherry are still exempt. Young men must go to Paris in order to take the higher degrees in Law, Medecine, Engineering, etc., and there, of course, they are all obliged to serve in the Army, if they are Frenchmen. There are few openings for young men in Pondicherry; but education there is good, and cheap, and examinations passed there hold good all over the French possessions in Asia, also in France.

As to the subjects taught, and the methods of teaching, these resemble very closely those adopted in England, and in British India. "Knowledge is the same everywhere, and the human mind is the same in all countries," remarked to me a Frenchman in Pondicherry.

In visiting the Pondicherry mixed schools one cannot help noticing the dress of both boys and girls—especially that of French nationality. The French boy wears always a clean suit of white drill. The French girl has a bow of ribbon set coquetishly in her hair. The Indian boys wear baggy trousers reaching to the ankles, generally red in colour; in fact they seem to copy the dress of the French soldiers in Pondicherry. The Indian girls wear a loose sort of pinafore; and sometimes a little white cape. The creole element is even stronger in Pondicherry than in British India.

The following syllabus shows the studies of pupils in the Superior Course during six months.

JANUARY AND FEBRUARY.

Moral instruction: The Family. The School.

Grammar: Preliminary remarks. Language Dialects. Ancient Tongues, Orthography, Discourse, Punctuation. The Noun, the Gender, the Number.

History: History of the Egyptians. The Assyrians. The Greeks, and the Romans. The Gauls. Merovingians and the Carlovingians.

Natural History: Man. The cells, tissues, organs. Functions of nutrition. Digestion. Circulation.

Geography: Europe, Physical.

Arithmetic: Numeration.

Geometry: Lines, angles, squares.

English: The definite article, the indefinite article, the participle. The noun, vocabulary, pronunciation.

Hygiene: Importance of hygiene. Water, the importance of the use of water.

Botany: Roots, stems and leaves.

Physics: Weight.

MARCH.

Moral Instruction: The Fatherland. Political duties.

the ninth year. Exclusive sense-training is not desirable. Powers of imagination and conception must be developed as well. Individual notions should be grouped together and general notions should be elicited.

The various stages of object lessons. The training of the senses is effected through the medium of *Nature-Study* which is begun in the infant standard and carried on up to the third standard. The child is made to observe the broad distinctions in nature of animal and plant life and led to deduce suitable inferences. It is made to observe the different rocks in the neighbourhood. The teacher should make the child correlate nature-study and the various kindergarten occupations. The child observes a leaf and admires its bright green colour; it should be made to draw the figure of the leaf and colour it suitably, to scatter seeds in the ground in the form of the leaf, and study the different parts of the leaf. Besides Nature-study, a knowledge of specimens of objects which the child cannot then and there be made to observe, should be instilled into its mind. In the fourth standard and the first form, object-lessons proper can be taught. From the first form upwards, an elementary knowledge of the principles of science is to be inculcated, and lessons bearing on scientific subjects should be taught until the formal teaching of science begins in the IV. Form.

The subjects suitable for object-lessons are :—

1. Common objects at home or in school.
2. Objects from Natural History, such as animals, vegetables, the chief minerals and their uses.
3. The common tools and implements.
4. Objects connected with food and dress.
5. Objects of domestic and general manufacture.
6. Physical phenomena.
7. Physical and mechanical appliances.
8. The different parts of the human body;

the first lessons being always chosen with due regard to familiarity and simplicity.

The appliances necessary for object-lessons are—

(*a*) A museum containing objects, specimens, models, pictures, diagrams, etc.

(*b*) The blackboard.

Where possible, the teacher in the lower classes puts each child in possession of an object and enables him to examine it under his guidance. It is a mistake in the use of the apparatus to resort to the more concrete when the less concrete will suffice the end in view. No doubt, the presentation of a real object creates interest by rousing the curiosity of the children; but there is a limit to this and the pupils should be trained to arrive at the stage when by the exercise of their imagination they can form a verbal description concrete in their minds of the objects described. The least concrete available for the teacher is the blackboard representation of the object or its parts and this he may utilise only if suitable pictures or diagrams are not procurable.

The following are the 3 points to be observed in the teaching of an object-lesson :—

(1) In every lesson, the pupils should be made to observe the objects under the teacher's guidance.

(2) The pupils must be made to infer with or without the guidance of the teacher from the facts of present observation and a knowledge of previous experience.

(3) The teacher mentions a few points here and there either for guidance or for information.

In the former case, he tells a fact now and then with a view to supply any link that may be wanting to make the impression complete and in the latter case he places before the class such facts as are beyond the experiences of the pupils and impresses them by comparison, illustrations, etc. Hence, the pupils should always be taken from the "known to the unknown" and from "the more familiar to the less familiar." The subjects of the lesson should be divided into such heads as provide for the curiosity and interest of the children.

The following scheme gives in a general way the order of treatment of the different classes.

(*a*) *Domestic animals*—general appearance, kinds, description of whole or part, food and drink, habits, uses and general remarks.

(*b*) *Wild animals*—general appearance, description of whole or part, where found, habits, food and kinds.

(*c*) *A tree*—general appearance—description—uses of the whole or parts—how grown and where found.

(*d*) *A mineral*—its appearance, qualities and uses—how and where got and kinds.

(*e*) *A manufactured article* what it is, appearance, from what made, how and where made, kinds and uses.

(*f*) *A building*—locality, appearance description of its parts, manner and object of construction.

(*g*) *A natural object*—position, size and direction, uses disadvantages and special facts.

(*h*) *A natural phenomena.*—What it is, appearance. Time and place of occurrence, causes, uses or disadvantages.

(*i*) *An event.*—What it is, description, Time and place of occurrence, advantages and disadvantages.

Method of teaching an object lesson.—Get all the appliances ready. Exhibit the object or its pictorial representation, make the pupils observe it and question on the different parts observed by them. Direct their attention to such points as they might have missed. Impress and emphasise such points as are connected with subsequent heads. Supply any information that may be necessary either to clear some doubts or give completeness to the lesson. Appeal to the previous independent observation and experience of the children and get from them similar examples of facts. Recapitulate at suitable stages.

In classes in which it is possible, make a good use of the blackboard for summary and in other classes for repetition and recapitulation. Do not omit to draw moral lessons wherever possible. Remember that the lesson should exercise their powers, give concrete and definite ideas and exercise them in the use of language.

A syllabus of object lessons for the 4th standard, *I, II and III Forms of a Secondary school.*

4th standard Animals.—The structure food, habits and uses of the following animals :—horse, ox, cow, ass, cat and dog.

Vegetable products.—The cultivation, the structure and the uses of the rice, ragi, cholum and sugarcane plants. Nature and uses of some common flowers.

Minerals—An elementary knowledge of iron, coal and gold.

Facts of general importance—Hot weather, rainy weather, their general indications.

I. Form. An elementary knowledge of botany, geology, hygiene, mineralogy and elementary science as detailed below :—

Trees—roots, trunk, branches, leaves,

and down go scores of pencils, blue, black and red, immortalising the passage or expression unto the day of examination. If the professor-examiner dictates any questions or notes—as he would do even though he were no examiner—they become an envied treasure whose loan is solicited by students of other colleges, and as jealously refused. However we may laugh at them, the students know their business better, and their faces light up when they see some of the questions dictated in the class, words specially marked and passages particularly noted, find their way into the question papers at the University. The lucky set of candidates write off their answers with an ease and promptness which excite the jealousy and anger of the unlucky many. Now, there is nothing unnatural or blameworthy in all this. But the student world builds its own theories thereon and speaks of the advantages of having as their teachers people who have the good fortune to be examiners at the same time. The examiner-professor or professor-examiner is not often times able to finish his text-book in the class and the rumour soon spreads that no questions will be asked out of the unfinished portion of the text. By sheer accident no such questions happen to be actually asked in the University paper and the theory of the students finds apparent confirmation. The writer of this article was at one time a candidate for the first college examination of the Bombay University. While he was idly sauntering about the examination *mandap* among a crowd of hundreds of students hailing from the various parts of the Presidency, conversing with one another about their prospects, the nature of the examiners and the paper next expected, and other cognate topics, having their last and hasty look into their sketches and notes, he came upon a knot of students near the door of the pandal. From their conversation it was clear that they belonged to the college in which the examiner in the subject in which we were going next to be examined, was a teacher. My curiosity and interest were therefore aroused and I stood by them a silent listener. They were speaking of a certain chapter in the text-book, which they were sure would be the subject of a question in the coming question paper. Just then, the bell rang out! and we rushed pell-mell into the pandal. I had no time to look into the chapter in question but remembered accurately what was referred to. I was inclined to dismiss the speculations of those students as dreams of idle brains but imagine my surprise when on getting the question paper into my hand my eyes were wonderingly rivetted on the self-same question which the students had mentioned outside the pandal! I could not adequately admire the power of divination the fellows possessed. They thought it was the advantage of having an examiner-professor to teach them. Examiners are of course too much of gentlemen to stoop to such a thing as even darkly hinting at questions they may be likely to ask in the University examination, and the examiners of the year are sometimes not even known before the end of the college term. Yet students are a clever folk, and have a subtle knack of divination. The teacher's habit of asking to mark this and note that, of dictating typical questions and examples—a perfectly unobjectionable proceeding—is availed of by students who contrive to fancy that many questions asked by him in the University examination were all specially explained in the class already. Conscious or even unconscious emphasis laid by the professor on a certain point, and stress laid on a passage in the ordinary course of explanation, are interpreted as hints, and the wonder of it is that the conjectures of students often times come out true. The questions on a subject or a text-book must of course be limited, and the figuring of some of them in the University paper ought to prove nothing. But the ways of students are wonderful and they scent hints where none are thrown out. One little success in thought—reading goes to confirm their faith in their theory and failure in divination counts as nought. Once, I was looking into questions dictated by a professor-examiner and was surprised to find, that many of them were identical with those he had asked in the University paper. One might envy the Professor's students and draw unfair inferences. But to me the limitation of questions on every subject was a sufficient explanation.

Publishers of annotated editions never fail to make capital of the appointment of the annotators as examiners. "Edited ..... with copious notes and introduction, etc., by .....*Examiner at the University*" are words printed in big type and hundreds of copies are purchased by hungry students and devoured entire. Large profits are made by annotator-examiner and publisher but none by students. It may be suggested that no one who has annotated a text-book ought to be appointed examiner in that subject and no annotated edition of a book should be prescribed as text-book. Annotated editions have, in many cases, become a positive nuisance. They are, as it were, dinner tables spread with all sorts of dishes, richly dressed and spiced and the only thing students are apparently expected to do is, to make a heavy meal of all of them. Thus, there is an introduction, a paraphrase, a summary, a glossary, examination questions, "copious notes," life of the author, critical remarks, a literary estimate and what not. Histories, biographies, dictionaries, encyclopedias are all boiled together and on this essence, students are to grow fat and strong. But the result is far other—indigestion and nausea. Even in tolerably well-edited books, there are many things that may be objected to. For example the annotator, in his introduction, points out certain peculiarities of the author's style in a digestible form, and students swallow them wholesale without making any effort to find them out for themselves as they ought to do, if their study is to have any educative value at all. It is a common tendency among people to devour such dishes as, they know, do not agree with their stomachs and have perhaps been forbidden by doctors. And even when good editions have been prescribed, students will take to others which are not so well-suited, though more tempting. The Bombay University prescribes Burke's select works in the Clarendon Press series and edited excellently by Mr. E. J. Payne, but ninety per cent. among students will purchase and make use of Principal Selby's editions—which are good so far as they go—on account of their copious notes and summaries. They can thus do away with the necessity of attending lectures and may easily cram the notes in a month's time at the fag end of the year. The cram may, to some extent, be discouraged by professors not allowing badly edited text-books to be used in the class, though private cramming is not so easy to reach. Apart from the quality of such annotated editions and their effects on students, the above suggestion is very useful and the Syndicate ought to make a rule accordingly. Similarly as hinted above, no professor who teaches a subject in his college ought to be appointed examiner in that subject. The evils of such a system have been described above. Education loses all its value and the passing of examinations becomes a fine art to which students devote all their attention to the exclusion of everything more valuable and lasting. Professors from other provinces may be appointed examiners, as is done by our University in some cases, the practice being extended as far as may be possible.

the ninth year. Exclusive sense-training is not desirable. Powers of imagination and conception must be developed as well. Individual notions should be grouped together and general notions should be elicited.

The various stages of object lessons. The training of the senses is effected through the medium of *Nature-Study* which is begun in the infant standard and carried on up to the third standard. The child is made to observe the broad distinctions in nature of animal and plant life and led to deduce suitable inferences. It is made to observe the different rocks in the neighbourhood. The teacher should make the child correlate nature-study and the various kindergarten occupations. The child observes a leaf and admires its bright green colour; it should be made to draw the figure of the leaf and colour it suitably, to scatter seeds in the ground in the form of the leaf, and study the different parts of the leaf. Besides Nature-study, a knowledge of specimens of objects which the child cannot then and there be made to observe, should be instilled into its mind. In the fourth standard and the first form, object-lessons proper can be taught. From the first form upwards, an elementary knowledge of the principles of science is to be inculcated, and lessons bearing on scientific subjects should be taught until the formal teaching of science begins in the IV. Form.

The subjects suitable for object-lessons are :—

1. Common objects at home or in school.
2. Objects from Natural History, such as animals, vegetables, the chief minerals and their uses.
3. The common tools and implements.
4. Objects connected with food and dress.
5. Objects of domestic and general manufacture.
6. Physical phenomena.
7. Physical and mechanical appliances.
8. The different parts of the human body; the first lessons being always chosen with due regard to familiarity and simplicity.

The appliances necessary for object-lessons are—

(*a*) A museum containing objects, specimens, models, pictures, diagrams, etc.

(*b*) The blackboard.

Where possible, the teacher in the lower classes puts each child in possession of an object and enables him to examine it under his guidance. It is a mistake in the use of the apparatus to resort to the more concrete when the less concrete will suffice the end in view. No doubt, the presentation of a real object creates interest by rousing the curiosity of the children; but there is a limit to this and the pupils should be trained to arrive at the stage when by the exercise of their imagination they can form a verbal description concrete in their minds of the objects described. The least concrete available for the teacher is the blackboard representation of the object or its parts and this he may utilise only if suitable pictures or diagrams are not procurable.

The following are the 3 points to be observed in the teaching of an object-lesson :—

(1) In every lesson, the pupils should be made to observe the objects under the teacher's guidance.

(2) The pupils must be made to infer with or without the guidance of the teacher from the facts of present observation and a knowledge of previous experience.

(3) The teacher mentions a few points here and there either for guidance or for information.

In the former case, he tells a fact now and then with a view to supply any link that may be wanting to make the impression complete and in the latter case he places before the class such facts as are beyond the experiences of the pupils and impresses them by comparison, illustrations, etc. Hence, the pupils should always be taken from the "known to the unknown" and from "the more familiar to the less familiar." The subjects of the lesson should be divided into such heads as provide for the curiosity and interest of the children.

The following scheme gives in a general way the order of treatment of the different classes.

(*a*) *Domestic animals*—general appearance, kinds, description of whole or part, food and drink, habits, uses and general remarks.

(*b*) *Wild animals*—general appearance, description of whole or part, where found, habits, food and kinds.

(*c*) *A tree*—general appearance—description—uses of the whole or parts—how grown and where found.

(*d*) *A mineral*—its appearance, qualities and uses—how and where got and kinds.

(*e*) *A manufactured article* what it is, appearance, from what made, how and where made, kinds and uses.

(*f*) *A building*—locality, appearance description of its parts, manner and object of construction.

(*g*) *A natural object*—position, size and direction, uses disadvantages and special facts.

(*h*) *A natural phenomena.*—What it is, appearance. Time and place of occurrence, causes, uses or disadvantages.

(*i*) *An event.*—What it is, description, Time and place of occurrence, advantages and disadvantages.

Method of teaching an object lesson.—Get all the appliances ready. Exhibit the object or its pictorial representation, make the pupils observe it and question on the different parts observed by them. Direct their attention to such points as they might have missed. Impress and emphasise such points as are connected with subsequent heads. Supply any information that may be necessary either to clear some doubts or give completeness to the lesson. Appeal to the previous independent observation and experience of the children and get from them similar examples of facts. Recapitulate at suitable stages.

In classes in which it is possible, make a good use of the blackboard for summary and in other classes for repetition and recapitulation. Do not omit to draw moral lessons wherever possible. Remember that the lesson should exercise their powers, give concrete and definite ideas and exercise them in the use of language.

A syllabus of object lessons for the 4th standard, *I, II and III Forms of a Secondary school.*

4th standard Animals.—The structure food, habits and uses of the following animals :—horse, ox, cow, ass, cat and dog.

Vegetable products.—The cultivation, the structure and the uses of the rice, ragi, cholum and sugarcane plants. Nature and uses of some common flowers.

Minerals—An elementary knowledge of iron, coal and gold.

Facts of general importance—Hot weather, rainy weather, their general indications.

I. Form. An elementary knowledge of botany, geology, hygiene, mineralogy and elementary science as detailed below :—

Trees—roots, trunk, branches, leaves,

One of their minor duties will be to see that the handbook of information, which will be published by the Central Bureau, is kept up to date; and the latter will be asked to supply from time to time to the local Committees in India all information necessary to correct that given in the current issue of the book.

6. Local Governments and Administrations have generally accepted the above proposals, and it only remains now to give effect to the scheme. The Governor-General in Council desires therefore that steps may be taken as soon as possible to constitute the local Committees. The intention is that there shall be in each province a general Committee representing the province as a whole, and that, where necessary, there shall also be sub-committees at such local centres as may be convenient. The President and members of these Committees will be selected and appointed by the Local Governments. As stated above, these proposals will not for the present apply to Burma; and the North-West Frontier Province will be represented on the Punjab Provincial Committee by the officer in charge of education in the former province. The province of Coorg might similarly be represented on the Madras Committee. Native States, who so desire, will also be represented by the Political officers of the States on the Committees at the head-quarters of their respective Universities.

7. There will be a paid Secretary to each Provincial Committee, who will be appointed by the Local Government. It has been stated by one Local Government that the services of a Secretary can be procured on an allowance of Rs. 60 *per mensem*. Such an arrangement may not be possible in every case, and the Government of India leave it to the discretion of Local Governments to fix the pay of this officer, subject to a maximum limit of Rs. 200 *per mensem*. The Provincial Committees, as soon as they are constituted, should place themselves in communication with the Educational Adviser to Indian Students, India Office, London.

Mr. Erach Jehangir Sorabji, B.A. has been selected by the Government of India for one of the scholarships, available in the current year, for the study of Sanskrit in Europe, under the terms set forth in the Government of India's Resolution in Home Department (Education), No 731—743, dated the 1st September 1908.

The Secretary of State has appointed Mr, G. H. T. Ross, Ph.D., to be a member of the Indian Educational Service and to occupy the new chair of Philosophy in the Rangoon College. Mr. Ross is on his way to Burma.

The Mysore Government have made "a new departure" by sanctioning, subject to certain conditions, the management of the Industrial School at Hassan by the Central Co-operative Society at that place. The Society is to take over the tools, benches, etc., at a valuation, to provide the necessary establishment and certain scholarships, and to receive a grant-in-aid of Rs. 100 per month, with premises, temporarily, rent-free. Hitherto the management has been in the care of the Headmaster of the local High School, and the working of the new scheme will no doubt be watched with interest.

Information has been received from Cochin that Mr. J. Vansomeren Pope, late Director of Public Instruction in Burma, who had been engaged for five years to put education in Cochin on a proper footing, will not be able to take up the appointment, as he does not care to take up active work again.

Her Highness the Begum of Bhopal has been pleased to sanction a permanent annual grant of Rs. 2,200 for the all India Mahomedan Educational Conference.

A *communiqué* issued to-day states that the Secretary of State has appointed Mr. Philip Wolfred Robertson, of Trinity College, Oxford, and Leipzig, to be a temporary member of the Indian Educational Service as Lecturer in Science at the Rangoon College.

The Secretary of State has appointed Mr. Robert Sanderson, M.A., to the Indian Educational Service to fill the post of Master of Training Class for Male Teachers in European Schools at Sanawar.

The Mysore Government sanctioned establishing an Educational Museum to be located in the Sheshadri Memorial Hall.

Foreign Notes.

GREAT BRITAIN.

A Blue—book (od. 4560) was issued on Saturday last (September 25) containing the report of the Treasury Committee on the organisation of Oriental studies in London. The committee were appointed in April, 1907, as the result of representations made by an influential deputation to the late Sir Henry Campbell-Bannerman on December 4, 1906.

The Committee was composed of Lord Reay, as Chairman, Lord Redesdale, Sir Thoms Raleigh, Sir Montagu Turner, and Mr. A. R. Guest, of the Board of Education.

The Committee finally report that there is urgent need for the provision of suitable teaching in London for persons about to take up administrative or commercial posts in the East and in Africa. A knowledge of the language and some preliminary knowledge of the history and religions and social customs of the country to which they are appointed is essential to such persons. Time will actually be gained, and it will be advantageous in other ways, if the first instruction is given in this country. A school of Oriental studies should be built up from the nucleus of Oriental teaching now existing at University and King's Colleges, and should be incorporated in the University of London. The school should have a constitution similar in its main lines to that of University College. It should possess a name and home of its own. The school should provide both for living Oriental languages and for classical Oriental studies; but the Committee ask for a grant to be made from Government funds at the foundation of the school for living Oriental languages only. The first establishment of the school should be on the scale necessary to meet immediate requirements, and should be extended gradually.

The University Extension Board for London has just issued the scheme of Extension lectures arranged for the coming session. Several courses are of unusual interest, and all well calculated to achieve the objects of the Board. In different parts of the London area sixty or seventy courses in all will be available. As was the case last session, the subject of London history receives much attention. In addition to the delivery of lectures, the scheme will include fortnightly visits to buildings illustrative of history and architecture. History, ancient, mediæval, or modern, is provided at a number of centres for those interested or anxious to learn. Literature is even more abundantly served. At Kensington and Wandsworth lectures will be delivered on "Some Masterpieces of Ancient and Mediæval Literature"; at Barnet on "Some American Writers." "Greek Art and National Life," "Music," "Geography," "Economics," and "Child-study" are some of the other subjects. Special courses have also been arranged with an eye to the diplomas to be awarded after four years' study in certain subjects—history, literature, social science, and economics. This new departure has been received with much favour, and is likely to be exceedingly popular with students, who will have something to show at the end of their four years' course of reading for all the pains they have brought to the subjects under study. A special pamphlet explaining the diploma scheme and setting out courses and places of delivery of lectures, can be had of the Registrar of the University Extension Board, at South Kensington.

For some years past, at Cambridge, during the Long Vacation, lectures have been given in elementary science for primary teachers. But this year, on the recommendation of the Board of Geographical Studies, it was determined to have a course on geography, and to invite secondary teachers as well as primary. The result was, that the number of persons attending, rose to upwards of one hundred, coming from all parts of England and Wales, and including several head masters. The lectures were given by Mr. H. Yule Oldham (King's), Mr. P. Lake (St. John's), and Mr. R H. Adie (Trinity). In addition, some lectures on botany were given by Mr. A. M Smith (Emmanuel), assisted by Mr. H.H. Thomas (Downing). The course was most successful.

Prof. Griffith, Reader in Egyptology in the University of Oxford, has been elected a Corresponding Member of the Imperial Academy of Sciences in Vienna.

The Oxford University Endowment Fund has now reached the sum of £139,000.

At the Health Congress recently held at Leeds, a paper was read by Miss Gibb, advocating the holding of schools in the open air, and urging that this would be one of the best means of promoting the health and maintaining the physical efficiency of the children. Compared with these benefits, the relief to the tax-payer would be but a minor consideration. If consumptive patients can sleep in the open air there seems to be no reason why healthy children should not carry on their school work under even Northern skies in all weathers, even although it might involve an appreciable increase in the difficulty of securing attention and upholding discipline. In this

EDUCATIONAL HANDICRAFTS IN THE TRAINING OF A GENTLEWOMAN.

The manual training in force at the Croft School, Fleet, Hants, comprises a varied and extensive scheme founded on a broad scientific basis.

At the beginning of the school life, simple work, well within the powers of the child and suitable for its special age and stage of development, is given. This work is diversified as much as possible, and forms the preliminary steps for woodwork, cardboard work (which can be made of infinite value throughout the whole school life), basket-making, wood carving, bookbinding, and all branches of needlework, together with other arts and crafts of secondary importance.

In the initial stages, ruler, pencil and scissors play an important part. Models of all kinds in fairly strong cardboard; simple woodwork, models of cavemen's dwellings, with simple baskets, stone weapons and clay figures of the men and women (coated with plaster), and clay models of primitive vessels, afford excellent preliminary work which can be done by quite tiny children of five to eight with equal profit. Raffia work at this stage is much better than "round cane" work, as it is easier to handle and the results are better. Samplers of stitches should be used later on in the advanced work of making garments and skilled embroidery.

During the years spent in the middle school all this training is continued step by step, and a gradually ascending scale of work, entailing more skill in manipulation and more tools, is introduced, according to the powers of the worker. Woodwork is continued steadily, and gives to boys and girls alike one of the very best manual trainings possible in rigid material and tools. The cardboard work is a useful medium for the development of hand and brain. Though few tools are necessary, yet imagination, dexterity, with neatness and truth of detail in the finish of the articles, are required. These help in the development of character to a surprising extent. Really artistic work in white linen, art vellum, embroidered linen and other stuffs, needing individual powers, result, followed later by professional bookbinding. This forms the ideal course of work for girls. In after-life chairs are upholstered, floor coverings laid down and beautiful things are created with surprising power and exactness.

Basket making is also a valuable asset, the pupil being enabled to make in the home the many baskets used for household purposes. Several pupils of this school who have attained skill in this art have started village industries and boys' clubs of considerable value. Much scope should be found for the crafts here advocated as of primary importance in school and educational training.

Needlework in all its branches should also form an intrinsic part of a girl's manual training. Beginning with the samplers (on plain canvas with equal threads), plain needlework stitches and embroidery stitches are easily and quickly mastered. These can be applied to small useful garments and then to beautiful house linen. Lace stitches, with crochet and other forms of work, can be fitted in as time goes on, and provide a recourse for quiet rest from mental work which busy women now need more than ever.

It is impossible to enumerate all the work and the results obtained by the various courses of handicrafts employed, but each thing undertaken by the worker can be brought to its own perfection, and forms a part of the whole.

Side by side with the manual training the art work progresses, and definite work in designing the right decoration of wood, cloth and leather is done from the very first by the whole school.

Only a small share of the things accomplished belong to the worker. All belong to the school, and are intended for its "use or beauty." The result of allowing each worker to have the things made as they are completed, in most children (and adults), is to encourage a greediness to work fast in order to possess, and to dishearten the slower workers. At the end of the term gifts are made from the things finished, and each pupil when leaving for the holidays possesses some of their own work to take home. In spare time—especially during the winter—free work is allowed on half holidays, and birthday presents are made or Christmas presents prepared by one and all alike.

The keen interest taken in handicrafts generally teaches the girls to recognise and work with much discrimination, and should, and does, result in a willingness on their part to pay a fair price for things that are well done.

The number of hours (after the first years when the work is chiefly occupational) given to the work in the middle school, including needlework, painting and drawing, is about eight hours a week. As soon as a girl begins to specialise, after the age of sixteen, the time devoted to handicrafts is according to the line of study she is taking up. Girls preparing for professional work as teachers of handicrafts naturally give more time to the subject than those taking up music and art. The individual is the measure of the work to be achieved.—*The Federal Magazine.*

THE JOHN MORLEY LABORATORIES.

The John Morley Chemical Laboratories, an important addition to the buildings of Manchester University, were opened on Monday October 4, in the presence of a large gathering, by Sir Henry Roscoe, who was for many years the Professor of Chemistry of the University. The new premises include a spacious laboratory for organic chemistry, research rooms, private laboratory, and accommodation for the professors, together with new service and store rooms and cold storage and ice-making machinery. For the third-year students there is a large laboratory on the ground floor, and throughout all modern essentials for research and other work, for which means have been supplied by Mr. Carnegie.

HONORARY DEGREES.

Lord Morley, Chancellor of the University, presided, and conferred the following honorary degrees:—

LL.D.—Mr. Whitelaw Reid, the American Ambassador, and Sir Robert Stout, Chancellor of New Zealand University.

Litt.—Sir Alfred Lyall.

D.Sc.—Dr. Otto Wallach, Professor of Chemistry in the University of Gottingen.

LORD MORLEY'S ADDRESS.

When Lord Morley rose to address the meeting there were interruptions from suffragists. First, two women had to be ejected, and then three women in undergraduates' gowns approached the platform and were forcibly removed by a number of policemen in plain clothes.

Lord Morley said he would not be expected on that occasion to discuss the multitudinous problems of University education. They were met on an occasion of ceremony, having to carry out two ceremonies, both of which were of happy significance. The first was to confer degrees of the University on four prominent and distinguished men. They had first of all the representative of the United States, a man of great distinction and authority. He remembered the time when the name of the United States would not have been received with the cordiality which was now displayed. Let them be thankful there was no circumstance in our national situation at this moment for which we had better reason to be thankful than our good fellowship and friendship for our kinsmen across the Atlantic Ocean. Then, going from the West to the East, they had had Sir Alfred Lyall, a man who had in the sphere of speculative rational reflection and imagination brought great genius to the solution of the dark riddle of the Indian sphinx. As for the self-governing colony of New Zealand, they did not require any words of introduction from him as to the new communities that carried our ideas and our institutions over the sea. Then they had the representative of European science and learning, and he felt justified in saying that this was an occasion of high mark and one on which they had a right to congratulate themselves. Some of them might not know what he and his audience knew of the glories of Manchester. It was true that up to this point Manchester had not taken assuredly its place, like some of the great cities in history, that had kindled the lamp of knowledge, kindled the love of truth, taught the pursuit of the beautiful, given new institutions and the principle of institutions, and so shaped the destinies of civilized mankind. Manchester had not yet taken the place in the world of Athens or Florence or Geneva or great Rome, but she had proved herself from a very early period in her growth—a period which he heartily regretted to say he remembered—a fit capital of a great community in an industrial and a

scientific age. Manchester University, with which they had done him the honour to associate him as an old Lancashire man, was a conspicuous example of what the great industrial cities of this country should do to keep abreast of all that was known and done in the world. In his early youth there were those who doubted whether learning and University training would be any good in practical life; but that evil and sinister prejudice had vanished, and there was nothing he thought, of which Manchester was more proud to-day than of the efficiency and prosperity of its University. He might be wrong in excluding Manchester from the great cities where great principles had been discovered, for his friend Professor Roscoe would remind him that, though John Dalton was not born in Manchester, unfortunately, he worked out the atomic theory there, he received his rewards there and his name was a name of which Lancashire though not his birthplace, ought to be proud and was proud.

EDUCATION AND CONTROVERSY.

Though this was not an occasion for talking much about education, Lord Morley continued, he might be allowed to say—he sometimes thought he would like to set a paper for an examination on the subject.—What is an educated person? He would be glad if they would turn that question over and apply it to their own cases. He would put at the very top the qualification that any educated man or woman should know what was evidence, should know when a thing was proved and when it was not. [At this point another suffragist interrupted, but was greeted with such a volume of disapproval that she walked out of the room.] How many interpretations, Lord Morley continued, would the same verbal proposition fairly bear? What weight was to be attached to rival authorities? There was no commoner error than to go to one authority and ignore another. One more point that constantly came before him in the office he had for the time the honour to hold, was to consider how far circumstances limited the application of abstract principles and how far circumstances transformed principles which were excellent in certain respects and certain times and certain places into irrelevant catchwords. Parallels and analogies from history were the most deceptive things in the world. Mr. Bryce once told him that in 1876, during the time of the Bulgarian agitation, he met a learned professor who was always descanting on the application of history to politics. Mr. Bryce cited to him the Eastern question as one in which history could teach a lesson in contemporary politics. "Certainly," said the professor. "You mean, of course," said Mr. Bryce, "that the Turks were in the wrong and that we ought not to support them." "No," said the professor, "I mean the exact opposite." That was Mr. Bryce's illustration of the incertitude of lessons from history. He hoped he was not guilty of the enormity of betraying a Cabinet secret but they might by and by have an opportunity of testing both the strength and the power on the one hand and the infirmities on the other, of the human intellect, in spite of all that education had done; and he for one should look at the struggles and controversies with great interest. Apart from other points of view, he should be curious to see how many hundreds of illustrations they would find, or he has an observer might deduct, of what was wrongly called reasoning in the controversy that might soon be upon us.

Mr. Whitelaw Reid, who was received with loud cheers, said he spoke on behalf of his associates as well as himself in expressing their feelings on the receipt of these great honours that day from the first of the new Universities. They profoundly appreciated the honour done them and were most grateful for it. Speaking for himself alone, he recognized that he owed this distinction not least to the fact that he had the honour to represent among them a great and glorious nation, a great and friendly nation, kindred in blood and drawn to us more and more by ties of friendship and intimacy that he trusted might last for ever. In some of their newer institutions in America, which perhaps corresponded in some small degree with the University of Manchester, there had sprung up an idea which had been rather extravagantly expressed in the popular saying that the education that a boy needed nowadays to make his way in the world was one which must teach him everything about something and something about everything. A University like Manchester might be disposed to be a little more insistent upon the last principle. He was emboldened by the remarks that had been made concerning a great citizen of his own country, as also a citizen of England and the world, to express the pleasure he had at standing among the cotton mills of Lancashire, within reach and hearing of the cotton operatives who in a great crisis in his country's history, although suffering themselves, starving for cotton and starving, alas! sometimes for bread, nevertheless threw the precious weight of their sympathy and moral influence on the side of freedom. He would say that their action then had not been forgotten in the South and the North, and that an entire reunited country thanked them for it.

The Vice Chancellor, in the course of a statement as to the new laboratories, mentioned that last summer he received a letter from one of their own graduates, Mr. Andrew Carnegie, stating that he would provide £10,000 towards the new loboratories. That would about cover the cost of the building, but would not provide for its equipment. He was glad to say that towards that some generous benefactions had already been given, and he believed they would not appeal in vain for the remainder. Mr. Carnegie had expressed the wish that the new laboratories should be called "The John Morley Laboratories."

SIR HENRY ROSCOE'S ADDRESS.

Sir Henry Roscoe, after declaring the new laboratories open, said that, as Professor Emeritus of Chemistry in the University—a title which he prized very highly—it was natural that he should feel great pleasure in accepting the invitation of the council to open the new laboratories. He was glad to know that these chemical laboratories were to be associated for ever with the name of the Chancellor of the University. The chemical school of Owens College and the University of Manchester had been and he firmly believed would long remain the premier school of chemistry in the country. The best wish that he could express for its future was that the work which issued from it might ring as true and might have as great an influence on English Science as John Morley's works had had on English literature. He was particularly sorry that Mr. Carnegie should not be present to see the work of his bounty, because he might have been induced to appreciate more thoroughly than perhaps he had hitherto done the importance to civilization and to scientific progress of chemical laboratories. He had endowed libraries throughout the English-speaking world, but this was the first scientific laboratory that he had established; might they hope that it would not be the last? In welcoming these new laboratories, so admirably constructed by Mr. Paul Water-house, it was well to remember that, just as it was the author rather than the binder that stamped a book, so it was the teacher's personality that made a school. In that respect the University was on sure and safe ground, for the scientific staff of its chemistry department was surpassed by none. The influence of what might be called mind over matter as regards scientific progress had nowhere been so fully illustrated as in Manchester, for there, under the most primitive conditions, two of the greatest scientific men of the age worked. Both Dalton and Joule carried out their classical investigations with the simplest accessories, but since their time conditions had changed, and now well-equipped laboratories and fine apparatus had become indispensable.

Sir Henry Roscoe went on to give some reminiscences of old days. It was exactly—almost to the day—52 years since, at the age of 24, he was appointed Professor of Chemistry in the Owen's College. He delivered a lecture on the scientific work of Joule, whose name he found was much better known in Germany than it was in his own city of Manchester. He was the last of the old guard who in 1857 served on the staff of the college and set themselves doggedly to overcome the prejudice and want of appreciation which were shown, not only by the people of Manchester, but also by the whole of the Press. It was indeed then a poor affair; they had 35 students in all, of whom 15 worked in his laboratory. The thing was in fact "going spark out." Manchester did not want a University college; it would be much better to limit their hopes to being a superior school. He was standing one night at the back door of the old building in Quay-street, smoking a cigar before his evening lecture, when a tramp came up to ask if that was the night asylum. He told him it was not so at present, but that if he called again in six months it might be. The progress they had made in the last 50 years read almost like a fairy tale in the pages of its history, written by his dear friend Joseph Thompson, who had just passed away. It was not only in one branch of intellectual activity that their University was conspicuous, but in all branches. It was not a mere school of science, though each of its science departments might well challenge comparison with similar institutes in other Universities, both old and new, but it was a real University, with all its faculties fully and adequately represented. That was their glory. To found a technical school in Manchester 50 years ago would have been a comparatively easy task, but they meaning Greenwood, Ward, and himself—had higher views. They were determined to conquer or to die, to have a University or nothing. And those small beginnings had ended, through the enthusiasm and devoted work of their successors, in what was now seen.

Lord Morley, referring to the name by which the laboratories were to be called, said that, whatever else he might be, he certainly would not be at home in a chemical laboratory.

A CORRECTION.

In the last issue of the "*Review*" in the article under the heading of "University Vagaries" it is stated that Mr. Bavanandhum Pillai is a chief Tamil Examiner. We learnt subsequently it is not correct. We are sorry for the insertion.

PANCHAMA EDUCATION.

The following paper was read by Mr. Arthur Mayhew, at a recent meeting of the Danish Mission Conference at Kottagiri.

It would be most presumptuous on my part to attempt, with my limited experience, to deal with so large a subject as has, apparently, through a misunderstanding—been allotted to me to-night. I propose to confine myself to the sufficiently large topic of the Education of the Depressed classes—or Panchamas as I shall prefer to call them. No one would deny that Education must play a large part in the elevation of every tribe or race. But there are other most potent factors in the process not to be ignored by those who take a general survey of the situation—factors on which I am not qualified to speak but to which I may be proved by the nature of my subject to allude. For Education rightly interpreted, can never be considered in isolation, it must always be intimately connected with the most vital and pressing questions of social and national life. It would therefore be most fitting for me to say that I am going to consider the elevation of the Panchamas from the educational standpoint. As an officer of the Education Department, I feel special interest and in sympathy with this kind of educational work, of which the work that is being done in the schools, whose supporters I see assembled here to-night, is undoubtedly a most inspiring and encouraging example. What I have to say is for the most part, the fruit of my experience as an Inspecting officer. In the course of five years I have visited a large number of Panchama schools and had the benefit of discussing their problems with numerous Managers. If at any time I stray beyond the regions of personal or official experience it is only because as I have said before the discussion of any educational problem leads one almost inevitably to a consideration of connected—often underlying—social, moral and national problems.

I can best demonstrate the need for Panchama Education by drawing your attention to what I understand to be their essential characteristic. The term Panchama—Panchama Prarda—or fifth class was first employed, I believe, by Dr. Cornish in the Madras Census Report of 1871 to denote the Paraiya and kindred classes who belong to none of the Brahman, Ksatriya and Vaisya or Sudra classes—and whether from occupation or habits of living or any other cause are held by the main body of Hindus to be polluted and polluting. At the 1901 Census it was estimated that there were 4½ millions of such people scattered over the Presidency. The term Panchama seems first to have been brought into general use by Dr. Duncan in 1893 when as D. P. I. he drew the attention of Government to the need for making more adequate provision for their education. They were then and are still of course exceedingly poor and illiterate but so too are a large number of castes not included among the Panchamas. If they were merely poor and illiterate, their case would not require special attention in this land where poverty and illiteracy are so common. What requires emphasis is, the fact that to a large extent they are excluded from the common life—the social aims and privileges and responsibilities of the Hindu community—a lot which resembles in many respects, though the analogy is not a perfect one, that of the slaves in the old Greek States and is reserved in such European countries as I know for those who have grievously offended the moral, social or religious conscience of the community.

It is obvious that such a state of exclusion is unhealthy not only for those excluded but for the community which excludes. A natural and regular development of social and national life is impossible so long as a certain portion of the inhabitants is excluded from sharing in it. The full extent of the evil is better seen when we consider the numerical strength of the excluded section and the real importance of the work which they might perfrom and are to a large extent performing now for the community at large. The actual dangers arising from a large class of by no means incompetent men left in a position of too great unfamiliarity with social rights and responsibilities are too obvious to be ignored.

Now I am not professing—and indeed have no right—to investigate here the social and ethical rights and wrongs of the caste system. It is not my business to fix the responsibility for the state of things described above. What I have said was intended merely to lead on to what is surely the function of Education in the case of these Panchama classes—namely to make them *more fit* to take their part in the common social life—more fit to be members of a community with definite and acknowledged rights and responsibilities Such, it may be urged, is or should be the aim of Education for all classes equally. This may be gratefully admitted. What I would urge here is that it requires *special* emphasis in the case of the Panchamas, who, unlike the more fortunate Hindu castes and classes—social or caste life—which, whatever are not borne into or brought up in the midst of whatever its faults undoubtedly affords some elementary training in the duties of citizenship—and gives, through its traditions and customs, some elementary ideas of the rights and responsibilities of a member of a society. It might, perhaps, be said that whereas in the case of the Hindu or Muhammedan the task of the education is to elevate the individual to take a wider view of life than that which he has as a member of a caste or race in the case of the Panchama, the educator's first duty is to prepare him for the larger social life by giving him a more definite notion of his elementary duties as a member of any community at all—of his duties towards his immediate neighbours, whosoever they may be. And if this be in any way accomplished there will gradually grow this *self*-respect which is a *sine qua non* in individual and race development. Let me descend from this region of the abstract to a particular concrete instance. It has often been my lot to thread the mazes of a Parchery or to enter into a Parchery School with a very orthodox and refined Brahman official. It was easy to see that the prevalent state of filth of these places—unpleasant enough to myself was absolutely repugnant and offensive to the Brahman. Nor could one be in any way surprised. One finds in such places a total disregard for the feelings of those who have been brought up subject to certain traditions and habits which, whether in some respects degraded now or not into mere ceremonials have their roots in sound principles of sanitation, decency and order—and illustrate the essential point that one must live one's life with due regard to the feelings and welfare of one's neighbours. Cleanliness has been placed by some next door to Godliness—a juxtaposition which is apt to be misleading unless we remember that cleanliness was probably estimated so high because it is a manifest and easily recognisable sign of that inward and visible grace - self respect for the feelings and health of others. While emphasising therefore the great importance of training the Panchamas in our schools to more-cleanly habits, I would also insist that such cleanliness is only part and parcel of the larger scheme of training in the duties and responsibilities of a life lived in a community. When our educational aim is attained "Noblesse Oblige" will be the motto of the Pariah no less than of the Brahmin.

1. From my general premises now established I may declare certain significant conclusions regarding Panchama Education. Social and moral training must play a very large part in our curriculum—it might be more true to say that it should dominate every portion of it. Moral training—which is more talked about than understood at present—has no doubt its value in all schools, but surely more value in a school intended say for Brahmins than for those who from their earlier days are accustomed to manual labour and are bread winners almost from the cradle. What they must learn in school is that which is most noticeably lacking in the life of their homes.

2. It follows from this that the teachers must be most carefully selected. It has always been the custom to relax the rules of the Department in the case of teachers in Panchama schools. But this rightly regarded is a concession to the paucity of Pariah schools and teachers It is *not*—as some think—equivalent to the theory that any teacher is good enough for the Panchamas. The opposite is more true—that we want our best teachers for these classes—but not necessarily in technical qualifications but most certainly in moral and social qualifications. For the most part these Teachers will be either native Christians and Panchamas—men intimate with the life and thought of those they are educating and yet able to view life themselves from a higher standpoint—able also to influence and enlist the sympathy not only of their pupils but also of their pupils' parents and relatives—a most vital point There are and will be to a great extent I hope caste people engaged as Teachers in these schools—but the bulk of the work must fall at present at least on Panchama and Indian Christians. For this reason the activity displayed by Missions in the work of training of Teachers for these schools and the maintenance of a Panchama Training School by Government are particularly valuable. Essential is it also that some of the most able—intellectually and morally—of the Panchamas should advance further in general education than is at present customary for the vast majority—in order that they may be better equipped for elevating their own class.

The supply of teachers for Panchama schools is a most vital question—far more important than the provision of Buildings and Furniture—a point adequately recognised in our present Educational Rules. Those who grumble at the slow progress of this kind of education are apt to forget the difficulties of supplying good teachers and the dangers of supplying bad ones.

III It follows also that to a large extent the Hostel system is of immense importance. Whatever the theoretic importance of retaining the sympathy of the parents and not separating pupils from them—the practical difficulties of training the pupils in social modes of life are enormous when they come to school filthy and return to a most degraded kind of life. Some of my most pleasant hours have been spent in studying the admirable efforts made by Missionaries to inculcate the elements of civic life in the Boarding Homes in their compounds.

IV. On the subject of separate schools for the Panchamas there used to be much controversy. It is I think generally agreed now that though it is important to maintain *so far as possible* the right of entry for all castes and classes into all kinds of Public Institutions—in the lowest stages at any rate, before the Panchama pupils have approached the rudimentary stages of civilisation it is very desirable to have separate schools--partly because a special kind of training is there required, partly because it is undesirable that the more refined Hindu boys should assimilate the customs, etc., of the untrained Panchamas. It is desirable later on that the Panchama should learn by example from his more fortunate Hindu brother. There is a further change from mixed schools which I will illustrate from what I have seen and believe to be not uncommon. One year I found in a village Board a Pariah School was started--outside the Parachery—largely owing to the representations of the village Munsiff. There was no Hindu school there. About a dozen Pariahs inside the school and two Hindus outside on the pial were found receiving instruction. Next year I found a dozen Hindu pupils inside the schools and two Pariahs outside on the pial. It still figured as a Pariah school.—Comment is needless.

It now remains to say a few words about the present state of Panchama Education and the Agencies for developing it. Though the Education Commission of 1882 had emphasised the need for administering to the depressed classes and though various regulations in favour of these classes were introduced at intervals into the code between then and 1890—the first systematic attempt on the part of Government to lay down general principles on the subject seems to have been in 1893 when orders were passed on certain important proposals of Dr. Duncan for extending and improving their education. Since that date there has been a gradual but marked extension of Panchama Education—the special help given by Government taking the form of increased grants for Panchama pupils—special schools and scholarships for Panchamas—a training school for Panchama teachers and relaxed conditions of recognition and aid for Panchama schools—reduced fees in institutions under Public Management for Panchama pupils. The number of Panchama boys under instruction has risen from 21,000 in 1893 to 34,527 in 1897—44,150 in 1902 and 49,272 at the close of the last quinquennium. The number of Panchama girls has risen from 4,961 in 1897 to 8,042 in 1907. The number of Panchama pupils in the Upper and Lower Secondary Departments of schools in 1907 was only 206 and in collegiate classes only 3. This is specially to be regretted when the need for better qualified Panchama teachers is borne in mind. But speaking even in general and remembering the difficulties that there has been a marked increase in the total number under instruction, it cannot be maintained that the present condition of Panchama Education is in any way satisfactory. On this point an admirable pamphlet by the Rev A. Andrew of the U. F. C. M. published a few years back is most convincing and depressing. Those who urge that Government or Local Boards ought to do more are apt to forget that the money spent by these Agencies is money obtained from the public at large—and that increased expenditure must imply increased taxation. On the work for Panchamas done by Missions I need not here dilate. They were the pioneers in Panchama education and still hold the field and are likely to continue to do so. There are also the admirable efforts of the Theosophical society, especially noticeable here in Madras It is a very different tale when we consider the part played in this noble work by private Indian enterprise. Even here there are notable exceptions, isolated examples of real and successful philanthrophic enterprise by large hearted members of the Indian Community. But can it be denied that for the most part the Hindu attitude towards Panchama education—so far as practical private effort is concerned—is apathetic or even in some cases especially in the rural parts antagonistic. It is not for me here to compare the merits of Secondary and Elementary Panchama Education—they do not admit of comparison. But is it sometimes forgotten that endowments and donations and subscriptions to Secondary schools for the Higher classes—laudable though they are—are help given to those who can pay—while every pie given to Panchama education is given to those who are for the most part unable to pay fees and are in a particularly helpless condition. Increase in public expenditure on these schools means, increase of a burden on the community at large. Increase of private expenditure means relief of the general community by those who are in a position to bear a greater share of the burden. Surely, for those who believe in a great future for an awakened India, it must be a great work to assist in the rousing from slumber of that section of the population too drowsy at present to realise for themselves their functions in the future. Nor is it pecuniary help alone that is required. There is a higher form of service—requiring the devotion of time and talents. It is often said that we English have no right to deplore the neglect of the Panchamas so long as we have in our own large cities masses of people always on the verge of starvation and in the depths of degradation. It is too true that we have also our problems--But in England one method of solution is attempted which seems to be conspicuously absent, so far as Indian enterprise is concerned in India. In the worst districts of our large cities in England you will find settlements of earnest men and women—working for elevation of these depressed classes and convinced that for the successful and sympathetic undertaking of this work it is necessary to go and live *amongst* the depressed classes—to be on the spot in order to *understand* their difficulties, to share their joys and sorrows and to raise so far as is possible by *personal contact* the general moral and intellectual standard. It may be long before we get an Oxford House or a Toynbee Hall as the result of purely Indian enterprise in India. I do not think that the outskirts of the citadel can be considered to have been taken until we see such a day. Such settlement work is educational in the broadest and truest sense of the term and that is my excuse for alluding to it to-night.

Perhaps, I should have said more about these, particularly "Elephant Gate Poor Schools." But you have the report and can visit. I hope you have visited or will visit these schools for yourselves. I think you will find them an encouraging example of work performed by Indians for the sake of the Panchamas—in a tireless and unselfish spirit. It is a pity that no great artist in words, or sculpture or painting has yet arisen in India to depict the needs of the depressed classes. The work done by Charless Dickens for social and educational amelioration in England needs doing in India. One of the most striking and appealing works of art in Florence is the ornamentation of the Foundling Hospital—which includes representations of foundling babies swathed in bands and holding out appealing arms for help. If, at any time, a Charles Dickens or Della Robbin arises in Madras, I hope their attention will be drawn to Mrs Lazarus' schools and that they will adorn and assist by their art her great undertaking. Meanwhile, as a poor substitute for these artists, I draw the attention of the Public to Mrs. Lazarus' closing words of her report, when she reminds us that Providence has commended these schools, not to a feeble woman, but—to the generous public. In common with all here to night, I take exception to the application of the epithet "feeble" to Mrs. Lazarus. But with the rest of the sentence, I find myself in complete agreement.—*Christian Patriot.*

SPEECH BY H. E. THE GOVERNOR.

His Excellency Sir George Clarke, recently distributed the prizes to the students attending the Poona High School. The ceremony took place in one of the quadrangles of the school which was gaily decorated with flags and bunting and was filled with a large assemblage of persons including several Europeans. His Excellency, who was accompanied by Capt. Sullivan, was met on arrival by the Headmaster of the School and conducted to the assemblage where a song of welcome was sung by the boys.

His Excellency, after distributing the prizes said:—"Ladies and gentlemen,—The very interesting account of the origin and uses of the Vishrambag which I have read gives rise to many reflections. This garden of repose has just completed its century of existence. From the first, it has been a seat of learning but great changes have come over it, changes which exactly represent the altered conditions of India and of all Oriental countries which have entered upon the path of progress. One hundred years ago the Vishrambag was planned at a place where learned Brahmins could meet to study the Vedas and the Shastras in peaceful seclusion ; to-day it is a busy hive of boys engaged in acquiring education on modern lines and grappling with subjects and a langnage almost unknown in Poona in the time of the last Peshawa. The change, like all changes, is not an unmixed good. Ancient India may have had very few educated people but it produced some great scholars and it has left us rich literature which will never pass away. Its methods of teaching were slow, but they created special relations of reverential affection between teachers and pupils which we cannot reproduce. The old religions and philosophies were deeply instilled into the minds of the pupils and spread from them among the people, heaping to mould, characteristics in which much was beautiful.

"Religion in its higher form was purer in the early days of Indian learning than now, and the fine teaching to be found in the sacred books had not been overlaid with accretions which tended to obscure what was best and noblest. Yet, it was necessary that the old order should change if India were not to remain what Persia and China now are. There is still need for such scholars as ancient India produced, but education must now be such as to set practical ideals before the people and to stimulate them to individual exertions in

order that they may be able to hold their own in the onward march of nations.

THE VENERABLE VISHRAMBAG.

"I fear that even the dream of turning the third quadrangle of this building into a pool of 'crystal water' would be rejected by the doctors who would say that the result might be to provide a breeding place for anopheles and a consequent centre for the propagation of malaria. Viewed in the cold light of the present day, the venerable Vishrambag cannot be regarded as suitable for the purposes of a school. It fulfils certain conditions, it violates others. It was well suited to its original purpose, it is ill-suited to that of a modern High School. Yet, it has succeeded in creating and maintaining the affectionate regard of its old pupils to an extent which is not common in India. Many well-known men have been educated within these walls and are attached to the memories which are associated with them. Distinguished teachers—Major Candy, the great Marathi scholar, Sir Edwin Arnold who, perhaps, more than any other Englishman caught the spirit of the East, Mr. William Wordsworth and Mr. Kunte who will always be remembered in Poona, have successfully ruled here. Sentiment thus built up during many years cannot be lightly disregarded by a Government which seeks to cherish all that is good in the old institutions of India. On the other hand, space and convenience of arrangement for teaching purposes are absolutely wanting, and there are no means of recreation close to hand. These are most serious drawbacks which may in part account for the falling-off of the number of pupils.

"I understand, that when twenty years ago, it was proposed to close this school, many protests were forthcoming and the question was dropped. In justice to the many demands upon our financial resources, I am doubtful whether Government can afford to maintain two High Schools in Poona. Since the time to which I refer, many changes have occurred and the whole question must now be reconsidered, but whatever may be decided, I hope that the best traditions of the Vishrambag may be preserved. Some of the old schools of England have been forced to move to more suitable localities, but I believe, that the strong sentiment attaching to them has not been weakened. If a geographical change should become necessary in the case of the oldest English teaching school in Poona, I trust the same results will follow. A school has everything to gain from the affection which it can inspire among its pupils. Such an excellent Institution as the 'Poor Boys Fund' which exists here, is one of the many ways in which successful past members may help those less fortunate and at the same time maintain their connection with their old school.

A WORD TO THE BOYS.

"And now I wish to say a few words to the boys. In India, there is a tendency to move from school to school, which cannot be a good thing either for the boy or for the school. It is best for you to remain at one school till you have acquired all that it can teach you, then, as has happened here you will learn to feel pride and interest in your school and you will be careful to do nothing which would bring it into discredit. Marcus Aurelius, the great Roman Emperor, wrote these words, as regards his own education. "From my tutor I learned, endurance of labour and to want little and to work with my own hands and not to meddle with other people's affairs and not to be ready to listen to slander." I hope you are learning these great lessons which are necessary for us all and which the great teachers of India did not neglect. You can only expect to succeed in life when you have acquired endurance of labour, and labour of many kinds is what India most needs. When you grow up to be men you can help or retard the progress of your country and the education you are receiving must be judged by your actions. You are imbibing Western knowledge and it is necessary that you should do so but do not on that account cease the best teaching of your own people. I have said that the sacred books of India lay down laws of life and conduct which ought to be a guide to you all. They can teach you to work not only for self-advancement, but for the general good; to be kind and courteous to all about you, to seek after truth and not to be led away by wild assertions. If you follow these wise precepts, you will become good and happy citizens.

"This is the anniversary of the Battle of Trafalgar, which I hope you know all about, because it had a powerful influence on the history of India. Nelson's last words to his crews told them that—"England expected every man to do his duty." That is what will be expected of you when you grow to manhood, and in proportion as you do your duty faithfully, so will you help forward the progress of India. I am very glad to be here to give away the prizes on this important anniversary. I congratulate the prize winners and I wish you all prosperous, useful, and happy lives."

OUR ENGLISH LETTER.

LIVERPOOL, *October* 1909.

FOR some time it has been felt that the lack of adequate provision for the teaching of Oriental languages is a disgrace to a race that has to govern an Empire. Thus, in London there is at the present time no school of Oriental languages. The absurdity of this is apparent when we consider that Paris, Berlin, St. Petersburg and Vienna have well-appointed schools. Our foreign obligations are infinitely greater, but our capital has no such school. India is only one of a large number of countries to which we are sending men in ever-increasing numbers. The Egyptian Civil Service, for instance, is a creation of the last few years. Sometime ago the Government appointed a committee to enquire into the matter, and their report has just been issued. Moreover, Viscount Morley—who is John Morley in this disguise—has stated in the Upper House what is the Government's attitude to their report. It appears that for once a committee has discharged its duties in a wholly admirable manner. Their report is based upon indisputable fact, and their findings such as fully meet the case. Naturally they ask for more than the Government will give them: the Treasury has quite enough claims to meet at the moment, and hen-roosts are hard to find, now that their owners are roused to the necessity of protecting them. But the Government is alive to the seriousness of the issues involved, issues that are not only political and administrative but commercial as well. £12,000 a year is required to maintain a school in London; the reasonableness of the sum is evident when we see Germany spending £10,000 a year. Of this, the Government will find something like three or four thousand pounds. For the balance, they looked to the great city merchants whose interests would be served by the new school. Lord Morley assented to Lord Cromer's plea that the school ought to provide instruction in Oriental religions and customs and character as well as languages. Lord Curzon urged, that a larger sum ought to be noted by the Government, but of this, Lord Morley held out no prospect. Nothing has yet been said of the date when the school will be provided, but we should imagine there will be no great delay. London ought to be able to offer the same facilities in this respect as Oxford and Cambridge. A committee which has reported in a reasonable time and a reasonable manner ought to have the satisfaction of seeing some fruit of its labours.

Archbishop Bourne has made a public declaration of Catholic policy on the Education question. According to the Bishop of Salford who presided over the meeting, it was a stirring and historic deliverance. He referred to the policy of the Government as one of unjust differentiation. 'Each of the four projects submitted to the House of Commons would have done the gravest injury to the sacred cause of Catholic education, had it passed into law." The statement that at the end of 1906 the Leaders of the Irish Nationalist Party obtained from the Government terms which were satisfactory to the Bishops, he characterized as positively misleading. It seems that the late Prime Ministers Mr. Birrell entered into negotiations with Mr. Redmonds and Mr. Dillon, but from the Catholic point of view it was in order to secure a *modus vivendi* and not a permanent settlement. The bishops had cognizance of the arrangements and acquiesced in them, but subsequent events have shown that their failure was providential. On every ground they had reason to distrust the Board of Education. At present Mr. Runciman's regulations regarding secondary schools are sapping and undermining the whole structure of Catholic education. And in this fight for the Secondary schools the Catholics stand alone. Outside the Catholic Church those who are most keen about the maintenance of definite religious teaching in the elementary schools are comparatively indifferent about it in the secondary schools. Accordingly it behoved the Catholics to be doubly careful. The Catholic Members of Parliament seemed unable to offer an adequate resistance to the wiles of the Board of Education.

This speech has roused Mr. Dillon to a vehement denial of the Archbishop's right to dictate upon the matter. The Catholic politicians are increasingly jealous of their rights, and in particular Irish politicians are not willing to bow to an English Ecclesiast. Which is but another illustration of the intricacy of this question. And when we bear in mind that the Liberal left wing are inclined to blame the Government for undue partiality towards the Catholics, even accusing them of betraying alike the cause of Education and of the Free Churches in their anxiety to meet the Catholics, we see how far we are still from the solution of this question. It has at least become clear that the Catholics will not consent to any uniform national system which is in the range of practical politics, and the main body of citizens will hardly consent to subsidize wholesale and permanently a Catholic system which shall be under full clerical control.

Pity the position of an Education Secretary even Mr. Birrell, an alien and an exile in Dublin, and Mr. Mckenna at sea in the Admiralty, can hardly envy the plight of their successor, who may get his will in administration but will never get it in legislation.

The topics of the hour are three in number. First of all, the Polar Controversy of which most of us are tiring, disgusted by the shameless bickerings of the protagonists: then, the doings of the flying men, whom we seem likely to call 'aviators', save the mark: and finally the Budget and the likelihood of its causing a general election when the Lords have wreaked their fearful vengeance upon it, despite the threats of Radical politicians who promise that the weapon the Lords hurl at the Budget will prove a boomerang. The land clauses of the Budget naturally affect the educational corporations who are in the happy position of being landowners. It was feared at first that the Universities and schools would be heavily hit. But the Chancellor has not their demands on many points. They are not to be charged undeveloped land duty or increment duty in respect of property which they actually occupied and enjoyed. They are also exempt from the corporation tax of 20 %. An attempt was made to induce the Government also to remit the increment tax when such land was sold. Sir Philip Magmes and Sir William Anson moved an amendment to that effect. They were supported by Mr. Balfur who has been in excellent fighting mood since his great speech at Birmingham. But the Chancellor was obdurate.

Reviews and Notices.

Intermediate Chemistry, by P. Lakshmi Narasu, B.A. Srinivasa Varadachari & Co., Madras.

About a year ago, the author of this book brought out an excellent Manual, "*Lessons in Elementary Chemistry*," for the use of the Matriculation students. We are glad that the very favourable reception given to that volume, has encouraged the author to prepare this sequel to meet the requirements of the course laid down for the Intermediate examinations of the various Indian Universities.

It has now come to be generally recognised that the most satisfactory method of teaching the natural sciences is by experiments which can be performed by the learners themselves. In consequence, several text-books have recently been published, in most of which an attempt is made to arrange for the pupils, courses of practical instruction, designed to illustrate the fundamental principles of the subject they treat of. But the matter is worthy of better treatment than it has received in such works, and there was therefore need for a work like the present. We are glad to be able to say, that in our opinion, Mr. Lakshmi Narasu's work is well fitted to serve the purpose for which it has been written. While it assumes a knowledge on the part of the student of certain primary principles in chemistry, it is strictly, as it professes to be, an elementary work, and can be used independently by beginners of the subject. The leading principles are developed in a simple, but connected and logical order, suited alike to the wants of the student preparing for his examination, as to those of the general reader, who, in these days of scientific progress cannot afford to be completely ignorant of the outlines of the subject. The treatment is full and clear, the chief propositions being illustrated by means of numerous experiments. To each section also is added, a set of experiments for practical work, with, in many cases, a notice of the principal sources of error in the experiments and indications of the method of making the necessary corrections. The value of the work is greatly enhanced by the endeavours which the author has made to avoid in the lectures elaborate apparatus and to make the whole as simple as possible. Most of the lecture experiments are performed with the apparatus which is afterwards used by the class, and whenever it can be done, the theoretical consequences are deduced from the results of those experiments. The introduction of the theory of ions is not out of place, as it is most desirable that the student, though a beginner, should be made familiar with the modern views of the subject. The excellence of printing, the wealth of illustrations, and the general get up of the book, do great credit to its well-known publishers. We have nothing but commendation for the book, and hope that it will be generally adopted throughout India.

Questions and Answers in Physical Geography.

The late Mr. Sankara Aiyar, whose histories of India and England are well-known to students, left this book in manuscript at the time of his death, and his son Mr. Krishnamurthi has printed it at the Kamalasani Press, Kumbakonam. The printer's work is well done. The printed matter is valuable to youngsters beginning the study of Geography. The study of Geography must proceed on the system of cause and effect and we think this catechism will be a useful aid to students adopting the accepted method. Mr. Sankara Aiyar's Physical Geography is, we understand, a recognised text-book in the Central Provinces. Here and there, we find a few blemishes, but these do not, in our opinion, mar the usefulness of the book as a whole Students appearing for the public as well as class examinations will find the Questions and Answers a very useful Companion. The book will stimulate further study.

A Class Book of Physics, by R, A. Gregory and H. E. Hadley, B.Sc. Macmillan & Co., Ltd., St. Martin's Street, London. 1909.

As its name implies, this is essentially a student's manual. It is concise in description and gives precise instructions for practical work. It provides for the requirements of students who intend to present themselves as candidates in elementary examinations in any branch of physics. The book may be consulted with profit by students preparing for the intermediate examinations of Indian Universities.

Prakriti Sastra Sangraham, being a treatise on elementary physics in Telugu adapted to the requirements of elementary and secondary schools according to the present educational rules, by A. Sitaramaswamy, with a preface by Y. Narasimham Pantulu Garu, M A. Printed at the Ananda Press, Madras.

Though this book is described on the title page as an elementary treatise on physics in Telugu, it contains sections also on chemistry and botany. We cannot say that the descriptions are always simple and plain. The terms used do not convey any definite sense, and are often misleading. To speak of adhesion as సంయంధశక్తి is not correct. Why should it not be translated అంటుకొనుశక్తి? We are not sure that our young boys will profit much by reading such books as these.

England under the Tudors, by S. Satyamurti, B.A. C. Coomarasawmy Nayudu & Sons, Madras. 1909.

Modern India, by S. Satyamurti, B.A. Printed at the Caxton Press, Madras. 1909.

Both of these books have been written to meet the requirements of students preparing for the Matriculation examination of the Madras University. We hope the books will be found useful by those for whom they have been specially written.

Indian Educational Notes.

ADVICE TO STUDENTS ON POLITICS,

By the Hon'ble Mr. Gokhale.

**But because it is impossible to prevent Indian students from taking an interest in politics before their time, therefore it does not follow that they should be left to pick up their political ideas where and how they can. On the contrary, I strongly hold that a crying need of the present situation is the provision in Colleges of facilities for the efficient training of what may be called the political sense of our young men. The present policy of treating politics, and specially current politics, as dangerous, and in some respects, even a forbidden subject has only resulted in depriving students of that guidance to which they are entitled at the hands of their teachers in forming sound views on important questions. To leave them thus to their own devices, amidst the perplexities of a difficult situation, is to neglect a plain duty towards them at a critical period in their lives, and the consequences of this neglect have been and are bound to be serious and far-reaching. I was glad to see this view urged, the other day, in a letter to the Press by the Rev. Mr. Andrews of Delhi, than whom there is no better friend of Indian students and Indian aspirations in the country. "The historical and economic questions," says Mr. Andrews, "which lie at the base of at least three-fourths of the politics of modern Indian students should be dealt with wisely and sympathetically by those who are teaching history and economics, and sound opinion should thus be built up within the colleges themselves. Different teachings will no doubt take different views of the same questions, but it is not so much the views urged on the attention of the students as to the proper cultivation of their political sense and the habit

of careful and comprehensive thinking in regard to political problems that must be the chief object sought, and will constitute the real gain. The very fact that our students cannot help taking an interest in politics before their time goes to emphasize the great need that exists for their efficient political education. I think, our students, especially college students, should enjoy every possible facility for acquiring an accurate knowledge of political matters, and forming sound views in regard to them. They should be encouraged to discuss such matters freely in the college; and publicists, whose opinions are entitled to weight, should, from time to time, be invited to take part in the discussions. They should be at liberty to attend public lectures and addresses on political subjects, and they may even attend political meetings with advantage, provided they are there only as spectators. But when it comes to active participation in what is called political agitation, I think we must draw a line. Political agitation, directed towards the people, seeks to educate and organize public feeling and public opinion in political matters, directed towards the Government it seeks to bring the pressure of that feeling or opinion to bear upon the authorities for the purpose of securing the changes that are desired. In either case it is a most responsible action, and students, with their immature judgments, are not qualified to take part in it. The active participation of students in political agitation really tends to lower the dignity and the responsible character of public life, and impair its true effectiveness. It also fills the students themselves with unhealthy excitement after evoking in them a bitter partizan spirit, which cannot fail to interfere with their intellectual and moral growth. The period of four or five years, which most young men spend at college, is all too short a time for the work which properly belongs to it, namely preparation in knowledge and character for the responsibilities of life. Surely it is not too much to ask our students to exercise a little patience and self-restraint during this period and defer responsible action in politics till after they have completed their studies, and taken their place in the public life of the country. I venture to think that a stage has been reached in our affairs when it is necessary for us to face resolutely our responsibilities in this matter. Every one knows that during the last few years a new school of political thought has risen in the country and that it has exercised a powerful fascination over the minds of young men, more or less, in all parts of India. A considerable part of what it has preached could not but find ready acceptance on every hand. That love of country should be the ruling principle of our lives, that we should rejoice in making sacrifices for her sake, that we should rely wherever we could, on our own exertions,—these propositions are not preached for the first time in the country, but they were urged by the new party from a hundred platforms and in a hundred organs of public opinion, with a passion which roused general enthusiasm. Side by side with this undoubtedly valuable work, the new party gave to the country a good deal of what could only be regarded as unsound political teaching. That teaching was in the first instance directed to the destruction of the very foundations of the old public life of the country, but once started, it could not be confined to that object, and in course of time it came to be applied generally. Its chief aim lay in its ignoring all historical consideration, and tracing our principal troubles to the existence of foreign government in the country. Our old public life was based on frank and loyal acceptance of British rule, due to recognition of the fact that that rule alone could secure to the country the peace and order which were necessary for slowly evolving the nation out of the heterogenous elements of which it was composed, and for ensuring to it steady advance in different directions.

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2. By Mr. Arundale, Honorary Principal of the Central Hindu College, Benares, delivered a most interesting speech before an enthusiastic audience on the place of Indian youths in national life. After referring to the elements constituting national life and laying stress on self-sacrifice as the only road to national greatness, Mr. Arundale proceeded to point out the unsettled condition of Indian politics, and remarked that there seemed to be an absence of common ideals in the India of to-day. We might, however, comfort ourselves with the speculation that this unsettled condition might merely be the signs of oneness of purpose to come.

Speaking of the place of students in national life he referred to the divergent views held by political leaders like Mr. Gokhale and Mr. Arabindo Ghose on the question of students taking an active part in politics. For his own part he emphatically declared, that he would not have the students take any active part in politics. The question should be asked: Are those who advise students to take an active part in politics prepared to take the consequences of it, and protect them if they fall into trouble? As a matter of fact, they did not do so. He strongly advocated the necessity of providing college students with political education. Both sides of different political problems ought to be placed before them and they should be encouraged to think independently. He condemned the general apathy of the elders towards the proper education of the students. He referred also to the order of the Sons of India, inaugurated by Mrs. Besant to provide an outlet for the proper development and guidance of the new forces which have been pervading the country, particularly the students with their throbbing spirit of patriotism.

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3. By Mr. Chauduri, President of the recent Partition day Meeting.—My young friends, the students of Bengal.—What have you to do with politics? you are the future hope of our country. Be students in the true sense of the word. Let no one amongst you behave, so as to make us hang down our heads in shame. Your work is to learn. Learn to be good and great. Isolate yourselves altogether from matters of State. You have nothing to do with them. We have little to do with them. Serve your country in the only way you can, strengthen yourselves in every way in intelligence, physique, and character and then you will succeed where your elders have failed. They may have failed in their duty by you. They may have been weak and uncertain. They have, perhaps, not been able to break traditions, but they belong to you as you belong to them. Make not their endeavours more difficult. It is needless to say that nothing great has ever been achieved through the path of moral debasement. Self-restraint must precede self-regard. Patience and self-control are great virtues. Patriotism is religious. I am not a visionary but I see in you the elements of a great nation. Don't falsify our hopes; do not be misled from the right path.

MADRAS.

It is a matter for congratulation that two of the members of the Shorthand Association—pupils in the Advanced Class—have been awarded scholarships of the value of Rs. 10 each per mensem, tenable for two years from 1st July, 1909. One of the stipendiaries, A. Krishnamurthy Row, is, it is gratifying to note, also a student in the Arts Class (Senior B.A.) of the Madras Christian College, and it is hoped that the fact that he has earned the scholarship will serve as an incentive to many of the College Class students to take to the study of the Art. It will be admitted on all hands that Shorthand is becoming more and more popular and useful, and that a knowledge of the Art is an invaluable asset.

It is notified that Sir Isaac Pitman and Son's Speed Examinations will be held this year in the third week of November next (1909), the exact date to be notified later. The composition of the Committee is as follows:

1. The Hon'ble Mr. V. G. Lynn, President of the Association.

2. The Revd. A. Moffat, M.A., Professor, Christian College.

3. Dewan Bahadur L. D. Swamikannu Pillay M.A., B.L., LL.B., Vice-President of the Association.

4. Mr. C. Gopal Menon, F.I.P.S., A.I.B., Vice-President of the Association, with Mr. C Gopal Menon and Mr. V. Venkatramana Iyer, B.A., the Secretary of the Association, as Joint Secretaries.

Candidates desirous of appearing for the Speed Tests, which will range from 60 words a minute and above, are requested to send in their applications to the Secretary, stating therein their names, age, educational qualifications, address, and the rate at which they desire to be examined. The applicants should remit by Money Order to the Secretary Re. 1-6 to meet the expenses for holding the examination.

The attention of the candidates is particularly invited to the fact that two prizes of the value of Rs. 20 and Rs. 10 respectively will be given out of the donation given in 1906 by the late Mr. H. K. Beauchamp, of *The Madras Mail* for the candidates who secure certificates for 140 words and more. For full particulars regarding the conditions of the award, please apply to the Secretary enclosing a half-anna stamp.

Dewan Bahadur L.D. Swamikannu Pillai, M.A., B.L., LL.B., Secretary, Board of Revenue, Madras, delivered a lecture on Shorthand in the school hall, Calicut on the evening of the 4th inst., when Mr. M. S. Rama Iyer, B.A., B.L., High Court Vakil, presided. There was a large gathering of many of the leading citizens of Calicut and students of the local schools and colleges.

The Chairman, who is well acquainted with the principles of Pitman's System of Shorthand, in introducing the lecturer, said, that he was very glad to welcome the lecturer to Malabar for the first time.

Mr. Swamikannu Pillai, in the course of a very lucid and interesting lecture, said, that Shorthand as popularly understood, was a method of writing fast by using secret and conventional signs. The Shorthand invented by Sir Isaac Pitman did not consist of arbitrary Signs, but was based on the principal elementary consonantal sounds of the English language. Shorthand was a Subject which should be studied, not only by the person who had to live by it, but also by all persons as

a fine art. He then dwelt at great length on the advantages of Shorthand. It not only saved time and labour but was a means to improve the memory. It was very useful to Indian students, since it greatly improved their pronunciation of the English language. He concluded with the remark that, in addition to the acquisition of proficiency in speed, a good knowledge of English was necessary to enable a person to become a successful shorthand-writer, *i.e.*, a person who could follow a good public speaker.

The Chairman, in the course of his concluding remarks, said, that a knowledge of Shorthand was more and more becoming indispensable, not only for the lecture room, but also for the successful discharge of one's professional duties. The reporter was coming into prominence and he was an indispensable ally of the teacher, since he made it possible for the teacher to have for his audience, not only the world of to-day, but of the future also.

The twentieth century might be characterised as the century, when the reporter would be abroad, armed with his fountain pen against any General that ever battle-field saw, or any Admiral that ever airship held. In this age of wonderful inventions, a machine which would register in Shorthand the utterances of a speaker might be possible, and the reporter need not be afraid of it, since the really good man would always have his value. For example, the gramophone has not yet displaced the true musician, nor has photography killed the art of painting.

The lecturer and the Chairman were garlanded, and the proceedings of the evening were brought to a close by the usual vote of thanks.

An ordinary meeting of the Executive Committee, of the Mohamedan Educational Association of Southern India was held recently, at the Anjuman Buildings, Mount Road, Madras, under the presidency of the Honourable Nawab Syed Mohammad Sahib Bahadur. The President and Mr. Yakub Hassan were elected to represent the Association on the Council of Native Education. A scholarship of Rs. 4 a month was granted to a Mohamedan student of Cuddalore. The letter from the Government in reply to the Association's communication on the subject of concession of half fees to Mohamedan students in the Salem College was read and considered in the meeting and further information was required from the Mohamedan Educational Association, Salem, so that the Committee may re-address the Government on the subject.

Miss P. F. Parsons, Second Assistant Inspectress of Girls' Schools, has been granted two days' extraordinary leave without pay.

The privilege leave for two months granted to Mr. S. V. Melagiri Rao Pantulu, Acting Assistant Inspector of Schools, Guntur district, has been extended by twenty days.

The University of Madras is pleased to nominate Lieut-Col J. L. Van Geyzel, I. M. S. to be an Ordinary Fellow of the Madras University.

Major A. Miller, I. M. S. has resigned his Ordinary Fellowship of the Madras University, with effect from 7th September 1909.

Mr. R A. Nelson, M.A., L.L.M., Barrister-at-Law, Principal, Law College, Madras, has been permitted to return to duty.

Mr Mir Sultan Muhi-ud-din Sahib Bahadur, having resigned his office as an Ordinary Fellow of the Madras University, is to be an Honorary Fellow.

Mr. P. Appaswami, B.A., Barrister-at-Law, is to be Assistant Professor, Law College, Madras, *vice* P. R. Ganapathi Aiyar resigned.

A batch of students from the Tanjore Government Training School paid a visit to Madras, under the "new excursions scheme," introduced by Mr. J. H. Stone. During their stay here, they were the guests of the Principal of the Teachers' College at Saidapet, they visited several local educational institutions, and Mr. J. H. Stone, Principal of the Presidency College, entertained them at lunch at the Presidency College. The party stayed in Madras for a week, and returned to Tanjore greatly edified with all that they had seen.

The Government are pleased to accept the offer of Mr. Stone, of Rs. 477 made on behalf of the students of the Presidency College, Madras, to endow in connection with the college, a prize in the name of Mr. T. R. Scott, formerly Junior Professor of English in that college.

The Government are pleased to accept the offer of Rs. 3,250 of Mr. H. Nowroji, Honorary Secretary, Colonel Love Memorial Fund, to endow in connection with the College of Engineering, Madras, three prizes in the name of Colonel H. D. Love, late Principal of that College.

With reference to the Resolution of the Government of India, Home Department (Education), dated 1st July 1909, Nos. 556-569, read above, the Governor in Council is pleased to appoint the gentlemen named below as a General Committee for the Madras Presidency and Coorg to co-operate with the central Bureau and Advisory Committee which have been established in England by the Secretary of State to assist and advise Indian students proceeding to England :—

President.

The Vice-Chancellor of the University of Madras (*ex-officio*).

Vice-President.

The Director of Public Instruction, Madras (*ex-officio*).

Members

The Hon'ble Raja Vasudeva Raja, Valia Nambidi of Kollengode.
Raja Venkatakumara Mahipathi Surya Rao, Raja of Pithápuram.
M.R.Ry. P. T. Srinivasa Aiyangar Avargal, M.A., Principal, Mrs. A. V. Narasinga Rao's College, Vizagapatam.
The Hon'ble Mr. P. S. Sivaswami Aiyar, B.A., B.L., Advocate-General.
Mr. F. S. Davies, B.A., Principal, Ernakulam College, Cochin.
Mr. A. C. Mitchell, D.Sc., Director of Public Instruction, Travancore State.
Muhammad Qadir Navaz Khan Sahib, Khan Bahadur, Acting Collector of Nellore.
M.R.Ry. Vengail Kunhi Raman Nayanar Avargal, Cannanore.
M.R.Ry. K. Narayana Rao Avargal, B.A., B.L., High Court Vakil, Madras.
Mr. J. H. Stone, M.A., Principal, Presidency College, Madras.
The Rev. William Skinner, M.A., Principal, Madras Christian College.
M.R.Ry. K. Ramunni Menon Avargal, B.A., Senior Assistant Professor, Presidency College, Madras.

Secretary.

Mr. A. Davies, Deputy Registrar, High Court, Madras.

2. The members will hold office for a period of two years.

3. The Secretary to the Committee will be paid an allowance of Rs. 60 *per mensem*.

4. The Committee will be requested to decide for itself the methods by which the objects for which it has been created may best be attained.

At the monthly meeting of the Arya Sangam for the amelioration of the Boatmen and Fishermen Community held recently it was decided that the President should memorialize His Excellency the Governor of Madras, with a request to issue orders to the authorities concerned to establish Tamil Elementary Schools, for the education of the boys and girls of the Boatmen and Fishermen Community in the several villages on the Coromandel Coast, in the Presidency of Madras, they being too poor either to pay school fees or maintain such schools.

Only one Indian candidate has been successful in the recent competitive examination for admission into the Indian Civil Service. The fortunate candidate who hails from Madras is Mr. V. Narsing Rao.

The Government has made a grant of Rs. 3000 to the Palghat Victoria College, the Municipal Council having consented to raise the fees.

At an adjourned meeting of the Senate of the Madras University, the School Leaving Certificate introduced by the Madras Government was accepted by a majority. This will be regarded as equivalent to the Matriculation, and candidates holding these certificates will be entitled for admission to College Class. The subject of the course is at the discretion of the heads of the Colleges. Matriculation is to be continued for those not holding School Leaving Certificates.

The "Hindu" referring to the School Leaving Certificate brought into being by the Government, takes serious exception to the system of taking finger prints of the students of whom the certificates might be issued. It says, the order may probably be due to Government's desire to place in the hands of the C. I. D., reliable guidance which shall help them in bringing to justice, those of the students who might hereafter develope into criminals. On the other hand, it might also be due to an expressed desire by the Finger Print Department to collect reliable statistics to test the accuracy of the theory of each individual's finger impression differing from every other man's. In either case the effect of the young boys coming to know of the object would be demoralising in the extreme.

At the annual meeting of the Senate of the Madras University, the Senate adopted the report of the Committee appointed for framing a scheme of examining for titles in Oriental learning and

regulations relating thereto, as also a scheme for Research Studentships. For the present eight studentships of Rs. 75 per month tenable for two years are to be awarded to promising graduates for research in the faculties of arts, medicine and engineering. The scheme of University lectureships has been begun on a small scale, to be extended as funds permit.

BOMBAY.

To the *Wilsonian*, a magazine recently started in connection with the Wilson College, Bombay, one of the staff, Professor A. R. Normand, contributes an account of some of the impressions left upon his mind by a visit to the scenes of his student life in Edinburgh during furlough.—He writes chiefly for the sake of his own India students, and he tells them that the science students in Edinburgh have very little provided for them in the way of apparatus. They have to buy it all, except the most expensive things, and the consequence is, that they have to devise the cheapest methods of attaining any result, and this is itself a very useful training to the student. Another note he made was that while a student at home might specialise to a certain extent in the subjects for his degree, he was not allowed to specialise in one subject, until he had taken his degree. There is a tendency in the home colleges to split up the big classes that used to be the rule into smaller groups, for the sake of more efficient teaching. Professor Normand, asked to give a lecture to the Edinburgh University, Chemical Society, took as his subject "Ancient Hindu Chemistry," mainly on the lines of Professor P. C. Ray's book. The Society showed much interest in the models of the simple apparatus built up from earthen pots and bamboos, and were impressed not only by the ingenuity of these early methods, but also by the advanced knowledge of many chemical operations and preparations which had been gained by their means. Bamboos and earthen pots not being on sale in Edinburgh, imitations of them had to be extemporised by means of newspaper and paste.

The Report of the Director of Public Instruction on the result of the examination held in Sanitary Science together with the Government resolution thereon, has been issued. In their resolution, Government, as recommended by the Director, sanction charges amounting to Rs. 2,200 for stipends to five students who passed the examination in Sanitary Science and adds :—The course be continued pending further orders. Government may trust it will be popular in future, having regard to the arrangements which are being made with the Royal Sanitary Institute, London. For award of its certificates to successful students of the local Sanitary Class, the Secretary of the Institute was addressed on 3rd August last and his reply is awaited.

The steady increase in the number of candidates annually appearing for the London Chamber of Commerce examinations, held at Bombay under the auspices of the Educational Department, is proof of the usefulness of the examinations and that they are furnishing an opening in life for the young men who are attracted by them. For the examinations held at the end of April and beginning of May last, there were as many as 431 entries for the Senior Test and 107 for the Junior Test, the actual number of candidates appearing in both being 414 and 96, respectively. In 1908 the total entries amounted to 459 and in 1907 to 329. The examination fee is Rs. 5 for both tests, in addition to entry fees, which are Rs. 4 for the Senior and Rs. 2 for the Junior examination.

The three agricultural students whom the Bombay Government have had under training at Cambridge are expected to return to India very shortly. Two others have also gone through a course of training at the Pusa Agricultural College; while twenty-eight new students have also graduated in agriculture at the Poona College, of whom ten have been given employment in the Agricultural Department of the Presidency.

Government have issued the following rules for the conduct of registered or aided public Libraries :—There shall be a Managing Committee responsible for the administration of the Library, with a Secretary to carry on correspondence. Authenticated lists shall be kept of all books, papers, etc., in the Library. A list of the periodicals and books subscribed for or added to the Library shall be submitted each year on the 1st of April to the Director of Public Instruction. No periodicals or books which have been notified to the Committee by the Director of Public Instruction as objectionable shall be added to or retained in the Library. The Library shall not be used for any political meeting, nor for any other proceedings which are likely to create a feeling of disaffection towards the Government, or to offend the religious susceptibilities of any community. No public meeting of any other kind shall be held in it without the previous permission of the authority empowered by the Director of Public Instruction to grant such permission. In cases where any doubt arises, the decision of the Director of Public Instruction shall be final. The Library shall be open to inspection by any officer of Government whom the Director of Public Instruction may empower to inspect it.

CALCUTTA.

The following official communication has been published :—

Political Department—Political.

Dated Darjeeling, the 7th October 1909.

Resolution No. 2126 P. D.

By resolution No. 2493-P, dated the 31st July 1909, which was published a few days before the celebration of the Anniversary of the Boycott, His Honour the Lieutenant-Governor invited the special attention of the Heads of colleges and schools and of all parents and guardians, to the inexpediency of permitting students and school boys to take part in such gatherings. His Honour expressed the opinion, that it was most undesirable that immature minds should be subjected to the excitement and disturbance which are inseparable from political agitation, and he appealed to all who are responsible for the education and behaviour of students and school boys, to use their influence to induce them to abstain from taking part in, or from being present at, any form of political demonstration.

Sir Edward Baker desires to acknowledge the response which was made to this expression of his views, for the Anniversary celebration of the Boycott was attended by a smaller number of students than on previous occasions. It is now again announced that political meetings will be held in connection with the Anniversary of the Partition of Bengal, and His Honour desires again, to invoke the attention of all responsible persons to the subject and trusts that on this occasion also, they will similarly use their influence with the students and school boys in whom they are interested. His Honour ventures to hope that further reflection during the interval since the previous resolution was published, may have produced a still more general and complete agreement with his views, and that students will be even less in evidence at the forthcoming political meetings.

By order of the Lieutenant-Governor of Bengal,
(Sd.) F. W. Duke,
Chief Secy. to the Govt. of Bengal.

The recent Calcutta University Senate meeting was a formal one. The Senate thankfully accepted the generous gift of Maharaja Sir Prodoyotcoomar Tagore, to utilize Rs. 10,000 contributed by his late father to the Ranchi College Scheme in founding a Law Library, in connection with the University Law College, to be called after his father. The Revenshaw College, Cuttack, and the Bangabasi College, were granted affiliation to the University up to the B.A. Pass Standard. The Senate appointed Professor Krishna Chandra Bhattacharya, M.A., as University Lecturer in Philosophy.

There was a large meeting at the National School compound, in which Babu Hirendra Nath Dutt and Mon Mohon Chatterjee of Calcutta explained to the audience, the aims and objects of National Schools and their students. Both of them, the day before, at a Conference of the leading men of the town, had said how the various Government officials and the Bengal Government, though first distrustful of the motives of the organisers, were now beginning to understand them well, assisting them so far as they could. They pointed out to the people the benefits that would accrue to those attending National Schools and the bright prospects that would await them hereafter, and appealed to the guardians to ask the boys to whole-heartedly devote their time and energy to their school's work and not to join any political movement to which the authorities object. To join the National system of education was the highest sort of partiotism, for, said a speaker, "without understanding the arts, literature and real history of the mother country, you cannot be said to understand her and serve her." Steps are being taken to place the National School upon a firm footing, which will cost nearly Rs. 700 a month.

The statistics relating to University Education are extremely interesting, as showing the decided preponderance of law students over engineering and medical. Taking the period three years ending 1907-08, it is seen that while the average number of students examined for the B.L. degree was 1,333 with 499 passes, those who appeared for the M.B. degree were only 34, with 15 passes. The B.C.E. degree attracted only 71 examinees, of whom 17 passed. For the Roorkee Civil Engineering Examination, there appeared 15 students who all passed. Electrical Engineering claiming only 3 examinees, who all passed. Agriculture attracted 39 examinees, of whom 34 passed. The results as to Oriental learning are the

most disappointing of all, 2 appeared, and one passed, and the successful student was a mahomedan.

The Lieutenant-Governor of Eastern Bengal has constituted a Local Provincial Committee in his Province to assist the Central Bureau and Advisory Committee in London in supplying Indian students with information on the educational facilities of the social conditions in England. The Committee is a strong one, presided over by the Commissioner of Dacca and the Vice-Director of Public Instruction, assisted by many Indian gentlemen, Moslem and Hindu. Much good is hoped.

The first Session of an Annual Educational Conference, in connection with the Convention of the Indian Section of the Theosophical Society, will be held at Benares in Christmas week, Mrs. Besant presiding.

The people of the town of Mymensingh subscribed in one day Rs. 5000 to fully equip the local National School.

The Syndicate of the Calcutta University have expressed their willingness to the Burma Educational Department to accept as a rule the High School Final Examination as equivalent to the Matriculation Examination of the Calcutta University, provided the candidates at the final examination take up at least four optional subjects, including History, Advanced English, Algebra and Geometry and a Classical language.

UNITED PROVINCES.

A Class for teaching Sanskrit and Hindi to Mahomedans has been opened at the Dar-ul-lum of the Nadwa-ul-Ulama at Lucknow. Several Muslims desirous of acquiring a first-hand knowledge of Hindi, and particularly the Arya Samajic scriptures, have already joined the class, which is expected to fill rapidly. The popularity of the Nadwa has grown to such an extent, that the State of Kolhapur has sent one of its Mahomedan subjects to the Dar-ul-Ulum to complete his studies in Arabic and Persian. The student has been sent at the State expense, and will receive a stipend from Kolhapur.

At a public meeting at Srinagar, Sir Francis Younghusband, presiding, and the Maharaja, Ministers of the State, and officials being present, it has been decided to establish a technical institution in Kashmir, to perpetuate the memory of the late Raja Sir Amar Singh. The Maharaja has donated a lakh of rupees, and the State will grant a building site and make grants-in-aid.

An important scheme is understood to be before the Secretry of State for a Medical College for the United Provinces at Lucknow. The work of construction is not likely to begin before next year, after which at least two years will be required for the completion of the buildings, though the college itself may be finished a little later.

The Government of India have ordered, on the recommendation of the Punjab Government, that in the general tablet appended to the Report on Public Instruction in Punjab. a separate column for Sikhs under the head "Classification of Scholars according to race and creed" should be opened. Hitherto, Sikhs have been included among Hindus. The change has been made at the request of the Sikh Educational Conference, which met in Lahore in April last.

INDIA GENERAL.

At present there is no uniformity in plans of school and college buildings in different parts of the country. The result is a good deal of unnecessary and unavoidable variation in the school buildings and in the total outlay incurred on these. There is nothing to guide private enterprise in education as to what kinds of buildings should be erected.

The Director-General of Education in India will shortly bring out a publication relating to school planning in India, which will contain plans of typical buildings, and descriptions thereof. Materials from colleges and schools of various types in the country have been supplied to the Director-General in order to give him some idea of the requirements of those institutions.

It has been frequently brought to the notice of the Secretary of State for India that Indian students on their first arrival in England experience difficulties by reason of their lack of information as to educational facilities and social conditions; and he has for some time had under consideration the possibility of rendering available for their use information and advice of the kind required. He has now, after consulting the Government of India, decided to establish a Bureau in London for the supply of information, as well as a Standing Committee for general advisory purposes. The Bureau and the Committee will work in close relation with one another, and the head of the Bureau, who will be called the Educational Adviser to Indian Students, will also act as Secretary to the Advisory Committee.

2. The functions of the Bureau will be to answer inquiries in regard to educational facilities, to keep a list of lodgings and boarding-houses suitable for Indian students and of private families willing to receive them on such terms as may be arranged, to furnish students with references, to bring to the notice of the Advisory Committee any cases in which the regulation of educational institutions bears hardly on Indian students, and generally to give all possible assistance either to students themselves or to their parents in India. The Bureau will be in close touch with the Board of Education, with its correspondents at the leading Universities, and with local Committees in India.

3. The Advisory Committee will be available for consultation by students or their parents, by the Educational Adviser, and by the Secretary of State, and will bring to the latter's notice any matter in regard to which it may desire to suggest action on his part for improving the position of Indian students. It will stand, as far as possible, *in loco parentis* to students whose parents are unable themselves to supervise their education. In particular, its members will be ready to assist students in social matters. It is hoped that in this way they may be able to do much towards removing any feeling of friendlessness, and towards providing for young Indians social opportunities which would not otherwise be open to them.

The following gentlemen have accepted the Secretary of State's invitation to serve on the Advisory Committee, of which Lord Ampthill has consented to act as Chairman :—

Sir M. M. Bhownaggree, K.C.I.E.
Saiyid Ameer Ali, C.I.E.
Major N. P. Sinha, I.M.S., retired.
Kamruddin Latiff.
Theodore Morison, Esq., Member of the Council of India.
Pandit Bhagwandin Dube, Barrister-at-Law.
Lieutenant-Colonel Sir. W. Curzon Wyllie, K.C.I.E., C.V.O., Political Aide-de-Camp to the Secretary of State.

4. The appointment of Educational Adviser to Indian Students has been accepted by Mr. T. W. Arnold, formerly of the Indian Educational Service, who has relinquished his post as Assistant Librarian at the India Office for the purpose. Mr. Arnold has taken up his duties, and the Bureau of Information is temporarily located at the India Office until suitable premises can be obtained elsewhere.

5. The Governor-General in Council now desires to explain the measures which, after consulting Local Governments, he considers should be adopted in India with the object of supplementing the activites of the Central Bureau and the Advisory Committee in England. It is proposed to establish local Committees, consisting of representative European and Indian gentlemen, in each province, excepting Burma and the North-West Frontier Province. These Committees will be in direct communication with the Central Bureau in England. By means of this agency it is hoped that the Educational Adviser will be able to obtain all information regarding individual students which may be desired by the University or other authorities in England, and thus meet the need which has made itself felt for detailed and trustworthy information as to the position, means and character of Indian applicants.

The Committees will be sufficiently large to be representative in character, and Local Governments will co-operate with the Universities in bringing them into existence. It is the intention that each Committee shall have among its members representative Indian gentlemen of good position and local reputation, enjoying the confidence of the educated classes of the province no less than of the Government. The Government of India consider that it will be advisable to appoint to the Committees a number of Indian gentlemen residing in the mufassal, who will take a personal interest in their work and will explain their objects and advantages throughout the area in which they exercise a local influence. The Provincial Committees will be constituted by the Local Governments and Administrations; and the Vice-Chancellor of the University and the Director of Public Instruction will be members where practicable. The functions of the Committees will be—

(1) To furnish information and advice to Indians who contemplate going to England.

(2) To circulate in India to colleges and other institutions the educational, financial and social information collected by the Central Bureau in London.

(3) To communicate with the Central Bureau on behalf of students before they start or on behalf of their parents when they are in England.

One of their minor duties will be to see that the handbook of information, which will be published by the Central Bureau, is kept up to date; and the latter will be asked to supply from time to time to the local Committees in India all information necessary to correct that given in the current issue of the book.

6. Local Governments and Administrations have generally accepted the above proposals, and it only remains now to give effect to the scheme. The Governor-General in Council desires therefore that steps may be taken as soon as possible to constitute the local Committees. The intention is that there shall be in each province a general Committee representing the province as a whole, and that, where necessary, there shall also be sub-committees at such local centres as may be convenient. The President and members of these Committees will be selected and appointed by the Local Governments. As stated above, these proposals will not for the present apply to Burma; and the North-West Frontier Province will be represented on the Punjab Provincial Committee by the officer in charge of education in the former province. The province of Coorg might similarly be represented on the Madras Committee. Native States, who so desire, will also be represented by the Political officers of the States on the Committees at the head-quarters of their respective Universities.

7. There will be a paid Secretary to each Provincial Committee, who will be appointed by the Local Government. It has been stated by one Local Government that the services of a Secretary can be procured on an allowance of Rs. 60 *per mensem*. Such an arrangement may not be possible in every case, and the Government of India leave it to the discretion of Local Governments to fix the pay of this officer, subject to a maximum limit of Rs. 200 *per mensem*. The Provincial Committees, as soon as they are constituted, should place themselves in communication with the Educational Adviser to Indian Students, India Office, London.

Mr. Erach Jehangir Sorabji, B.A. has been selected by the Government of India for one of the scholarships, available in the current year, for the study of Sanskrit in Europe, under the terms set forth in the Government of India's Resolution in Home Department (Education), No 731—743, dated the 1st September 1908.

The Secretary of State has appointed Mr, G. H. T. Ross, Ph.D., to be a member of the Indian Educational Service and to occupy the new chair of Philosophy in the Rangoon College. Mr. Ross is on his way to Burma.

The Mysore Government have made "a new departure" by sanctioning, subject to certain conditions, the management of the Industrial School at Hassan by the Central Co-operative Society at that place. The Society is to take over the tools, benches, etc., at a valuation, to provide the necessary establishment and certain scholarships, and to receive a grant-in-aid of Rs. 100 per month, with premises, temporarily, rent-free. Hitherto the management has been in the care of the Headmaster of the local High School, and the working of the new scheme will no doubt be watched with interest.

Information has been received from Cochin that Mr. J. Vansomeren Pope, late Director of Public Instruction in Burma, who had been engaged for five years to put education in Cochin on a proper footing, will not be able to take up the appointment, as he does not care to take up active work again.

Her Highness the Begum of Bhopal has been pleased to sanction a permanent annual grant of Rs. 2,200 for the all India Mahomedan Educational Conference.

A *communiqué* issued to-day states that the Secretary of State has appointed Mr. Philip Wolfred Robertson, of Trinity College, Oxford, and Leipzig, to be a temporary member of the Indian Educational Service as Lecturer in Science at the Rangoon College.

The Secretary of State has appointed Mr. Robert Sanderson, M.A., to the Indian Educational Service to fill the post of Master of Training Class for Male Teachers in European Schools at Sanawar.

The Mysore Government sanctioned establishing an Educational Museum to be located in the Sheshadri Memorial Hall.

Foreign Notes.

GREAT BRITAIN.

A Blue—book (od. 4560) was issued on Saturday last (September 25) containing the report of the Treasury Committee on the organisation of Oriental studies in London. The committee were appointed in April, 1907, as the result of representations made by an influential deputation to the late Sir Henry Campbell-Bannerman on December 4, 1906.

The Committee was composed of Lord Reay, as Chairman, Lord Redesdale, Sir Thoms Raleigh, Sir Montagu Turner, and Mr. A. R. Guest, of the Board of Education.

The Committee finally report that there is urgent need for the provision of suitable teaching in London for persons about to take up administrative or commercial posts in the East and in Africa. A knowledge of the language and some preliminary knowledge of the history and religions and social customs of the country to which they are appointed is essential to such persons. Time will actually be gained, and it will be advantageous in other ways, if the first instruction is given in this country. A school of Oriental studies should be built up from the nucleus of Oriental teaching now existing at University and King's Colleges, and should be incorporated in the University of London. The school should have a constitution similar in its main lines to that of University College. It should possess a name and home of its own. The school should provide both for living Oriental languages and for classical Oriental studies; but the Committee ask for a grant to be made from Government funds at the foundation of the school for living Oriental languages only. The first establishment of the school should be on the scale necessary to meet immediate requirements, and should be extended gradually.

The University Extension Board for London has just issued the scheme of Extension lectures arranged for the coming session. Several courses are of unusual interest, and all well calculated to achieve the objects of the Board. In different parts of the London area sixty or seventy courses in all will be available. As was the case last session, the subject of London history receives much attention. In addition to the delivery of lectures, the scheme will include fortnightly visits to buildings illustrative of history and architecture. History, ancient, mediæval, or modern, is provided at a number of centres for those interested or anxious to learn. Literature is even more abundantly served. At Kensington and Wandsworth lectures will be delivered on "Some Masterpieces of Ancient and Mediæval Literature"; at Barnet on "Some American Writers." "Greek Art and National Life," "Music," "Geography," "Economics," and "Child-study" are some of the other subjects. Special courses have also been arranged with an eye to the diplomas to be awarded after four years' study in certain subjects—history, literature, social science, and economics. This new departure has been received with much favour, and is likely to be exceedingly popular with students, who will have something to show at the end of their four years' course of reading for all the pains they have brought to the subjects under study. A special pamphlet explaining the diploma scheme and setting out courses and places of delivery of lectures, can be had of the Registrar of the University Extension Board, at South Kensingtom.

For some years past, at Cambridge, during the Long Vacation, lectures have been given in elementary science for primary teachers. But this year, on the recommendation of the Board of Geographical Studies, it was determined to have a course on geography, and to invite secondary teachers as well as primary. The result was, that the number of persons attending, rose to upwards of one hundred, coming from all parts of England and Wales, and including several head masters. The lectures were given by Mr. H. Yule Oldham (King's), Mr. P. Lake (St. John's), and Mr. R H. Adie (Trinity). In addition, some lectures on botany were given by Mr. A. M Smith (Emmanuel), assisted by Mr. H.H. Thomas (Downing). The course was most successful.

Prof. Griffith, Reader in Egyptology in the University of Oxford, has been elected a Corresponding Member of the Imperial Academy of Sciences in Vienna.

The Oxford University Endowment Fund has now reached the sum of £139,000.

At the Health Congress recently held at Leeds, a paper was read by Miss Gibb, advocating the holding of schools in the open air, and urging that this would be one of the best means of promoting the health and maintaining the physical efficiency of the children. Compared with these benefits, the relief to the tax-payer would be but a minor consideration. If consumptive patients can sleep in the open air there seems to be no reason why healthy children should not carry on their school work under even Northern skies in all weathers, even although it might involve an appreciable increase in the difficulty of securing attention and upholding discipline. In this

respect, at least, the Indian village school is often in advance of much more pretentious educational establishments. The *patasala* very often assembles under a tree, and, however modest its equipment of scholastic apparatus or its standard of teaching may be, the ventilation is perfect. It may adjourn to a verandah or to a cattle shed during the monsoon, but the necessity of a special building for its accommodation is never thought of. The system may have its disadvantages, but the dangers arising from bad air and insufficient lighting are entirely obviated.

FOREIGN GENERAL.

The co-education of boys and girls has been declared to be of great advantage to both, but this contention is not borne out by the results of a referendum in which all the teachers in the high schools of the Duchy of Baden took part. The system of co-education has been in operation in the Grand Duchy since 1901, but the verdict of the teachers is decidedly against its continuance. Many of the teachers emphatically deny that there is any useful sense of competition between the sexes, adding that on the contrary the general level of classes containing many girls rather tends to fall. Reference to the better records of girls has only the effect of making a large number of indolent boys more indolent. Teachers complain that the girls show markedly less talent for mathematics and natural science, and that in teaching biology and other subjects it is necessary to restrict the subjects in order to make the teaching suitable for girls. The reports generally agree that the male pupils dislike the presence of the girls. The girls have no effect upon the conduct of the boys, but the influence of the boys on the girls is shown in displays of morbid ambition and rough conduct.

The Governor of Hongkong has received a hundred thousand dollars as contribution to the Hongkong University collected in the Canton District by Cheungpateze, a former resident in the Straits.

MATTHEW ARNOLD:

SOHRAB AND RUSTUM

WITH INTRODUCTION AND NOTES

By T. O. HODGES Esq., B.A.,

Principal and Professor of English,

KUMBAKONAM COLLEGE.

PRICE Re. 1.

Srinivasa Varadachari & Co, Triplicane & Esplanade, Madras.

MADRAS.

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MATHEMATICS.

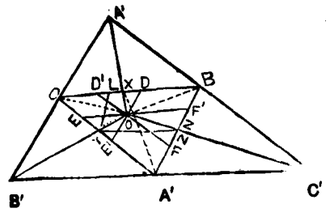
[Conducted by B. Krishnamachari, M.A.]

38. [M. Bhimasena Rao.]

Find a point through which lines drawn parallel to the sides of a given triangle are such that—

(1) their parts intercepted by the sides of the triangle are equal.

(2) the sum of the squares on their parts intercepted by the sides of the triangle shall be a minimum.



Solution by the Proposer.

(1) Let ABC be the given triangle. Through the vertices A, B and C draw parallels to the sides forming the triangle A'B'C'. Bisect the angles of the triangle ABC by AX, BY and CZ. Since AX, BY and CZ are concurrent $\frac{BX}{XC} \cdot \frac{CY}{YA} \cdot \frac{AZ}{ZB} = 1$. Now A'X divides B'C in the same ratio as CX : XB ∴ A'X, B'Y and C'Z are concurrent. Let them meet in O. Then O shall by the point required.

Through O draw DOE', EOF', FOD' parl. to AB, BC and CA and draw YL and YN parallel to AB and BC.

The figure BLYN is a parallelogram and YB bisects the angle LBN

∴ YL=YN. OE' is parl. to CB'

∴ B'O : B'Y = CE' : CY.

Again YL is parl. to DE' ∴ CE':CY=YL:DE'

∴ B'O:B'Y=YL:DE'.

Similarly B'O:B'Y=AE:EY=YN:EF'

∴ YL:DE'=YN:EF'; but YL=YN

∴ DE'=EF'.

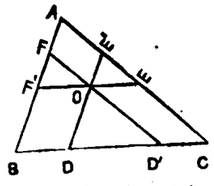
By similar reasoning, we see that DE', EF' and FD' are equal to one another.

If AO, BO and CO meet the sides of the triangle ABC in X', Y' and Z' and l denote the length of the equal lines through O, we have

$$\frac{l}{a} + \frac{l}{b} + \frac{l}{c} = \frac{EF'}{BC} + \frac{FD'}{CA} + \frac{DE'}{AB}$$

$$= \frac{AO}{AX'} + \frac{BO}{BY'} + \frac{CO}{CZ'} = 2.$$

$$\therefore l = \frac{2abc}{ab + bc + ca}.$$



(2) Let ABC be the given triangle. If x, y and z be the lengths of lines EF', FD' and

DE' drawn through any point O parallel to the sides of the triangle we have

$$\frac{x}{a} + \frac{y}{b} + \frac{z}{c} = 2.$$

$$\text{Now } \left(\frac{1}{a^2} + \frac{1}{b^2} + \frac{1}{c^2}\right)(x^2 + y^2 + z^2)$$
$$= \left(\frac{x}{a} + \frac{y}{b} + \frac{z}{c}\right)^2 + \left(\frac{x}{b} - \frac{y}{a}\right)^2$$
$$+ \left(\frac{y}{c} - \frac{z}{b}\right)^2 + \left(\frac{z}{a} - \frac{x}{c}\right)^2.$$

If $\frac{x}{a} + \frac{y}{b} + \frac{z}{c}$ be given, $x^2 + y^2 + z^2$ is a minimum when $\frac{x}{b} - \frac{y}{a} = 0$, $\frac{y}{c} - \frac{z}{b} = 0$, $\frac{z}{a} - \frac{x}{c} = 0$, *i.e.*, when $ax = by = cz$.

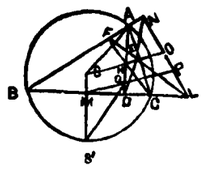
The minimum value of

$$x^2 + y^2 + z^2 = \frac{4}{\frac{1}{a^2} + \frac{1}{b^2} + \frac{1}{c^2}}.$$

To find the point O when $x^2 + y^2 + z^2$ is a minimum.

Since $by = cz$, the ratio of $y : z$ is known. When the ratio of FD' to DE' is given, the locus of the point of intersection of the lines FD' and DE' can easily be shown to be a straight line passing through the point of intersection of lines through B and C, drawn parallel to AC and AB. In the present case this line can be shown to divide BC in the ratio $AB^2 : AC^2$. Therefore the point O is determined by the following construction:—Through the vertices A, B and C draw lines parl. to the sides of the triangle ABC forming the triangle A'B'C'. Join A, B and C to the symmedian point of the triangle and produce them to meet the sides BC, CA and AB in X, Y and Z. The point of concurrency of A'X, B'Y and C'Z is the required point.

42. [M. Bhimasena Rao.] The base and the vertical angle of a triangle being given, find the locus of the foot of the perpendicular from the middle point of the base on the axis of perspective of the triangle and its pedal triangle.



Solution by the Proposer.

Let BC be the given base and A the variable vertex. Let DEF be the pedal triangle and H the ortho-centre of the triangle ABC. Produce DE and FE to meet AB and BC in N and L. Then LN is the axis of perspective of the triangles ABC and DEF. From S the circumcentre of the triangle ABC drop SM perp. to BC and bisecting BC in M.

The semicircle on BC passes through E and F.

$\therefore$ LC.LB = LE.LF.

The nine points circle passes through MDFE.

$\therefore$ LD.LM = LE.LF.

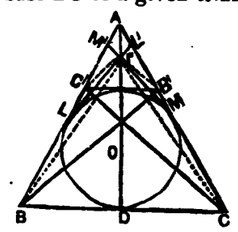
$\therefore$ LC.LB which is equal to the square on the tangent from L to the circle ABC = LD.LM which is equal to the square on the tangent from L to the nine points circle. Therefore L is on the radical axis of the nine points circle and the circumcircle. Similarly N is on the radical axis $\therefore$ LN which is the axis of perspective of the triangle and its pedal triangle is the radical axis of the circumcircle and the nine points circle of the triangle. Join SH and produce it to meet LN in O. SO, the line of centres of the two circles is perp. to LN. Through M draw MP perp. to LN and meeting AD in Q. SH is parl. to MQ and SM is parl. to HQ. $\therefore$ SHQM is a parallelogram. $\therefore$ SM = HQ.

Since the angle BAC is given, the circumcentre S is fixed and therefore the line SM is fixed. The line AQ is given in length, for AH can be shown to be equal to twice SM and HQ is equal to SM. Produce SM to S', such that SS' is equal to AQ. Since SS' is equal and parallel to AQ, S'Q is equal to SA. Therefore the point Q moves on a fixed circle whose centre is S' and radius equal to that of the circumcircle of the triangle ABC.

Again since the angles MPL and QDL are right angles, the quadrilateral QDLP is inscribable in a circle. $\therefore$ MQ . MP = MD . ML = MC² for BDCL is a harmonic range. Since Q moves on a circle, the point P moves also on a circle which is the inverse of the locus of Q with respect to the semicircle on the given base BC.

We see that Q is the pole of the radical axis NL with respect to the semicircle on BC and that the polar of any point on the radical axis passes through Q. Therefore when the base, the vertical angle and a point through which the radical axis of the circumcircle and the nine points circle of a triangle pass are given, the polar of the given point with respect to the semicircle on the given base and the perpendicular from the vertex on the base intersect on a fixed circle. Hence Question 24 may also be solved as follows:—On the given base describe the segment of a circle containing the given angle. From S the centre of the circle drop SM perpendicular to the base and produce it to S' such that SS' = 8SM, and describe an equal circle having S' as centre. Draw the polar of the given point with respect to the semicircle on the base, cutting the circle whose centre is S', in Q and Q'. Through Q and Q' draw perpendiculars to the base meeting the segment on the base in A and A'. ABC and A'BC are the required triangles. There will be only one solution when the given point is on the polar reciprocal of the second circle with respect to the semicircle on the base.

46. [M. Bhimasena Rao.] Prove geometrically that $OI^2 = 2r^2 - AO \cdot OD$, where O is the orthocentre, I the in-centre, r the in-radius and D the point where the line AO meets the base BC of a given triangle ABC.



Solution by the Proposer.

Draw any tangent C'B' to the in-circle. On BB' and CC' describe semicircles intersecting at P. Through P draw LL' and MM' tangents to the in-circle. Any four tangents are cut by a variable tangent in points whose anharmonic ratio is constant. $\therefore$ Anharmonic ratio of BLC'M' = anharmonic ratio of CL'B'M = anharmonic ratio of B'MCL'.

$\therefore$ (P, BLC'M') = (P, B'MCL').

Hence the pencil (P, BB'LMCC') is in involution, the rays PB, PB'; PL, PM; PC, PC' being conjugate. Since BB' and CC' subtend at P a right angle, LM also subtends at P a right angle. Therefore the tangents at P and similarly the tangents at the other point of intersection of the semicircles on BB' and CC', are at right angles. The circle whose centre is O and the square on whose radius = OA . OD,—the self-conjugate or the polar circle of the triangle ABC,—cuts the semicircles on BB' and CC' orthogonally. Therefore the points of intersection of these

semicircles are inverse points with respect to the polar circle. Since the locus of perpendicular tangents, the director circle, passes through these points of intersection, the director circle is orthogonal to the polar circle. In the case of a circle, the square on the radius of the director circle is equal to twice the square on the radius of the circle. Since the director circle of the incircle and the polar circle are orthogonal, the square on the line joining their centres is equal to the sum of the squares on their radii.

$\therefore OI^2 = 2r^2 + OA \cdot OD = 2r^2 - AO \cdot OD.$

56. [M. Bhimasena Rao.] Given that

$A = x(x\cos\alpha - y\cos\beta - z\cos\gamma) - yz.$

$B = y(y\cos\beta - z\cos\gamma - x\cos\alpha) - zx.$

$C = z(z\cos\gamma - x\cos\alpha - y\cos\beta) - xy.$

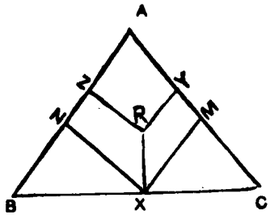
$D = x^2(1+\cos^2\alpha)+y^2(1+\cos^2\beta)+z^2(1+\cos^2\gamma) - 2xy\cos\alpha\cdot\cos\beta - 2yz\cos\beta\cos\gamma - 2zx\cos\gamma\cos\alpha$

and $\alpha+\beta+\gamma=2$ right angles, find the value of

$$A^2B^2 + B^2C^2 + C^2A^2 - ABCD.$$

61. [M. Bhimasena Rao.] The circle which passes through the feet of the perpendiculars from a point on the sides of a triangle being termed, for the sake of brevity, the pedal circle of the point with respect to the triangle, show that the cubic curve which is the locus of a point whose pedal circle with respect to a given triangle passes through a given point P circumscribes the given triangle and cuts the sides again in three points which are collinear. When the cubic breaks up into a conic and a line, show that the conic passes through certain fixed points, and find the locus of the point P. Prove that the pedal circles of the points of intersection of the conic and the line into which the cubic breaks up touches the locus of the point P.

74. [M. Bhimasena Rao.] The pedal circle of a point P with respect to a triangle touches the nine points circle of the triangle. Show that the line joining the point P to its isogonal conjugate with respect to the triangle passes through a fixed point. Find the angles of the triangle formed by the asymptotes of the locus of the point P.



Solutions by the Proposer.

Let ABC be the triangle and from R drop RX, RY, RZ perp. to sides. From X draw XM and XN perp. to CA and AB.

Let $RX = Kl$, $RY = Km$ and $RZ = Kn$ where $K = \dfrac{2\Delta}{ab+bm+cn}$; $XN = K(n + l\cos B)$ and $XM = K(m + l\cos C)$.

The line AX is represented by the equation

$$\frac{z}{n + l\cos B} - \frac{y}{m + l\cos C} = 0.$$

If the circle XYZ cuts the sides again in X', Y' and Z' perpendiculars to the sides at these points concur at the isogonal conjugate of R.

Hence equation of the line AX' is

$$\frac{z}{\frac{1}{n} + \frac{1}{l}\cos B} - \frac{y}{\frac{1}{m} + \frac{1}{l}\cos C} = 0.$$

The two lines AX and AX' are represented by the single eqn. $\{z(m + l\cos C) - y(n + l\cos B)\}\left\{z\left(\frac{1}{m} + \frac{1}{l}\cos C\right) - y\left(\frac{1}{n} + \frac{1}{l}\cos B\right)\right\} = 0$

which when expanded becomes

$$y^2.\, m\{ml(1+\cos^2 B) + \cos B(n^2+l^2)\} + z^2 n\{ln(1+\cos^2 C) + \cos C(l^2+m^2)\} - yz\{l(m^2+n^2) + m\cos C(n^2+l^2) + n\cos B(l^2+m^2)\} = 0.$$

Therefore the eqn. of the pedal circle of R is $\Sigma lx^2\{(m^2+n^2)\cos A + mn(1+\cos^2 A)\} - \Sigma yz$ $\{l(m^2+n^2) + m\cos C(n^2+l^2) + n\cos B(l^2+m^2)\} = 0$, for by putting x, y, z equal to zero we see that the points of intersection with the sides of the given triangle are x, x'; y, y'; z, z'.

The above equation may be written as

$l(m^2+n^2)p + m(n^2+l^2)q + n(l^2+m^2)r + lmns = 0$ (1)

where $p = x(x\cos A - y\cos B - z\cos C) - yz$

$q = y(y\cos B - z\cos C - x\cos A) - zx$

$r = z(z\cos C - x\cos A - y\cos B) - xy$

$s = x^2(1+\cos^2 A) + y^2(1+\cos^2 B) + z^2(1+\cos^2 C) - 2yz\cos B\cdot\cos C - 2zx\cos C\cdot\cos A - 2xy\cos A\cdot\cos B.$

This equation in l, m, n is a cubic which is the locus of a point whose pedal circle passes through a fixed point P whose co-ordinates are x, y and z.

By changing l, m, n into their reciprocals eqn. (1) is unaltered. Therefore the cubic is self-isogonal *i.e.*, isogonal conjugate points lie on the curve. The curve circumscribes the triangle as the terms l^2, m^2, n^2 are wanting in eqn. (1). If the curve cuts the sides BC and CA in L and M, produce LM to meet AB in N. The pedal circles of L, M and N which are the semicircles on AL, BM and CN are co-axal for these are the semicircles on the diagonals of a quadrilateral. Therefore N is also a point on the curve, the equation of the line LMN being $\frac{l}{p} + \frac{m}{q} + \frac{n}{r} = 0$.

When this cubic breaks up into a line and a conic, since the cubic is self isogonal, the conic must be the isogonal transformation of the line. If $l\alpha + m\beta + n\gamma = 0$ be the line, then $\frac{\alpha}{l} + \frac{\beta}{m} + \frac{\gamma}{n} = 0$ is the conic $\therefore$ eqn. (1) must be equivalent to

$(l\alpha + m\beta + n\gamma)(lm\gamma + mn\alpha + nl\beta) = 0.$

i.e., $\Sigma l(m^2+n^2)\beta\gamma + lmn(\alpha^2+\beta^2+\gamma^2) = 0.$

$\therefore \dfrac{p}{\beta\gamma} = \dfrac{q}{\gamma\alpha} = \dfrac{r}{\alpha\beta} = \dfrac{s}{\alpha^2+\beta^2+\gamma^2}$

Eliminating α, β, γ we have

$$p^2q^2 + q^2r^2 + r^2p^2 - pqrs = 0 \qquad (2)$$

The eqn. (2) is of the eighth degree and represents the locus of the point P when the cubic breaks up into a line and a conic. The expression $p^2q^2 + q^2r^2 + r^2p^2 - pqrs$ is the same as that proposed for resolution in question 56 but with different letters. The factors of this expression can be easily found by geometrical considerations. Let a straight line perpendicular to a side of the triangle ABC cut the side in P. The pedal circle of any point R on this line or on the isogonal conjugate of this line passes through the point P. Therefore when P moves on the sides of the triangle, the locus of R breaks up into a line and a conic, the line passing through one of three fixed points on the line at infinity and hence the conic passing through one of the points where the lines joining the vertices of the triangle to the circumcentre meet the circumcircle. Therefore x, y and z are factors. Again let A'B'C' be a triangle circumscribing a parabola whose focus is S. From a point R on the directrix draw tangents RQ and RQ'. Then QQ' passes through the focus and is perp. to RS. Let A, B, C and P be the poles of the lines B'C', C'A', A'B' and QQ' with respect to a circle, centre R and let RA', RB' and RC' cut BC, CA and AB in X, Y and Z. The points X, Y, Z and P are the inverses of A', B', C' and S; and RX, RY and RZ are perp. to the sides of the triangle ABC. The pedal circle of R with respect to the triangle ABC passes through P and is the inverse of the circumcircle of the triangle A'B'C'. The polar reciprocal of the parabola with respect to the circle whose centre is R,

is a conic passing through A, B, C and P and since the tangents RQ and RQ′ are at rt. angles this conic is a rect hyperbola. The centre of the rect. hyp. is P which the pole of QQ′. Therefore the pedal circle of any point on a rect. hyp. circumscribing the triangle ABC or on its isogonal conjugate which is a diameter of the circumcircle of the triangle ABC, passes through a fixed point, *viz*, the centre of the rect. hyp. which therefore lies on the nine points circle of ABC. Therefore when P is on the nine points circle, the locus of R breaks up into a line and conic. Hence $x^2a\cos A + y^2b\cos B + z^2c\cos C - ayz - bzx - cxy$ is a factor.

The equations $p=0$, $q=0$, $r=0$ represent the semicircles on the sides of the triangle ABC and $s=0$ is also a circle whose centre is at the symmedian point of the triangle. Therefore the curve $p^2q^2 + q^2r^2 + r^2p^2 - pqrs=0$ intersects the line at infinity at the circular points, each circular point being a fourfold point on the curve. If the curve breaks up, it can only do so into curves of an even degree intersecting the line at infinity, only at the circular points, and for every real line which the curve represents, the line at infinity is also represented. Since x, y and z are factors, $(ax+by+cz)^6$ is also a factor.

$\therefore\ p^2q^2+q^2r^2+r^2p^2-pqrs$

$= \lambda\, xyz\,(ax+by+cz)^3(\Sigma x^2a\cos A - \Sigma ayz)$

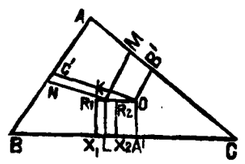
where λ is independent of x, y and z.

By comparing the coefficients of like powers, we see that the expression is equal to

$-xyz(\Sigma x\sin A)^3\times(\Sigma x^2\sin A\,.\,\cos A - \Sigma yz\sin A)$

Let R_1, R_2 be isogonal conjute points on a line which is perp. to a side of the triangle ABC and meet the side in P. If the pedal circle passes through P, the locus of R is the line PR_1R_2 and its isogonal conjugate which passes through R_1 and R_2. If R be a point on PR_1 and R′ the isogonal conjugate of R, the pedal circle of R cuts the side in two points P and P′ where P′ is the projection of R′. When R coincides with R_1, R′ coincides with R_2 and P and P′ coincide. Therefore the pedal circle of R_1 touches the side at P.

The pedal circle of any point R on a rect. hyp. circumscribing the triangle ABC or on the isogonal conjugate of the rect. hyp. passes through the centre of the rect. hyp. The rect. hyperbola and its conjugate intersect in two points R_1 and R_2 which are isogonals. If R′ is the isogonal conjugate of R, the pedal circle of R cuts the nine points circle of the triangle ABC in two points P and P′, one of them being the centre of the rect. hyperbola passing through R and the other the centre of the rect. hyp. passing through R′. If R coincides with R_1, R′ coincides with R_2 and since R_1 and R_2 lie on the rect. hyp. the points P and P′ must coincide. Therefore the pedal circle of R_1 touches the nine points circle at P. This may also be proved as follows:—



Let O be the circumcentre of the triangle ABC and R_1 and R_2 be isogonal conjugates points on a rect. hyp. circumscribing the triangle ABC. The line joining R_1 and R_2 passes through O. Take OK a mean proportional to OR_1 and OR_2 and from O, R_1, K and R_2 drop perpendiculars to the sides. Now the pedal circle of R_1 passes through the feet of the perpendiculars from R_1 and R_2 on the sides.

$$\frac{OR_1}{OK}\cdot\frac{OR_2}{OK} = \frac{A'X_1}{A'L}\cdot\frac{A'X_2}{A'L} = 1$$

$\therefore\ A'L^2 = A'X_1\,.\,A'X_2$, $\therefore$ A′L is equal to the tangent from A′ to the pedal circle. Similarly B′M and C′N are equal to the tangents from B′ and C′ to the pedal circle.

Since L, M and N are the projections of a point on the sides of the triangle ABC we have

$$BC\,.\,A'L + CA\,.\,B'M + AB\,.\,C'N = 0$$

$$\therefore\ B'C'\,.\,A'L + C'A'\,.\,BM + A'B'\,.\,C'N = 0$$

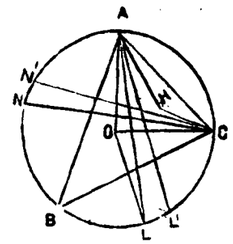
By considering A′, B′ and C′ to be point circles, we see by Casey's Extension of Ptolemy's Theorem that the pedal circle touches the circle A′B′C′, *i.e.*, the nine points circle of the triangle ABC.

The equation of the locus of a point whose pedal circle touches the nine points circle is

$$\begin{vmatrix} \cos A & \cos B & \cos C \\ x & y & z \\ \frac{1}{x} & \frac{1}{y} & \frac{1}{z} \end{vmatrix} = 0$$

i.e., $x\cos A(y^2 - z^2) + y\cos B(z^2 - x^2) + z\cos C(x^2 - y^2) = 0$

which is a cubic circumscribing the triangle ABC and passing through the points (cos A, cos B, cos C); (sec A, sec B, sec C); $(1, \pm1, \pm1)$ that is, the circumcentre, the orthocentre, the in-centre and the ex-centres. If the curve cuts the sides BC, CA and AB in D, E and F, then AD, BE and CF concur at the circumcentre since A, D; B, E; C, F are pairs of isogonal conjugate points on the curve. It may be easily verified that the pedal circles of D, E and F which are the semicircles on AD, BE and CF touch the nine points circle. To find the direction of the asymptotes and the points where the curve cuts the circumcircle of the triangle ABC we require the trisection of an angle.



Let O and H be the circumcentre and orthocentre of the triangle ABC. Trisect the angle OAH by the lines AL and AL′ meeting the circumcircle in L and L′. Since OA and HA are isogonal lines and angles OAL and HAL′ are equal, the lines AL and AL′ are isogonal. Angle OLA = OAL = LAL′. $\therefore$ OL is parl. to AL′. The isogonal conjugate point of L is at infinity on the line AL′ and also on the OL since OL is parallel to AL′. Therefore the line joining L and its isogonal conjugate passes through the circumcentre. Therefore L is a point on the curve. By trisecting the angles OBH and OCH, the remaining points of intersection of the curve and the circumcircle can be found.

Since AL′ meets the curve on the line at infinity AL′ is parallel to an asymptote. If the angle $HCN' = \frac{1}{3}OCH$, the line CN′ is parallel to a second asymptote. The angle between AL′ and CN′ = CAH—HAL′—HCN′

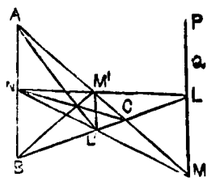
$$= 180 - B - \frac{(C-B)}{3} - \frac{(A-B)}{3}$$

$$= 180^\circ - \frac{A}{3} - \frac{B}{3} - \frac{C}{3} = 120^\circ.$$

By similar reasoning we see that the triangle formed by the asymptotes of the curve is equilateral.

67. [M. Bhimasena Rao.] Show that the four conics which can be inscribed in a given triangle so as to pass through two given

points are touched by a conic passing through the given points.



Solution BY THE PROPOSER.

Let ABC be the given triangle and P and Q the given points. Produce PQ to meet the sides of the triangle in L, M and N. Find points L', M' and N' such that BL'CL; AM'CM and AN'BN are harmonic ranges.

If $px + qy + rz = 0$ be the line PQ, the lines M'N', N'L' and L'M' are represented by $-px + qy + rz = 0$, $px - qy + rz = 0$ and $px + qy - rz = 0$.

The equation of any conic passing through L', M' and N' is of the form

$$\frac{\alpha}{-px+qy+rz} + \frac{\beta}{px-qy+rz} + \frac{\gamma}{px+qy-rz} = 0.$$

Let the conic $\alpha(px + qy - rz)(px - qy + rz) + \beta(-px + qy + rz)(px - qy + rz) + \gamma(-px + qy + rz)(px - qy + rz) = 0$ which passes through L', M' and N' pass through P and Q and let the conic $l^2x^2 + m^2y^2 + n^2z^2 - 2lmxy - 2mnyz - 2nlzx = 0$ which touches the sides of the triangle ABC pass also through P and Q and intersect the first conic on the line $ux + vy + wz = 0$.

We have $\Sigma l^2x^2 - 2\Sigma lmxy - (px + qy + rz)(ux + vy + wz)$ identically equal to

$$\Sigma\alpha(px + qy - rz)(px - qy + rz).$$

By comparing the coefficients we have the following six equations

$$p^2(\alpha - \beta - \gamma) = l^2 - p\alpha \ldots\ldots\ldots (1)$$
$$q^2(\beta - \gamma - \alpha) = m^2 - qv \ldots\ldots\ldots (2)$$
$$r^2(\gamma - \alpha - \beta) = n^2 - rw \ldots\ldots\ldots (3)$$
$$2lm + pv + qu + 2pq\gamma = 0 \ldots\ldots\ldots (4)$$
$$2mn + qw + rv + 2qr\alpha = 0 \ldots\ldots\ldots (5)$$
$$2nl + ru + pw + 2rp\beta = 0 \ldots\ldots\ldots (6)$$

$$\alpha - \beta - \gamma = \frac{l^2 - pu}{p^2}.$$

$$\beta - \gamma - \alpha = \frac{m^2 - qv}{q^2}.$$

$$\text{Adding } -2\gamma = \frac{l^2}{p^2} + \frac{m^2}{q^2} - \left(\frac{u}{p} + \frac{v}{q}\right)$$

$$\therefore -2pq\gamma = \left(\frac{l^2}{p^2} + \frac{m^2}{q^2}\right)pq - (pv + qu)$$

$$= 2lm + qu + pv \text{ from (4).}$$

$$\therefore \frac{l^2}{p^2} - \frac{2lm}{pq} + \frac{m^2}{q^2} = 2\left(\frac{u}{p} + \frac{v}{q}\right) \ldots\ldots (7)$$

$$\text{Similarly } \frac{m^2}{q^2} - \frac{2mn}{qr} + \frac{n^2}{r^2} = 2\left(\frac{v}{q} + \frac{w}{r}\right) \ldots\ldots (8)$$

$$\frac{n^2}{r^2} - \frac{2nl}{rp} + \frac{l^2}{p^2} = 2\left(\frac{w}{r} + \frac{u}{p}\right) \ldots\ldots (9)$$

$$(7)+(9)-(8) = 2\left(\frac{l^2}{p^2} - \frac{lm}{pq} - \frac{lu}{rp} + \frac{mn}{qr}\right) = \frac{4u}{p}.$$

$$\therefore u = \tfrac{1}{2}p\left(\frac{l}{p} - \frac{m}{q}\right)\left(\frac{l}{p} - \frac{n}{r}\right).$$

$$\text{Similarly } v = \tfrac{1}{2}q\left(\frac{m}{q} - \frac{n}{r}\right)\left(\frac{m}{q} - \frac{l}{p}\right)$$

$$\text{and } w = \tfrac{1}{2}r\left(\frac{n}{r} - \frac{l}{p}\right)\left(\frac{n}{r} - \frac{m}{q}\right).$$

The condition that the line $ux + vy + wz = 0$ touches the conic $\Sigma l^2x^2 - 2\Sigma lmxy = 0$ is $\frac{l}{u} + \frac{m}{v} + \frac{n}{w} = 0$. The values of u, v and w found above satisfy this condition for

$$\Sigma\frac{l}{u} = -2\Sigma\frac{\frac{l}{p}}{\left(\frac{l}{p} - \frac{m}{q}\right)\left(\frac{n}{r} - \frac{l}{p}\right)}$$

$$= \frac{-2\Sigma\frac{l}{p}\left(\frac{m}{q} - \frac{n}{r}\right)}{\pi\left(\frac{l}{p} - \frac{m}{q}\right)} = 0.$$

$\therefore ux + vy + wz = 0$ is a tangent to the inscribed conic and therefore the conic L'M'N'PQ touches the inscribed conics and similarly it touches the remaining three inscribed conics passing through P and Q.

When l, m, n, p, q, r are given the equation of the tangent at the point of contact of the two conics may be written as

$$\frac{px}{\frac{m}{q} - \frac{n}{r}} + \frac{qy}{\frac{n}{r} - \frac{l}{p}} + \frac{rz}{\frac{l}{p} - \frac{m}{q}} = 0.$$

When P and Q are the circular points at infinity all the conics will become circles and L', M' and N' the middle points of the sides of the triangle ABC, showing that the inscribed and escribed circles are touched by the nine points circle.

QUESTIONS FOR SOLUTION.

83. [M. BHIMASENA RAO.]

(1) The perpendicular from the circumcentre O of a triangle ABC on the side BC meets the perpendiculars from B and C on the opposite sides in A_b and A_c. If B_c, B_a, C_a, C_b are similar points on the perpendiculars from O on CA and AB, show that the circles described with A_b, B_c, C_a as centres and A_bB, B_cC, C_aA as radii respectively intersect in a point P and the circles described with A_c, B_a, C_b as centres and A_cC, B_aA, C_bB as radii respectively intersect in a point Q. If R is any point on the circumcircle of the triangle show that the points R, P and the intersection of AR, BR, CR with BP, CP, AP respectively are concyclic and the points Q, R and the intersection of AQ, BQ, CQ with BR, CR, AR respectively are concyclic. Calling these circles as P and Q circles show that (1) the P circles form a co-axal system as also the Q circles, the radical axes of the two systems intersecting on the circumcircle, (2) the P and Q circles of any point on the circumcircle intersect on the line PQ, their radical axes passing through a fixed point.

The conic passing tho five points P, Q and the intersection of AP, BP, CP with BQ, CQ, AQ respectively being called the PQ conic of the triangle ABC, when P is given find Q such that the PQ conic is a circle. If a point R is found such that the QR conic is a circle show that the RP conic is also a circle and that the three circles have a common point of intersection.

(3) The PQ, QR and RP conics of any triangle have 3 points in common.

83. [M. BHIMASENA RAO.]

Solve:—

$$x^2 + xy + y^2 = c^2$$
$$y^2 + yz + z^2 = a^2$$
$$z^2 + zx + x^2 = b^2.$$

84. [M. BHIMASENA RAO.]

The sides of a triangle ABC are divided in the ratios $l:m$, $m:n$, $n:l$. Show that the area of the triangle formed by joining the points of division is equal to $\frac{2lmn\Delta}{(l+m)(m+n)(n+l)}$ where Δ is the area of ABC.

85. [M. BHIMASENA RAO.]

A conic cuts the sides BC, CA and AB of a triangle ABC in points D, D'; E, E'; F, F'; and the lines AD and AD' in XX'; the lines BE and BE' in Y, Y'; the lines CF and CF' in ZZ'. If AD, BE and CF meet in a point O show that

(1) AD', BE' and CF' are concurrent, say at O'.

(2) XD', YE' and ZF' are concurrent, say at H.

(3) X'D, Y'E and Z'F are concurrent, say at K.

(4) The four points O, O', H and K are on a line, the line of collinearity passing through the points of intersection of DE' and D'E; EF' and E'F; FD' and F'D.

(5) The points H and K are the poles with respect to the conic, of the axes of

perspective of the triangles ABC and D'E'F'; the triangles ABC and DEF respectively.

(6) If the line of collinearity is a diameter of the conic, the points H and K lie on a conic circumscribing the triangle ABC and passing through its centroid.

86. [M. Bhimasena Rao.] From a point P, perpendiculars PD, PE and PF are dropped on the sides BC, CA and AB of a triangle ABC. On PD, PE and PF, points D', E' and F' are taken such that $PD \cdot PD' = PE \cdot PE' = PF \cdot PF' = k^2$. Show that AD', BE' and CF' are concurrent, and find the locus of the point of concurrency if k varies.

87. [M. Bhimasena Rao.] I is the incentre of a triangle ABC. AI, BI and CI meet the sides BC, CA and AB in D, E and F. EF meets BC in D', FD meets CA in E' and DE meets AB in F'. Show that the semi-circles on DD', EE' and FF' intersect on the line joining the circumcentre and the symmedian point of the triangle.

89. [P. S. Sundram Iyer]. If ABCD be the line passing through the centres of two circles, and A' B' C D' any circle cutting them orthogonally, then the four lines AA', BB', CC', and DD' will be concurrent.

SOME DRAMATIC CONVENTIONS.

THE drama has been defined by Dryden "as a just and lively image of human nature, representing its passions and humours and the changes of fortune to which it is subject, for the delight and instruction of mankind." Leaving aside some otiose additions we may suppose that the drama is the artistic representation of life. From the very nature of the case we cannot get life in its concrete and complex wholeness on to the stage. Art has to select and free the material it shapes from whatever is not subservient to its purpose. The jejuness and frivolities, the griminess and squalor of life have to be freed from the humours and fun, explosions of passionate wrath or tenderness, exhibitions of hatred or devoted love. What is of the essence of life, of perennial interest to mankind has to be seized and presented and the mere ephemeral neglected.

Another limitation is—in the drama—that the action to be represented can occupy only some three or four hours. Even the liberal allowance of China or Japan cannot make any approximation between the time taken up in the representation of the action and the time taken by the action itself.

The need for the exhibition of the action, diversified as it may be, *within the limits of a theatre,* imposes another kind of limitation.

There is then the style of dramatic expression.

What I propose to speak of will be on the limitations of action, time and place, and on the language chosen as the medium of dramatic expression.

From the days of Aristotle to those of Shakespeare—a great deal has been made of the likeness of the stage to life. It is by a frank recognition of the differences between the two, between stage and life, we can understand how some of the conventions have sprung up. The arrangements of the stage bear no resemblance to the arrangements of life. "You do not murder, or (if you can help it) make love, in real life, before a miscellaneous audience who have paid to see you do it; in real life you do not talk in any regular stagelings that has hitherto been invented, whether the outward form be fourteenes or rhymed verse or doggerel or complete or blank verse or stage prose." Saintsbury's History of Criticism, Vol. ii. 76-7.

Every-day criticism of the drama is apt to think too exclusively of the likeness—of *vraisemblance* of the representation. I have seen friends witnessing Suguna Vilasa Sabha performances grow impatient of the lyric outbursts interspersed where there is a transition from an ordinary level of feeling to a higher level of sorrow or indignation or rapture. The varieties of metric and stanzaic arrangements reflect the fluctuations of passion in the characters. Students of Shakespeare are aware how blank verse, rhyme and prose are artfully utilised to represent the ebb and flow of passion. In the Greek tragedies the verse and metre varied according to the exigencies of the action. In the Tamil and in the early classical drama the transition appears too noticeable. Shakespeare's blank verse the development of which from the early Gascoigne and Surrey inventions through Marlowesque modifications into an infinitely varied flexible instrument can be studied in Saintsbury's Prosody, this blank verse is so near prose that the transition from it to prose or the reverse does not seem to be too abrupt.

The English public was tolerant of blank verse, but rhymed verse could not get into favour. In France rhyme was in favour in the plays of the classic period. The romantic revolt was against it. Even in England Dryden both by precept and example showed that rhyme could be properly introduced in the drama.

If the Tamil drama should have a verse form somewhat like the English blank verse equal to all the exigencies of the serious drama and not too differentiated from prose, the objection of sudden transition could not be often advanced. It seems to me that such a form (this I speak subject to correction) is used in மணிமேகலை. And if my memory does not deceive me the late Mr. Sundaram Pillai very nearly hit at such a compromise.

De Stendhal insists that tragedy ought to be in prose in his *Racine et Shakespeare.* Even the prose of Comedy must be sifted and refined if there is anything more than farce attempted. The dramatic dialogue is the quintessence of ordinary conversation. The wit and wisdom rivalling that of the most renowned speakers doesn't surprise us, in the drama. Even the fools have a richness, an exuberance of foolish fancies leaving their every day counterpart far behind.

Applying the 'holding mirror to nature' test, every form of verse and prose may be objected to in the drama, as in no conceivable condition of society can we think of men and women, of heroes and heroines in the drama, talking to one another in the elevated if not stilted manner of the stage. The language of the drama is a highly specialised product, differentiated from every-day-language of the court, the camp and the market place. We frankly accept the convention. Only we insist that the convention must not be carried to a ridiculous extreme.

Before I pass on, let me notice briefly how soliloquies are utilised in the drama: They give information without which it would be difficult for the audience to follow the play. The inner-springs of conduct are thus laid bare. How useful a convention this is students of Shakespeare should know.

Next we have the three famous Unities of Time, Place and Action. It is interesting to notice that of the three, only one has the Aristotelian sanction. The real paternity of the Unities belongs to Castelvetro.—He was the first to view the drama as conditioned by the stage.

If you suppose the action of the drama to approximate in character to what can be enacted in the course of three or four hours *and* on the Stage which is fixed and cannot change, you arrive at such conventions—as of the Unities. The mysteries of the middle ages ranged from Heaven to Hell, took weeks to act and covered millennia in their action. (Saintsbury's His. of Cri., ii. 84.) The English drama which traces its origin to such mysteries was accustomed to changes and disregarded this question of verisimilitude. Sir Philip Sidney a student of Renaissance criticism inveighs against the neglect of the Unities. The best exposition of these occurs in Dryden's Essay on Dramatic Poetry: "The Unity of time they comprehend in twenty four hours, the compass of a natural day or as near as it can be contrived; and the reason of it is obvious to every one,—that the time of the feigned action or fable of the play, should be proportioned as near as can be to the duration of the time in which it is represented. Since all plays are acted on the theatre in the space of time much within the compass of 24 hours, that play is to be thought the nearest imitation of nature, whose plot or action is confined within that time. For the second unity—of place—the ancients meant by it that the view ought to be continued through the play, in the same place where it was laid in the beginning; for, the stage on which it is represented being but the one and the same place, it is unnatural to conceive it many —and those far distant from one another." The last Unity is that of action. The events of real life, the facts of history, the incidents of fiction are like the waves of a ceaseless flood. That which binds a group or body of them into a single action is the bond of the dramatic idea. It need not be one event. There may be subsidiary actions, and different stages of the action: opening, growth, height, fall, return, catastrophe.

This of action is the most important of the Unities and any dramatic author that neglects it does so at his peril. The single scenes and episodes may be impressive but discerning judges will not on their account alone accord to the author a high rank as an artist. Here you will notice it is not by the emphasis you lay on the verisimilitude principle you discover the importance of the Unity of action. It is the differentiating principle that takes up a piece out of life—the flood tide of existence—takes up so much of it as is organically connected and presents it as an artistic whole. Life very rarely presents itself as one artistic whole. It is diversity, want of the inner connecting principle that seems to be the dissatisfying feature in real scenes of life.

The other two Unities may have risen out of early stage necessities. Neither the Sanskrit nor the Tamil drama cares for them. Shakespeare except in *The Tempest* pays no regard to these Unities. The vigorous common sense of Dr. Johnson showed the futility of the usual arguments in their favour: "The objection arising from the impossibility of passing the first hour at Alexandria, and the next at Rome, supposes that when the play opens, the spectator really imagines himself at Alexandria, and believes that his walk to the theatre has been a voyage to Egypt, and that he lives in the days of Antony and Cleopatra. Surely he that imagines this may imagine more. He that can take the stage at one time for the palace of the Ptolemies, may take it in half an hour for the promontory of Actium. Delusion if delusion be admitted has no certain limitation; if the spectator can be once persuaded that his old acquaintances are Alexander and Cæsar, that a room illuminated with candles [or electric light] is the plain of Pharsalia or the bank of Granicus, he is in a state of elevation above the reach of reason, or of truth, and from the heights of empyrean poetry, may despise the circumscription of terrestrial nature."

I need not labour the point more. Of the three Unities—two of them seem to be from making too much of the verisimilitude principle. The other Unity is the result of duly recognising the difference between life as it is and life as it must be represented in art.

I have referred to four of the conventions: one, of the language used in the drama, and the other three, of the Unities. Of these, two of them based on emphasising the difference between art and life seem to be permanent elements of dramatic excellence. The other two which rose by riding too hard the notion of the drama being the picture of life do not seem to be so intimately connected with the artistic perfection of the drama.

K. B. RAMANATHAN.

I. ON THE TEACHING OF MATHEMATICS IN SECONDARY SCHOOLS.

THE University has told the teachers, in a couple of fortnights, what is expected of them and of their pupils. The Educational Department has issued its 'Hints and Suggestions.' The English firms have supplied the text-books on New Mathematics. It will be interesting to note that the books on the so-called 'New Mathematics,' the New School Arithmetics in particular, have a good deal in common with the very old text-books published by De Morgan and his disciples—with this difference that the new hasty publications lack the concise and accurate expression of the old ones.

Now the change has been notified and the text-books have been supplied; how have our school authorities arranged to introduce the change?

Strangely enough, they have found it convenient to introduce the change only in the IV Form. The lower forms are in the blessed ignorance of what is going on in the Secondary Department. The explanation is easy. The teaching of the New Mathematics requires a special study and training on the part of the teacher and the pecuniary condition of most of the schools allow the supply of only one such qualified teacher. The old set of teachers who revelled in Steam-engines and Telegraph posts crossing each other for the *n*th time or who interested themselves with a loaf of bread with half a dozen circumstances affecting its cost price which rose and fell according to the whim of the problem-maker or who busied themselves with a simultaneous quadratics of three unknowns whose literal co-efficients in the process of solution, developed into a symmetric function of the 4th or the 5th degree—such teachers now feel themselves somewhat fish out of water. A pair of cross lines on square paper has revealed the mystery of the meeting trains and a few ready reckoners have simplified *the complicated loaf-question*. So the school authorities have found it possible to introduce the change only in the higher forms. The Headmasters who are almost free from teaching work and who may be expected to guide the teachers, are equipping themselves for their arduous task, and of course Mathematics is not the first thing to take up with a good many of them. So, what is the result?

A pupil who, in his Matriculation Examination, is expected to know all about the diagonal scale and the chord scale and to make his measurements correct to ·05″ or ·5° and who is expected to plot second degree curves

and to have a good knowledge of graphical and approximate Arithmetic, comes to learn in the IV. Form how to mend his pencil and to draw a straight line of given length, hears for the first time in the IV. Form of simple questions in Arithmetic being generalized by the use of algebraic symbols, and of the existence of square paper and in the same form initiates himself into contracted methods of arriving at approximate results.

How 'Experimental Geometry' and the use of Algebraic symbols may be introduced in the lower forms, I shall consider in a separate article. The change in the teaching of Arithmetic in the lower forms is so very imperative and the non-introduction of such a change so much handicaps the work in the secondary department, I shall indicate a few of the most desirable changes.

The teaching of Arithmetic in the lower forms does not lead the pupils to the portions to be done in the higher forms. The machinery of Arithmetic consists in (1) a good practice in the art of computation (2) a great deal of facility in handling decimals (3) a thorough familiarity with the special and contracted methods in the multiplication and division of numbers. In the higher forms the student has time only to learn the application of this machinery to commercial Arithmetic and to learn graphical Arithmetic. So a good practice in the machinery of Arithmetic should be acquired in the lower forms.

Let me first consider the four simple Rules. When a pupil adds, for instance, 8, 3, 7, 6 he does it like this: 8 and 3, 11; 11 and 7, 18; and so on. This unnecessary repetition of words not only causes delay but shows want of proficiency in computation and sometimes leads to mistakes. His eyes should run up the figures and he should rapidly repeat only 8, 11, 18, 24 and so on. Square paper may be used with advantage at the very outset.

Subtraction is to be always made by the method of 'making up.' This serves as an introduction to the "Italian method of division" so useful in contracted work. The boy knows addition and nothing more is required in this method. He can easily understand that the answer to be obtained, if added to the smaller number must make up the larger. If the digit in the upper line is less than the corresponding digit in the lower line he is to make up for the 'teen-number' of that digit. He is to imagine the answer to lie between the upper and the lower lines and as the mind supplies the digits he writes them down. He carries the '1' as in addition. For instance he is to write down

```
1 5 6 5 3 6
  8 6 9 3 4
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  6 9 6 0 2
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the italicised digits as he gets them, 4 and *2*, 8 and *0*, 9 and *6* (carry the one as in addition) 7 and *9*, 9 and *6*. The use of the sign—should be taught. Square paper may be used in teaching combined addition and subtraction. The student should practice combined addition and subtraction in a large scale. This is very serviceable in working out compound interest. For instance, 36456 — 6384 + 593 — 86 + 293 — 6. The following interesting method may be adopted. For numbers 1 to 9 the next higher grade number is 10, for 10 to 99, the next higher grade number is 100, and so on. It is easily seen that 3 and 7 are complements 33 and 67 are complements; we find the complement of a number by making up for the next higher grade number; the process is to make up for 10 in the case of the units digit and for 9 in the case of the other digits. Subtracting a number means adding its complement and subtracting the next higher grade number. For instance subtracting 675 is the same as adding 325 and subtracting 1000. We can do this by writing — 675 as $\bar{1}325$ where $\bar{1}$ is written in the 'thousands' column and is subtractive. The question is worked thus:

```
  3 6 4 5 6
  1̄ 3 6 1 6
      5 9 3
      1̄ 1 4
      2 9 3
        1̄ 4
-------------
  3 0 8 6 6
-------------
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The complement of 6384 is 3616 and $\bar{1}$ is written in the fifth column and so on for negative numbers. The several columns are added remembering that $\bar{1}$ is subtractive. The first column gives 26, 6 is written down and $2+\bar{1}$ is 1 and so on.

The value of this practice of doing combined addition and subtraction will be obvious in working out the compound interest in the following question in the higher forms. To find the amount at compound interest correct to a pie of Rs. 375-14-6 in 3 years at 4½%. Rs. 375-14-6 when decimalized = Rs. 375·9062. Since the answer is to be correct to a pie we work out the figures to only four decimal places.

The working stands thus:—

Rs.		
375	9062.	Principal.
18	7953.	Int. at 5 %.
$\bar{1}$8	1205.	Int. at ·5 %.
392	8220.	Principal.
19	6411.	Int. at 5 %.
$\bar{1}$8	0359.	Int. at ·5 %.
410	4990.	Principal.
20	5249.	Int. at 5 %.
$\bar{1}$7	9476.	Int. at ·5 %.
428	9715	Amount.

The amount required is

Rs. 428 15 as. 7 pies.

To find the interest at 5 % we divide the principal by 2 and write the digits of the quotient one place removed to the right. The interest at ·5 % is evidently $\frac{1}{10}$ of the interest at 5 % and so no separate operation is needed. We simply write down the complement of 1 8795 namely 8 1205 in the third row and write $\bar{1}$ in the 'tens' column of the same row. We perform the combined addition and subtraction and get the principal for the second year and so on. Here this method involves of course, a thorough knowledge of the local value of the digits, but when once the principle is understood, nothing more than a systematic arrangement of the figures is required of the pupil. No complicated process of multiplication and division is required. There is no likelihood of committing errors.

Then let us consider the third of the four Simple Rules, namely, 'multiplication.'

[To be continued.]

S. CHINNASAMI AYER.

STUDENTS AND POLITICS.

THE question as to whether and how far students ought to be allowed to take part in politics has been exhaustively discussed both in the press and on the platform, so that it appears nothing new or more useful can be said on the subject. But I feel that divesting the discussion of all irrelevant issues, one may, with advantage, deal dispassionately with the educational aspect of the question and arrive at certain conclusions that may serve as useful guides to the parents and guardians of students and to those engaged in the cause of education. Though the political, social and educational aspects of a subject are interdependent, the educational

point of view ought to outweigh other considerations where the bringing up of boys, the development of their character, the training of their faculties, the moulding of their minds and hearts and the formation of their habits —in short all those things which are to determine the character and the capacities of the next generation, are concerned. Is it in the interests of the sound education of the tender youth of the country that they should be allowed to participate in political, or for the matter of that, in any agitation? This is the crucial question that every educationist and every parent has to answer. And to the discussion of this question I propose to direct myself as briefly as is consistent with the importance of the subject.

It would take long to go into the genesis of this problem and to trace its history to the stage it has now reached. I shall therefore satisfy myself by merely touching upon a few salient points so as to make my discussion intelligible. Four years ago the Swadeshi and boycott agitation threw Bengal into an unusual excitement which sent its waves to other provinces to beat more or less idly on their calmer coasts or career triumphantly over parts of them, with the result that students of every description and age were driven into the vertex of political strife to the delight of a few and the disappointment and disapproval of many. When a whole province has been lashed into an uproar against what is regarded as a national grievance, it may be natural for the less thoughtful and experienced and therefore more susceptible and excitable portion of society to be thrown off their feet and swept along the current not knowing whither. When the elderly members of a family, for example, wear mourning or observe a fast in memory of the Partition Day, the little ones may be excused if they imitate their elders and betters, ignorant of the significance of their actions. The very air is saturated with a new spirit and the younger section of society cannot but breathe it. They attend meetings and pore over newspapers, carry on discussions, criticise and condemn without let or hindrance from those who ought to guide them. This is what has happened in Bengal on a large scale and on a smaller scale elsewhere. In the Swadeshi and boycott meetings held in public squares students took active part; they took vows, they picketed. Parents did not, on the one side, pay serious attention to what was perhaps regarded as youthful zeal. On the other side the enthusiastic but misguided youths came handy, were found serviceable and were encouraged,—with the most honest intentions in the world, of course. Government however scented an undesirable tendency in this, and the Risley circular came as a thunder clap. It immediately ran into abridged or enlarged provincial editions. Students and their teachers were debarred from participation of everything that smelt of politics. A few "national" schools were started here and there for the sake of such as could not reconcile themselves to the educational policy of Government. There is now a lull in the storm almost everywhere except in Bengal where a cloud makes its threatening appearance now and then. But even there people have come to think calmly of the whole situation and there is a feeling that after all boys have been overdoing their part. Parents seem to have been roused to a sense of their duty to their own children, as leaders of people also have become conscious of their duty to other men's children.

The fundamental question underlying all this has been, whether it is beneficial, in the interests of sound education, of the student world and the country generally, to allow the budding manhood of the nation, the hope of the coming generation, to participate freely in the movements of the moment, in political strife

and in party warfare that is being so bitterly carried on? It is alleged on the one side that as the students of to-day are the citizens of to-morrow, it is but just and proper that they should get a preliminary training preparatory to the public life they will soon be called upon to lead when their student-apprenticeship is over and that Government look askance at the association of students with politics because they find it so inconvenient to themselves. On the other side the exclusion of raw youths from active politics and public life, is justified on the ground that the premature dabbling of school boys and college students in public agitation and demonstrations, seriously interferes with their legitimate duties, undesirably excites their passions, arrests the healthy development of character, warps judgment and makes politics a game of children. It has been asked, if Government are so solicitous about the interests of students, who are being prevented from participating in active politics, for the alleged harm that is thereby done to them, why have they not evinced similar solicitude for the student community in other respects? Why has no special censorship been exercised over the theatre-going propensities of students? What steps have been taken to improve the physique and morals of our boys? Have special facilities been given for their physical and intellectual development? I do not feel it necessary to answer these questions and either to excuse or defend Government who may have been slow to perform their duties by the student community. The questions are not relevant to the point at issue. I may, however, be allowed to say this much that whatever the sins of commission and omission on the part of Government may have been, their hands have been certainly forced by parental neglect and public apathy into issuing disciplinary circulars, which are after all, it must be conceded, in the best interests of those concerned.

Everything has and ought to have its time and place. It is an elementary rule that the instruction to be imparted to boys and girls ought to be consistent with their intelligence and age. We want our students to be good citizens, patriots and all that. But we shall not be justified therefore in cramming into their heads subtle ideas about Swarajya and boycott. Because we wish that our students should in the future be active citizens and politicians, we must not allow them to harrangue mob meetings and take part in boistrous demonstrations. It would be a sin to drag them into party politics or any politics, participation in which presupposes a sense of responsibility, capacity to form judgments and the power to pass opinions, all which the student world is innocent of. An agitation of unprecedented heat and fury is at present being carried on over the budget in England, hundreds of mass meetings and demonstrations are being held, and speeches full of bitter criticism are being made by some of the foremost men in that country. But we scarcely hear of any students prominently attending them or taking any active part in them. But in India no political meeting can be a success without a large contingent of students. The peculiar condition of India is to a certain extent responsible for this peculiar phenomenon. But that does not justify what is wrong in principle. Mr. Balfour passes very strong strictures on Mr. Asquith. To a school boy or college student both ought to be equally respectable. A complaint is made in certain quarters that Government circulars regarding discipline unnecessarily invade public to heretics, and that slavish headmasters and principals bow down their necks to what they ought to

resent. In this connection the following press cutting will be interesting reading, as it will show what educationists in a free country like England think in the matter. "It is interesting to learn that efforts to restrain students from association with politics are not confined to India. Addressing the new students at University College recently, the Provost (Dr. T. Gregory Foster) impressed it upon them that during their college course they should have no time for any public meetings outside the life of the University community, and that it ought to be considered an act of disloyalty to belong to any club outside the University Political partisanship or a close following of political movements in this time of feverish political agitation was, he said, especially baneful. Last year, he recalled with distress, there were students who became so interested in certain causes as to forget they were students altogether. Speaking more particularly to the Indian students, he assured them that he sympathised with them in the crisis which their country was passing through, but he required them not to forget that they were welcomed in the University as students, and not as politcians." Boys in India are, however, fed on the nasty pabulum that is served out every day by newspapers and speakers. A sense of respect for age, experience and learning, which ought to characterise youth, the modesty and the humility which become a learner—these are destroyed by juvenile participation in things which are beyond their comprehension and province. It is essential that all youths should have a good grounding in the physical sciences. But it would never do to allow boys of the fourth form to make difficult and dangerous experiments in chemistry. When they find themselves in the higher classes of their college, it will be time to do so, and even then under the eye of the professor. A teacher cannot begin his lessons in science by enunciating to his pupils the grand scientific truth that matter is never destroyed for fear that he may stand the chance of having his turban hurled out of the window as an illustration of the indestructibility of matter. You cannot hold forth to a rustic on abstruse and subtle points of philosophy lest you make a fool of yourself. Instruction ought to be adjusted to the learner's state and stage of understanding.

This elementary principle is ignored by those who defend schoolboy participation in public movements. A father who understands his duties to his children would not allow them to witness plays in the theatre unless he knows that they are wholesome. Boys will soon become men; that is no reason why they should be premature playgoers. If a parent wishes that his boys should become patriots—and what parent will not?—he must instil the love of country into their minds by precept and example. If he wishes to instruct them in any particular principles of politics, let him discuss those questions with them. But it is dangerous to leave boys to their own devices. They cannot read newspapers and controversial literature without doing harm to themselves. But few parents appreciate their duties and responsibilities in this respect. Boys are permitted to have their own way and pick up things wherever and in whatever way they can. Their eyes are opened when it is too late. And Government cannot be blamed if they could not allow this state of things to continue. If some parents feel that Government rules and restrictions intrench upon their parental privileges, they must remember that they have long neglected their own rights and duties and that they have to pay the penalty for that neglect. Beyond school or college no world ought to exist for students. All their activities must be confined to their legitimate sphere. The class room, the debating club, the playground, the messing hall, and the home—these ought to be the student's fields of action. He should be a stranger to mob-meetings, public demonstrations, and political orations. These do not concern him, are not meant for him. His duties as a student require the concentration of all his energies on them.

It is not meant hereby that all students should be on the same level and that they all should receive no instruction beyond their books. It has been said above that education should be consistent with age and capacity. The more advanced students may with advantage enjoy certain liberties which must be denied to others. Two speeches have been recently made on the subject under discussion, and notable speeches they are, which deserve to be read and digested by all those who are interested in the good of the younger generation of India. In his address to the Students' Brotherhood of Bombay delivered last month, the Hon'ble Mr. Gokhale, than whom none can have a better title to speak with authority on this subject, suggested that special provision should be made in colleges for the teaching of the principles of politics. What our students want is proper guidance at the hands of responsible teachers, and the study of politics and cognate subjects may be conveniently encouraged in their debating clubs by professors guiding the deliberations as presidents of their periodical meetings. By the time students reach the upper classes in college, they attain an intellectual and mental stage when they may be allowed to attend well organized meetings as passive spectators with some benefit to themselves. Though Government circulars preventing students from taking part in meetings appear to have special reference to political agitation, the remarks made above apply with equal force to all public agitation. Whether it be a social, religious or industrial movement, students ought not to enter actively into them as they are intended for elderly people. More advanced students may with profit follow what is going on around them, they may study discussions and controversies carried on on different subjects—but as humble learners full of respect for age and experience. It is thus only that they will gain knowledge and the necessary training. Students must be seekers after truth, receiving light from whatever direction it may come and not presume to set up as gentlemen with fixed opinions. As the President of the Behari Students' Conference recently held at Gaya, Mr. Sayad Hasan Imam made an excellent speech in which he boldly and clearly expressed the view that students cannot and ought not to be totally prevented from tasting of the forbidden fruit of politics. He almost followed the lines Mr. Gokhale had laid down in his Bombay speech and pleaded that while students ought to have nothing to do with active politics, they ought to be properly guided in a study of the various questions which are exercising the minds of society around them. Two sentences from the speech will best summarise his views on the subject. "Nobody will have the unwisdom to tell you that you will be advancing the interest of your country, if you rush into active politics. But I hold strongly to the view that it will be a sin on our part to leave you without guidance to evolve a code of political morals out of the perplexities of the present situation." These words, it is obvious, have been addressed to students. Similar views are held by many an eminent educationist in the country.

The political views of Government, however, differ from those of the people. And

certain persons may feel that educational institutions controlled by Government are not likely to inculcate principles of patriotism such as they would wish their boys to imbibe. Government officials are no doubt sometimes unnecessarily suspicious and the Educational Department exercises a severe censorship over the selection of text-books. While works such as the Citizen of India are strongly recommended, there is much ado in sanctioning equally innocent and useful books for use in high schools. Greater liberty of choice must be accorded to responsible head-masters, and educational authorities would do well to show more tact and sympathy in dealing with such matters. Parents who wish that their children should receive instruction of a particular kind such as cannot be obtained in Government high schools, are at liberty to send their boys to independent schools—national schools included. But even in these latter institutions there must be perfect discipline and the students ought not to be allowed to dabble in things which do not belong to their province. The loyalty of all educational institutions to British rule ought to be unimpeachable. Whatever kind of patriotism is taught, the teaching has to be consistent with loyalty. No school can also go on for a day without enforcing discipline upon pupils. Those who speak against the sort of discipline that is sought to be introduced into Government schools and colleges will find that in independent educational institutions also the need of similar discipline is the same. Even national schools—whatever their differences in curriculum may be—cannot permit their pupils to take active part in politics. Educational science, the very elements of it, require that the activities of boys should be confined to their legitimate sphere. There can be no education in the real sense of the word, no development of the mind and the heart, no self-control, no respect for the elders, no modesty and humility, where raw youths are allowed to become gentlemen before their time. This is a question which concerns the most vital interests of the nation. It must therefore be dispassionately considered, and not mixed up with party and political prejudices. Society in general does not seem to have paid this subject the attention it deserves. Parents and guardians have not thought out to themselves the serious consequences that are sure to ensue from a neglect of their duties to their own dear children. The time has now come when this policy of drift should be given up. Personal attention must be paid to the bringing up of children and the influence of the home must be fully brought to bear upon them. They cannot be left to the tender mercies of the press and the platform speakers without serious injury. As no experiments in physics and chemistry can be made by students without the assistance and supervision of the teacher, so also no useful knowledge about political and other public questions can be obtained without the guidance of some responsible person. Let youthful enthusiasm be properly guided so as to run into useful channels, and beneficial results will follow.

V. G. Kale.

UNIVERSITY OF MADRAS.

Lawyers or Teachers.

VAST and sweeping are the changes that have come upon education; and who knows what may yet be in the womb of time? Even the sturdy professionalists themselves pause and stand in doubt and amazement at the outburst of what-almost-be-termed a revolution. The old-world, if also the world-old, examination system stands doomed a curse; and is to be superseded by a truer and far more liberal standard of test. The heads of institutions, it is now urged, will not be hampered in their work by the narrow bigotry of the genius of examinations; they will be allowed a degree of freedom and latitude in the pursuit of their aims and methods; they will be invested, in the first place, with the power to adjudge the merits of the scholars they bring up. Great is the trust reposed in them; and great too the burden and responsibility of work. Such at all events is, apparently, the general tenor of the proposed educational policy. But what may eventually issue from the be-praised reforms in actual practice, it is at present hard to tell. Let us now this day hope for the best, as it may prove 'folly to be wise'?

Now, at least, is no time to trifle with matters educational: very weighty and momentous issues are gathering ahead. It is devoutly to be hoped that we shall bear in mind the gravity and importance of our work when we shall be called upon to elect two worthy men for the two vacant fellowships of the University now announced. We do not here take upon ourselves to mention any names; but strongly urge the advocacy, nay, the necessity, of giving a fair chance to a professional educationalist as against others.

The lawyers are a fast-spreading body, and have stepped into every department of life that carries honour or emolument with it. They are, admittedly, the protagonists of all movements, social, political, economical; and what progress we have made so far, must, in no small measure, be set to their credit. They have wealth; they have influence; they have freedom above all; they have about them all the pomp and glitter of outward circumstance that catch the popular applause. These they have, and have, besides, a host of indebted clients at their service. With such resources as these, they have got at almost all posts of honour, great and small. Is a post of the Municipal Chairman vacant? Who gets it? the lawyer. Who gets the vacant Municipal Councillorship? the lawyer. Who is to be the Secretary of the Town Hall?—the lawyer. Even the schools are not safe; a certain lawyer is very likely the President of the school committee: some are sure to be on the committee; and it is a committee mostly of lawyers. 'Lawyers, lawyers, everywhere.....' It is, however, a different question if other men will not do the work as creditably as they. Good work or no good work, the lawyer is there and will be there for all the world if he can help it. There is the 'go' in him: he has the pluck, the daring and the push to fight his way through; defeat and discomfiture he takes right honourably. What an adventurous spirit!

But if a stand must be made somewhere, let it be made on education. Here the field may be limited to the educationalists. But the teacher is quite a different character from the lawyer. He is a shy, modest soul, who is quite nervous about his honour, which he, by virtue of his office, has zealously to guard even against suspicion. Poor man! he is a servant under a master or masters, by no means easy natures to please. His temperament as well as his circumstances forbid him from making any vain empty display and make him the retired contented man that he is. Say the worst, it must still be conceded that, more than any other, the educationalist does his duties to the best of his conscience and most unostentiously. It is a right noble service that he does, and does most piously. 'The race is not always to the swift, nor the battle to the strong.' If in the present economy of things such a quiet honest worker does not meet with his merited appreciation, small thanks, then, to

all the boasted education and civilisation of the day! Without any disparagement to the individual merits of the graduates, it will be admitted that it is mostly due to their teachers that they have come to be what and where they are. An educationalist in the Senate working for education is just the right order of things. Every day of his life he comes in contact with his scholars; he knows their merits and their deficiencies, advances the one and supplies the other, and is ever improvising ways and methods of educating the young minds entrusted to his care. He does nothing else besides: he is the educator merely, and his whole life is devoted to education. Who else then, is to direct and guide educational policy, if not such as he? The lawyer is surely in his place in his court, arguing a question of law for his client and seeing to no miscarriage of justice. Working mainly for his client and in the interests of law, he must put by all other work for his spare moments, to be done with what imperfect knowledge he may have picked up second-hand. But however, he may do it, he makes a rush to the vacant place for the honour that it brings,—as who will not?

Let us not be deceived by profuse promises or tall talk; let us not be distracted by any considerations of wealth, rank, or dignity. Let us, graduates of the University, knowing and discreet that we are, justify the education that we have received by conferring our united votes on two worthy educationists in the ensuing election. Let us stoutly refuse to acknowledge false gods in whatever shape; and do honour to those who deserve it by their worth. 'Sufficient unto the day is the evil thereof.'

V. M. D.

OBSERVATION AS A METHOD OF STUDY IN SCHOOLS.*

There are assembled here students and students, a good number of them; but how few of them, I ask their pardon, do really come under that denomination! I am a student too, in a sense; most of us do belong to the school-going class, read books, write exercises, and pass examinations too; but may all such claim to be ranked as students in the true sense of the word? I do not now propose to lay down any definition of a student. That may look a very formal and fair beginning; but it will answer my purpose to-day if I raise such a question. Answer it however you may, you will all admit that the stage dress we put on, and the parts that we enact in school or college are but the outward pomp and circumstance, that behind this pageantry there abides a spirit and mind that alone mark the true student.

Permit me now to recall to your minds certain stories you may have read before, or at least heard tell of. There is the story of *The Dervish and the Lost Camel*. What a fine story has the Dervish woven of the apparently isolated incidents he came upon!—Camel's foot-steps—no human foot-print round about—grass on one side cropped—a small uncropped tuft peeping out—a line of busy ants on one side—a cluster of bees on the other. What a remarkable man that who patched up a story out of these broken pieces!

There is yet again another story told by Kingsley, an inimitable story-teller. He calls one of his children's books *Madam How And Lady Why*—a queer title; and sets our curiosity on edge. A certain lesson in it goes by the title, *Eyes And No Eyes*; where two boys Robert and William go on a walk along the same road. Mr. Robert comes home at length apparently all done up. Cursing himself why on earth he ever went out-of-doors, he looks about him, with his blank and lack-lustre eyes, for an arm-chair to

* The lecture read by V. Mahadevan, B.A., L.T., before the Junior Association, Findlay College, Mannargudi.

fling himself into. While Mr. William returns, his pockets bulging with curiosities picked up on his way, his beaming eyes bespeaking eager expression and wonder, his heart yearning to ask a thousand questions and learn of all he has seen and has fetched. "So it is; one man walks the world with his eyes open, another with his eyes shut; and upon this difference depends all the superiority which one man acquires over another."

For every one of you, honest students, there should have come moments when you asked yourself why you are so behind, why your class-fellow overtops you; if the difference is God's making; if not all that you can do may bridge it up. You have so often made pious resolutions to do better, meaning no more than to *read* harder and longer hours. Now tell me why the *dervish* was superior to the merchants that laid hold on him, in what different school was he brought up; what books did he read more than they, more than the learned magistrate himself who tried him. You have probably read the fable of *The Shepherd and The Philosopher*, how the philosopher 'with loads of learned lumber in his head' owned his littleness before the illiterate shepherd. What books did the shepherd study more than God's Book of Nature? Do you imagine that the great master minds of olden times read a tithe of the books which the meanest of us have studied and are studying?

I will not go on multiplying instances to show what after all you may know that the number of books a man has studied is no measure of his knowledge and wisdom. There is, notwithstanding, such a foolish worship of books, such a wholesale swallowing of printed matter, among school boys especially, that the strongest denunciation of books is but poor and weak censure. I do not mean to pronounce a sweeping anathema upon the whole world of books. There are books the possession of which is a liberal education in itself; books which are worth more than all the treasures of California and Potosi; books, the reading of which causes

> Our hearts, in glad surprise,
> To higher levels rise.
>
> Honour to those whose words and deeds
> Thus help us in our daily needs
> And by their overflow
> Raise us from what is low.
>
> LONGFELLOW.

A good book increases our knowledge, ennobles our character, purifies our heart and soul, and instils a spirit in us which thirsts after more knowledge. A good book is a sacred thing at which you must sit devoutly with your mind and heart centered on it. It demands self-control, calmness and fixity of mind and thought. It is certainly no play thing with which to pass our time, no toy to trifle with. For one such good genuine book, there are thousands of imitations in book's clothing, most pernicious stuff seducing our minds and hearts. A bad book is doubly a curse; it is a negative evil, insomuch, that the reading of it is so much time lost to good reading; it is a positive evil that it debilitates the mind and corrupts our taste so much that in time we lose the power of reading a good book and feel an aversion for it, How very often have we not put a good book by, saying it is tough reading, taxes our brains Light, pleasant reading, our mind craves for. Says Mr. Frederick Harrison,—"As I look back and think of those cataracts of printed stuff, * * * printed stuff which I and the rest of us, to our infinitely small profit, have consumed with our eyes, not even making an honest living out of it and impairing our substance, I could almost reckon the printing press as amongst the scourges of mankind. I am grown a wiser and sadder man, importunate like that Ancient Mariner to tell each blithe wedding guest the tale of his ship-wreck, on the infinite sea of printer's ink, as one escaped by mercy and grace from the region where there is water, water, everywhere, and not a drop to drink." Says he again referring to our modern habit of reading: "To read from the pricking of some cerebral itch rather than from a desire to form judgments; * * * to use books as a sedative, as a means of exciting a mild intellectual titillation instead of as a means of elevating the nature; to dribble on in a perpetual literary

gossip, in order to avoid the effort of bracing the mind to think—such is our habit in an age of utterly chaotic education."

The present century is pre-eminently a century of keen struggle and competition. Not a moment is to be lost or you will be thrown behind, and you will rue it all your life long. The steam ships, railways, balloons, motor-cars and other means of rapid locomotion; the never ceasing whirling machinery turning out many giants' work in no time; these glories in the physical world have their counterpart in the region of the mind. This is above all an age of great bustle, of hurry, of emergencies and hurried expediencies. We have to do the greatest amount of work in the shortest time possible; for it is by the *quantity* of your work that you are in the first place judged; quality comes next if at all. 'How many hours do you work in school? How many books have you read? How many boys did your school pass?' These are the questions asked and by what answers you give to these you are judged. You are not asked *what* work you do, *what sort* of books you read, *what sort* of boys they are that have passed. No time to answer; no time to judge. The teacher has no time to think of how best he may address himself to his work, how best he can make his boys think. The boys too have hardly less time.

Neither the boys nor the teachers are to blame: they have to get up a goodly lot of subjects, and go into a host of details in every subject. They cannot afford to pause and take thought before each step; so doing they would not have traversed half the ground that they should clear and that their brethren have managed to clear. The over-crowded curriculum of the present day has much to answer for the pitiful deficiencies of modern education, for the very mediocre abilities of the present day school and college boys. "Indeed, it would seem," says an author, "that unless the next generation greatly curtails its educational curricula, it will have to increase the number of lunatic asylums," with pardonable exaggeration.

One result of this principle of maximum knowledge in the minimum time is the introduction of routine into the educational system. Everything is reduced to neat precepts and rules and formulas—labour-and-time-saving shifts and devices. The teacher has certain rules of Method to go by, certain rule-of-thumb, mechanical principles to facilitate and expedite his business. The student too is not to think; he is not to observe. He is assigned a number of pages to read: he reads them and answers certain mechanical questions next day and gives satisfaction to himself as well as the teacher: thanks to the *Test Examiner*. Is he given a sum to work? there is a book containing all manner of questions worked out. There is *Notes* for History, Geography, English of course, Science by reading which you may answer every imaginable question without knowing a test-tube from a spirit lamp. There are *Model Essays*, recipes for writing essays for paraphrasing; *Letter-writers*; *Made-Easies*; *Briefs*; and a legion of sinister books avowedly designed to disable us from thinking and judging for ourselves; to transform us into unthinking brutes. Now it is that Government and control of youths is quite essential at least from their being seduced and captured by evil and pernicious influences in diverse forms. It is much to be deplored if any laxity of discipline is here shown from any mistaken notions of liberty. Our student now lives in a perpetual world of books, of letters, and of sounds; of real things, of the actualities of life, he knows no more than the man in the moon; it is not even deemed his business to know. Pity!

Now, there are two ends to be kept in view in all education:—Knowledge and discipline. The latter is indeed the more important. There are in fact many things, we are at great pains to learn in school and college, but which do not for all the world subserve any purpose in afterlife. But what is of vital interest and importance is the training we have been under, the methods we have followed, and the habits of thinking and observation we have cultivated in the course of acquiring knowledge. Our success in life depends

on how we understand the duties before us, on how we understand the circumstances and the men amidst whom we are cast: in short upon our powers of observation and judgment.

Those departments of learning that, more than others, are reputed to bear upon this power of observation are Natural Science and Mathematics. Here is no domain for dogma; nothing shall be taken on trust. Everything shall be remorselessly laid bare and proved. The student of science deals with the object first-hand, tests its nature in as various ways as he can, analyses it into its parts, into its very elements till it has nothing to disclose; observes its various forms: how it behaves itself towards several other objects, and under varying conditions. All this is to be performed coolly, thoughtfully, and with exceeding care. He ought to beware of any flurry or impatience; or consequences may follow by no means congenial to his person or laboratory. Quick and prompt you ought to be; but this is quite different from being hurried and hasty. Science so studied is studied scientifically; otherwise it is mere mockery and delusion. Its chief merit lies in this; (1) You study *real things*: (2) You study them *yourself*. The aim should be calm and close observation, independent judgment, and self-reliance: any one of these will bring on the rest in its wake. These are identically the powers of mind that are called into exercise in the work-a-day life of the world, where you have to observe, study, and adjudge men and measures. It may here be asked and very pertinently too if Science and Mathematics men get the start of others in life, and display more than their colleagues any of the readier facilities of making their way in the world, and discerning men around them. It is indeed a question for which statistics may be taken. Without them I will not venture on any answer. If some of them are found to be as bad as the rest or even worse than they and betray a strange incapacity of understanding human character and measures, the fault is not in science or mathematics. They have not, as it may well be, studied it scientifically; or it may also be, as is facetiously urged, that man being a very hard and unruly compound made up of very conflicting irreconcilable elements defies all analysis not admitting of being operated on experimentally. He sets at nought, acted upon as he is by too many inconstant and indeterminable forces, all calculations regarding his motions. But let it alone.

Other subjects of study, English, History, Geography, Logic, etc., appeal to our observation in varying measure. Here are called into play our observation of 'all common things, each day's events, that with the hour begin and end.' In the course of studying English Literature for instance, we are continually set a thinking of the world, and its ways, of all sorts of human characters, of our feelings and experiences, past and present. It appeals to our knowledge of the world, and sets before us the various impulses and ambitions that sway the world. We are not to stop with discussing the points of grammar and rhetoric contained in any particular lesson; for surely literature is not meant for the elucidation of grammar and rhetoric; nor did God doom man for the study of them. Most of us are excellent critics in our own way; we have devoured pages after pages, books after books of criticism about Hamlet, Lear, Falstaff, Iago; of criticism built upon the facts of the plays. If with all this, we cannot judge of our friend's nature from his line of conduct, and comport ourselves befittingly, all our elaborate study is but profitless waste,' and weariness of the flesh. So it is with most of us; no wonder; what did we do more than make an 'examination study' of our books, flinging them away or tearing them to tatters directly the examination bother is done; nay more, I have seen some that would, if any remote thought of their text-books inadvertently came upon them, shake themselves off literally from such painful and bitter reminiscences.

History and Geography fare no better at our

hands. Of what earthly good is the host of facts and dates that we lay to heart if not to enable us to determine the natural sequence of things? Observe what policy the sovereign power pursues, how he puts it into execution, what sort of men he employs, how he is understood by the people, what results followed and ought to have followed, what varying and inconstant forces in operation modified or nullified the results, and so on—. Let the student observe how his father manages the home, how the headmaster or principal governs and directs the school or college, how the chairman administers the municipality, and having observed these let him study and understand history. As we are now, most of our boys do not know who their chairman is, how many municipal members assist and work with him, but will tell you exactly the names of the sons of Shah Jahan, of the sons, legitimate or other, of John of Gaunt. This is certainly not the proper study of history. When we read of an event or a personage in history, we should conjure up images of incidents or combination of incidents we have seen and persons we have seen: if we read of results of certain policies and acts, we must judge whether they tally with what we have seen and known of the world about us. Unless so based upon our personal observations or experiences of life, the study of history is nothing but mere thankless exercise of memory, a negative evil, if not also a positive one. If we cannot get a sound idea of the political forces and movements that are stirring about us at present, what a miserable study should we have made these long years of school and college!

Education is a slow laborious process to be gone through patiently and carefully. The mechanical spirit we bring to bear on education, and the rule of thumb methods adopted in the process cause untold mischief. The custom of herding together boys of various natures and temperaments, and of varying abilities into one section of a form tends to minimise all the good effects of teaching. The teacher addresses himself to bad boys or to good boys; and cannot at the same time both. It is sheer waste of time to either class of these boys. In this promiscuous grouping there is a tendency for everything to level itself to the average. Whether backward boys are advanced or not, the forward boys are sure to deteriorate, and are deteriorating. This is perhaps one reason that many very bright and promising youths decline fast as they go up to higher forms till they seem to have grown into quite different beings from what they were. This is an evil incidental to congestion in schools; and cannot be repaired until every form is divided into as many sections as there are pronounced orders of intelligence among the boys; and until arrangements are made to facilitate teachers to pay individual attention to them. So easy to say; but there are very many difficulties in the way chiefly the difficulty of procuring money, not to speak of other difficulties. The evil can possibly be averted to some extent only by the boy's engaging a private tutor, if he can afford it. Here I may tell you that a good private tutor is not easy to find: he is not a a cheap commodity to be had for a paltry sum of money. He must be one whom you love and reverence, whose company you should have at all times, one who takes you to a walk, who plays with you, and who discusses with you on every common topic on free and easy terms. The poor mortal that puts in his appearance at stated hours, sits with you for a stated length of time, looks upwords in the dictionary for you, dictates paraphrase to you, and works sums for you, and goes away having done with you for the day—such a man is a positive drain on your purse. If you are charitably minded, you had better offer him the stipulated fees and a trifle more every month, and beg him not to molest you.

The charge is generally levelled against the English-knowing men, that they are woefully ignorant of the most common things in the world. To a great extent this is true. Some of us do

not know what grain is sown in rice fields: what manure they are dressed with: what work our peasants do there: how many kinds of rice grains are there. How few of us can strike a good bargain, at least not be duped? The most rudimentary knowledge essential for smooth and easy getting-on in life we are unacquainted with. We seem to walk the world with eyes half-shut; and talk and act as if we were denizens of some strange dreamy land.

Books, books, the world of books is too much with us; reading and writing we lay waste our powers. After all the great end of knowledge is to enable us to lead wiser and better lives. Like the miser who confounds means for the end and hoards piles after piles, we develop into bookmen reading books after books. At no time do we take thought of how much we have been the better for reading. We seem to read on as if by a curse. Reading after all only furnishes the mind materials; it is thinking makes it ours. If we do not think and assimilate the knowledge got, it is but cumbersome luggage which takes up a space that might otherwise be better furnished. But the hardest thing in the world is to think, as Emerson says; and in so far as we fail to learn to think and get into the habit of thinking, and judging for ourselves, our education is a failure; it does not matter what academical heights we reach, a miss is as good as a mile.

Now, here comes in the value of excursions, so much preached by inspecting officers. The system has not yet been given a fair trial; and it is hard to say what difficulties there may occur in actual practice. The objection commonly made is, it entails additional cost. The parent will not bear the cost, he would say "he is already paying heavy fees, and it is a hardship to be obliged to pay even a trifle more. And for what, after all is he to pay? for a mischievous innovation, a wanton interruption to the regular course of studies, while the boy freely indulges himself in gay wanderings and merry makings. It is a diabolical trick to wring money out of him. He is not such a fool, let the manager beware; and would vindicate his wisdom by withdrawing his boy if it should come to that." It is with such parents that the poor manager has mostly to deal. He has first to educate the parent before he educates the boy. But will the manager pay? where is he to get the money? Can the manager in the first place *afford* to brave public opinion, if he has an eye to the strength of the school? But the fear is more imaginary than real. The parent may be made to pay, at length, though he will curse as he pays. An excursion is a very welcome diversion from the monotony of school routine. The student comes in contact with natural things, and his curiosity may be roused for natural history. Every student will have a note-book, in which will jot down what he observes and learns. The teacher may take this opportunity of explaining to his boys the growth and cultivation of many natural products, how they are grown in the particular locality; when, and how harvested. The teacher may take his boys to a railway station and show them the steam-engine, its chief parts and how the wheel is acted upon. You may take them to a historical place, if luckily you happen to have any hard by; and show them the historical ruins. Or take them to the temple, tell him the history of the temple if it has any, some of the myths and fables attaching to the god or gods. Let him see the solid immensity of the building and drink in the sanctity of the place. Excursions, are surely very much to be commended, and deserve a trial at least. Say the worst of them, you cannot deny the pleasure of the trip, the teachers and boys come into closer relations; and there is generated amongst the students themselves a feeling of solidarity, which alone must be reason enough for making excursions.

Now, boys, how often have not some of you cursed your teachers for not dictating to you notes and even paraphrase? If things were

left to your direction, you would have your teacher frame a number of *model* questions—meaning those likely to appear in the examination—and dictate beneath each question the model answer too. You will not, good souls that you are, take even the trouble of finding out answers yourselves. You may be told—as indeed you often are—that you will be defeating the very ends of the examination; that you will be passing for your answers what are in fact the teachers', that while your teacher is expected to teach, he shall not be a party to your cheating the examiner. But no; you will shut your eyes to the morality of the question. The best part of a man's education is that which be gives to himself. The teacher only helps you to educate yourself. He will tell you what to observe, and what books to study. Read far fewer books than you do now: Bid farewell to your *Text-Examiners*, and *General English Manuals*. Above all be honest: and make an honest study of your text-books. Take your teachers' counsel as often as you may. Think and think out everything yourself. That is the only honest way of seeking wisdom. Then, "Ask, and it shall be given you; seek, and ye shall find; knock, and it shall be opened unto you."

OUR ENGLISH LETTER.

LIVERPOOL, *November* 1909.

Three voices have been recently raised against examinations. There have been others no doubt wherever two or three victims of the schools are gathered together. But these three have been heard. Dr. Miers, speaking at Birkbeck College, spoke of the shadow of examinations which hung over the student all through his career, the effect of which was that the study all too often ceased abruptly, when the examination pressure was removed. There can be no question as to the truth of this statement. Examinations do not make for the pursuit of wisdom for its own sake. How can they? Your correspondent cannot forget an incident which took place in a room, world-famous for other Associations than this, one stifling night in May some years ago. It was only a week or two before we were to be plunged into the abyss of "Greats." The philosophy tutor was trying to remedy the ignorance of certain of his men and descanting on all things metaphysical. "You know there are only seven or eight questions in philosophy. They can ask them in various ways, but there are no other questions besides them." An undergraduate was playing with his men and making ready to write. He was a man who had achieved some distinction in the field of sport and is now a worthy member of the I.C.S. "What are you doing, G—?" "Getting ready to take the answers down. You are going to tell us them, aren't you?" It certainly seemed a golden opportunity. We were all anxious not so much to drink of the fountain of knowledge as to arm ourselves against the wiles of the examiners. How many men are there who are prepared to go their own way at a University and take the consequences? The consequences are a bad degree, for which there is an explanation, but one that is never given, because of the universal incredulity with which it is received. The examination under present conditions is the goal, and the goal is, here as elsewhere, the end of the course: there is no need, no inducement to go beyond it. There is the inward constraint, of course, but there is also the outward restraint. And there is no doubt that in the majority of cases, only one can survive: equally certain is it that most men keep the law and lose the love. But there seems no way out of the difficulty. Examinations may be, and are, an evil, but they appear to be a necessary evil, and all that can be done is to modify and mitigate it. If this were being done, there would be little to say on the matter, but the tendency is rather to increase the burden. Nothing saner on this matter of examinations has ever been written than Mr. Warde Fowler's little book. 'An Oxford Correspondence' in which he sets forth what no doubt are his own views in a series of letters supposedly written to a man who has failed to get a First Class in the Schools. Like all his writings, it is eminently readable, and is the sane talk of the sanest of tutors.

Another who has spoken is Professor Osler. Far from being a dry-as-dust professor, Dr. Osler generally succeeds in sweeping very stoutly with a good broom when he mounts the platform. He hates the dust and would be rid of it. And he is willing even to bring the accusation of dust harbouring against those who think they have the cleanest of hearths. Speaking at the London Hospital he addressed to the students the remarks which arouse satisfaction in the breasts of the elders and fall with "damned iteration" on much-enduring youth. But afterwards he had a word—whether it was in season or out of season let them say that know—for the authorities. He reached them through the students. "You say that research work will not help you in your examinations: I tell you to take no thought for your examinations." According to Dr. Osler "the University, the hospitals, and the colleges have all failed the student. It is a scandalous injustice that the London student cannot, after a good honest examination, get a good honest degree." Such statements from such a source have naturally roused comments. The Vice-Chancellor has strongly defended the conjoint examination which he says is as good a test as at Oxford or Cambridge or the Scottish Universities. The Dean of Charing Cross Medical School has pronounced this to be a matter of grave interest to the London Medical Schools, and is quite sure that if the public could only appreciate what it meant, a real and effectual interest would be taken in the matter. Perhaps "a good M.D. degree" will be the outcome of it.

Yesterday, by the way, the trial of a certain Dr. Bodie who has had a great vogue in the Music Halls here was terminated. In the course of the cross-examinations he admitted that the M.D. which he claimed was a "showman's lie," but insisted that it was not intended to deceive: in the theatrical professor it was understood that it stood for "merry devil."

Sir. Isambard Owen, Vice-Chancellor of Bristol University, in his recent Inaugural address insisted on the difference between living and dead knowledge. By 'living' he meant that is, has root and grows: the difference was in the mind of the student and not in the matter studied: and in this connection he made a remark on examinations which is well worth quoting: and with that we leave the sorry subject and will not return to it for some time. One almost fears that you will think your correspondent smarting under some rebuff at the hands of examiners: this is groundless: my wounds are not recent, and time works wonders even on the déclassés.

"If a University insists too much on the importance of its examinations, if it teaches its students to look forward too much to the examinations and too little to the necessities of their after-life, then a great deal of the knowledge gained in the University is likely to become of the dead kind." Well said, Sir Isambard.

Manchester has every reason to be proud of her University. When we are inclined to grow pessimistic on the educational outlook, it will be well for us to look to the words spoken by Sir Henry Roscoe in Manchester a few weeks ago. It is a graphic picture of the progress of half a century. Sir Henry Roscoe is not a man in whose favour I am prejudiced. It is Chemistry Primer was a sore thorn in the flesh of a budding classic (alas how many buds never come to flower!) But his speech is full of instruction and encouragement, and is remarkable for the tribute which in all modesty and with every justification he pays himself and his friends. "I am the last of the old guard who in 1857 served on the staff of the college and set themselves doggedly to overcome the prejudice and want of appreciation which was shown not only by the people of Manchester but also by the whole of the Press. It was indeed then a poor affair. The thing was in fact going spark out. Manchester did not want a University College: it would be much better to limit our hopes to being a superior school. I was standing one night at the back of the old building in Quay Street smoking a cigar before my evening lecture, when a tramp came up to ask if this was the night Asylum. I told him it was not at present, but that if he came back in six months it might be. Think of the progress of 50 years. It is the greatest example of rapid progress of higher education which this country has seen. It is not only in one branch of intellectual activity that this University is conspicuous, but in all branches and this is its most remarkable characteristic. It is not a mere school of science but a real University, with all its faculties, Arts, Science, Law, Medicine, Theology, Music, Commerce, and Technology, adequately represented. This is the marvel and this is our glory. To found a technical school in Manchester in the fifties would not have been a difficult task, but we—Greenwood, Ward, and myself—had higher views. We were determined to conquer or die; it was to be a University or nothing. And these small beginnings have ended, through the enthusiasm and devoted work of our successors, in what you now see."

The wave of feeling that wept over Europe upon the execution of Senor Ferrer has passed away, though no doubt the advanced socialists are still under its influence. Ferrer was a great educationist and his loss is to be deplored. He kept a free private school of his own, and, so far as this goes, he is not likely to have many imitators in England. We believe the Sophists were right.

Term is now in full swing at the Universities. There is not much change in the *personnel* at Oxford and Cambridge. Dr. Johns is installed as Master of St. Catherine's. This was an unexpected appointment; but it has been received with enthusiasm. Dr. Johns is a distinguished Assyriologist, quite in the front rank of scholars. Mr. Spenser Wilkinson has been appointed to the Chichele Professorship of Military History. This should be a splendid choice. He has for some years been a leading military expert, and is so much a man of affairs that it came as news to most that his academic qualifications include an M. G. Oxon. and M. A. Lond.

Reviews and Notices.

"Geometry for Beginners" by C. Godfrey, M.A., and A.W. Siddons, M.A., Cambridge University Press, 1909. Large Crown 8vo. Cloth. pp. 8 + 80. Price 1*s*.

The booklet is the experimental section of the author's Elementary Geometry issued separately with additions and changes found necessary in the light of experience 'gained in the working of the new methods of teaching Geometry.'

The book is divided into 2 parts. The *First Stage* deals with 'introductory practical work concerned with the fundamental concepts, and not primarily designed to give facility in using instruments.' The *Second Stage* deals with 'experimental work leading up to the discovery of the fundamental facts of geometry; including angles at a point, parallels, angles of a triangle and polygon, congruent triangles.'

Sections of the bigger book which deal with Pattern-drawing and symmetry have been omitted in the booklet; but we think that the same might very well have been included, to form part of the Second Stage.

The general arrangement of matter in the little book is certainly an improvement on the method of the bigger book; and the matter will be enough ground to be travelled in the earlier stage of fourth forms in our High Schools.

Epochs of English Literature: (1) The Wordsworth Epoch, (2) The Tennyson Epoch, by J. C. Stobart, 1*s*. 6*d*. each. (Edward Arnold).

Two books of a very useful series. They have introductions giving enough details of the leading authors of the respective periods and of the literary characterics of the epochs. The selections of prose and poetry have been made with judgment and students who will work through these books carefully will get a better knowledge of the history of literature than they will by studying more pretentious books professedly treating of History of English Literature.

Elementary Lessons in Astronomy, by Sir Norman Lockyer, K.C.B., Macmillan & Co., 5*s*. 6*d*.

Sir Norman Lockyer, we are sure, needs no introduction to our readers. So also for the book before us, which is a reprint of the second edition (published in 1888) with corrections and additions. These lessons, which are admirably treated in a lucid and interesting manner, are intended for use as a text-book in schools. But as there is not much of mathematics in them, they will also serve the general reader as an introduction to the most fascinating of all sciences. The author has taken considerable trouble to show the sun's real place in the cosmos. The question of most important and terrible moment to us, "How long will the heat of the sun last" is dealt with in an interesting manner. The lesson relating to Mars, illustrated by a number of excellent drawings of the planet, will be of especial interest now, when the problem of communication with Mars is *in tapis*.

On the whole, we have nothing but praise for the book, and have no hesitation in recommending any reader who wants to acquire a sound and it to thorough knowledge of the fundamental principles of Astronomy.

The book consists of a number of photographs, steel plates, and drawings which are all *par excellence*; and its get-up is characterised by the usual excellence of Messrs. Macmillan.

Chambers's Student's History of England. Edited by David Patrick, LL.D., and William Woodburn. W. and R. Chambers, Limited, London and Edinburgh, 1909.

The justification offered by the editors for this new version of the oft-told tale of English history, is that they have attempted to tell the great story of England in the fewest words possible, so as to enable the student to grasp the succession of causes and effects, of events and facts, that have made the English nation what it is. Many explanatory details are given in a carefully

planned system of notes and the large number of sketch-maps renders it easy to follow the march of events. To enable the student to test his knowledge for himself, the book is provided with a series of summaries and selected questions. We are sure that the book will be found useful to teachers as well as to pupils in the higher forms of secondary schools and to such as are preparing for the Intermediate examinations of Indian Universities.

The Function of words. A guide to Analysis and Parsing. By M. C. Carman, B.A., New edition. Longmans, Green and Co., London, Bombay and Calcutta.

This book is intended for those who have already mastered the simplest rudiments. It does not contain too many exercises, but the examples are all prose. The author thinks that if a boy can understand all the exercises and examples here given, he will find little difficulty with the parsing and analysis of poetry, and we agree with him, as poetry differs from prose chiefly by variation in the order of words for purposes of rhythm and expression. We think that the book will prove particularly useful to teachers and pupils of the lower forms of our secondary schools.

By Road and River. A Descriptive Geography of the British Isles. By E. M. Wilmot Buxton. Methuen and Co., London.

The best way of learning geography is by actually travelling to every part of the world and seeing it for one-self. The next best thing is to read the descriptions of travellers and follow them in imaginary travels. This is what is attempted in the book before us. The reader is supposed to go on journeys from place to place and picture for himself what he would actually see if he went there. Sometimes he is made to go by train, sometimes by road on a bicycle or in a motor-car, sometimes by boat. All the time he keeps his eyes wide open, so that in the end he may have some idea of what the British Isles are like. We have much pleasure in recommending this book to pupils of our high schools.

India under Company and Crown: Being an account of its progress and present administration. By Herbert A Stark, B.A., Macmillan & Co., Ld., 309, Bow Bazaar Street, Calcutta.

This book attempts to tell our school boys what gain has accrued to India by British Rule. It is written in a style simple enough for the lower forms of our secondary schools, and closely follows the syllabus detailed by the University of Calcutta. The author hopes that his book will not be found wanting in any information given in the text-book upon the same subject which the University of Calcutta is preparing.

Indian Educational Notes.

MADRAS.

We are desired to publish the following circular and programme regarding the annual Conference of the South India Teachers' Union to be held at Trichinopoly next month:—

South India Teachers' Union,
Royapettah, Madras,
25th October, 1909.

Dear Sir,

At the Conference held under the auspices of the Madras Teachers' Guild in December 1907, it was felt that the time had come for a strong union of teachers for the whole Presidency to be formed, and Mr. Theobald of Coimbatore outlined what seems to be a very practicable scheme on the lines of the National Union of Teachers of England. The meeting unanimously voted its adoption. To carry out the plan, a number of gentlemen were deputed to visit the different centres and address the local teachers on the general scheme with a view to form, in each centre, a local association.

On November 14th, 1908, a meeting of delegates from different associations was held in Madras and it was decided that a Teachers' Union for South India be formed forthwith. A small subcommittee was appointed to draw up the rules of the constitution; and the rules so drawn up were submitted for approval to the Conference held in Madras, on the 22nd and 23rd of December, 1908. A copy of the Rules as passed by the Conference, is enclosed.

The Union is now fairly well started; there are seventeen Local Associations distributed over seven circles, the registered teachers in each of which have elected a representative to serve on the Executive Board. Arrangements have been made to hold a Conference in December next, at Trichinopoly, when many matters of importance will be discussed. Detailed notice of the programme of the Conference will be sent out in due course. Surely it is time that such a large body of teachers as is found in the colleges and schools

of this Presidency, should be organized and so be able from time to time to discuss educational matters and make when necessary strong representations on questions of general educational interest such as the betterment of the status of teachers, the provision of pensions, etc. May I request you to co-operate in the work and help forward the movement which would certainly be for the advancement of the profession?

I am,
Dear Sir,
Yours truly,
S. VASUDEVACHARIAR,
General Secretary,
S. I. T. U.

The following is the proposed Programme for the Annual Conference to be held at Trichinopoly in December next :—

Tuesday, December 21st.

(1) An Address of Welcome by the President of the Trichinopoly Teachers' Association.

(2) The Presidential Address.

(3) A paper on "Provident Fund for Teachers" by M R. Ry. T. S. Venkataramana Iyer Avergal, B.A., L.T., Coimbatore College.

(4) i. A paper on "The School Leaving Certificate Scheme," by M. R. Ry. A. Panchapakesa Iyer Avergal, M.A., L.T., Mylapore High School.

ii. A paper on "The Place of Science in the S.L.C. Scheme," by M R. Ry. G. Shiva Row Avergal, Cuddalore High School.

(5) A paper on "The Work of the Different Sections in the Madras Teachers' Guild," by one of the Secretaries of M.T.G.

[Sectional meetings for discussing this].

Wednesday, December 22nd.

(1) A paper on "The Findings of the Matriculation Failure Committee."

(2) A paper on "A more Liberal Grant for Teaching."

[These two papers will be by two Trichinopoly members].

(3) M.R.Ry. A. Rajarama Iyer will move the following proposition :—

"That the Municipalities and Local Boards be asked to set apart a definite proportion (15 per cent.) for Education."

Afternoon :—Business Meeting.

Who are eligible to become Members?—All persons actually engaged in Teaching, whether in a College, High, Secondary or Primary School and all who have retired from Teaching and have adopted no other Profession.

How to join the Union.—Teachers in each Station where no association exists should meet and form themselves into a Local association and appoint a Secretary, who should communicate with the General Secretary. If such a Local association already exists, individual Teachers should join it. The Secretary of each association will forward to the General Secretary of the Union, the names of all Members in his association with an annual capitation grant of As. 8. All persons so reported will be registered as Members of the S I.T.U., and will enjoy equal voting rights at all elections and upon all questions on which votes are taken.

Provident Fund.—It is proposed as soon as the Union is well started that funds should be pooled to help Teachers and their families in times of sickness or misfortune, and also that a Periodical should be started by which all members of the Union can be kept in touch with the work being done in the Union, and also helped in practical School work by Notes of Lessons, Schemes of work, Suggestions *re* School Management, etc.

Owing to the out-break of plague in Coimbatore, the students in the London Mission High School and the Coimbatore College have been attending the institutions from stations outside the town. Both of them are now closed for the annual recess after their annual examinations. The latter re-opens on the 10th January, 1910.

There was a meeting of the Coimbatore College Committee recently to consider the letter of the Director of Public Instruction asking the Committee if it is willing to hand over the College to Government. The Committee unanimously expressed its willingness and hoped that Government would not reduce the status of the College, and that the staff would be retained as far as possible.

At the District Board meeting held recently, sanction was accorded as usual to a grant of Rs. 100 as the Board's contribution to the Deaf and Dumb School, Palamcottah, for 1910 and 1911.

At the annual meeting of the Senate of the Madras University a scheme of examination of conferring titles in Oriental learning was adopted. Regulations relating thereto were passed most notable amongst them being that candidates for this examination should possess a knowledge of English and show an acquaintance with critical methods and research of the Western Oriental lists. The Senate also made provision for the annual award of eight studentships of Rs. 25 per mensem each, to encourage the graduates of exceptional ability, to carry on research work in faculties of arts, medicine and engineering. Lastly, provision was also made by the Senate for the new scheme of the University lectureships for the honours course. The scheme is commenced on a modest scale and is to be extended as funds become available.

The Director of Public Instruction is pleased to appoint Mr. E. N. Ramachandra Aiyar, Sub *protem.* Supervisor of Elementary Schools, Papanasam, and lately Acting Sub-Assistant Inspector of Schools, Pattukkottai Range, to act as Sub-Assistant Inspector of Schools, Saidapet Range, in the probationary class, during the absence of Mr. S. G. Daniel Pillai on leave or until further orders—to join forthwith.

This cancels the appointment of Mr. S. Srinivasa Aiyangar.

The Director of Public Instruction is pleased to make the following appointments :—

(1) Muhammad Abdus Salam Sahib, B.A., Sub *protem.* Sub-Assistant Inspector of Schools, Bellary, Muhammadan Range, to be Sub *protem* Sub-Assistant Inspector of Schools, Rajahmundry Muhammadan Range, *vice* Abdul Azeez Khan Sahib, resigned—to join on relief.

(2) S. Muhammad Abdullah Sahib, Headmaster, Government Muhammadan Training School, Madras, to be Sub *protem* Sub-Assistant Inspector of Schools, Bellary, Muhammadan Range, in the probationary class—to join on relief at the end of the current term

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The Madras Government have sanctioned Rs. 50,000 as grant-in-aid to the Victoria Technical Institute. The Council of the Institute applied for the grant a few months back pointing out that their funds had been exhausted in erecting the Victoria Memorial Hall.

Mr. M. R. Ramakrishna Aiyar, B.A., B.L., resigned his office as an Ordinary Fellow of the Madras University and is to be an Honorary Fellow.

We understand that the proposal to locate the Engineering College in the Agricultural College buildings at Saidapet has been dropped, and it is probable that new buildings will be erected at the Adyar for the College, for which purpose plans and designs are now under consideration.

It is intended to lay out a Botanic Garden at the new Madras Agricultural College which has lately been opened at Coimbatore.

Election of Ordinary Fellows of the University of Madras.

It is notified that the names of Mr. C. Krishnan and Dr. A. W. Bishop have been drawn by lot, and that the two vacancies thus created among the "Ordinary Fellows elected by the Faculties"—the vacancies being in the Faculty of Law and in the Faculty of Arts respectively—are to be filled by an election which by direction of the Chancellor, will take place at the Senate House, on Saturday, the 11th December, 1909, between the hours of 2 P.M. and 4 P.M. The two vacancies will be filled up by the Faculty of Arts. His Excellency the Chancellor has directed that the persons to be elected shall be Graduates in Arts of some recognised University. Voting papers will be furnished to each Member of the Faculty, which should be filled up and returned to the Registrar either (*a*) by the voter in person not later than 2 P.M. on the day of the election or (*b*) by registered post, so as to reach him not later than 2 P.M. on the day of the election.

It is also notified that the name of the Hon'ble Mr. Justice V Krishnaswami Aiyar has been drawn by lot and that Mr. M. R. Ramakrishna Aiyar has resigned his Fellowship, and that the two vacancies thus created among the "Ordinary Fellows elected by Registered Graduates" are to be filled by an election, which, by direction of the Chancellor, will take place at the Senate House on Saturday, the 11th December, 1909. between the hours of 2 P.M. and 4 P.M. Only graduates who have been registered on or before the 26th November 1909 shall vote, and are alone eligible for election. A list of Registered Graduates will, within seven days of this notification, be forwarded by the Registrar to each Registered Graduate. Voters resident in the City of Madras will fill in and sign their voting-papers at the Senate House within the hours noted above and will deposit them in the ballot-box. Voters not resident in the City of Madras will fill in and sign their papers in the presence of a Magistrate (not being a Village Magistrate). District or

Sub-Registrar, District Munsiff or Judge, who will authenticate the voting paper with his signature and designation. The voter will thereupon forward the voting paper in a registered cover to the Registrar at such a time that it may reach him not later than 4 P. M. on Saturday, the 11th December, 1909, the hour at which the ballot closes.

THE first anniversary of the Presidency College Union Society was held in the Upper Hall of the College, when Mr. H. Dodwell, M.A., delivered a lecture on "Italian Unity." Mr. A. M. A. C. Gallettiudi Cadilhac, I. C. S., occupied the chair.

In the course of his lecture. Mr. Dodwell said that a passage in the report just read by the Secretary had a strong bearing on the subject he was going to address them. That was, that for some years past, the various Societies of the College were not doing satisfactory work and that therefore the Union Society was formed. This gave them in brief outline, the situation of Italy before the formation of the Italian Unity. Italy was originally a chaos of States. The process of the development of Italian Unity was a long, difficult and complicated one, and he (the lecturer) could not attempt to trace that process in detail. They could only glance at certain general aspects of the matter. In the opening years of the nineteenth century in Europe in general and especially in Italy, the relations between the States and the subjects were decidedly strained. All the States regarded their subjects with the strongest suspicion owing to the French Revolution in the eighteenth century. They were afraid to entrust their subjects with the most ordinary duties of citizenship In these circumstances the State could not possess its greatest force. This state of things existed largely in Italy. In Naples, the King depended for support on the Neopolitan nobles and on the rif-raffs of the States. Then there are the Papal States which were models of distrust. In these States the government was carried on chiefly by the Cardinals who objected to the introduction of Railways because it would encourage immorality. This plea was only an excuse to avoid developing the condition of the people, because they feared that if the people began to develop and grow in wealth and power then the State would crumble into pieces. This state of things prevailed in the Dutch and other States. Owing to this distrust of the people by the States of Italy, there was a growing discontent and several revolutionary Societies were formed whose aim was to destroy the States. The early phases of this movement were quite unimportant. In the later aspects of the matter there were two periods, and each period was characterised and dominated by a singleman. The first period ranged from 1830 to 1848 and the second from 1848 to 1859. The first period was dominated by Mazzini and the second period by Pabua In 1848 there was revolution all over Italy, and each of the States promised a constitution for the people. But as soon as the States gathered strength they refused the constitution and the people became restless except the Piedmontese who held hopes of fulfilment till the last moment. Mazzini's policy was to kindle the enthusiasm of the people which was sufficient to upset the existing system but not enough to build a permanent one. Therefore, the movement of 1848 failed. Pabua who was equally enthusiastic was capable of looking at things fairly in the face. He first increased the strength of Piedmont extended Railways, modified taxation and encouraged commerce. He first weakened the power of Austria by appealing to Louis Napolean. He planned an attack on Russia and Austria in 1859 and on Prussia in 1870. Pabua next instigated rebellion in Sicily and in Naples. The peoples of these two States sided with Piedmontese and wanted constitution. Similar state of things prevailed in the other States where governments were becoming worse than before. At last all the States voted for unity to secure a good Government and this led to the Italian Unity.

It might be asked what was the purpose of the Italian Unity and why were the Italians anxious to secure unity and why not a series of States. The lecturer observed that if there were a series of States the business would be greatly increased and there was not enough of intellect to manage the affairs of State.

Finally, in comparing the two great men, the lecturer said that Mazzini exercised a great and profound influence over men. But this influence was only temporary. Pabua who was also an idealist did not lose sight of the necessity for material foundation. Mazzini was like a man who thought that a human being was all soul without a body attached to it. Pabua was a man who realised that a human being was composed of body and soul and that both needed sustenance. Pabua was able to gather forces to accomplish the unity of Italy. Though Pabua had recourse to some tactics, still it must not be forgotten that he supplied the material basis for the Italian Unity.

With a few remarks from the Chair, the meeting terminated.

CALCUTTA.

THE students of the Presidency College have started a fund, with the help of their professors, to assist poor and diligent Indian students. Applications for assistance should be sent to Srijut Kamal Chandra, Secretary, 23, Wellington Street, Calcutta.

THE first annual distribution of prizes to the students of the Darjeeling High School, founded last year by H. H. the Maharani of Cooch Behar, took place recently in the compound of the "Century Club." Lady Baker gave away the prizes to the little boys and girls. H. H. the Maharani of Cooch Behar, H. H. the Maharani of Mourbhunj and a number of other ladies were present. Among the gentlemen present were the parents of some of the students. After the presentation of an address of welcome to Lady Baker, the girls sang a song in Bengali. This was followed by hoop drill, recitations in Bengali and gipsy action song. The little girls acquitted themselves fairly well in playing the parts allotted to them. The year's report was read by Dr. B. B. Sircar which contained a short history of the school and some other interesting particulars regarding its progress. We further gather from the report that the three noble ladies, the Maharanis of Cooch Behar, Mourbhunj and Burdwan, who are the backbone of this useful institution, and their co-adjutors have a more ambitious project in view, *viz.*, the foundation of a Home School for Indian girls. The promoters have already selected a site for the proposed school buildings in the vicinity of the Government House. It is probable that the site referred to in the report is the spacious site formerly occupied by the houses "Sunny Site," and "Snowy View," the property of H. H. the Maharaja Bhup Bahadur of Cooch Behar, which were seriously damaged by the destructive earthquake of 1897 and since dismantled. The report was followed by the distribution of the prizes to the boys and girls and the proceedings terminated with a vote of thanks to Lady Baker.

MR. ARCHBALD, lately Principal of the Aligarh College, has accepted the post of Principal of the Dacca College for one year.

AT a meeting of the Senate of the Calcutta University to be held on the 4th December next, the Registrar will report that the syndicate has resolved to purchase the library of the late Dr. Pischel for the University for Rs. 10,000 and to keep it apart in the University under the name of the "Pischel" collection.

ANOTHER matter to be brought forward, is the munificent gift of Rs. 50,000 by Maharaja Manindra Chandra Nundy of Kasimbazar for the promotion of legal education by the award of scholarships to deserving students who will have to receive their instruction at the University Law College.

THE Secretary of State has appointed Mr. Evan Ebenezer Biss to the Indian Educational Service as Principal of the Training College at Dacca.

PROFESSOR Lalit Mohn Das of the Calcutta City College has been asked to resign as he is an active Swadeshi worker. A professor in the Ripon College also has been asked to show cause why he should not resign.

MRS. ANNIE BESANT left London on Friday last (October 22) for Benares, "full of zeal," says the "Daily Chronicle," for the new University she hopes to found there. In an interview with a representative of that journal, she is represented as speaking with much enthusiasm of the scheme. The Central Hindu College at Benares, which she was instrumental in establishing some twelve years ago, would, she pointed out, probably form the nucleus of the new university.

"It occurred to me," she said, describing the steps she had taken, "that it would be a better thing for India really to have a university of its own, which would grant degrees by a Royal charter. When I was over here two years ago, I interviewed Lord Morley on the subject. He said he could not commit himself one way or the other, until he knew the opinion of the Viceroy. So when I went back again to India I saw the Viceroy, and had a long talk with him. He took a very favourable view, I pointed out to him that the objection made would be that it would, to some extent, check the hold of the Government over Indian education. All the universities there are under Government control; so that if a boy makes a fool of himself he can be shut out from higher education. Personally, I think it is not a good thing to have nothing but Government places for the higher teaching. For one thing, Governments cannot teach religion, and the

speciality of this university would be that it only affiliate colleges in which religion and would morals were an integral part of the curriculum."

"In this university," said Mrs. Besant, "we should lay stress upon Indian history and philosophy rather than upon European history and philosophy. We should also try to take up the application of science to the economic conditions of India, so as to revive the indigenous arts and crafts. In that way we should help to relieve the pressure on the land, which is really one of the great causes of famine. There are too many people on the land, and too few taking up other things." Lord Morley was stated by Mrs. Besant to have intimated that he would do all he could to forward the scheme. The application for the charter was now ready. "We want, if we can, to persuade the King to be 'Protector' of the University. This is a thing which would make him enormously popular in India." There were (she continued) representatives of all the great religions on the board except the Christian. Unfortunately, she had not been able, so far, to find an Indian Christian of sufficient educational and social rank. If she did not succeed in finding one, she would have to fall back upon an Englishman.—*India.*

BOMBAY.

Dr. Joshi, of the Wilson College, Bombay, and of Cornell University, has been appointed to the Chair of Physics, Grant Medical College, Bombay; being the second Indian to get such a Professorship.

H. E. the Governor presided at the recent prize distribution ceremony of the Poona High School. His Excellency was accompanied to the school by Capt. Sullivan, A. D. C., and was received, on arrival, by Mr. Dudley, the Head Master and by the teachers. After recitations and prize-distribution, H. E. the Governor delivered a short speech. Mr. Dudley briefly thanked His Excellency for having presided, and after distribution of flowers, His Excellency left the High School.

The following rules for the conduct of registered or aided public libraries, have been issued in a Resolution of Government Educational Department:—His Excellency the Governor in Council is pleased to approve the following rules for the conduct of registered or aided public libraries:—There shall be a Managing Committee responsible for the administration of the Library, with a Secretary to carry on correspondence. Authenticated lists shall be kept of all books, papers, etc., in the Library. A list of the periodicals and books subscribed for or added to the Library shall be submitted each year on the 1st of April to the Director of Public Instruction. No periodicals or books which have been notified to the Committee by the Director of Public Instruction as objectionable shall be added to or retained in the Library. The Library shall not be used for any political meeting, nor for any other proceedings which are likely to create a feeling of disaffection towards the Government or to offend the religious susceptibilites of any community. No public meeting of any other kind shall be held in it without the previous permission of the Authority empowered by the Director of Public Instruction to grant such permission. In cases where any doubt arises, the decision of the Director of Public Instruction shall be final. The library shall be open to inspection by any officer of Government whom the Director of Public Instruction may empower to inspect it.

The proposals submitted by the late Director of Public Instruction, Bombay, with the view of improving the prospects of teachers in primary schools are as follows:—

(1) To raise the pay of untrained and unqualified teachers of five years' standing and over to Rs. 10 a month.

(2) To raise the minimum pay of all trained Head Masters to Rs. 12 a month.

(3) To raise the minimum pay of all trained Assistants to Rs. 12 a month.

(4) To raise the minimum pay of all untrained Head Masters to Rs. 12 a month.

(5) To fix at Rs. 9 a month the minimum pay of all untrained and unqualified Assistants of less than five years' standing.

In order to differentiate between trained and untrained men, it was decided that the pay of untrained Head Master should be Rs. 11 instead of Rs. 12 as proposed by the Director.

Proposal No. 5, being the most urgent, was sanctioned and brought into operation last year at an additional cost of Rs. 97,440 to Provincial Revenues (*vide* Press Note No. 2525, dated 17th October 1908). Government considered that the reform next in order of relative urgency was the proposal to raise the pay of teachers in primary schools to Rs. 10 a month after five years' service. Accordingly as stated in the Press note referred to above, Government passed orders that it should be carried out when funds became available.

His Excellency the Governor in Council is now pleased to sanction the following six proposals to be carried out at the expenditure shown against each:—

	Expenditure. Rs.
(1) To raise the pay of untrained and unqualified teachers of five years' standing and over Rs. 10 a month	17,328
(2) To raise the minimum pay of all trained Head Masters to Rs. 12 a month	
(3) To raise the minimum pay of all trained Assistants to Rs. 11 a month	3,516
(4) To raise the minimum pay of all untrained Head Masters to Rs. 11 a month	65,560
(5) To fix Rs. 10 a month as minimum and Rs. 15 a month as maximum pay for qualified but untrained teachers in Sind	22,000
(6) To give trained teachers in the Presidency Proper, the face-value of their certificates as far as the funds allotted permit, preference being given to those with longest service	31,529
Total ...	1,41,560

The whole of this charge will be borne by Government for three years and at the end of that period one-half the cost will be payable by the Local and Municipal Boards concerned. In Sind the sum of Rs. 1,406, which the Municipalities can contribute at present towards the cost of proposal No. 5, mentioned in paragraph 3, will be recovered at once, thus reducing the cost in the current year to Rs. 22,000, as shown against the proposal. The increased rate of pay in each case is sanctioned with effect from 1st April 1909. The cost will be paid to the Boards in the shape of additional grants.

The Collectors, including the Collectors and Deputy Commissioners in Sind, have been requested to inform the Local and Municipal Bodies that the primary teachers employed under them should not receive less than the rates of pay sanctioned by Government.

The Director of Public Instruction has been requested to warn the untrained and unqualified Head Masters whose pay is now raised that they will be liable to discharge or to reduction to non-pensionable pay, unless they pass the Vernacular Final Examination within a specified time to be fixed by the Director. The Director has been authorised to grant exemption from the operation of the rule in special cases.

PUNJAB AND UNITED PROVINCES.

In connection with the recent visit to Aligarh of his Highness the Ameer of Khairpur and the permanent grant to the college of Rs. 500 per month, the following congratulatory telegram has been received by Nawab Mashtaq Hosain, the Honorary Secretary, M.A.C. College, Aligarh, from the Private Secretary to his Excellency the Viceroy:—

The Viceroy congratulates the Trustees on the generous gift of his Highness the Ameer of Khairpur.

Sir John Hewett, accompanied by Lady Hewett, recenly opened the laboratories and other new buildings that have been added to the Thomason College, Roorkee. His Honor took the opportunity of delivering an important speech on technical education in the United Provinces generally, and of indicating the progress that is being made in carrying out the recommendations of the Industrial Conference held in 1907.

The Lieutenant-Governor and Lady Hewett subsequently proceeded by motor to Meerut, and *en route* stopped at Muzaffarnagar, where his Honor laid the foundation-stone of a model Girls' School which is to be named after him.

The Secretary of State has appointed Mr. John Lawrence Watson, M.A., of Edinburgh University, to be a Member of the Indian Educational Service and to hold the appointment of Vice-Principal of the Training College at Allahabad.

The following new educational endowments in the United Provinces which already have a very large number of such endowments are being vested under the Charitable Endowment Act 1890:—The Vizianagram Scholarships Endowment Trust, value Rs. 40,000, the Chaukhari Scholarships Endowment Trust, value Rs. 6,400; the Panna Scholarships Endowment Trust, value Rs. 3,300; the Purshottamji Scholarships Endowment Trust, value Rs. 3,700. The scholarships of all four Trusts are tenable at the Muir Central College, Allahabad.

In the review of the report of the Director of Public Instruction, Punjab, for the year 1908-09, by the Lieutenant Governor of Punjab, dated 11th November occurs the following:—"It is to be regretted that the influence of agitators and sedition-mongers has not been entirely excluded

from one or two institutions which could be named and that the audience at some disreputable meetings is reported to have consisted very largely of college students. In the majority of the colleges, however, His Honour believes no encouragement whatever is given to the reception of disloyal sentiments.

THE Convocation of the Punjab University will be held on 22nd December.

MR. G S ARUNDALE, Principal of the Central Hindu College, is trying to enter the Allahabad University as a Fellow.

MR. PIERPOINT, Registrar, Allahabad, has resigned his post. Dr. Ewing, of the Allahabad Christian College, is officiating.

THE United Provinces Education Department are calling applications from candidates desirous of applying for State scholarships for scientific study of Sanskrit and Arabic.

THE main points in the Technical Education scheme for the United Provinces as announced by Sir John Hewett as likely to be taken up are these:—"The Lucknow Industrial School to be improved and others established at Gorakhpur and Cawnpur; the Gorakhpur school is likely soon to open; Cawnpore school is not yet taken up. Four small demonstration stations of handloom weaving have been opened including one for wool at Almora, and a centre experiment weaving station under an European expert is to be opened at Benares which will include also, silk weaving school, a school of industrial design at Lucknow, and a carpentry school at Bareilly being provided. In the higher portion are included proposals for a technological institute in two parts, engineering at Rurki and Industrial at Cawnpore, the proposals for Cawnpur are reserved for further consideration. The scheme for Rurki includes an addition of chairs for Mechanical and Electrical engineering and eventually for practical, also. The Government of India are unable to assist at present in the funds. The Provincial Government will therefore go on with the scheme as far as finances allow, hoping to get assistance later. The Rurki plans involve buildings, but a mechanical engineering Professor can be accommodated at once and application has been made for his appointment."

INDIA GENERAL.

THREE Indian names figure in the final examination list of candidates selected for the Indian Civil Service in 1908. Mr. Nowrojee Jehangir Wadia, who was twenty-seventh in the open competition, is now eighth. He has been posted to Bombay, as also has Mr. Janardan Atmaram Madan, who from fifty-fifth has worked his way up to the fourteenth place. The third, Mr. Jaggannath Luxman Sathé, goes to the Upper Provinces of Bengal; he was twenty-eighth last year, and is now sixteenth. Of the fifty candidates, nineteen are allotted to the Upper Provinces, and sixteen to the Lower Provinces of Bengal, six each to Madras and Bombay, and five to Burma.

THE *Standard* states that there is considerable dissatisfaction with regard to the changes in the regulations for the examination for the Indian Civil Service, and the short notice given before introducing them. Sir Philip Magnus has suggested to Lord Morley the appointment of an Advisory Board for examinations, with functions similar to the Advisory Board of the War Office, in connection with the Woolwich and Sandhurst examinations.

THE Mysore Durbar has paid the full amount of their promised building grant of five lakhs of rupees to the Indian Institute of Science at Bangalore.

A CONFERENCE to discuss needs of technical education in Burma was held recently in the board room of the Office of the Director of Public Instruction. Mr. J. G. Covernton, Director of Public Instruction, in opening the discussion, presented a brief sketch of what has been done in the past, in the way of technical education. He divided the arts into main groups (1). Those connected with professions which were especially scientific, *e.g.*, Engineering, etc. (2) those connected with ordinary country life and home, *e.g.*, weaving and shoemaking, etc; After lengthy discussions, the following resolutions were carried:—(1) That a Central Technical School for Industrial Education in vernacular should eventually be opened at Insein in connection with the Engineering School and related to all selected vernacular schools for the Technical Education which may hereafter be established; (2) pupils should be drafted to this Central School who show especial aptitude for technical training and should be placed on stipendiary funds for completion of the course. The course should be in the vernacular and aim to provide (*a*) general technical training for the hand and the eye, (*b*) training pupils who might hope to become skilled artisans in various crafts and industries, (*c*) teachers trained to give instruction in the local industrial schools in local industries, such as carpentry, blacksmithing, cane work, pottery, etc. Almost all schools be opened by the Government or by the local authorities at three or four local centres in the province for imparting technical education and training.

WE are asked to announce that the Cochin Tribes and Castes Vol. I with 44 typical illustrations, a preface by Dr. John Beddoe and an introduction on Indian Ethnology will be shortly published by Messrs. Higginbotham & Co., and Messrs. Luzac & Co., London.

Foreign Notes.

GREAT BRITAIN.

At the opening of the autumn session of the Manchester Shakespeare Society, the President, Sir William Bailey, delivered an address on the subject of "Swinburne and Shakespeare." After a eulogy of Swinburne's genius, the lecturer pointed out that his object was to direct attention to the poet's opinions of Shakespeare. Swinburne's last works on Shakespeare were not his best, for they lacked that clean sharp edge, those bolts from the blue that in his earlier productions fascinate, startle and delight as when a sudden ray of sunlight splits the mists on a mountain side. Swinburne declared that it was Christopher Marlowe—the first English poet whose powers can be called sublime—who alone guided Shakespeare into the right way of work. By his arrival the paths were made straight for Shakespeare. Swinburne considered Shakespeare's first drama to be "King Richard III." in which, "for the first time in all the literature of the world we are confronted with a great as well as a greatly wicked man." As comedy, "Much Ado About Nothing" was his crowning work, while "A Midsummer Night's Dream," according to Swinburne was "probably or rather surely the most beautiful work of man." In conclusion, Sir William Bailey reminded his hearers of Swinburne's words: "It is not only the crowning glory of England, it is the crowning glory of mankind, that such a man should ever have been born as William Shakespeare.

A HOSTEL for Indian students, called Orient Lodge, has been opened near Regent's Park, with the object of affording young Indians an insight into English social life. Arrangements have been made for week-end visits to certain country houses. No propaganda will be carried on in connection with the hostel, and political discussions will be discouraged. The household arrangements are thoroughly Indian, with a native cook and waiters.

LORD MORLEY has appointed Mr. F.E. Pargiter, of Exeter College, to the office of correspondent at Oxford of the Bureau of Information for Indian Students. Sir Edward Candy, of Gonville and Caius College, has been selected to fill the similar post at Cambridge. Both are retired members of the Civil Service.

THE statistics of Public Education in England and Wales issued by the Board of Education in England show that on July 31, 1908, there were 21,015 schools in England and Wales providing accommodation for 7,129,248 children These schools were of various kinds—Church of England, Wesleyan, Roman Catholic, and Jewish. It is interesting to note that there were 2,202 children in schools for the blind, 3642 in schools for the deaf, 12,953 in schools for the "defective" and 281 in those for the epileptic. The total number of teachers was 177,628 A peculiar feature is the large number of special schools. We are told that 283,811 girls and 142 boys attended cookery classes, 73,880 children were being taught laundry work, 12,163 combined domestic subjects, 101 dairy work, 199,239 boys handicraft and 18,338 boys gardening.

DR. SMITH, the new Principal of Aberdeen University, was born at Calcutta in 1856, and is the eldest son of Mr. George Smith, then editor of the "Friend of India."

A HISTORY of Glasgow University, from its foundation in 1451 to the present year, by Mr. James Coutts, M.A., formerly its Registrar, has just been published. There are many well-known names in the pages, for among the former professors were William Hunter, hardly less distinguished in medical science than his younger brother, John Francis Hutcheson, the moral philosopher, Adam Smith the political economist, Joseph Black the discoverer of latent heat and the friend and patron of James Watt, and William Cullen, a noted physician and author. In the list of recent teachers the best-known names are those of Lord Lister and Lord Kelvin. The story of the University's Association with

the achievements of James Watt is an interesting one. A set of astronomical instruments had been presented to the University by a Scotchman in Jamaica. When they arrived they were found to be damaged by the sea air, and Watt, who was learning to be a mathematical instrument maker, was engaged to clean them and put them in order. Afterwards when Watt was anxious to set up in business for himself, he was prohibited from opening a shop for the exercise of his craft within the burgh of Glasgow. One reason for this interdict was that he had not served a regular apprenticeship to the trade, and another was that he was not the son of a burgess nor married to the daughter of a burgess. In these circumstances it was by the friendly intervention of the University that Watt was enabled to establish himself in business In 1757 he was allowed to occupy an apartment and to open a shop within the walls of the old College in the High Street, and to style himself mathematical instrument maker to the University. His inventive genius had attracted the notice of several of the professors, who encouraged him to persevere amid many difficulties till his efforts were crowned with success.

More money for scottish Universities is the recommendation of the Elgin Committee, whose report has been long delayed. It is understood that Edinburgh and Glasgow will each get an additional £12,000 a year, St. Andrews and Aberdeen each £9,000; and that of these amounts the salaries of the Principals will be raised in the first two cases to £2,000 a year, in the other two to £1,500.

The London University Extension Board Report of 1908—09, shows progress all round. The number of courses and the entries of students were larger than in the previous year, and the summer course for foreigners attracted 243 students. For the school leaving examination of Matriculation standard there were 814 candidates, 97 more than in 1907-08. A scheme for diplomas in History, Literature, Economics, and Political and Social Science has also been instituted. "The London University will not accept any substitute for its own Matriculation examination..... It has often been urged that the University should agree to accept any adequate test as a substitute.....but hitherto without success."—*The Yorkshire Daily Post.*

The Senate of the University of London has recorded its full agreement with the recommendations contained in the recently published Report by the Treasury Committee on the Organisation of Oriental Studies in London, and, in view of the proposed School of Oriental Studies, has appointed a Committee to communicate thereon with Government and other bodies.

The Public Schools Club was opened in Albemarle Street, London, with about 2,000 elected members, all representatives of Public Schools in England and Scotland. The President is an Old Etonian, and the Club has about twenty-seven present or past Head-masters of such schools, and a large Committee composed of Public School men. The subscription is three guineas a year.

In commemoration of the recent visit of the King and Queen to open the new Birmingham University buildings, a special Degree Congregation was held, being the first of its kind since the inauguration of the University. In the absence of the Chancellor, Mr. Chamberlain, the Vice-Chancellor presided, and Honorary Degrees of Doctor of Laws were conferred by him on thirty-two persons, including Mr. Balfour, Mr. Carnegie, Mr. Chamberlain (*in absentia*), Professor Crookes, Professor Geikie, Mr. Haldane, Lord Rayleigh, Lord Strathcona, Lord Wolverhampton and Mrs Sedgwick. In the evening there was a conversazione of the University. Mr. Balfour, Lord Rayleigh and Lord Strathcona were the guests of Mr. Chamberlain, at Highbury.

Mr. Haldane attended a Demonstration in the cause of the education of the working classes, held at Victoria Hall, Sheffield. The Lord Mayor of Sheffield presided and was supported by the Archbishop of York, the Bishop of Sheffield, the Vice-Chancellor of Sheffield University, etc. The Archbishop proposed a Resolution expressing confidence in the unsectarian, non-party, democratic activity of the workers of the Educational Association, in attempting alike to stimulate and satisfy the demand among working men and working women for education. In the course of his remarks he expressed a hope that the working classes would be keen to have something more as an intellectual outfit than catch-penny phrases, and that those who were going to take a great, perhaps a leading, part in the Government of their country should be trained to think properly. Another speaker dwelt on the necessity for labour, not only to achieve power, but also to realise its responsibilities. The motion was carried.

The Educational Review.

We are exceedingly sorry to note what extraordinary fate has fallen upon Senor Ferrer, a famous teacher of Barcelona. He founded "the Modern School" in that city, a school reported to be the best in all Catalonia. He was also instrumental in founding a system of secular schools to thwart the monopolization of the elementary stage of education by the Roman Catholic clergy supported by the State. No wonder that Senor Ferrer has fallen a victim to the machinations of "the bloody sons of the scarlet mother murderous both to body and soul." Senor Ferrer was well-known in Europe through his educational activity, and his martyrdom for the zeal he evinced in public welfare is of the utmost importance to teachers. A great deal is said and written for religious education. But this execution of Senor Ferrer is one more instance of the ineptitude of religion to elevate and civilize mankind. We fear that humanity will have no lasting peace till the phantoms of supernaturalism and the schackles of priestcraft are completely destroyed.

A Persecuted teacher.

The Consultative Committee of the Board of education has prepared an exhaustive report on the question of compulsory continuation schools, the means of securing an increased attendance at evening schools and the possibility of securing the co-operation of employers and others concerned in arranging facilities therefor. The keynote to the report is given in the preface as follows:—"It is universally admitted that educational questions lie at the root of many of the most important social problems. Of late, especially, improvements in the provision made for continued education, after the age up to which attendance at school is at present compulsory, have been widely advocated as tending to stimulate commercial and industrial progress, and as being likely to have a direct bearing on the whole question of unemployment." Recent investigations show that the average German mechanic is the best trained workman in the world, not because he is more intelligent, but because an important part of his schooling prepares him specially for his trade. The heart of Germany's system of industrial education is the continuation school, and this is not an outside movement grafted to the school in an overzealous endeavour to educate the masses, but has a direct connection with the common school on one hand and with industrial activities on the other. Germany's continuation schools are chiefly of two types: those training for the requirements of commercial life, and those directly planned to meet the needs of shops, the factories, the local industries and the trades. The connection between an educated community and trade supremacy cannot be denied, and Scotland has adopted a compulsory continuation school system. The Committee therefore make the following recommendations: 1. The day school education must be improved by (*a*) smaller classes; (*b*) an improved staff of teachers; (*c*) less academic and more practical instruction, with opportunities for private study and less exposition; (*d*) more attention to physical training, including organised games. 2. Boys and girls should be encouraged to attend continuation schools during the closing months of the day school course. 3. The day school teacher's interest in the continuation schools should be sought, and his assistance in teaching will often be needed, but due care should be taken to avoid over strain in such cases. 4. Compulsory

Compulsory Continuation Schools.

attendance should be enforced under restricted conditions similar to those existing in Scotland. 5. The curriculum at these continuation schools, besides giving effective training for the duties of citizenship, should have reference to the crafts and industries practised in localities. Prominence should be given to practical and manual instruction, and to systematic physical training.

Nature Study.

Nature study has for its aims the cultivation of a sympathetic acquaintance with nature, the introduction of the child to the forces of nature and to the sources of material wealth, and the development of the powers of observation. These aims can be attained by bringing the children into actual contact with the object of study whenever possible, either in or out of the class room. The actual observation or experiment by the pupils will enable them to represent to themselves objects presented by description. The phenomena of life in the world about the pupils should be made prominent, and plants and animals should at all times be treated as living things. Class-room work should be supplemented by visits to the parks and museums and by the use of pictures and lantern slides. Wherever it is practicable, pupils should be required to sketch the object they are studying, and be called upon to find resemblances and differences in the objects of study. The teacher, while indicating the lines of study, should refrain as far as possible from telling his pupils what they may find out for themselves. Stories, fables, songs and other literature pertaining to objects studied should be read. All these points connected with nature study are clearly brought out by Miss L. R. Latter in her paper, *A plea for nature-teaching*, which forms the introduction to the report for 1907-1908 of Kindergarten Instruction in Mysore. Miss Latter was brought down from England to introduce Kindergarten methods of instruction into the Elementary Schools of Mysore, but a few months after her arrival she died. However the seed planted by her is producing good fruit, as is testified by the account of the various lines of work contained in the above mentioned report.

Teaching English Subjects.

In the *Journal of Education* for last month Mr. A. E. Roberts, M. A., suggests that a special room should be set apart in schools for the teaching of English. In support of this suggestion he quotes the words of a leading American educationist, Professor Genung, who advocates that a room of this sort should be decorated with pictures, books, busts—such as the portraits of great writers and thinkers and representations of famous scenes in history and poetry—so that the very surroundings of the pupils would silently produce an increased taste for what is refined, beautiful and imaginative. There can be no difference of opinion as to the desirability of such a plan in itself, although the plan may not be easy to follow in most schools. Mr. Roberts gives an account of one of the best examples of the plan in actual practice. At the Newton Ville High School, near Boston, Massachusetts, the lower part of the walls of the "English Room" is covered with a fabric called "burlap," tinted in harmonious keeping with the other decorations, while the upper part is arranged in panels containing some two hundred and fifty framed pictures relating to English authors and scenes connected with their work. These panels are grouped on a chronological system, the first illustrating the beginnings of English literature, the second having reference to medieval times and the age of Shakespeare, while

another depicts the country of Wordsworth and of Tennyson, and yet another that of Scott and Burns, and so on. Above the panels are larger and more imposing pictures of such famous men as Dante, Milton, Chaucer, and Carlyle, or of historic places like Westminster Abbey and Tintern Abbey. Around the room there are a few busts, and it also contains a small reference library. The whole idea may seem to some to be more or less visionary but it appears to us to be sufficiently important to receive the attention of educationists.

The Ideal School of the Future.

Messrs. Cecil Norwood and Arthur H. Hope describe the ideal school of the future as follows in their new book on "The Higher Education of Boys in England" (John Murray). "Such a school will be situated on the outskirts of an English town, in the fairest suburb, where the houses are merging into the open country. If there is a hill, it will stand upon it, in order that from the class-room window its boys may look over the city with its mills and steeples, away to the farms and moorland-beyond, with perhaps a glimpse of the sea. Its buildings will be both noble and useful, with an individuality of their own, that they may be loved, like a person. There will be a great hall where the boys can pray together and sing together—songs of the school, of the town, of the nation. . . It will bear the town's name and reflect the town's greatness, and it will bring up men who shall so serve and rule their city that its name shall be unsullied and its greatness human. It will also be a school of Englishmen that shall make their country's name spell honour and her empire service. It will be a kind mother to kind sons. The boys will come together from homes of all classes, so long as classes endure. The son of the Prime Minister will sit side by side with the son of the merchant and the son of the workman who has been given a scholarship because the country needs so badly all the talent she can discover. . . For at school, at least, all will be equal, without shame or condescension, since all will be taught that riches, like genius, are really a trust to be used for the greatness and the welfare of her people. On the playing fields, which their own arms have levelled and keep in proper order, the boys will learn to play straight and to lose manfully fighting for their side, not each for his personal glory. In the class-room they will learn to work keenly, for the sake of home and school, and to work gladly, not unwillingly, since they will be taught the noblest thoughts of man and left to discover for themselves the method and the laws of Nature."

Science and Religion.

In his Presidential Address to the Teachers' Guild, on October 22, on "the Teacher and the Religious Lesson," Professor. M. E. Sadler discussed the effect of the public spirit of the time on the religious lesson. As regards the influence of scientific progress, he noted the tendency to reduce the relative importance of the religious lesson resulting from the stern demands of scientific subjects on the curriculum. This does not seem to be true as regards elementary schools, as according to some educational experts, the amount of time devoted to religious teaching is at present excessive. Dr. Sadler referred also to the effect of the survival of the mid-Victorian antagonism between science and religion. "One of the most tragic things in educational history as in politics," he said, "is that the results of some early stage in speculation realize themselves in practical affairs long after the course of speculation itself has passed into a new stage and has provisionally reached other

conclusions." Though we agree with Professor Sadler in thinking that there need be no necessary antagonism between science and the religious spirit, yet we think that all supernatural religions with their belief in ghosts, devils, gods and goddesses are really antagonistic to the spirit of science. Science is a ministering angel in all human activities, physical and spiritual, and the advocates of religion are trying to make themselves useful to the modern world only by applying the scientific spirit within their sphere. It is absurd to speak of science as hating the name of love and moral purpose and putting man only into a bottle along with snakes and lizards. The right solution of every problem, physical and spiritual can be offered by science and science alone.

Examinations.

The question of examinations and their value in education was incidentally discussed by three great English educationists in their recent addresses. Dr. H.A. Miers, Principal of the University of London, laid stress upon the mastery of principles in his inaugural address at the opening of the eighty-seventh session of Birkbeck College, London. "Has it even occurred to you," he said, "that it requires a much greater intellectual effort to understand general principles than to learn facts or to remember the details upon which those principles are founded? The one is to a large extent an exercise of memory, and the other is to a still larger extent an effort of thought. And the reason why I would emphasise this difference is this: so much of the preparation for examination is the acquisition of learning, and the faculty that an examination tests is so pre-eminently the memory, that in the stress of modern examination work it becomes increasingly difficult to think about first principles, and many a successful examinee endeavours to learn them without understanding them. And this, I believe, is where the intellectual stimulus is to be found if the examination stimulus is taken away." Professor Osler in opening the new laboratories for chemistry, physics and physiology at the London Hospital, said: "I should like every student to undertake a small piece of research work. But you say that research work will not help you in your examinations. I tell you to take no thought for your examinations." Sir Isambard Owen, in his inaugular address as Vice-Chancellor of the University of Bristol, differentiated sharply between living and dead knowledge. In this country, he said, we are "somewhat apt to estimate Universities according to their lists of classes and honours, or according to the number of graduates they annually put forth." In other countries, such as America, "they have another way of estimating the importance of a University. Americans estimate it according to the proportion of its students who desire to pursue their studies further after they have taken their interim degree." "If a University insists too much on the importance of its examinations, if it teaches its students to look forward too much to the examinations and too little to the necessities of their after life, then a great deal of the knowledge gained in the University is likely to become of the dead kind." These utterances by great educationists show which way the wind blows. Examinations may not be bad in themselves, but they tend to develop memory instead of mind. Examinations conducted merely for the purpose of review are excellent but when one's position in life depends upon the mere passing of examinations they tend to reduce lessons to mere tasks which become irksome, as they do not encourage originality and research.

Educational Science.

Is there an educational science? That is the question we have often asked ourselves. Science is a social product and is the cumulative result of a long series of individual efforts and experiences. A careful examination of the fluctuations of educational opinion reveals the individual and uncoordinated character of much that passes as educational science. Educational science, even when it professes to be scientific, is a one-man science and each of the one-man scientists has investigated and concluded without any regard for what every other one-man scientist has done. The canons of scientific research demand that the conclusions of each investigator should be verified and applied by other investigators. This is sadly lacking among educational investigators. We do not find an impartial jury among them. Nor are there in education any clear-cut issues which enable us to permit the utilization of the collected results of accomplished investigation and of the co-operative efforts of individual investigators. We feel justified in saying that education has lagged behind in the forward movement of social-scientific institutions, the retardation being mostly due to the unconscious loyalty of mankind to institutions which have become sanctified by age and tradition.

Universities and Legislative Councils.

In certain quarters objection has been taken to our urging that Universities should be represented in the Legislative Councils by those actually connected with the teaching profession, but we fear no sound argument has been brought forward to show that our view is erroneous. We are glad that the Madras University returned an educationist to the local Legislative Council, and we hope that in the coming election to the Reformed Council, the fellows of the University will again return an educationist. If the Indian fellows are of opinion that the Reformed Councils should consist largely of Indians, we have no objection to their returning an Indian educationist. We can name many Indian educationists who can represent the University in the Legislative Council as well as any lawyer, and among them the name of Rao Bahadur Nagoji Rao stands prominent.

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(Sd.) M. O. PARTHASARATHY AIYENGAR, *District Judge.*

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THE PLACE OF SCIENCE IN THE SECONDARY SCHOOL LEAVING CERTIFICATE SCHEME.

IT appears to me that we are dealing—because we are constrained to deal—with a subject which has not yet assumed a very definite shape. For in the absence of details the whole subject of the Secondary School Leaving Certificate appears somewhat shrouded in mystery. The scheme, however, is to come into force at once. Naturally, therefore, there is some uneasiness almost everywhere, and one can only hope that, like Adam's uneasiness at the approach of the first night, it will soon be agreeably relieved.

In this connection one may perhaps be permitted to express the belief that in view of the non-publication of details it is desirable to defer for a year the giving effect to the scheme. If the details of the scheme are published first tentatively, teachers and others having actual experience of high school work can discuss them and offer suggestions, if any; and then, after duly considering these suggestions, the details may be given a final shape. There will then be no uneasy feeling that something possibly unpleasant is going to be suddenly forced on us. And if things are managed without undue haste or undue delay, the schools also will have sufficient time to equip themselves adequately with men and things to suit the altered conditions.

As the scheme stands at present, in group A (consisting of subjects to be brought up for the public examination) an independent place is assigned to *Elementary Science*. What field this expression covers—whether it embraces only what is given in such a book as, for instance, Huxley's Introductory Primer or is something more ambitious, whether it includes some practical work or will easily lend itself to the pre-Gutemburg system of note-dictating so prevalent even in this twentieth century—we do not know. We only know that it is one of the compulsory subjects. It may be objected that the Director of Education has publicly said that he hopes to get it removed. But after all it is so far only a hope; let us hope it will be realised ere long. We have now to deal with the subject, however, in its present aspect.

It is a notorious fact that Science has generally been the "plucking subject" at the Matriculation examination. And if Science is to be brought up here for the public examination, who knows it will not prove the same here too? For the machinery of examiners, &c., will be pretty much the same, we may be sure. It may be objected that there is to be no such thing as passing or failing to pass. But it may still be the subject in which very few will be able to secure more than, say, twenty per cent. It is true that there is to be no such thing as the publication of results.

But people cannot easily give up their ideas and will long continue to use the expressions *passes* and *failures* or their equivalents. And if in the great majority of certificates issued a very low score should happen to be shown against Science, it will be as bad as what is now half-seriously called slaughter. If there is to be no official publication of results, let it not be supposed that there will be no unofficial publication. There is the newspaper press. Some enterprising editor will, I daresay, set his army of honorary correspondents in motion, and lists and statistics accompanied by remarks wise and otherwise will pour in at his office; with these for his text he will no doubt preach homily after homily holding forth on the vagaries of examinations, examiners, and headmasters. You cannot prevent that: the official Secrets Act does not apply here.

Another reason why Science should not be placed in group A is that most of our schools are very inadequately equipped for teaching Science on right lines. Unless defects in point of accommodation and equipment are first removed—that is, unless Government are prepared to give very liberal grants towards providing the needful—it is hardly good policy to insist on Science being taught as a compulsory subject.

It has been suggested by some that Elementary Science may, instead of being removed altogether, be placed in group B. I confess I cannot quite appreciate the arrangement. One can see why Drawing and Gymnastics should go to group B. But if subjects like History or Geography or Science are relegated to this group, is there not the risk of their being neglected? When the old regulations for Matriculation were in force, that is, even till last year, in some schools the English Reader disappeared the next day after the Inspector. The same thing may happen now with the subjects of group B—at least in the sixth form. In any case it is pretty certain that in these subjects the teaching will generally be "below par." And if Science is to be one of them, it will perhaps be worse than useless. It will fail to give that training in careful and accurate observation and inductive reasoning which I believe to be the object of Science teaching; and without this training it is hardly of any value.

If further argument should be deemed necessary, I need only ask—At how many institutions was practical work in Science done this year by sixth form pupils? Be it noted that both the University and the Department expect that practical work is done by pupils. The reason why it was not done at many schools is that pupils were not to be examined in it. And here, the subjects of group B have not to be brought up for examination, nor has work done in those subjects to be shown in the certificate.

I have attempted to show why Elementary Science ought not to be in group A and how, if included in group B, it is likely to be of little value. Where, then, shall it find a place? Its proper place, it seems to me, is in connection with Geography. The new Geography includes a great deal of Science, and if taught on right lines ought to give sufficient training of the kind Science is expected to give. In fact modern Geography is itself a Science, and the best solution of the problem seems to be to place Geography in group A and omit Elementary Science as such.

G. SHIVA RAU.

TRUE PERSPECTIVE IN HISTORY.

IT is well known that one of the chief directions in which the study of history is of supreme educative value lies in the facilities which it affords for the cultivation of historic judgment and imagination. It is in history rather than in any other subject that one comes, so to speak, in living contact with a thousand personages, each with his own political, intellectual and moral complexion, on whom one may naturally be called to pronounce judgment. Again, it is in the realm of history that one is brought face to face with an almost interminable procession of events with varied aspects and bearing, so that any one gifted with intelligence would feel irresistibly tempted to examine from a moral standpoint the character of at least the most important of them. In order, however, that in matters of history one should be able to exercise rightly one's power of judgment, it is absolutely necessary that one should be able to take a true perspective of historic events and characters. It will be the aim of this brief paper to consider some of the chief conditions that render possible the taking of a correct historic perspective.

One of the greatest difficulties that a student of history has to experience, lies in the ascertainment of truth. Dame Truth is too jealous of her beauty and too fastidious in her sense of dignity to reveal her face or to open her lips to any but the most ardent and loyal of her votaries. And it is in the domain of history more than in any other subject that she deports herself with particular rigour. It is therefore beyond doubt that only to those who are prepared to spare neither time nor trouble in the pursuit of truth, will the muse of history deign to yield up her treasures. Facts are the groundwork of history; without correct facts to serve as data no correct judgment or generalisation is possible. It is therefore of absolute importance to the student of history to make sure, in all possible ways, that the facts upon which he has to build approximate as nearly as possible to actuality. Instead of resting content merely with modern works, the historic information embodied in which has filtered through a hundred hands with countless mutations in the process, he should, as far as possible, have access to the original authorities themselves and drink deep from the fountain-heads. As sources from which to draw his inspiration, contemporary histories, state papers and documents, letters and diaries, the relics of structures and monuments, are likely to be of invaluable service to him. In this connection, it is indeed satisfactory to note that in all schools and colleges, especially in European countries, more and more stress has been laid, of late, on the study of source books in connection with history. It may be that even among original authorities there will at times be a bewildering diversity of opinion; it may be that even in regard to original authorities, the student of history, to his utter dismay, is occasionally treated to a profusion of fantastic guesses and cobweb speculations. All that he can do in such cases is, with the aid of calm reflection and judgment, to arrive at as close an approximation to the truth as, under the circumstances, is possible. To gain information at first-hand, to spend and be spent in the work of historic research—this should ever be the motto of a student of history. With pensive intent, he should ever watch and must, upon the venerable shade of a Mommsen or a Grote, a Freeman or a Gardiner.

The facts in regard to past history having been collected and marshalled in array, it then becomes necessary for the student of history to form his own judgment—and pronounce it,

if called upon to do so—in regard to various characters and incidents. What then is to be the nature of his intellectual and moral equipment so that his historic outlook may be clear and free from obliquity ?

The first point that has to be urged is that, in an examination of past characters and incidents, the student of history should, as far as possible, divest himself of all traces of what may be called 'personal equation.' One of the blinding subjective forces of history, 'personal equation' may be either general or specific. It is general if it arises because a man is the product of his age; it is specific if it is due to what a man is himself. It is a matter of common observation that, as the result of the influence of the accumulated traditions, customs, usages, beliefs, thoughts and feelings of the age in which a man lives, moves and has his being, he becomes thickly or thinly coated over with a veneer—political, intellectual, religious and moral—peculiar to his age. A man of the twentieth century is the twentieth century man; he wears the twentieth century spectacles; he is prone to look upon all past characters and incidents in the light of the twentieth century prejudices and idiosyncrasies he has acquired. This is personal equation of a general character, of which something more will be said later on.

The personal equation of the specific type consists in the prejudices, habits and mannerisms peculiar to special individuals. One who is a zealous Whig sometimes comes to believe that only the Whigs are the blessed of God; he has a kindly word only for them; he fumes at the mention of a Tory and is ever ready to trample him under foot. Again, a devoted Churchman comes to believe that the Puritans and other religious sects are accursed and has nothing but loathing and contempt for them. In the case of such persons, who start with a distinct bias, it may be noted that they cannot be expected "to naught extenuate nor set down aught in malice," and that consequently their judgment cannot possibly be just and impartial.

In the history of whatever country or of whatever age you may examine, you are sure to be confronted by a rich crop of partisan writers of every hue. In regard to ancient history there is the democratic as well as the oligarchic class of historians. There are those to whom democracy is a shibboleth of inspiration and those again to whom oligarchy represents the constitutional ideal. In the eyes of the former, Athens, the glorious exemplar of democracy represents in every way the highest perfection of excellence in all things—in politics, in religion, in literature, art and science. They are never tired of singing her praises and of painting her achievements in roseate hues. When they come across oligarchic states like Sparta, they are ever ready to pick holes in them, to magnify their faults and cry down their virtues. In the eyes of the latter class of historians, Sparta, the famous type of oligarchy, is the flower and glory of Hellas, while Athens and kindred states are to them but a hissing and a bye-word. Passing on to Roman History we may note that the Gracchi have their hero-worshippers, and that Sulla and his school have theirs. In English History too there are two schools of historians, divided from each other by a broad cleavage—the Tory and the Whig. Hume is the chief apostle of the former school, and as such, in his monumental History of England, always holds a brief for the Royalist and the Tory cause in the long and chequered struggle between Crown and Parliament in the seventeenth century. In his eyes King Charles I, of blessed memory, is a Saint and Martyr, whose blood was wantonly spilt by a gang of ruffians actuated by a pernicious political creed and by motives of self-aggrandisement, while Oliver Cromwell, the arch-representative of the Parliamentary cause, is only Beelzebub in the flesh. To pit against Hume, we have the brilliant Macaulay, the heaven-born champion of the Whig cause, who, in his own flashing rhetoric, paints the horrors of the "crowned and mitred tyranny" and the glories of the Puritan rule and the Protestant Revolution. In the domain of Indian History, too, we may notice historians of the Anglo-Indian type as well as of the pro-Indian type. It is the personal equation, *i.e.*, the inherited or the acquired prejudices and pre-possessions of the writer, that is to a large extent responsible for such one-sided views of men and things as have been noticed above.

The second principle that may be laid down as *germaine* to the question at issue is, that in an estimate of historic characters, their work and worth—they must be viewed and judged strictly in relation to their age, and not ours. In estimating the character and the work of a great historic personage—say of the fifth century A. D.—the student of history must, as far as possible, cast off his twentieth century glasses and take a view of his hero and his environment through fifth century spectacles. That is to say, he must transport himself in imagination to the age of his hero and judge of him as he would have been judged then, strictly in consonance with the customs, beliefs, usages, prejudices and traditions in vogue at the time. One or two arguments, more or less of the nature of truisms, may be advanced in support of the above observation.

First, a man is to a large extent the product of his age. Responsive as he is to the subtle and mysterious influences brought to bear upon him in a thousand ways, he is shaped by his age and environment. There is the gigantic force of public opinion which, to a large extent, regulates his conduct and prescribes his duty. Then again, there is the accumulated influence—director impalpable—of the traditions, customs, beliefs, usages, laws and principles of the time.

Secondly, it has to be noted that there is nothing like fixity or permanence in social laws, moral principles, religious beliefs, customs, traditions and usages, which are all subject to fluctuation from age to age. First of all there is the savage man, with his own savage ways of thinking and living and the civilised man, with his own civilised ways. There is a broad and deep cleft between the two. Coming to the civilised man, we may observe that there are various gradations and kinds of civilisation among the nations of mankind. Civilised men, instead of all belonging to a common plane or of being of a common stature and hue, have been marked off into hundreds of nationalities of castes, creeds and colours, each with its distinguishing features of social and political life. In the light of the above truisms, it is a peremptory demand of historic justice that, in pronouncing judgment on a historic personage, strict cognisance shall be taken of the age in which he lived, the conditions under which he worked, the traditions, customs, laws and usages by which he was influenced.

A few illustrations may now be given from the pages of history to exemplify as well as to elucidate the above observations. It is a matter of common knowledge that in the period of Elizabeth and the first Stuarts the Puritans and, to some extent, the Catholics were savagely persecuted in England, so much so, that one looking at the phenomenon

through modern spectacles is apt to lay the guilt of heartless cruelty and blood-thirstiness at the door of these sovereigns. When, however, it is recognised that the period referred to was an age of brutal religious passions and fierce religious strife, as well exemplified by the Massacre of St. Bartholomew and the Thirty Years' War, an age when religious toleration as it is to-day was something unknown and unintelligible, one is sure to abate his fury against the English sovereigns and acknowledge that they only acted in sympathy with the spirit of their age. Is it not indeed wonderful and noteworthy then, if in an age of such religious ferment, one should boldly come forward not only to proclaim but also to practise the gospel of religious toleration? That was what Oliver Cromwell did and hence he shines apart, a solitary star, with a lustre all his own, in a sky thick with fearful clouds. In the case of Aurangzeb or of Tippu, who were also guilty of fierce persecution of the Hindus, there is the extenuating circumstance that they only acted strictly in accordance with the tenets of Islam. One has therefore to think twice before one falls foul of these Mussalman rulers for their treatment of the Hindus. As the prototype of Oliver Cromwell we have, in the pages of Indian History, the far-sighted and sagacious Akbar, who, to his everlasting fame, realised the value of religious toleration and in the face of strenuous opposition on the part of friends, courtiers and ministers, vouchsafed the boon to his subjects. Take another instance. You may feel indignant at Walpole for his unseemly and degrading practice of parliamentary corruption, but really he was only what he should have been, seeing that the political atmosphere in which he passed his daily life was reeking with such corruption. To pass on: it may sometimes be a fashion among historians to speak of some of the Stuart kings as despicable miscreants for their wicked and audacious attempt at despotism in England. But then it is forgotten that the era of the Stuarts was an era of despotism in Europe—an era, when, beyond the Channel, Louis XIV. was building up in France a magnificent despotism which, in its towering greatness, appeared for a time to overshadow all Europe. It is but natural that Charles II. and James II., fascinated as they were by the predominance of Louis, their friend, neighbour and ally, should attempt to follow in his wake and bring about in England the same phenomenon as was visible in France. Again, the famous quarrel between Becket and Henry II. on an ecclesiastical question should not be viewed in the light of a stray and isolated event—the outcome of the Archbishop's arrogance and pugnacity; it was, on the contrary, but a single and limited phase of a tremendous conflict between the Church and the State for temporal and spiritual supremacy—a conflict with which Europe was ringing for nearly two centuries. One may frequently wonder that the ancient Greeks should have been politically so short-sighted as to offer a steady and systematic resistance to all attempts at political union, so much so that Greece presented throughout her history a spectacle of chaos, of disunion, of internecine strife, such as would be presented by an ill-knit and ill-organised mass of political atoms. It must, however, be borne in mind as an explanatory or extenuating circumstance that in the eyes of the Greeks the city State was the highest political unit and that a country—State or imperial State, such as at present exists, was to them little short of a political chimera. Many more instances of a similar nature could easily be given to show the need for care and discretion and a keen insight into the conditions of the age, in an examination of any historic personage or incident.

Thirdly, in pronouncing judgment on any historic character, the student of history should take careful notice of the conditions under which he worked, of the circumstances calculated to help or to hinder him in his work. This proposition is, to some extent, but a corollary of the previous one, but, in view of its importance, needs special emphasis. The work of a historic personage, like a precious stone, appears bright or dim according to its setting. If the work done is notable in itself, it is certainly entitled to much praise; if, however, the same work has been done under conditions depressing and uncongenial, under a frowning sky and in a raging storm, amid peals of thunder and lurid flashes of lightning, the hero is destined to shine in the pages of history with a resplendence of glory all his own. Imagine however, that the conditions are different. The work, although of distinct value, has been done under highly favourable conditions, under a bright sky and in cheerful weather the hero cannot then shine so well.

To take an example—Warren Hastings has often been the target for unsparing criticism at the hands of historians for some of his doings as Governor-General. If, however, we take care to realise the difficulty and complexity of his situation—the sullen indifference of the Directors, their constant inroads on his finances, the malicious spite of some of his Members of Council, the implacable hostility of the native powers, his was the pecuniary straits to which he was often driven, his trials and tribulations, we cannot but feel lofty admiration for the courage, the fortitude, the sagacity, the far-sighted statesmanship, with which he guided the destines of India, and that in the stress and storm of an unparalleled crisis. Taking other personages such as Cromwell or Pitt or Napoleon or Luther, it has to be remembered that, in order to obtain a vivid conception of the full magnitude of their work and their abilities, it is absolutely necessary to understand the conditions under which they played their parts on the stage of history.

These are some of the considerations that may be advanced as needful for a correct historic perspective.

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P. S. RAMAKRISHNA IYER.

THE NATIONAL COLLEGE OF BENGAL.

BY AN ENGLISH VISITOR.

THE National College of Bengal is now three years old. It was, as many people know, established by the National Council of Education, which was born at the close of 1905. On the 16th of November, 1905, a Conference composed of some of the leading Hindus in Bengal met in the rooms of the Bengal Landholders Association, Park Street, Calcutta, to consider the matter of National Education, and after a prolonged deliberation, the following Resolution was unanimously adopted:—

"That in the opinion of this Conference it is desirable and necessary that a National Council of Education should be at once established to organize a system of Education—Literary, Scientific, and Technical—on National lines and under National Control, and that a Provisional Committee be appointed to further this object." This Committee formulated a provisional scheme which was considered by the Conference at a second meeting; and then a small Committee of Ways and Means was appointed to prepare and submit a report amending the scheme of the Provisional Committee. A third and final meeting of the Conference took place on the 11th of March 1906; and on that day the Conference

adopted the report of the Ways and Means Committee and constituted the National Council of Education, Bengal. The Council thus constituted started work at once, and after a body of Rules and Regulations for its management and its Memorandum of Association had been drawn up, was registered on the 1st of June 1906, under Act XXI of 1860. According to the Memorandum of Association, the objects of the Association are :—

(*a*) "To impart and promote the imparting of Education—Literary and Scientific, as well as Technical and Professional—on National lines and exclusively under National control —not in opposition to, but standing apart from the existing systems of Primary, Secondary and Collegiate Education — attaching special importance to a knowledge of the Country, its Literature, History and Philosophy, and designed to incorporate with the best Oriental ideals of life and thought the best assimilable ideals of the West and to inspire students with a genuine love for and a real desire to help the country.

(*b*) To promote and encourage the study chiefly of such branches of the Arts, Sciences, Industries and Commerce as are best calculated to develop the material resources of the country and to satisfy its pressing wants, including in Scientific Education generally a knowledge of the scientific truths embodied in Oriental Learning, and in Medical Education specially a knowledge of such scientific truths as are to be found in the Ayurvedic and Hakimi systems.

(*c*) To promote moral and physical education.

(*d*) To provide for denominational religious education out of funds specially contributed for that purpose, such education, however is not to include the enforcement of religious rites and practises. It is to be presumed that Hindus, Mahomedans, Brahmos, Christians and members of other religious bodies desire that their wards should receive religious education in their respective creeds unless the guardians of such wards express a contrary intention."

The Memorandum of Association goes on to say what is to be done and is not to be done; but the four objects quoted embody the most important features of the education imparted in the National College and the various schools that are under the direction of the Council of Education. The Inaugural Ceremony of the Bengal National College and School took place in the Town Hall, Calcutta on the 14th of August 1906, under the presidency of Dr. Rashbehari Ghose, C. I. E., who had been elected President, and a summary of his speech will show what the College, and the schools that are affiliated with the Council of Education aim at. Dr. Ghose said :—

"We have assembled here on a very solemn occasion .....We have started very well, better perhaps than, speaking for myself, I had expected. A band of devoted workers have gathered round and are ready to work, not for money but for love. Crowds of students, too, are knocking at our doors, eager to learn, and eager when the time would come, each in his own way and according to the station in life to which he might afterwards be called to do his duty.....We, the National Council of Education of Bengal, are not the rivals or enemies of the Calcutta University. Our objects and aims are the same as those professed by the Calcutta University though our methods are different. The composition of our governing bodies are also different, because our governing bodies are composed of Indian gentlemen. The official element, too, is somewhat conspicuous by its absence, but this is

a drawback against which we will do our best to bear up. Let us console ourselves and the friends of the Calcutta University may also console themselves with the remark that is to be found in one of the utterances of Mr. John Morley—scholar, historian, philosopher and statesman—when in addressing the Birmingham Institute. Mr. John Morley said :—

"One of the greatest of all hindrances to making things better is the habit of taking for granted that plans and ideas, simply because they are different and approach the matter from different sides, are therefore the rivals and enemies instead of being the friends and compatriots of one another."

Sir Gooroo Das Banerjee afterwards gave an address in the course of which he said :—

"It may be said that love of one's own country and of one's own nation is laudable, yet education should not be limited by considerations of nationality, but should proceed from a cosmopolitan basis. This may be true to a certain extent, and so far as it is true, the National Council accepts it by expressly providing for the incorporation of the best assimilable ideals of Western life and thought with our own. But though this assimilation of foreign ideals is desirable in the later stages of mental growth, in the earlier stages, such assimilation is not possible, and any attempt to force it on, will retard instead of accelerating the healthy development of the mind. Want of due consideration for this elementary principle is, I think, one of the main reasons why the existing system of English education in this country has failed to produce satisfactory results.....Defective as that system may be, it has helped the spread of education, and it is because it has been tried that we are placed in a position to find out its defects and devise means of reform. .....I deem it undesirable as it is unnecessary to discuss the question of Government policy, or to dwell on the causes that have led to the establishment of the National Council of Education. I would only remark that none need be under any apprehension that the National Council of Education is antagonistic to any one or opposed to the interests of other educational institutions. We shall certainly teach our students to love their country and their nation; but we shall never tolerate in them or teach them want of love for others.

There is ample field for educational work and ample scope for trial of new systems. Only a very small section of the country is receiving education now, and that education is given under one uniform system all throughout. An educational institution proceeding on new lines may at least claim a fair trial.....

In regard to technical education, the Council will be content to promote the study of such branches of the arts and sciences as are best calculated to develop the material resources of the country and to satisfy its pressing wants.....

Being deeply convinced of the necessity of religious instruction, the Council have resolved upon providing for denominational religious education, subject to certain restrictions that I need not enter into here. An hour will be set apart for religious instruction when students professing different creeds will go to their respective teachers for instruction, which will not include any religious observances.....

Another express object of the Council is to impart education ordinarily through the medium of the vernaculars, English being studied as a second language, and to encourage the preparation of text-books in the vernaculars, in arts and science, and if this object is attained, it will have far-reach-

ing consequences. Except in the lowest forms, the different subjects of study have at present all to be learnt in our schools and colleges in English, and this throws no small burden on the students. English is a very difficult language for a foreigner, especially for a Bengali to learn, because English and Bengali differ so widely, not only in their vocabularies but also in their grammatical structures and idioms. And this difficulty is really so great that it not only over-taxes the energy of our students but also cramps their thought. Our scheme of imparting knowledge so far as practicable, through the medium of the vernaculars will lighten the labour of the student and make the acquisition of knowledge more speedy and more direct.....We shall have to select not more than two vernaculars, and I think they should be Bengali and Urdu.....

The next aim is to encourage research by the grant of fellowships to advanced students, and to train teachers who shall make teaching the great object of their lives.....One great drawback in the progress of education is the want of competent trained teachers..... The training of a body of competent teachers must be a necessary preliminary to the work of education. Teaching is an art and a difficult art and the art is based upon recondite principles of the science of mind. Every teacher must learn his art; and if the trained School-master is abroad the spread of education will receive a powerful impetus.

SCHEME OF STUDIES AND EXAMINATION.

The Council has prescribed courses of study under three heads, namely (1) Primary, including a three years course to be commenced by a boy in his sixth year; (2) Secondary, including a seven years course to be commenced by a boy in his ninth year and finished when his age is fifteen years, the courses of the fifth and seventh years being respectively nearly equivalent to the present Matriculation Course, and the course for the F.A. Examination of the Calcutta University; and (3) Collegiate, including a four years course in a single subject with one allied subsidiary subject, equivalent to the B.A. Honour Course of the University.

The scheme of Technical Education has not yet been completed. There will be three Public Examinations, one at the end of each course, and for some years there will be another examination at the end of the fifth year of the Secondary course.

A MODEL COLLEGE AND SCHOOL.

The Council has established a Model College and School. Regarding the efficiency of the teaching staff, I shall only say this for the present, that the gentlemen appointed are either experienced teachers or distinguished graduates of Indian or European Universities. I will not say more but leave their efficiency to be proved by their work. There is however one merit in our staff that is entitled to immediate recognition. Every one of them has made some personal sacrifice in joining our institution and is actuated by a real desire to serve his country.

OUR STUDENTS AND THEIR FUTURE CAREER.

We do not expect any great rush of students, at least for the present. Nor need we feel regret if this is the case. For if the number of our students is small, we shall be better able to look after them than if their number is large. There is one class of students that will come to us, and they are those whom the University rejects or does not suit. The Calcutta University by insisting on proficiency in a multiplicity of subjects not unfrequently rejects candidates who in their favourite subjects are fitted to do solid work and earn distinction. These students will naturally seek admission here, and if properly directed they may do work that will reflect

credit on them and their teachers.....Then again, University graduates may join our institution for higher study and research work, or for receiving instruction as teachers. .....Government service and the legal profession must be left out of consideration for some time to come.....Agriculture, Manufactures and Commerce are the fields to which our young men must turn their attention..... Lastly there is the noble work of teaching, in which there is ample scope for work.

ADVICE TO STUDENTS.

"Turning now to my young friends, the students, I would ask them to remember two things, first, that they are Indian students, and next that they are students of institutions under the control of the National Council of Education.....Theirs should be a life of ascetic simplicity, spotless purity, and rigid discipline, and they should cultivate habits of reverence for superiors, obedience to authority, and readiness to respond to the call of duty. In their youthful ardour they are full of enthusiasm for their country. They cannot show that love better than by conducting themselves so as to make the work of their National Council of Education a complete success."

I have thought it best to let the promoters of the National College and School explain the objects of the institution in their own words, more especially as they are eminent Hindus and their utterances carry great weight with their fellow-countrymen. The scientific part of the College was too little developed in 1906 for much to be said about it then; but during three years it has achieved great things, and now it helps to pay the monthly bills, articles made in the scientific workshops being sold and "jobs" being undertaken. The Technical Department is to-day almost self-supporting. There has been, needless to say, an enormous outlay, but now the workshops are fully equipped, and so far as fittings are concerned the College is practically finished. All the things are portable and can be carried away when the College and School are moved into larger and more suitable surroundings.

The Scientific Departments include the Physical Department, the Chemical Department, the Biological Department and the Technical Department. The object of training the boys with a view to help them to find new and independent careers in the departments of arts and industry, is sought to be attained by adopting a three-fold method of teaching both in the Science and the Technical Departments. The instruction imparted may be classed under three heads (1) Theoretical, (2) Experimental, and (3) Manufacturing. Not only are principles explained orally and by means of experiments in the class-room by the lecturer, but in the laboratories, students are required to perform the experiments themselves either under the direction of the teacher or independently as the case may be, and lastly, in the workshops, students are required to manufacture articles, implements and apparatus having special reference to the teaching in the class or in the laboratory. An Exhibition of articles made is held in the College each year, and many of the articles are then sold. The exhibits may be classed as follows. Engineering wooden patterns, engineering appliances, cutlery, drawing appliances and requisites, instruments and apparatus for the Physical Laboratory, instruments and apparatus for the Chemical Laboratory, free-hand drawings and paintings, card-board work, furniture, and miscellaneous, such as candlesticks, inkstands, picture-frames, pen-holders, garden tools, dumb-bells, toy steam engines, keys, etc. Even the smallest boys may be seen in the carpenter's shop, and

in the kindergarten department they learn to make many things. Drawing and clay modelling are said to be the favourite occupations in the Secondary Department.

There are to-day in the National College and School four hundred boys. The attendance is increasing slightly, but Hindu fathers apparently still wish their sons to take Degrees, and fail to appreciate the Certificates given by the Examiners of the National College in lieu of these things. In America and in Germany the Certificates given to students in the National College have been accepted when boys have desired to enter institutions there; but so far, in India, fathers seem to think that these Certificates do not help a boy as much as a Degree given by a Government University. The fees charged at the National College are lower than in Government Schools and Colleges. Thus Primary education is only one rupee a month, Secondary education two rupees a month, and College education three rupees a month. So far all the boys who have joined the National School and College are Hindus. Much attention is paid to Sanskrit, which is the main language taught, and which is compulsory in the Secondary Department from the first year. Twice a week religious instruction is given to all the classes by a Pundit, and each morning for the first hour of School and College work Slokas are repeated by the students. The standard is much higher in Sanskrit in the National College than in Government Colleges, where students are only obliged to learn enough to pass examinations. Hindu religion and philosophy are embodied in Sanskrit, and the students of the National College are taught to look upon Sanskrit as the most important part of their education. It is generally known that very wealthy Hindus are at the back of the National College, and that it has been richly endowed. During the present year the expenses have been greater than the receipts; but now the scientific workshops are beginning to bring in money and each year the up-keep of the institution will be less. But larger premises are badly needed. The present building stands in Bowbazar Street, which is a very crowded part of Calcutta, and it is close to the Dufferin Hospital. The class-rooms and the work-shops are much too small, and the boys have no proper play ground. One cannot help noticing in reading the reports, how small a place recreation takes in the minds of the promoters of the National College; and one would like to remind them that:—

"All work and no play
Make Jack a dull boy."

In England, games form an important part of School and College life, for it is recognised that the health of a boy is of more importance than anything else. I am sure if the Government of India put four hundred growing boys in such cramped surroundings it would have many severe critics. Enthusiasm is very well, but a sound mind needs, as we know, a sound body; and the sooner the promoters of the Council of Education move their model College into larger and healthier surroundings the better it will be, no doubt, for everybody concerned.

Each Sunday the students beg for their College, and rice is asked for, not money, and this rice is afterwards collected and sold. The College has already a fine Library and many of the volumes have been presented by friends. Photography is now taught, and this department promises to be a great success.

The following schools are affiliated with the National Council of Education and have received from it grants-in-aid varying from 125 Rs. to 1,220 Rs. Altogether the sum of Rs. 12,125 was paid last year to Dacca, Rangpur, Mymensingh, Dinajpur, Comilla, Chandpur, Jalpaiguri, Kishoreganj, Khulna, Jessore, Noakhali, Rajshahi, Sylhet, Maldah, Majpara, Giridih, Kamargram, Santipur and Magura. An Inspector of these Mofussil schools is to be appointed as soon as a suitable person can be found. Some of the students of the National College have gone into the Mofussil as teachers, and there is a great demand for more teachers of the same sort, more especially for those who have had technical training and experience in the scientific workshops.

Some of the masters of the National College live on the premises; and all are engaged in original work. Thus one of the lecturers in Economics is working at Indian Economics, a subject which has been little studied and presents many novel features. The President of the Council of Education has offered to bear all the expenses necessary for the preparation of suitable text-books embodying the results of original research work in Indian economics, and interesting results may be expected. In the higher branches of Indian history several of the lecturers are working at particular periods. A Marithi scholar is in charge of the Marathi period of Indian history, and a Pali scholar is making researches into the Buddhist period of Indian history. In the department of Indian philosophy one of the lecturers is preparing text-books on Indian psychology and Indian ethics. The gentleman in charge of mathematics is making researches into the history of Indian mathematics, and hopes to produce a work on this subject. Another gentleman is preparing a hand-book on Pedagogics. The lecturers on science have undertaken to prepare text-books on their special subjects, in conformity with the syllabuses and scheme of studies adopted by the Council. Text-books on Indian history and Indian geography are also being prepared by the gentlemen who are in charge of these subjects; in fact, in a few years time, we shall see a complete set of books by Indian experts dealing with Indian subjects for the use of Indian students.

I must not forget to mention that the ladies belonging to the families of the Staff having expressed a desire to see the last Exhibition held at the National College, and to meet one another, arrangements were made for them to do so, and a very successful evening was the result. Lectures were given from "behind the purdah," magic lantern slides were shewn, and the ladies enjoyed conversation and refreshments and examined the exhibits.

SCHOOL EXCURSIONS AS A FACTOR IN EDUCATION.

THESE are days of progress everywhere in the field of education, and in our own Presidency there has been, within the last few years, a great awakening among those responsible for the teaching of our youths. Old and antiquated methods of teaching are being given up and more rational ones slowly adopted. Learning by rote is giving place to observation and reasoning. The Educational Exhibitions held in different parts of the Province and the Vacation lectures organised by the University have already begun to bear fruit; and attempts are now seriously made on all sides at the realistic teaching of the various subjects of the school curriculum. Of these attempts none are calculated to be more successful and more productive of good, than school excursions properly arranged and conducted.

It is a painful truth that our boys have very hazy notions of even the common pheno-

mena of nature. They do not possess even the rudiments of the many fundamental conceptions regarding the three kingdoms of Nature—minerals, plants and animals. To the majority of them, mountain ranges and hills, valleys and basins, tides and waves, harbours and ships,are nothing more than mere names. To take only one example, boys are not wanting even in the High School Department who ask, if mountains are made of hard rocks, how it is that they are clothed with luxuriant vegetation. Indeed, in such cases it is very difficult for a teacher, however capable, to make his pupils realise fully the work of rain and frost on mountains, the nature of soils and subsoils and similar other things by mere verbal description. The pupils often run away with the impression that since their teacher says so, it must be so.

This defect in the majority of our boys is no doubt partly due to the training that is given them at the very threshold of their school career. Even when splendid opportunities for developing the powers of observation and reflection lie at their very door, teachers have been generally slow to take advantage of them. But more important than this cause is the want of facilities afforded to our boys in the matter of studying simple natural phenomena. A boy of the Tanjore District has not even a small hill in his neighbourhood to visit and form his own conceptions of a mountain. A student of Coimbatore, living as he does far away from the sea, has hardly any chance of understanding the real meaning of tides or waves, harbours or ships. He imagines them as best as he can and his best is often very poor.

It is in remedying this great defect in our boys; it is in enabling them to grow more observant and acquire fresh knowledge about natural phenomena; it is in making them take an intelligent interest in the world around them, that school excursions prove their great value. A boy who has seen with his own eyes a mountain range, however small, or even a group of hills, will scarcely fail to picture to himself the great mountain chains and peaks, valleys and basins of the world. A small waterfall or even the rapidity of the current of a mountain stream as it leaps from one rock to another, will enable a student to gain a tolerably clear conception of the Niagara or the Victoria Falls of the Zambesi. Then again, a visit to the ruins of an old fort or an historical site will awaken in the minds of boys many interesting associations in a way which the dry pages of their text-books can never do. In short, school excursions open the eyes of children to the beauties and realities of nature and lead to the acquirement of useful knowledge about various natural phenomena and invest the subjects of the schoolroom with a living interest.

School excursions are also useful in many other ways. They bring pupils and teachers into closer touch to the benefit of both. Both begin to appreciate each other better. It has fallen to the lot of the writer of this article to have been in charge of one or two school excursions, and his experience is that a boy whom he considered to be very dull in class displayed a remarkable spirit of enquiry and was more observant throughout the excursion than many others—a sure and far better test of the merit of the boy than mere repetition of tables of figures and catalogues of names. In fact, such co-operation between the teacher and the taught is bound to engender feelings of sympathy and kindness towards the boys and respect and love for the teacher.

Again, these excursions promote good-will and comradeship among the students themselves and incidentally train them in habits of self-reliance and self-help. Boys also learn to be kind to one another and grow unselfish by subordinating their own interests to the pleasure and welfare of the whole party. Excursions afford boys opportunities for collecting specimens for the school Museum in the maintenance of which they take not a little pride.

So much about the importance and advantages of school excursions. It remains now to throw out some practical hints and suggestions regarding the arrangement and conduct of such excursions. It must be clearly realised at the outset that these excursions are not mere pleasure trips. The enjoyment of pleasure is only secondary; the primary object is to bring the pupils face to face with nature in its various forms, to make them observe and reflect and note down their observations and inferences. Therefore it is essential that the teacher should previously prepare a hand-book which should contain complete instructions to the pupils about the aims of the particular excursion and the things to which the attention of the boys should be directed. For instance, if an excursion to a sea-side town is undertaken, the hand-book may, with advantage, contain such headlines as these:—Tides and waves, high and low water marks, the work of waves on the shore, remains of marine insects on the beach, canoes and ships, characteristic occupations of the people. If, on the other hand, it is an excursion to the hills, points similar to the following may find a place in the hand-book:—Life of a mountain stream, the nature of its bed, the rapidity of the current, angular and rounded pebbles, corrosion and erosion. Hill Tribes—name and origin, general appearance and habits of living, language and religion, social customs, etc., etc.

The great advantage of such a carefully prepared hand-book lies in that it calls the attention of the pupils prominently to the objects they must note and the nature of the information they must gather by their own efforts during the excursion. Without such a book, the pupils will be at sea, and in the end the excursion will have served no useful purpose.

Next in importance to the hand-book is the programme. This must be a well-thought-out one. The teacher should note therein the time and order of the subjects to be dealt with during the excursion and the open air lessons he has previously arranged to give. As far as possible this programme should be strictly followed.

It is also necessary that the boys should be given each a copy of the hand-book and the programme. For the boys will then know what definite work awaits them during the excursion. Some points in the hand-book that may require previous explanation may be dwelt upon in the class just before the excursion. Care should be taken that all the boys have thoroughly mastered the details of the hand-book. They must be provided each with a blank note-book to record their observations, lest in the excitement and hurry of the hour several things worth noting should afterwards pass away into forgetfulness. Boys may also take with them a few sheets of blotting paper to preserve specimens of plant life which they may meet with on their way.

The question of discipline during the excursion is one that need not much concern us. Because Indian youths are generally amenable to discipline whether in school or out of it. Moreover, when they find objects that excite their interest and wonder it is almost certain

that their attention will be centred on things around them and they will have little opportunity to turn their hands to mischief. Should any teacher however feel diffident, he may try at the outset with a small number of boys; or he may take with him one or two of his colleagues to be in charge of a section of the party. After all there need be no great anxiety that the boys will get out of control.

We come at last to the question of finance. To some, it may appear to be quite an insurmountable difficulty. Some managers of aided schools may think that such excursions are mere waste of time and money. Others, while alive to the importance and the educative value of school excursions, may plead poverty. But the whole burden of expenses need not necessarily fall on the shoulders of the school authorities. The boys, if asked, will willingly contribute half the amount required, and the other half should be met from the school funds. With such help from the boys and the concessions granted by the Railway Companies, the difficulty of finding out ways and means will be greatly minimised. Considering the manifold advantages that accrue from these excursions, it is not too much to hope that all managers of schools will be induced to defray a portion of the expenses and make school excursions a permanent feature of their school curriculum.

N. R. Subbaiya.

MATHEMATICS.

[Conducted by B. Krishnamachari, M.A.]

Notes on some contracted processes.

(1) *Conversion of vulgar fractions into decimals.* The following results should be noted.

(i) A fraction whose denominator contains only the factors 2 or 5 leads to a decimal, the number of whose digits is the same as the number of times the factor 2 or the factor 5 is contained in the denominator, according as the former factor or the latter occurs the greater number of times, *e.g.* the number of digits of $\frac{1}{2^3\times5^3}$ is 3, and that of $\frac{1}{2\times5^4}$ is 4.

(ii) A fraction whose denominator contains neither the factor 2 nor 5 leads to a pure recurring.

(ii) A fraction whose denominator contains in addition to the factors 2 and 5, a factor prime to these factors leads to a mixed recurring, the number of whose digits that are before the period being the same as the number of times the factor 2 or the factor 5 is contained in the denominator, according as the former factor or the latter occurs the greater number of times, *e.g.* the fraction $\frac{1}{2^3\times5^2\times7}$ gives a mixed recurring, the number of digits before whose period is 3.

In the case of fractions giving pure recurring decimals, the following rule is very useful for contracting the work.

"If in the conversion of the fraction $\frac{a}{b}$ into a decimal, a remainder equal to $b-a$ occurs, half the circulating period has been found, and the rest of it will be found by subtracting in order from 9 the digits already found."

To apply this rule, we have only to perform the division until we come to a remainder equal to $b-a$, when half the circulating period would have been found, and then subtract from 9 in order the figures already found. These digits in order will be the other half of the circulating period.

Ex. The fraction $\frac{8}{17}$ gives a pure recurring decimal. In the course of the division of 3 by 17, the remainder $17-3$ or 14 occurs when the figures 17647058 have been found. Hence this is half the period, and the digits of the other half in order are $9-1, 9-7, 9-6, 9-4, 9-7, 9-0, 9-5$, and $9-8$ or 8, 2, 3, 5, 2, 9, 41,

$$\therefore \frac{8}{17} = \cdot\dot{1}76470588235294\dot{1}$$

In the case of fractions which give rise to mixed recurring decimals, this rule cannot be applied at once. From rule (ii) above we know the number of figures before the period. If we multiply the fraction by unity with as many cyphers after it as the number of figures, the resulting fraction will give a pure recurring decimal to which this rule is applicable.

Ex. $\frac{1}{2^4\times5\times13}$. This gives rise to a mixed recurring decimal, the number of figures before the period being 4. Therefore if we multiply by 10000, we will get a fraction which will give a pure recurring decimal.

$$\therefore 10000\,F = \frac{10000}{2^4\times5\times13}$$
$$= \frac{192\frac{8}{13}}{13}$$
$$= 9\frac{8}{13}.$$

In the course of the division of 8 by 13, the remainder 5 occurs when the figures 615 of the decimal have been found. The remaining figures of the period are therefore $9-6$, $9-1$, $9-5$ or 3, 8, 4.

$$\therefore 10000\,F = 9\cdot\dot{6}15384\dot{}$$
$$\therefore F = \cdot0009\dot{6}15384\dot{}$$

(2) *As the foot is divided into 12 inches, multiplication in scale 12 can be applied to find areas.*

E.g. Find to the nearest sq. inch the area of a room $27'3\frac{3}{4}''$ long and $14'5\frac{1}{2}''$ broad.

$27'3\frac{3}{4}''$ in scale $12 = 23\cdot39$
$14'5\frac{1}{2}''$ in scale $12 = 12\cdot56$

$$\begin{array}{r} 23\cdot39 \\ 12\cdot56 \\ \hline 233\,90 \\ 46\,76 \\ e\,47 \\ 1\,18 \\ \hline 28t.t9 \end{array}$$

$28t$ (Scale 12) $= 2\times12^2+8\times12+10$ (scale 10)
$= 394$ sq. feet
$\cdot t9$ (Scale 12) $= 12\times10+9$ (scale 10)
$= 129$ sq. inches.

$\therefore$ the area to the nearest sq. inch is 394 sq. feet 129 sq. inches.

45. [M. Bhimasena Rao.] If $x=a$, $y=b$, $z=c$ satisfy the equation

$$px(y^2-z^2)+qy(z^2-x^2)+rz(x^2-y^2)=0,$$

show that

$$\frac{a^2x^2(qb-rc)(qy-rz)}{q^2-r^2}+\frac{b^2y^2(rc-pa)(rz-px)}{r^2-p^2}$$
$$+\frac{c^2z^2(pa-qb)(px-qy)}{p^2-q^2}+\frac{(pa-qb)(qb-rc)(rc-pa)}{(p^2-q^2)(q^2-r^2)(r^2-p^2)}$$
$$\times(px-qy)(qy-rz)(rz-px)=0$$

The following alternative solution is furnished by the proposer

$$\Sigma\frac{a^2x^2(qb-rc)(qy-rz)}{q^2-r^2}+\pi\frac{(qb-rc)(qy-rz)}{q^2-r^2}$$
$$=\frac{\Sigma a^2x^2(qb-rc)(qy-rz)(r^2-p^2)(p^2-q^2)+\pi(qb-rc)(qy-rz)}{(p^2-q^2)(q^2-r^2)(r^2-p^2)}.$$

The numerator of this fraction

$$=\Sigma a^2x^2(qb-rc)(qy-rz)(p^2q^2-q^2r^2+r^2p^2-p^4)$$
$$-\Sigma a^2p^2(qb-rc)\times\{-\Sigma x^2p^2(qy-rz)\}$$
$$=\Sigma a^2x^2(qb-rc)(qy-rz)(p^2q^2-q^2r^2+r^2p^2)$$
$$-\Sigma p^4a^2x^2(qb-rc)(qy-rz)$$
$$+\Sigma p^4a^2x^2(qb-rc)(qy-rz)+\Sigma a^2p^2(qb-rc)$$
$$\{q^2y^2(rz-px)+r^2z^2(px-qy)\}$$

$= \Sigma p^2q^2 \{ a^2x^2(qb-rc)(qy-rz)$
$+ b^2y^2(rc-ap)(rz-px)$
$-c^2z^2(ap-bq)(px-qy)\} + \Sigma a^2p^2(qb-rc)$
$\{ q^2y^2(rz-px)+r^2z^2(px-qy)\}$ ... (1)

By hypothesis

$px(y^2-z^2)+qy(z^2-x^2)+rz(x^2-y^2)=0$ ...(2)

and $pa(b^2-c^2)+qb(c^2-a^2)+rc(a^2-b^2)=0$ ...(3)

$\therefore x^2(qy-rz)+y^2(rz-px)=-z^2(px-qy)$

and $a^2(qb-rc)+b^2(rc-ap)=-c^2(ap-bq)$

Multiplying we have $a^2x^2(qb-rc)(qy-rz)$
$+ b^2y^2(rc-ap)(rz-px)-c^2z^2(ap-bq)(px-qy)$
$+ b^2a^2(qy-rz)(rc-ap)+a^2y^2(qb-rc)(rz-px)$
$=0.$

Therefore the expression (1)
$=-\Sigma p^2q^2 \{ b^2x^2(qy-rz)(rc-ap)$
$+ a^2z^2(qb-rc)(rz-px)\}$
$+ \Sigma a^2p^2 \{ q^2y^2(rz-px)+r^2z^2(px-qy)\}(qb-rc).$

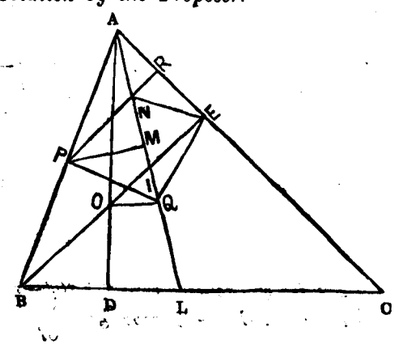
By writing the expressions under the two sigmas in full, we find that they are identical. Hence the given expression vanishes.

From the above we see that it is not necessary to consider a, b and c equal to x, y and z and that the given result follows if equations (2) and (3) are satisfied, *i.e.*, if the points (a, b, c) and (x, y, z) lie on the curve

$$\Sigma px(y^2-z^2)=0.$$

46. [M. BHIMASENA RAO.] Prove geometrically that $OI^2 = 2r^2 - AO.OD$, where O is the orthocentre, I the in-centre, r the in-radius and D the point where the line AO meets the base BC of a given triangle ABC.

Solution by the Proposer.



From I drop IP perpendicular AB. Then $IP=r$. From P drop PM perpendicular to AI. Then $IM.IA=IP^2=r^2$. On the line MA take MN equal IM, join PN and produce it to meet AC in R. Since IM = MN, the triangle IPN is isosceles. $\therefore$ angle PIM = PNM = ANR. In the two triangles AIP and ANR, the angles AIP and PAI are equal to the angles ANR and NAR. $\therefore$ the angle ARN = API = a right angle. Join BO and produce it to meet AC in E. Since ARP and AEB are right angles PR is parallel to BE. Since the triangles API and ANR are similar, AP : AI = AR : AN. $\therefore$ AP : AR = AI : AN. But AP : AR = AB : AE for PR and BE are parallel.

$\therefore$ AB : AE = AI : AN ... ... (1)

Join NE. The two triangles AIB and ANE are similar, for they have the sides about equal angles BAI and NAE proportionale, since AB : AI = AE : AN by (1). $\therefore$ angle $AEN = ABI = \frac{B}{2}$. From O drop OQ perpendicular to AL and join QE. Since the points A, O, Q, E are concyclic, angle AEQ = QOD = QLC = $\frac{A}{2}+B$. $\therefore$ angle QEN = AEQ — AEN $= \frac{A}{2}+B-\frac{B}{2}=\frac{A+B}{2}$. Again angle QNE = QAE + AEN = $\frac{A+B}{2}$. $\therefore$ angle QEN = QNE.

$\therefore$ QN = QE ... ... (2)

In the two triangles ABL and AQE, the angle BAQ = QAE, and the angle ALB is supplementary to the angle AEQ. $\therefore$ the sides about their third angles ABL and AQE are proportionals. $\therefore$ AB : BL = AQ : QE But AB : BL = AI : IL for BI bisects the angle ABL.

$\therefore$ AQ : QE = AI : IL.

$\therefore$ AQ . IL = AI . QE
= AI . QN for QN = QE by (2) ... (3)

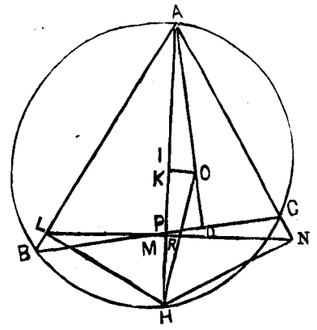
Since AQO is a right angle, $AO^2 + QI^2$
$= AQ^2 + QO^2 + QI^2 = AQ^2 + OI^2$ ... (4)

Since AQ . AL = AO . AD, $AQ^2 + AQ.QL$
$= AO^2 + AO.OD$ ... ... (5)

From (4) and (5) we have
$OI^2 + AO.OD = QI^2 + AQ.QL$
$= QI^2 + AQ.QI + AQ.IL$
$= QI.AI + AI.QN$ by (3)
$= AI.IN = 2AI.IM$
$= 2r^2.$

Hence $OI^2 = 2r^2 - AO.OD.$

2nd proof.



Produce AI to meet the circumcircle of the triangle ABC in H. Draw LMN, the pedal line of H, meeting AH in R. Since AH bisects the angle LAN and HL, and HN are perpendicular to AB and AC, the line LMN is perpendicular to AH. Since H is the middle point of the arc BC the perpendicular HM bisects BC. $\therefore$ M is the middle point of the points of contact of the inscribed and the escribed circles touching BC. on opposite sides. $\therefore$ the radical axis of these circles is the line LMN, for it bisects the common tangent and is perpendicular to AH, the line of centres. If I_a and r_a be the centre and radius of the ex-circle, $I_aR^2 - IR^2 = r_a^2 - r^2$. Since H is the middle point of II_a, $I_aR^2 - IR^2 = 2II_a.HR$. $\therefore$ $2II_a.HR = r_a^2 - r^2$ .. (1)

Join OH and drop OK perpendicular to AH. OK is parallel to LMN and OH is bisected by LMN the pedal line of H. $\therefore$ HK is also bisected by LMN. $\therefore$ HK = 2HR. Since $I_aK^2 - IK^2 = 2II_a.HK = 4II_a.HR = 2r_a^2 - 2r^2$ by (1), the point K is the foot of the radical axis of two circles whose centres are at I and I_a, and the square on whose radii are equal to $2r^2$ and $2r_a^2$ respectively. Therefore the radii of these circles are proportional to r and r_a. Hence the centres of similitude of these circles are the same as those of the in-circle and the ex-circle. Therefore the circle of similitude of the new circles is the semi-circle on AP where P is the intersection of AH and BC, for A and P are the centres of similitude, and this circle of similitude passes through D, for ADP is a rt. angle. These new circles and the semi-circle on AP being the circle of similitude form a co-axal system whose radical axis is OK. Hence the rectangles of the segments of the chords of these circles through O are equal. Therefore $AO.OD = 2r^2 - OI^2 = 2r_a^2 - OI_a^2$. Hence the proposition.

78. [T. SUNDARA RAO, B.A.] Prove the rule for checking arithmetical calculations by "casting out the nines."

Solution by B. Krishnamachari.

Let P be the product found of two numbers A and B; and let the remainders when A, B, P are divided by 9 be A', B', P'.

Then $A = 9a + A'$,
$B = 9b + B'$,
$P = 9p + P'$,

where a, b, p are integers.

Since $P = AB$,
$9p + P' = (9a + A')(9b + B')$
$= 9(9ab + aB' + bA') + A'B'$,

whence the remainder when P' is divided by 9 must be the same as the remainder when A'B' is divided by 9.

Hence the rule.

[The rule may be applied in a modified form to division also.

Let Q be the quotient and R the remainder when A is divided by B.

Then $A = QB + R$

and $A - R = QB$.

Thus the result of casting out nines from A—R must be the same as the result from Q. B.

Ex. Dividend A = 1380719
Remainder R = 455
Quotient Q = 2312
Divisor B = 597

casting out nines from A, R, Q, B we have 2, 5, 8, 3. Casting the nines from QB, we get $6 = 9 - 3$, and the result from A—R also is — 3].

79. [T. SUNDARA RAO, B.A.] Take an integer and the integer formed by writing its digits in inverse order. Then

(1) The difference of the numbers is always divisible by 9;

(2) Their sum is divisible by 11 when the given number contains an even number of digits.

(3) Given the remainders after casting out the nines from the sums of all the digits of the given number and of all but one of the digits of the sum or difference, we can name the omitted digit without looking at the numbers. How is that?

Solutions by P. S. Sundram Aiyar, B.A., L.T. and S. Gopalakrishna Iyer, B.A.

Let the digits of the number be $a_0, a_1, a_2, \ldots a_n$ in order beginning from the units place.

Then the number $N = a_0 + 10a_1 + 10^2a_2 + \ldots + 10^na_n$.

The number with its digits reversed

$N' = 10^na_0 + 10^{n-1}a_1 + 10^{n-2}a_2 + \ldots + a_n$.

(1) $N' - N = (10^n - 1)a_0 + 10(10^{n-2} - 1)a_1 + 10^2(10^{n-4} - 1)a_2 + \ldots - (10^n - 1)a_n$.

As $10^n - 1$, $10^{n-2} - 1$, $10^{n-4} - 1$, etc. are all divisible by 10—1 or 9, N'—N is divisible by 9.

(2) $N' + N = (10^n + 1)a_0 + 10(10^{n-2} + 1)a_1 + \ldots + (10a_n + 1)a_n$.

When n is odd, $10^n + 1$, $10^{n-2} + 1$, etc. are all divisible by 10 + 1 or 11. Hence N' + N is also divisible by 11; and when n is odd, the number consists of an even number of digits.

(3) Let the remainder after casting out nines from N be R; and that from N + N', omitting one digit, be R'.

The remainder after casting out nines from N + N' = 2 R.

∴ omitted digit + R' = 2 R

∴ omitted digit = 2 R — R'.

If 2R < R', omitted digit = 9 + 2R — R'.

If R'' be the remainder after casting out nines from N — N' (omitting one digit), we have omitted digit = R'' + 9 since N — N' is always divisible by 9 and therefore the remainder after casting out nines from N — N' is 0.

∴ omitted digit = 9 — R''.

81. [B. KRISHNAMACHARI, M.A.] ABC is a triangle of area Δ. Another triangle $A_1B_1C_1$ is formed by joining the middle points of the triangle ABC; $A_2B_2C_2$, is similarly formed by joining the middle points of $A_1B_1C_1$ and so on. Find the sum of all the triangles so formed.

Solutions by M. Bhimasena Rao, S. Gopalakrishna Iyer, B.A., P. S. Sundaram Aiyar, B.A., L.T., and M.M. Venkatachariar.

Each of the figures $BA_1B_1C_1$, $CA_1C_1B_1$, $AB_1A_1C_1$, is a parallelogram, and therefore each is double the area of the triangle $A_1B_1C_1$

∴ $A_1B_1C_1 = AB_1C_1 = BC_1A_1 = CA_1B_1$

∴ $\Delta = 4A_1B_1C_1$ and $A_1B_1C_1 = \frac{1}{4}\Delta$.

Similarly $A_2B_2C_2 = \frac{1}{4}A_1B_1C_1 = \frac{1}{4^2}\Delta$,

and $A_3B_3C_3 = \frac{1}{4}A_2B_2C_2 = \frac{1}{4^3}\Delta$, etc.

∴ the sum of all the triangles

$= \frac{1}{4}\Delta + \frac{1}{4^2}\Delta + \frac{1}{4^3}\Delta + \ldots$

$= \frac{1}{3}\Delta$.

82. [G. R. KAYE]

If $n = 4(a + \frac{1}{4})$
$3a = 4(b + \frac{1}{4})$
$3b = 4(c + \frac{1}{4})$
$3c = 4(d + \frac{1}{4})$
$3d = 4(e + \frac{1}{4})$

where n, a, b, c, d, e are integers find the smallest integral value of n that satisfies the conditions.

Solutions by M. Bhimasena Rao, P. S. Sundaram Aiyar, B.A., L.T., S. Gopalakrishna Iyer, B.A., and M. M. Venkatachariar.

$n + 3 = 4(a + 1)$
$3(a + 1) = 4(b + 1)$
$3(b + 1) = 4(c + 1)$
$3(c + 1) = 4(d + 1)$
$3(d + 1) = 4(e + 1)$

Multiplying and cancelling the common factors we have $81(n + 3) = 1024(e + 1)$ whence $n = 1024t - 3$ and $e = 81t - 1$ where t is any positive integer.

∴ The least value of n is 1021 and of e is 80.

M. BHIMASENA RAO, points out that we may prove in exactly the same way, prove that if $a_0, a_1, a_2 \ldots a_r$ be any quantities connected by the relation $la_r = ma_{r-1} + n$ where l, m and n are constants,

$$a_r + \frac{n}{m-l} = \left(\frac{m}{e}\right)^r \left\{a_0 + \frac{n}{m-e}\right\}$$

If all the quantities involved are positive integers, n a multiple of $m-l$ and $\frac{m}{l}$ is in its lowest terms, then the least value of a_0 is $l^r - \frac{n}{m-l}$ and that of a_r, $m^r - \frac{n}{m-l}$.

QUESTIONS FOR SOLUTION.

90. [M. BHIMASENA RAO.]

P is a point on a conic circumscribing a triangle ABC. A P, B P and C P meet the opposite sides in D, E and F. Show that the centre of the conic touching the sides of the triangle at D, E and F lies on a fixed straight line.

91. [M. M. VENKATACHARIAR.]

Assuming that sound travels at the rate of 1100 feet per second and that a person walking towards a gun fired once a minute hears the fourteenth report $12\frac{27}{29}$ minutes after hearing the first report, find the rate at which the man is walking.

92. [G. V. TELANG.]

Draw two equal circles touching each other and touching two given straight lines at two given points in them.

93. [G. V. TELANG.]

Draw two circles touching two intersecting straight lines at given points so that the line of their centres may pass through the point of intersection of the two given lines.

94. [G. V. TELANG.]

Through O the centre of a circle, a perpendicular OA is drawn to a [given] straight line, intersecting the circle in two points B and C. On it a point P is taken such that AP^2 is the arithmetic mean between AB^2 and AC^2, and through P a chord DE is drawn. From D and M, perpendiculars DM and EN are drawn to the straight line. Show that the sum of their squares is less than $2AP^2$ by the difference between the squares of DD^1, EE^1, perpendiculars from D, E on the diameter parallel to the given line. For what position of DE will this difference be the greatest.

95. [G. V. TELANG.]

TA and TB are tangents to a circle. CD is a chord passing through T such that TB is the external bisector of the angle TAC. Show that the intercept on TB made by AC and AD is half of CD.

96. [G. V. TELANG.]

AB is a chord of a given circle and P the middle point of the arc AB. Through P a chord PCD is drawn intersecting AB in C and the circle in D. If O_1, O_2, O_3 be the centres of the circles ABD, ACD and BCD, show that the circle $O_1 O_2 O_3$ passes through D and a fixed point.

97. [G. V. TELANG.]

A triangle Y is inscribed in another triangle X and a triangle Z is inscribed in the triangle Y. If triangles X and Y are in perspective as well as triangles Y and Z, show that the triangles X and Z are also in perspective.

98. [B. KRISHNAMACHARI, M.A.]

The digits of a are added, the digits of this sum added, and soon till a single digit is arrived at. This last is denoted by $\phi(a)$. Show that $\phi(a+b) = \phi\{\phi(a) + \phi(b)\}$; and that the values of $\phi(8n)$ for $n = 1, 2, \ldots\ldots, a$. successively consist of the nine digits continually repeated in descending order. [Chrystal.]

99. [B. KRISHNAMACHARI, M.A.]

A common conjuring trick is to ask a boy among the audience to throw two dice, or to select at random from a box a domino on each half of which is a number. The boy is then told to recollect the two numbers thus obtained, to choose either of them, to multiply it by 5, to add 7 to the result, to double this result, and lastly to add to this the other number. On mentioning the final number thus obtained, the conjurer is able to tell the two numbers originally chosen. How is this done?

100. [B. KRISHNAMACHARI, M.A.]

Rama, Krishna and Nala had been to market taking their wives Damayanti, Seeta and Rukmani with them. They bought apples; each person bought as many apples as they gave annas for each apple. Rama bought 23 apples more than Rukmani; and Krishna bought 11 more than Damayanti; likewise each man laid out sixty-three rupees more than his wife. (Apples then seem to have sold at a fancy price). Find the name of each man's wife.

[Question 80. M. BHIMASENA RAO points out that 'H . P' should be 'A . P.']

OUR ENGLISH LETTER.

LIVERPOOL, *December* 1909.

Consequent upon Dr. James' removal to Oxford, there was a vacancy in the Headmastership of Rugby. There is no school in England that occupies her position. No doubt Eton and Harrow stand by themselves, but even they on many counts have to grant precedence to Rugby. They have greater social prestige, but not a greater reputation as centres of sound education. Rugby still bears the stamp of the greatest of headmasters. It is not always so. Thring's influence has hardly lived as Arnold's has. But Rugby has maintained, and still maintains, her position: the school life is strong at every point. The teaching is efficient, and the general character of Rugbeians is still a matter of pride to those who have the honour of the school at all. Speaking without prejudice from some little acquaintance with products of all the great schools, we should certainly give Rugby first place.

Certainly, there is no headmastership that is more coveted. It was generally thought that the appointment would fall to one of three men, all of them now headmasters, and all of them ex-assistants of Rugby. Of these, Mr. Fletcher of Marlborough refused to stand: he stands by the school which he has raised to a front rank position. And the choice of the governors has not fallen upon Mr. Wynne-Wilson who did excellent work when a master at Rugby and faced and mastered a difficult task in following the present Head of Eton at Haileybury. The task was not difficult in one sense—in the sense that one would immediately suppose. But into that matter we need not enter. There was a call for drastic methods; and these Mr. Wynne-Wilson was not afraid to employ. His successful rival was Mr. David of Clifton. Knowing something of the present condition of Clifton, we can honestly commend the wisdom of this choice. Mr. David has not been long at Clifton. But he was an instant success, and has more than maintained his position since. Clifton will sincerely mourn his loss. As will Bristol. He had won for himself much esteem in the city by the combination of courage and sanity which marked his public actions and utterances. We wish him all success at Rugby, and Rugby all prosperity under his regimé. His approaching marriage is announced: and in this connection the papers have revived the story of Percival, now Bishop of Hereford, and first Head of Clifton. He was objected to on the grounds of youth and bachelorhood. "The latter defect, gentlemen, I shall shortly remedy myself: the former you will find that time cures only too soon," was his retort. But the good Bishop still goes on his way, an untamed Liberal. His, was one of the few voices raised in the House of Lords in favour of the Budget in the recent debate there, whose issue is bound to prove historic. It will rank as the occasion when the House of Lords strengthened its position as a Second Chamber with power of revising even financial proposals, or sealed its fate as a real power in the constitution. One of the indirect results of its action, by the way, is that it has accentuated a demand for a written constitution, in which the powers of the Crown, the Lords and the Commons will be so clearly defined that an usurpation of privilege on the part of any party may be easily detected.

We wonder whether the novels of Mr. William De Morgan have reached you. They have been providing us with welcome oases, and oases by no means scanty in extent, in our literary desert. His, are several times the length of the ordinary novel, and are full of the most intimate and seemingly irrelevant detail. But they are remarkable for their piercing insight and their all-pervasive humour. The libraries have refused to take his last novel, because it is published in two volumes and the price is more than six shillings. Mr. De Morgan has a great future before him, and yet he is over seventy. It is a curious phenomenon indeed, this of a man born in the forties, and living through the Victorian era, and not breaking his silence till the twentieth century had dawned; and all the time with these romances crowding upon one another somewhere within him. His father Augustus De Morgan was for more than thirty years Professor of Mathematics at University College, and Mr. William De Morgan has now presented to the Library of London University a collection of books, pamphlets, and MSS., formerly the property of his father.

Our Universities still continue to receive small contributions towards the vast sums they have asked for thoroughly to equip them for their immediate needs. Thus Lord Rosebery, forgiving his non-election to the Chancellorship and forgetting the Budget, has given £1,000 to the Bodleian. But with what pains of avarice suppressed the Oxford and Cambridge Chancellors must read of the princely benefactions to American Universities which are continually being reported. Thus, with conditions in certain cases which need not concern us, we find that Columbia University benefits under the will of Mr. John Kennedy to the extent of £1,000,000. From the Sloane's Yale University has received £95,000. From the Pratt's, the Pratt Institute of Brooklyn has received £350,000. From Mr. Proctor of Cincinnati Princeton, has accepted a gift of £100,000. And so one might go on. These are recent gifts. What would Oxford or Cambridge do with some of these? What would they not do? But since Cecil Rhodes insulted the Common Room of Oriel and simultaneously atoned handsomely, no great benefactor has helped Oxford or Cambridge, as, say, the Wills family have helped Bristol. Tobacco, cocoa, and jam are the kindly products which seem to react upon their producers and make them not only princely in income

but in benefactions. But these manufactures prefer the modern Universities: they do not trust the time-worn institutions: to them, perhaps, they are out-worn.

There is an article in the November '*XIX Century*' which is well worth reading. It is by an Assistant Master at Clifton, Mr. H. B. Mayor, who worthily maintains the traditions of the day when the Masters' Room at Clifton contained Irwin, Brown (of Fo'c's'l Yarns fame), Dakyns, Tarver, and Worthington, and others as worthy of mention. Those familiar with Brown's letters seem to know the inside of that room and to hear the Homeric laughter that followed on some sally more brilliant than most: for if report speak true, they were great talkers. Mr. Mayor with considerable skill has written an indictment on the modern public schoolmaster, who plays the part of the Elder Brother of his boys and not of their Teacher. He preaches upon the futility of "putting yourself upon their level." 'It is not well that we should live habitually in their world, or we may lose all sense of the true value of things.....For surely if a school is in a healthy condition, the school-boy virtues will propagate themselves; we ought to assume them rather than to be constantly preaching them; whereas width of sympathy, intellectual enthusiasms, an interest in the wider concerns of men, duties, whose fulfilment brings no applause—such things, as these are hard for boys, and they will only learn to value them if they realize that we are always thinking about them, and that to us they are more important than many successes in the humbler sphere." Mr. Mayor is a staunch believer in the Public Schools, but the picture he draws of a school-boy of eighteen is not one at all flattering to the system as at present worked. "At this stage of his career [Art. 16] he is a delightful person to deal with: he is a little contemptuous of those who are not average boys, but apart from that he has not developed any conceit or swagger, he is natural and unaffected, with a pleasant smile for everyone, and is a standing advertisement of the benefits of a Public School education. Two years later, I think, he is less attractive. He is now a young man at the age when a young man would naturally be learning to take his place in the world: but he has the good fortune to belong to the privileged class, which can devote four more priceless years to the preliminary training that shall make them fit to rule a mighty empire, or bear a hand in guiding the new democracy in the gigantic task before it. He knows well that he occupies a privileged position: he hears it from every stranger who occupies the school pulpit: he hears it on every occasion of public festivity, and he is frequently warned by some distinguished visitor that success depends not on mere book-learning (for the book-worm is the idle drone of the hive), but on character: and that character is built up on the playing fields, 'where the battle of Waterloo itself was won.' This quite squares with his own views, and a generous indignation begins to mingle with the contempt he has long felt for the drones of his own acquaintance. Consciousness of merit, inadequately embellished by the arts of the school millinery lends a statelier port to his movements; his public services excuse him from many of the school hours, which have now begun to grow wearisome; for life is too serious a matter to waste on elegant trifles; and though his masters are not extreme to mark what is done amiss, yet he obviously occupies a false position, when younger boys, with no claims to public spirit and with no public services to show, pass easily over his head. He is still a pleasant person to deal with, for I am thinking of the average boy, and not of the 'brutal' athlete—happily a *rara avis*, whose body has outgrown him,—but can we flatter ourselves that he really does us much credit.' Mr. Mayor has a good word to say for the University scholarship system—strangest of all encomiums in these days—as providing something tangible, some worth having, to counteract the seeming far-off-ness of the rewards of the true student, and he appeals to the schoolmasters to throw themselves in cordially on the side of learning. "Surely if he is to be brought to choose the harder path, we ought to throw in all the weight of our influence on that side; and here again our influence will only carry weight, if we really do, in our heart of hearts, put intellectual things above athletic distinctions and have not a sneaking feeling, even while we exhort him to stick to his books, that, after all, it does not very much matter." The whole article is well worth careful reading, as it touches the problem of the public schoolmaster just where it is hardest for the individual master to reach the right theory and put it effectually into practice. It is so easy to swim with the tide and so easy to be left high and dry on the river bank. Most men take one of these courses. There must be still another.

Reviews and Notices.

A TEXT-BOOK OF DIFFERENTIAL CALCULUS, BY G. PRASAD, B.A., PROFESSOR OF MATHEMATICS, QUEEN'S COLLEGE, BENARES. RS. 3. (LONGMANS). 1909.

The book is intended for the use of students preparing for Part I of the Cambridge Mathematical Tripos Examination or for the B.A. and B.Sc. Degrees of the Indian Universities. It attempts to give a rigorous and, at the same time, a simple exposition of the differential calculus. There are many illustrative examples and numerous exercises in every chapter. Some of the English text-books on the Calculus give the machinery of the subject completely before taking up its applications, the author has done well to have deviated from this practice and introduced the simple geometrical applications immediately after differentiation. Such an arrangement will make the subject interesting to beginners. There are also added notes on Weierstrass's Function and Taylor's Theorem to give the ambitious student a glimpse of the modern researches in the differential calculus. The book covers nearly all that is required for the Madras B. A. Examination and is priced very cheap. If the treatment of the 'Asymptotes,' 'Multiple points,' 'Curvature,' 'Partial differentiation,' &c., had been a little more elaborate, we could safely recommend this book in the place of the more costly books now in use. By way of suggestion for the improvement of the book, we wish to remark that, instead of giving first the rules and then the applications, the author would do well to lead the readers to the rules.

ANIMALS AND THEIR WAYS. AN INTRODUCTION TO THE STUDY OF ZOOLOGY AND AGRICULTURAL SCIENCE, BY ERNEST EVANS. LONDON: J. M. DENT & CO. 1909.

This book covers the syllabus of stage I, Zoology of the Board of Education. It deals with the essential facts of the food, mode of life, general structure, reproduction and classification of animals. It may serve as an introduction to the animal side of agricultural science and rural economy. It will be found useful by those who take up group II of our Intermediate examination.

PRACTICAL EXERCISES IN GEOGRAPHY, BY B. C. WALLIS. MACMILLAN & CO., LTD., ST. MARTIN'S STREET, LONDON. 1909.

This book embodies the results of the author's experiments in teaching geography. The exercises are intended to cover a course of two years. Surely the students who are taught geography in the manner treated in the book will get a good grasp of the subject, but we doubt very much if any of our schools can really teach geography on the practical lines contained in the book. The book will be found very useful by teachers of geography in secondary schools.

A GEOGRAPHY OF THE BRITISH ISLES, BY A. MORLEY DAVIES, D.SC. MACMILLAN & CO., LTD., ST. MARTIN'S STREET, LONDON, 1909.

This book presents the materials in such a way that the pupils learn by doing. It also follows a progressive method, so that the earlier lessons reveal the general principles applicable to the later lessons. It contains a number of maps and statistical tables. We have much pleasure in recommending the book to teachers of geography in our secondary schools.

We have received from Messrs. Macmillan & Co. a box of Cardboard Indian Coins priced one rupee, consisting of 5 rupees, 10 ½ rupees, 10 ¼ rupees, 10 2-anna pieces, 25 annas. 50 ¼ annas, 50 ½ pice and 50 pice in exact imitation of the coins now current. They are intended to be used in schools for illustrative purposes in teaching arithmetic.

Indian Educational Notes.

MADRAS.

Mr. H. Malim, Principal, Government College, Mangalore, has leave on medical certificate for two months and eighteen days.

Miss C. M. Lynch, Inspectress of Girls' Schools, Southern Circle, has combined privilege leave and special leave for six months from or after the 16th March 1910.

The following Gentlemen have been nominated to be Ordinary Fellows of the Madras University:—

The Hon'ble Justice Sir R S. Benson, *Kt*, M A, LL B., (Bar-at-Law), I. C. S.

The Hon'ble Mr. Justice V. Krishnaswami Aiyar, B.A., B.L.

Mr. R. L. Jones, M.A.

Mr. T. Richmond, B.A., Bar.-at-Law.

Mr. M. Seshagiri Prabhu, First Assistant, Government College, Mangalore, is to act as Principal of the College during the absence of Mr. H. Malim on leave or until further orders.

Mr. M. Seshagiri Prabhu is to act in the 9th grade of the Provincial Educational Service.

The Director of Public Instruction is pleased to grant Mr. G. Rama Aiyangar, Sub-Assistant Inspector of Schools, Karur Range, privilege leave on full pay for a month and ten days with effect from the 22nd November 1909, and to appoint Mr. M. Subrahmanya Aiyar, sub. *protem*. Supervisor of Elementary Schools, Karur, to act for him, without prejudice to his own duties in the probationary class during his absence on leave or until further orders.

Mr V. A. Venkatasubba Aiyar, Sub-Assistant Inspector of Schools of the present Vriddhachalam Range (head-quarters Vriddhachalam) will be the Sub-Assistant Inspector of Schools of the new Chidambaram Range, with head-quarters at Chidambaram, with effect from 1st January next.

Mr. M. D. Jacobs, Headmaster, Reformatory School, Chingleplut, and Acting Sub-Assistant Inspector of Schools, Tiruppattur range, is confirmed in the latter appointment in the probationary class with effect from the 18th October 1909, *vice* Mr. S. T. Kallapiran Pillai transferred.

Mr. U. Mangesha Rau sub. *protem*, Supervisor of Elementary Schools, Mangalore, to act as Sub-Assistant Inspector of Schools, Kasaragod Range, in the probationary class, *vice* Mr. P. Mangesha Rau on other duty or until further orders.

The following postings are ordered:—

(1) Mr. S. V. Melagiri Rau, Assistant Inspector of Schools, Nellore district, acting in Guntur district, to be Assistant Inspector of Schools, Bellary district—*to join on relief.*

(2) T. S. Muhammad Hussain Sahib Bahadur Assistant Inspector of Schools, Bellary district to be Assistant Inspector of Schools, Nellore district *vice* No. (1) but to act in Guntur district, *vice* Mr G. V. Subbarayudu Sastri Garu on other duty or until further order—*to join after handing over charge to the head clerk on the 3rd January, 1910.*

Miss J. Patterson, Assistant Inspectress of Schools, West Coast Girls' Range, is granted privilege leave for one month with effect from the 3rd January, 1910.

Mr. K. S. Vaidhyanatha Iyer, L.T., Headmaster Government Training School, Tinnevelly, and lately Acting Sub-Assistant Inspector of Schools, Kulitalai Range (now in transit), acts as Sub-Assistant Inspector of Schools, Conjeeveram Range, in the probationary class, *vice* Mr. S. Venkatasubba Iyer on other duty or until further orders.

Mr. V. R. Venkatarama Iyer, Assistant Inspector of Schools, Coimbatore District, acts as Inspector of Schools, Sixth Circle, *vice* Mr. O. J. Couldrey on other duty or until further orders.

Mr. T. K. Venkata Rao, Sub-Assistant Inspector of Schools, Coimbatore Range, acts as Assistant Inspector of Schools, Coimbatore District, in the Subordinate Educational Service, *vice* Mr. V. R Venkatrama Iyer on other duty or until further orders.

Mr. P. Varadachari, Head Clerk, Office of the Inspector of Schools, Fourth Circle, and Acting Sub-Assistant Inspector of Schools, Madura Range acts as Sub-Assistant Inspector of Schools, Coimbatore Range, in the probationary class, *vice* Mr T. K. Venkata Rao on other duty or until further orders.

The first meeting of the Madras Students Advisory Committee was held at the Senate House recently Mr. Justice Wallis presided and others present were, Dr. A. G. Bourne, C.I.E., Director of Public Instruction, Mr. F. S. Davies, Mr. J. H. Stone Mr. K. Narayana Rao, the Rev. Dr. W. Skinner Mr. K. Ramunni Menon and Mr. Arthur Davies (Secretary).

Mr. Arthur Davies made a verbal report of the progress made up to date, from which it appeared that a dozen applications from students intending to proceed to England were now being considered and that a number of interviews had already taken place.

A letter was read from Mr. F. W. Arnold, head of the Bureau in England, enclosing a "Handbook of Information" and other papers, stating (1) conditions on which the guardianship of students will be undertaken, (2) the information required if students are to be met and provided for on their first arrival, (3) the conditions for entering the Universities of Oxford and Cambridge.

It was resolved to draft a Circular stating the objects and methods of the Central and Provincial Committees, on the lines of G. O, No. 542, dated the 29th September, 1909, drawing attention to the "Handbook of Information and incorporating the effect of Mr. Arnold's letter, and that copies of this Circular be sent to all members of the Committee, all Colleges and the principle newspapers of the Presidency.

The following other Resolution were adopted:—

(1) Resolved, that the next meeting should be held on the day before the Senate meeting in March.

(2) Resolved, that Mr. K. Narayana Rao and Mr. J. H. Stone should form an Executive Committee to whom the Secretary should refer questions of doubt, and that they should either settle such questions themselves or refer them for decision by the members in circulation, or at a meeting.

(3) Resolved that in the opinion of the Committee it is desirable, as suggested in G.O., No. 542, dated the 20th September, 1909, that individual members do their best to make the work and the objects of the Committee widely known and further them by every means in their power.

(4) Resolved, that the Secretary be directed to address the Secretary to Government (Educational) with a view to obtaining (1) a contingent allotment that should include (*a*) an initial expenditure of Rs. 50, (*b*) office rent at Rs. 30 a month, (*c*) clerical expenses at Rs. 15 a month, (*d*) cost of stationery, stamps, telegrams, etc., at Rs. 60 a year. (2) A permanent advance of Rs. 100. (3) Permission to have printing done at the Government Press.

In an order recently issued, the Madras Government say, that in future as in the case of the Revenue Special Tests, there will be two sets of papers in the subjects of the three Judicial Special Tests, one set dealing with the general principles of the law and practice embodied in the Codes, Acts and text-books proscribed, to be answered without books, and the other, dealing with the more detailed application of these principles to be answered with books, as in the Standard examinations of Assistant Collectors. The Government do not desire that this change should result in the standard or strictness of the examinations being lowered or in any reduction in the number of subjects or Acts which should be studied. Special care will indeed be necessary in framing the questions to be answered without books to ensure that they may really test the candidate's knowledge of general principles and their application in practice. The Commissioner for Government Examinations is requested by the Government to submit at an early date, a draft of the alterations to be made in the Special Tests Notification in order to give effect to the above decision.

The Governor in Council is pleased to sanction the following regulations for the institution of University Lectureships and Research Studentships.

1. The University shall assist in giving instruction in the Honours Courses, and may provide for post-graduate teaching, study and research by establishing courses of lectures in subjects included in the Honours Courses or in others not so included on the recommendation of the Boards of Studies.

2. The Boards of Studies shall send in by the 31st January each year their recommendations as to the courses of lectures in their subjects, it is desirable to have established or recognized during the following academical year.

The Heads of Colleges affiliated in an Honours Course shall also send in by the 31st January each year a list of the courses of lectures to be delivered for Honours students in their Colleges during the following academical year which they are willing to have recognized as University lectures.

3. The Syndicate shall make a selection from these recommendations and place the consolidated list of lectures so selected before the Senate at the March meeting for sanction.

4. Each course of lectures will ordinarily last one term (i) July to September, (ii) October to December, (iii) January to March, the length of each term being about ten weeks.

5. The lectures may be delivered at any first-grade College affiliated to the University or at any other institution approved by the Syndicate.

6. The lectures shall be open to any student who is taking an Honours Course in any College affiliated to the University, on the recommendation of his College authorities. No fee shall be charged for attending a course of lectures, but a student shall not attend a course till he has paid the usual fee to his College for the term.

The lectures shall also be open to graduates of the University who wish to engage in post-graduate study and research on payment to the University of Rs. 50 per course per term, and with the sanction of the lecturer appointed.

7. The remuneration for a course of lectures extending over one term and consisting of not less than 20 lectures shall ordinarily be Rs. 500.

8. It shall be the duty of University Lecturer to supply to Principals of Colleges a report upon the attendance at lectures of their students.

9. It shall be competent for the Syndicate with the sanction of the Senate to make from time to time special arrangements for a course of lectures to be delivered by a person eminent in Arts or Science on any subject they may select.

RESEARCH STUDENTSHIPS.

Regulations.

Studentships not exceeding eight in number may be awarded annually to graduates of the University in accordance with the Regulations set forth below, if candidates of sufficient merit present themselves.

2. The studentships will be given to enable graduates to undertake research in any subject in the Faculties of Arts, Medicine, and Engineering.

3. No candidate will be eligible for a studentship unless he has passed (*a*) the Science Branch of the B.A. Degree Examination in the first class or the M.A. Degree Examination under the old Regulations or (*b*) the B.A. Degree Examination in Honours under the new Regulations; in addition he must not be of more than five years' standing since passing his F.A. or Intermediate Examination.

4. A candidate for a studentship must send in his application on the prescribed form to the Registrar not later than the 1st July. The application must be accompanied by a statement of the subject or matter he proposes to investigate, or the general nature of the research he proposes to undertake. He must also state where he proposes and has permission to undertake his research.

The application and the statement shall be referred for consideration and report to the Board of Studies dealing with the subject which the student proposes to investigate.

5. The award of studentships will be made by the Syndicate on the reports of the Board of Studies: usually it will be in August.

6. Each studentship will be Rs. 75 per month in value and shall ordinarily be tenable for a period of two years from the date after the award on which the student commences work on his investigation. A student who fails to start work before the 1st October of the year in which he was awarded a studentship will have his award cancelled.

7. During the tenure of his studentship, the holder must engage diligently in his investigation. Arrangements will be made to report on his work and progress from time to time by competent authority. The Syndicate shall have power to deprive him of his studentship at any time if in their opinion his progress is not satisfactory.

8. The Syndicate shall have power to defray out of University funds such expenditure incurred in connexion with research as, in their judgment, is reasonable. They will also make arrangements where necessary for affording facilities for the prosecution of research.

9. Each student shall submit four printed or typed copies of a paper embodying the results and giving an account of his investigations to the Syndicate at the end of the tenure of his studentship. It shall however be open to him to submit to the Syndicate at any time the results of any completed portion of his research.

10. A student shall not be at liberty to publish any results of his investigation until he has laid them before the Syndicate in accordance with Regulation 9.

11. When in the opinion of the Syndicate the character of the investigations on which a student is engaged and the ability shown by him render such a course desirable, they may continue his studentship for a third year.

THE Government have sanctioned the following Regulations passed by the Senate of the University of Madras.

212. Candidates for the degree of Licentiate in Teaching shall be required to pass an examination which shall be held in Madras and at such other places as the Syndicate may appoint commencing on the second Monday in April.

213. Candidates for this degree shall have taken a degree in this University or a degree in some other University accepted by the Syndicate as equivalent thereto.

Applications for admission to the examination in the form hereinafter prescribed shall reach the Registrar not later than the 1st February preceding. Each candidate shall forward with his application his graduate's diploma or other satisfactory evidence of graduation, and before the 20th March a certificate in the form hereafter prescribed from the head of a Training College affiliated to the University to the effect that he has attended the College for a period of at least one year after taking his degree, that he has completed the course prescribed and that his progress and conduct have been satisfactory.

214. No candidate shall be admitted to the examination unless he has previously paid a fee of fifteen rupees. Candidates failing to pass one examination may be admitted to a subsequent examination on payment of a like fee of Rs. 15.

215. The examination shall be a written examination conducted by means of printed papers.

216. Candidates shall undergo a course in—

(i) The Theory and Practice of Education—

(*a*) The elements of Human Physiology with special reference to the nervous system and the organs of sense and to physiological stages of development during childhood and youth. School hygiene including lighting and ventilation of school rooms, school furniture and its arrangement, detection of physical imperfection and of ill-health and measures to be taken by the teacher in typical cases. Fatigue: signs of and means of avoiding over-fatigue. Physical training, gymnastics, drill and out-door games: how far these are a remedy for mental fatigue.

(*b*) The elements of Psychology with special attention to the stages of mental development. The training of the senses, the nature and conditions of attention and interest, the use of memory and imagination in education, the theory of apperception, 'the five steps' in teaching method. The cultivation of the feelings, the will and the moral intelligence. Theories of punishment. School discipline, its aims and methods. Analysis of habit and character. Development of *esprit de corps*. The cultivation of such habits as diligence, accuracy, truthfulness, and politeness.

(*c*) The nature of knowledge; knowledge and language. The nature of judgment and types of judgment. The modes of reasoning, deductive and inductive. Definition, classification and explanation. Specific teaching methods, *e.g.*, expository, catechetical teaching, experiment. Classification of subjects usually taught in schools with reference to their educational and practical value, the drawing up of curricula and of time-tables. Correlation of studies. Planning of courses of lessons and of individual lessons and sections of lessons. Notes of lessons. Classification of pupils according to general progress or progress in separate subjects. Examinations.

(*d*) Methods appropriate to the teaching of (1) all subjects to young children, (2) English, and (3) one of the following groups of subjects:—(*a*) Mathematics, (*b*) Physical Science, (*c*) Natural Science, (*d*) History and Geography, (*e*) Two languages other than English.

Syllabuses under (*d*) may be prescribed by the Syndicate as necessity arises.

(ii) The History of Education; special books or subjects for study bearing on the Lives and Work of Eminent Teachers and the Systems of instruction adopted in foreign countries will be prescribed from year to year.

(iii) Practical training including instruction in school management and practice in teaching.

217. The examination shall be conducted in the order of time and subjects set forth in the following table, and the number of marks assignable to each subject shall be as therein specified:—

(*A table is herein affixed*).

218. Candidates, who obtain not less than thirty-five per cent. of the marks in the papers on Theory and Practice of Education taken together and in the paper on the History of Education or forty per cent. on the whole shall be eligible to receive the Degree of Licentiate in Teaching.

(*A form of statement to be submitted by the Examiners and a form of Application for Registration are inserted here.*)

THE Government have sanctioned some additions and alterations in the University Regulations.

(*a*) *Add* between Regulations 165 and 166 as a (1) section—

"*Matriculation*

"Subject to such rules and directions as the Syndicate may issue from time to time, holders of completed secondary school-leaving certificates, issued under the authority of the Government of Madras or such other authority as may have been accepted by the Syndicate, may be admitted by the head of an affiliated college, if he be satisfied as to their fitness, to a University course of study, and when so admitted shall be registered as Matriculates of the University.

"Other candidates for Matriculation shall be required to pass the Matriculation examination of this University or some other examination accepted by the Syndicate as equivalent thereto."

(*b*) In Regulation 180, lines 11 and 12, *omit* the words "passing the" and "or other accepted examination."

(*c*) In Regulation 178, *for* the words "in which candidates are examined for the Matriculation" *substitute* the words "which candidates studied previous to Matriculation."

(*d*) Other necessary consequential alterations in the regulations.

(2) That sub-section (xv) of section XIII of the regulations be divided so that "Academic Robes" become a separate sub section.

(3) That the following alterations and additions be made in the regulations:—

(i) That in the table of examinations set out in Transitory Regulation 370, in the last column headed "Under the existing Regulations" there be added the letters "B.A." before the letters "M A." for the years 1913 and 1914.

(ii) That immediately before the last sentence of Regulation 370 and following the table of examinations there be added the words—

"The examinations for the Degree of Bachelor of Arts under the existing Regulations shall be held in the years 1911, 1912, 1913 and 1914, commencing on the first Monday in April, but Thursday, Friday and Saturday before Easter Day shall be *dies non*. The applications for admission to these examinations and the necessary certificates must be submitted by the dates specified for the submission of applications and certificates respectively by candidates for the B A. Degree examination under the new Regulations.

'The examinations for the Degree of Master of Arts shall be held in the years 1911, 1912, 1913 and 1914, commencing on the first Monday in April, but the Thursday, Friday and Saturday before Easter Day shall be *dies non*. Applications for admission to the examination in the form prescribed must reach the Registrar not later than the 30th September preceding.

"The examinations for the Degrees of Bachelor of Arts and Master of Arts shall, during those years, be conducted in the order of time and subjects set forth in the tables contained in the existing regulations, and the number of marks assignable to each subject shall be as therein specified."

(iii) That to Transitory Regulation 372 be added the words—

"A student who has qualified for the four term

certificates required to be produced by candidatesfor the First Examination in Arts under the existing by-laws and regulations shall be allowed to appear for the Intermediate Examination in Arts under the new regulations on the production of a certificate or certificates of having attended an additional year in an affiliated college."

(4) That the following addition be made to Transitory Regulation 371:—

"As regards Law Examinations the academical year for 1910 and for the succeeding years shall commence not later than the 15th July and shall end not earlier than the 31st March following."

Resolution No. (1) above is intended to provide for the Matriculation of students possessing satisfactory school-leaving certificates, so as to allow of their entering upon the University courses without the necessity of passing the Matriculation Examination of the University. G. O. No. 427, Educational, dated 21st July 1909 requested the Syndicate to state whether they would be prepared to accept the school-leaving certificate as a substitute in whole or in part for the Matriculation examination as a qualification for admission to the University course. The Syndicate after careful consideration submitted the resolution under reference to the Senate, which body adopted it unanimously.

Resolution No. (2) above involves a change only in the arrangement of the sections into which the present regulations are divided.

Resolution No. (3) above is intended—

(i) to provide for the cases of students who have passed, by the year 1912, one or two parts only of the B.A. Degree examination under the old by-laws. According to Transitory Regulation 370, the last examination for the B.A. Degree under the old by-laws will be held in 1912. It is now proposed to give the unsuccessful or partially successful candidates two more chances of completing the degree;

(ii) to fix the actual dates for the submission of applications and certificates for the B.A. and M.A. Degrees examinations under the old by-laws and also the dates of the examinations for the years 1911 *et seq.* This remedies an omission in the present regulations;

(iii) to provide for the cases of students who have completed their college courses for the F.A. examination (the last of which is held in 1909) but have been unable to appear or have failed in the examination.

Resolution No. (4) above is intended to provide for those students who pass the F.L. examination in April 1910. If the academical year for 1910 were to commence in January, in accordance with present Regulation 371, these students would be unable to enter upon their studies for the B.L. Degree examination until July 1911—the beginning of the next academical year after the F.L. examination, 1910.

The Government approve the proposals of the Director of Public Instruction to take over under departmental management, with effect from 1st March 1910, the girls' branch of the Muhammedan School at Satyamangalam, Coimbatore district, and to employ for the school a staff of three teachers on salaries of Rs. 12, 10 and 10, respectively. The proposition statement submitted by the Director is sanctioned.

The Annual Conference of South Indian Teachers Association was held in the S. P. G. College, Trichy, under the Presidentship of Rai Bahadur Mr. M. Rangachariar, M.A., on the 21st and 22nd instant. The meeting was well attended by headmasters, teachers and others. Among those present were K. B. Ramanathan, M.A., L.T., P. Lakshminarasu, B.A., S. Vasudevachari, B.A., L.T., P. V. Seshu Aiyar, B.A., L.T. A. Panchapakesava Aiyar, M.A., L.T., G. Shiva Rau, B.A., L.T., A. Rajaram Aiyar, B.A., N. Ganapathi Subba Aiyar, B.A., L.T., Seshu Aiyangar, B.A., R. Saminatha Aiyar, B.A., L.T., and others. The Conference opened with an address of welcome presented by the Rev. A. F. Gardiner, M.A., followed by the Presidential address by Rao Bahadur Mr. Rangachariar, M.A., Mr. T. S. Venkataramana Iyer, B.A., L.T., read a paper on "*Provident Fund for Teachers.*" The first paper in the afternoon of the 21st was on the School-Leaving Certificate scheme by Mr. A. Panchapakesa Iyer, M.A., L.T., and the second was by Mr. G. Shiva Rao on "The Place of Science in the S. L. C. scheme."

A paper on *The work of the different sections in the Madras Teachers' Guild* closed the first day of the Conference.

Rev. Father H. J. Quinn, D.D., began the second day with a paper on *The Findings of the Matriculation Failure Committee.* It was followed by a paper on *A more Liberal Grant for Teaching*, by Mr. S. S. Vyasa Rao, B.A., L.T. Mr. A. Reja Rama Iyer, B.A., moved the proposition "That the Municipalities and Local Boards be asked to set apart a definite proportion (15 per cent.) for Education."

A business meeting and a social gathering occupied the second Session of the second day with which the Conference came to a close.

Messrs. Dewan Bahadur L. A. Govindaraghava Aiyar and T. R. Ramachandra Aiyar have been elected as fellows to the University of Madras by the registered graduates. Mr. C. Krishnan and Dr. Bishop were re-elected as fellows by the Faculty of Arts. Mr. T. Seshagiri Aiyar has been elected as the University representative to the Legislative Council.

The Secretary of State has sanctioned the proposals for strengthening the staff of the Government first grade Colleges in this Presidency at an ultimate cost of Rs. 60,566-12-0 a year. The scheme involves an addition of four officers to the Indian Educational Service, four to the Provincial Educational Service, and seven to the Subordinate Educational Service. Effect has already been given to the portion of the scheme which relates to the addition of two appointments to the Provincial Educational Service, one for the Kumbakonam College and the other for the Rajahmundry College. The present staff of the Presidency College includes the assistant professorships of Zoology and Geology both of which posts are now included in the Provincial Educational Service. As under the scheme of reorganization now sanctioned both these posts will be transferred to the Subordinate Educational Service, the former immediately and the latter when the present incumbent vacates it, the net ultimate result of the proposals will be the addition of four appointments to the Indian Educational Service, two to the Provincial Educational Service and nine to the Subordinate Educational Service. The Secretary of State is said to be taking steps to recruit the four officers for the Indian Educational Service in England. The order of the Government of Madras embodying the above scheme is dated the 30th October last and has just been published.

Under the School-leaving Certificate scheme, a large number of Secondary institutions will soon have to be preparing students for the Secondary School-leaving Certificate, and several of them will have to arrange for the teaching of the commercial subjects in group C. These commercial subjects comprise Commercial Practice and Geography, Book-keeping, Commercial Arithmetic, Shorthand, and Type-writing. Besides, when model schools for secondary education are established in the important centres of the Presidency, the teaching of Commercial subjects may form part of the curricula for the Modern side. There will thus be bound to arise a demand for qualified teachers of commercial subjects, there being at present but few men with good general attainments and capable of teaching the subjects of the commercial group efficiently.

With a view to meeting the prospective demand for efficient and qualified teachers of such commercial subjects, the Hon'ble Dr. Bourne, Director of Public Instruction, lately submitted to Government a scheme for the opening of a special commercial class in the School of Commerce, Calicut, for the training of graduates and undergraduates, mostly of the F. A. standard. The Director proposed that the class may at present work for three years from the beginning of January next, its further continuance being determined by the demand for qualified commercial teachers. Mr. S. Vaidyanatha Iyer, the Headmaster of the School of Commerce, reported that the maximum number of teachers that can be trained at a time, until the new building is ready for occupation, is 24, and that the course of training should extend over one year. The Director suggested, therefore, that if so many candidates are forthcoming, 12 graduates and 12 undergraduates should be admitted for training, stipends of Rs 25 and Rs. 20, respectively, being offered to them. It was further shown that the new class would involve the addition of a sixth teacher to the Staff of the School of Commerce and that the working of the scheme would involve an outlay of Rs. 7,775 a year.

The Madras Government have approved of the Director's proposals, with the result that what may be considered an advance in the system of commercial education in this Presidency will be taken at the beginning of the coming year.

MYSORE.

We understand that Mr. H J. Baba, M.A., Inspector-General of Education, Mysore, has retired, Mr J. Wier, M.A., Principal, Maharajah's College, Bangalore, has been appointed to the place.

Of the 24 candidates who appeared for the Mysore Civil Service examination, only ten have passed; 7 from Madras and 3 from Mysore. They are Messrs. Visvanatha Rao, Ramier, Satya Murthi, Krishnaswamy, M. Subba Rao, Gopala Deshikan, Venkateshan and S. V. Krishnaswamy, Krishnaiyengar and H. V. Rangaswamy. The Board of Control, consisting of Messrs. R. H. Campbell, Weir, Bhabha, Tait, Skinner and Dr. Bourne, have sent up the list to the Government. It is before His Highness.

BOMBAY.

Applications are invited for one or two State technical scholarships from candidates in the Bombay Presidency who are willing to go to England to undergo a special course of study in (1) sugar-refining, (2) electrical engineering. Each scholarship is of the value of £ 150 a year and is tenable for two years.

The Bombay Government Resolution, reviewing the report of the Director of Public Instruction for 1908-9 states that the year was marked by progress in many directions, more especially in regard to Primary education. Taking all institutions together the number of pupils attending public institutions which are open for inspection by the Department rose by 39,000. The percentage of all pupils under instruction to the population rose from 2·9 to 3·1. Turning to general finance, the total expenditure on education in the Presidency, inclusive of the Native States, was Rs. 1,18,03,000, representing an increase of Rs. 4,60,000 over the previous year. Of the total the Government share works out at 46 per-cent. for British Districts and 39·6 per cent. when the Native States are included, while of the increase over the whole the Government contributed Rs. 1,82,000.

CALCUTTA.

With the object of effecting an improvement in the conduct of the public examinations, prescribed

by the Education Department in E.B. and Assam, the Lieutenant Governor is pleased to pass the following orders:—A board shall be formed, to be styled the Central Board of Examiners, and shall consist of the following Members:—(1) The Principal, Dacca College, (*ex-officio*) President; (2) the Inspector of Schools, Dacca Division, (*ex-officio*) (3) the Principal of the Cotton College (*ex-officio*) (4) The Inspector of Schools, Assam Valley Districts (*ex-officio*). (5) The Inspector of Schools, Sarma Valley and Hill Districts, (*ex-officio*), (6) the Inspectress of the Girls' Schools, (*ex-officio*), (7) the Superintendent, Dacca Madrassa (*ex-officio*), (8) one Professor of the Dacca College, (9) the Head-Master, Pogose School, Dacca (*ex-officio*) Secretary. The Director of Public Instruction is empowered to appoint No. 8. The Board shall assume control of the following examinations and the Director shall have the power to entrust to it the conduct of any other examinations conducted by the Education Department.—The examination of Normal Schools in Assam. 2. The examination of Lower Primary Training Classes at Jorhat and Silchar. 3 The departmental examination of educational officers 4. The Madrassa examinations in Assam. 5. The examinations of apprentice teachers in Assam as long as it continues. The functions of the Board shall be as follows:—(*a*) To control and supervise the examinations entrusted to it, (*b*) to appoint examiners for the conduct of the several examinations. (*c*) To moderate the question papers, (*d*) to receive the marks, to tabulate them, and to determine the pass or failure of the candidates, (*e*) to report the results of the examinations to the Director of Public Instruction for publication in the Government Gazette and for the issue of certificates, (*f*) to control all receipts and expenditure connected with the examinations submitting an annual statement of accounts to the Director of Public Instruction. No member of the Board will be entitled to any remuneration in connection with the Board, but travelling allowances will be admissible to members who do not reside at Dacca for attendance at the meetings. The Board shall frame its own rules for the conduct of its business, subject to the approval of the Director of Public Instruction. In all matters relating to examinations, the Board shall be competent to correspond direct with the Inspectors of Schools, Principals of Colleges and Headmasters of Schools. It shall be the duty of the Board to advise the Director of Public Instruction with regard to the syllabus of studies of the several examinations, the conduct of which is entrusted to it. It may make any other suggestions that it may deem necessary.

Mr. Archibald, late Principal of the Aligarh College, has been appointed to officiate as Principal of the Dacca College during the absence on sick leave of Mr. Colin H. Browning. With the exception of the Presidency College, Calcutta, the Dacca College is the largest first grade College in both Bengals. Mr. F. C. Turner, who was officiating for Mr. Browning, is going Home on leave. The local Government were most fortunate at this juncture in securing the temporary services of Mr. Archibald, whose abilities as a teacher and as a Principal, are already well known.

The Secretary of State has appointed Mr. George Earnest Fawcus, B.A., of New College, Oxford, to be a Member of the Indian Educational Service and to hold the appointment of Inspector of Schools, Bengal.

Mr. De Basuldua, a distinguished Oriental scholar, who has been appointed Consul of the Argentine Republic, has arrived in Calcutta. Though Mr. De Basuldua's visit is nominally associated with the duties of representing his mother-country in India, it is the study of Sanskrit and Brahmins that has in reality brought this profound Oriental scholar to the East. All the dead languages of the world are apparently known to Mr. De Basuldua, for he can equally read the ancient optic inscriptions of Egypt, the hieroglyphics on cartouches of the ancient kings or old forms of the Sanskrit.

At a meeting of the Senate of Calcutta University, the Patna College was affiliated to the University in Law, while affiliation was withdrawn in English to the M. A. Standard from the Scottish Churches College, Calcutta, on the ground that the College had failed to maintain adequately for a period of four years the courses of study in that subject. The Senate accepted with thanks the munificent offer of the Maharaja of Cossimbazar, to place at the disposal of the University the sum of Rs. 50,000 for the promotion of legal knowledge. In view of the special value and excellence of the lectures on Hindu Jurisprudence, prepared by the late Dr. Priyanath Sen, it was resolved to take early steps for the delivery and publication of these lectures. The Senate accepted the recommendation of the Syndicate to purchase at a cost of Rs. 10,000 the valuable library of the late Dr. Pischel.

News has been received that Mr. Addi Nath Sen, M.A., son of the late Babu Dina Nath Sen, who joined the Glasgow University in September, 1908 has been bracketed first at the last B. Sc. examination in Engineering with Mr. Satish Chandra Mozumdar, the State scholar, who was a Deputy Magistrate before leaving India and passed first in the B. Sc. Examination of the Calcutta University.

In connection with the grant of State technical scholarships awarded yearly by the Government of India for the encouragement of the study of local industries by youths of this country, I understand that the Bengal Chamber of Commerce have recommended to the local Government that the scholarship for the year 1910 should be awarded for the study of coal mining, as it is thought this industry offers better lucrative openings to trained Indians than any other at present existing in this country.

PUNJAB.

Rai Bahadur Shadi Lal, M.A., B.C.L. (Oxford). Bar.-at-Law, secured the highest number of votes for the University seat in the Punjab Legislative Council having secured as many as 51 votes, his opponents Mr. Main Mahommed Shafi getting 31 and Mr. Fazli Hossein getting six votes. Mr. Shadi Lal was the General Secretary of the last Hindu Conference and is the General Secretary of the Punjab Hindu Sabha.

A Circular issued by the Director of Public Instruction, Punjab says: "As the duty of Volunteers for the Congress must apparently involve action on the part of students which would bring undesirable notoriety on their College which is a Government institution, the request that students should be allowed to act as Volunteers should not be sanctioned."

At the Convocation of the Punjab University held recently, His Honour the Lieutenant-Governor presiding, degrees of Doctor of Laws were conferred on Sir Pratul Chandra Chatterjee.

Mr. Justice Robertson, Vice-Chancellor, speaking of the relations of students and teachers, said that he had heard of the influence on the part of teachers to involve their students in matters beyond their sphere and to influence them in directions not for their advantage. If these rumours were true, no words could be too scathing in condemnation and no action too drastic. Concluding, he said that the name of Indian student was in danger of becoming a by-word for self-conceit, want of discipline and moral ballast, and other undesirable qualities. He wanted the students of the Punjab to give a satisfatory answer for their conduct. "I want," he said, "each one of you starting on your life's work to sit down and think how he can best frame his life so as most to serve God and man."

It is believed that arrangements are being made to open a model school in the heart of the city of Allahabad, for the education of Hindu and Mahomedan girls. The idea of opening such an institution owes its inception to the Inspectress of Schools who, is known to be very keen on the question of the education of Indian girls.

Regarding the alleged implication of some officials of the University Registrar's Office, Allahabad, in the acceptance of bribes, it is said, that the movements of the suspected persons were very deligently watched by the police for some time past and it is presumed that they are in possession of proofs which establish beyond doubt the guilt of those men. It is rumoured that the Assistant Registrar, Head Clerk, and two other clerks will be forced to resign. In consequence of these startling revelations, the Vice-Chancellor is clamorous to have a whole-time Registrar immediately.

The Director of Public Instruction of U.P. calls for applications from candidates willing to study Sanskrit and Arabic scientifically in Europe, stating educational qualifications, nationality, and period of residence in U. P. Applications to reach not later than 15th January. The value of the scholarship is £150.

The Annual Convocation for conferring Degrees in connection with the University of Allahabad took place recently at the Vizianagram Hall of the Muir Central College, Allahabad. The Fellows of the University met at 2-45 P.M. in the College Library. At 3 P.M., a procession of Fellows headed by the Registrar, in the usual order, started from the Library and entered the hall, Mr. Justice Richards, Vice-Chancellor, presided. On the Vice-Chancellor taking his seat on the dais, the Convocation was opened. Pandit Ganjanath Jha, M.A., Prof. of Sanskrit, Muir Central College, was first presented to receive the Degree of Doctor of Letters. Dr. Jha is the first recipient of this high Degree in this University. Twelve M.A.'s. 167 B. A.'s.—of whom seven were ladies, six from the Isabella Thoburn College, Lucknow, and one teacher—38 B. Sc.'s and 50 L. L. B.'s were presented.

Mr. Justice Richards then delivered his address. He said that those interested in the education of girls will be grateful to the University for agreeing, on the representations of a number of headmistresses, to add a modern European language—French, German or Italian—as an alternative subject for female candidates for the degree of Bachelor of Arts. The growing popularity of scientific studies is shown in the eagerness with which the Colleges are seeking affiliation for the B. Sc. Degree. He regretted that the results of the examination for the M. A. degree are disappointing. That no more than 24 candidates should present themselves for the Degree and that only 14 M. A.'s should be turned out in a year seems to point to some lack of enthusiasm for higher studies. The decline of the popularity of Sanskrit is evinced by the fact that in two years only one candidate has qualified for the M. A. Degree. The reason for this decline, he said, was that the conditions of modern life offer no adequate reward for proficiency in Oriental classics. The spirit of the age is too severely practical for much account to be paid to learning for its own sake. But whatever may be the cause, it is something of a slur that the Sanskrit language of their religious books should have almost ceased to exercise its attraction over the minds of young Hindu scholars.

INDIA GENERAL.

Mr. S. C. Hill, Director of Public Instruction, Central Provinces writes:—"Generally speaking, I agree with the Commissioner of Nagpur that people have begun to recognize the fixed determination of Government "to enforce the responsibility of Head Masters and Managers for seeing that their charges

comply with the regulations on the subject of participation in political agitation." This, has been brought about by the dismissal of some masters and the reduction or transfer of others, together with a purging of school committees and rustication or expulsion of the worst cases amongst the boys."

Mr. Rustam N. Covlawala, who after passing out of the Hyderabad Medical College went to Edinburgh and further pursued his studies there, has passed the F. R. C. S. with honours. He is only 28 years of age and a son of Dr. Nussernanjee Covlawala, a medical practitioner of Chudderghat.

Sir F. D. Lugard, the Governor of Hongkong has reported to the Government that Mr. H. N. Mody has generously offered to present the Colony with the building necessary to start a University. A Committee has been formed with the Governor as Chairman to promote the undertaking. Mr. Mody's original offer was to give a sum of 150,630 dol. for this purpose, and a further 30,000 dol. towards the endowment. Plans of the necessary buildings were prepared and as the Director of Public Works estimated that the cost would not be less than 290,000 dol. Mr. Mody undertook to provide them in accordance with the plans which he had approved, no matter what the cost might be stipulating, however, that he should use on the buildings the 30,000 dol. originally given for endowment, if it should be required.

Speaking at dedicatory ceremonies in connection with the Cushing Memorial building recently, the Lieutenant-Governor said that the time had now come for the establishment of a University for Burma, which had been proposed years ago, and that during the short time that remained to His Honour, he would do his best to advance this project towards realisation.

The *Indu Prakash* says :—

We understand that Government have notified that with effect from the 1st January 1910, no boys belonging to the undermentioned schools shall be admitted to any Government Aided or Recognised School, because Government consider the teaching in these schools to be objectionable :—

1 Samarth Vidyalaya, Talegaon.

2 Maharashtra Vidyalaya, Poona.

3 Mustifundavaril Shala, Dharangaon.

4 Private Anglo-Vernacular School, Erandol.

That means that parents and guardians should withdraw their boys from these schools and get them admitted to other schools, not under ban, prior to the end of this year, unless of course, they wish their boys *never* to be admitted to Government Aided or Recognized schools.

The Educational Department, Central Provinces and Berar, have awarded three Technical Scholarships of the value of Rs. 25 per mensem each, tenable for three years in the Textile Department of the Victoria Public Technical Institute, Bombay, to three selected native candidates of the two Provinces.

The details of Mrs. Besant's Indian National University scheme are being drafted and will appear in a fortnight.

Foreign Notes.

GREAT BRITAIN.

An Indian Guild of Science and Technology was inaugurated at Leeds University on Saturday. It is formed of Indian students who are abroad, and is intended to promote the application of science to Indian resources and industries. It is proposed to form a medical section at Edinburgh, of engineering at Glasgow, mining in Birmingham, dyeing in Manchester, and of leather manufactures at Leeds. A number of eminent British scientists are patrons.

A National scheme to prevent the growth of the unemployables in England is to be organised very shortly, and the trade unions are considering in earnest the question of the industrial training of the boys in the country. In order to concentrate their efforts a National Industrial Educational League has already been formed. The originator of the league is the veteran, Mr. R. Applegarth, who was associated with the late Mr. W. E. Forster and Mr. A J. Mundella in connection with the Education Act of 1880. He has long advocated the necessity of making elementary education go hand in hand with industrial training and in order to stop the waste of the nation's best asset—whereby thousands of boys drift yearly into the ranks of the unemployed and unemployable—Mr. Applegarth advocates that boys, before leaving school, should be given a sound elementary industrial training, so that they may follow the occupation for which they are naturally best fitted. Mr. Applegarth recognises the good work done by the Government and Municipalities in promoting technical instruction, but points out that these piece-meal efforts cannot reach the bulk of the children who are destined to become industrial workers. It is only a few weeks since Mr. Applegarth laid the project to found the league before all the trade union councils, and already he has received the approval of fifty-seven councils and of the representatives of industrial workers in upwards of 170 towns, representing several hundred different trades; and as near as he can at present ascertain, these represent three million workers. A National Conference will be called at an early date. None perhaps is more fitted to give the lead to such a movement as Mr. Applegarth, for his unbroken connection with trade unions extends over fifty years (in one of the former he was chief officer for ten years), and since that period he has added thirty years' experience as an employer of labour.

Representatives of modern Universities and University Colleges met recently at University College, London, and appointed a sub-committee to take the preliminary steps necessary with a view of holding a Congress of Modern Universities and University Colleges in London, in the early part of July next, to discuss the various problems connected with their management in future.

Lord Rosebery has given £1,000 to the Bodleian Library, Oxford University.

The University of Oxford has conferred the honorary degree of Mus. D. upon Principal Hadow, Armstrong College, Newcastle.

Prof. Saintsbury has been elected an Honorary Fellow of Merton College, Oxford.

A Readership in the English language and Older English Literature is to be founded at Oxford next year. The initial stipend will be £300 (which may possibly be increased to £500) and the Readership will be tenable along with a Fellowship in any College.

Mr. William De Morgan has presented to the Library of the University of London a collection of books, pamphlets, and MS. material formerly belonging to his father, Augustus De Morgan, who was for over thirty years Professor of Mathematics at University College, and whose library of mathematical and astronomical works was presented to the University by Lord Overstone in 1871.

AMERICA.

Columbia University will receive some four and a half million dollars (nearly £1,000,000) under the will of the late Mr. John S. Kennedy; also gifts amounting to about £47,200, of which £22,500 is from Mr. W. H. Charpentier to be added to the J. S. Charpentier Fund, and £20,000 is given anonymously.—Yale University has received from Mr. W. D. Sloane and Mr. H. T. Sloane the sum of £95,000.

The death of Dr. W. T. Harris, late Commissioner of Education in the United States, removes a great educationist and a very remarkable personality. Dr. Harris was perhaps best known in this country through his Annual Reports as Head of the United States Bureau of Education to the Minister of the Interior—volumes of singularly unattractive appearance, but full of valuable information not only about American Schools and Colleges, but about educational movements throughout the civilized world. Leaving Yale without a degree, Harris started as a teacher of shorthand at St. Louis. Presently he obtained a place on the staff of the St. Louis "common schools," and steadily rose step by step to the post of Superintendent (1867) with control of the whole of the popular education of the city. Here he soon gained a national reputation—partly by his official reports, mainly by the reforms he advocated and initiated. He is said to have started the first kindergarten in America; and he did much to define the separate functions of the different classes and grades of schools. He resigned the post of Superintendent in 1880 owing to bad health. For some years he worked at philosophical studies, in which he had already taken an active interest; and it was in 1889 that President Harrison appointed him Commissioner. Prof. Findlay has described his bureau as "a laboratory for scientific research in the field of comparative education." Dr. Harris retired in 1906. He received doctorates from several Universities. The Trustees of the Carnegie Foundation placed his name first on their roll of honour, and assigned him the highest pension permissible under their rules. "There is naturally," they wrote "no other name connected with American education which is so identified with the progress of the last thirty years as yours."

The first session of the seventeenth International Congress of Americanists will be held at the National University in Buenos Ayres, May 16 to 21, 1910; and a second session will be held in Mexico in September next. The Conference will deal with questions relating to the Ethnology, Archæology, and History of the New World.

Queensland is going to establish a University. The Government has introduced a Bill with this object, following the recommendation of the Royal Commission appointed to inquire into the matter.

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BY E. E. KELLETT, Esq., M.A.
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The Educational Review.

School Museums.

The Brooklyn Institute of Arts and Sciences is accomplishing very useful work through its Children's Museum, which is organised and arranged with the purpose of so interesting the child in various lines of nature-study and research that it will be stimulated to continue such study and extend its investigations wherever it may happen to be placed. The exhibits are all arranged with this definite purpose in view. Raw products and the articles manufactured from them are arranged in consecutive order so that the child, for instance, can see the various forms assumed by iron in the process of turning it into wire. Plant life is illustrated not only by charts but by enlarged reproductions of the plant and its parts, which are imported. In one room are found small but beautiful models of colonial homes, showing the interior furnishings of cabin, house or wigwam in perfect detail, as well as the exterior surroundings of forest, clearing, &c. The department which is most attractive to boys of the experimenting age is that of wireless telegraphy. Here boys may experiment with apparatus and gain much first-hand practical information by actual personal effort. One of the praiseworthy characteristics of the museum is that in addition to the printed cards describing plants, animals, etc., in a particular case there will be found a card frequently containing a poem or extract expressing the poets point of view, his joy or consolation found in nature. The beneficial effects of the museum are indicated in the following extracts from the organ of the museum:

"A gratifying characteristic of the work for the year 1908 has been found in the greater intensity of interest manifested in every department. The boys and girls with specific questions to ask and with the knowledge of where to go for information become more conspicuous as the work expands. Note-books, pads, and pencils are becoming more generally used in the exhibition rooms because teachers are more and more sending their pupils to see what they can find at the museum. One boy told us not long ago that he had not missed a lecture on electricity for more than a year. Other pupils have attended eight and ten successive lectures without missing, while a great many children come to the museum day in and day out for months at a time."

"Teachers who are thoughtfully studying the influence of the museum upon their own pupils speak of its quickening power in stirring into expression and action, pupils that appeared to be uninterested in any class-room work. One teacher only a few days ago said: "**This is a most wonderful place for bringing** out what is in children—some of these boys have never shown the slightest interest in their studies at school, but in the presence of these objects they blossom right out and talk about them with pleasure and enthusiasm."

"One of the very impressive results of the year's work with the children has been the growing sense of appreciation of helpful surroundings. This appreciation has found expression in the general good behaviour of all visitors. In former years we were occasionally annoyed with visits from boys who were noisy and often rough and ill-behaved. For many months it was also necessary to watch the "line" while children were waiting for admission to the lecture room, but as the museum has improved its collections, and as it has multiplied its centres of interests so that there is plenty for the child to see and do from the moment he enters the door, the

question of discipline has been almost forgotten."

The day may be far off when such things would be possible in India, but our teachers can still have small school museums which would prove a source of attraction and interest to their pupils.

The Methods of Mathematics.

Dr. George A. Gibson, the newly appointed Professor of Mathematics in the University of Glasgow, chose for the subject of his inaugural address the methods of mathematics. To some the value of mathematics consists almost solely in its usefulness, in the help it brings to other sciences; to others mathematics appears as the one genuine science and these lay stress on the disciplinary value of a mathematical training in which deductive logic is given a prominent place. Are these two aspects of mathematics incompatible? That is the question of primary importance for the teacher, for the whole scheme of study and the methods of instruction will be found in the long run to be determined by the general attitude that is taken up with respect to the value of the subject. There is at the present time considerable uncertainty in the minds of teachers regarding the methods of school mathematics, and the recent changes are regarded by some of the older teachers as tending to impair the disciplinary effects of a mathematical training. "In the recent discussions on elementary mathematics," says Dr. Gibson, "the guiding principle that has emerged seems to me to be the explicit recognition of the essential part that observation and induction play in the acquisition of mathematical knowledge. With this recognition is associated the idea that in the early training of the pupil it is scientifically unsound and practically hurtful to emphasise the deductive element; his training should, in its broad outlines, be modelled on the course that the historical development of mathematics has followed. Mathematics has now reached the stage in which it is possible to treat it as a deductive science, but it does not follow that it is either necessary or possible to teach it to beginners entirely as a deductive science. To do so is to mistake the meaning of its history and to deprive it of its place as an exponent of scientific method. Observation, classification, and induction are essential elements of scientific method, and these are well illustrated in the historical development of mathematics. The recent discussions have shown that, in the opinion of many experienced teachers, it is not only possible, but necessary to make full use of these methods in mathematical teaching, and the conviction is widely held that they are of special importance in geometry, the branch of elementary mathematics where deduction has so long had the leading place. The excellence of the intellectual discipline to be obtained from a study of Euclid is, in my opinion, not to be questioned, but I think there is no doubt that it is contrary to all scientific order to take Euclid as our guide for an introduction to geometry. It is necessary for the pupil to acquire a knowledge of the forms of material objects before he can reasonably be expected to demonstrate the geometrical properties that are implied in the definitions of geometrical bodies. In acquiring this knowledge, observation and classification are essential, and deductive reasoning will have little place. The knowledge thus gained may be quite entitled to the name of scientific; if the course is carefully planned and carried out, it will be quite possible to obtain a system that is not a mere aggregate of

isolated details, but a coherent structure. The importance of a practical course is now greatly recognised in its bearing on deductive geometry; its value, however, in relation to the appreciation of scientific method is equally great."

There can be no doubt that, so far as the early training in mathematics is concerned, it is in accordance with the scientific method to keep the purely deductive element in the background. This procedure brings out in better relief the general characteristics of scientific method. But this does not imply that the deductive side so characteristic of mathematical training is to be neglected; it rather means that deduction, which is surely a scientific method, must be used when its place and need will be better comprehended. "Induction is essential as an instrument of research, but deduction is also essential to the systematic development of mathematical science, and no training in mathematics can be considered satisfactory that does not show the complete process by which mathematical knowledge advances from the stage of observation to that of a science in which deduction plays the principal part in the co-ordination of its contents."

Education in India.

In a review of the last quinquennial report of the progress of Education in India Professor Michael E. Sadler makes some valuable remarks which deserve the attention of all concerned in Indian education. "The highest art in the educational policy of a nation," says Dr. Sadler, "is to anticipate needs, to be beforehand with them, to guide nascent aspirations by favouring provision of well-planned intellectual discipline and opportunity. Our English educational history is full of missed opportunities, of failures on the part of the State to look ahead and provide in time the kind of educational organization which the nation was about to need. The same is true of India. There, as here, the Treasury has failed to do soon enough what the growing and changing needs of the people required. Educational policy has been stingily thwarted by a too narrow view of finance. Education, from the Treasury point of view, has been traditionally regarded as "unproductive" expenditure. The old taint of a too commercial and of a too individualistic political economy has clung to its educational theory. The presuppositions of it have been fallacious. The Treasury mind has never, here or in India, fully realised that a wise and generous educational policy must look ahead, must be venturesome, must stake much on the future, and it is in essence capital outlay upon a scheme of development. What Bacon said about the planting of colonies is true of the planning of education: "It is like the planting of woods. You must make your account to lose almost twenty years' profit, and expect your recompense in the end." Indian education has never had enough money spent upon it. It is anæmic for want of proper subsidy. It is in great measure mechanical and sterile because it has been virtually starved. Whether any more generous treatment of it was financially possible is indeed a difficult question. Other claims upon Government were in themselves an exhausting drain. But the fact remains that Indian education never has had enough money spent upon it." We might point out for the benefit of our readers that the Indian Government annually spends at present a little more than three pence half-penny per head of the population, while in England the public expenditure on education per head of population is exactly as much every week as the Indian Government spends in the course of a year. Dr. Sadler also points out that the educational ideas dominant in Great Britain in one decade become dominant in Indian administration a decade or so later, but he forgets to note that the educational policy obtaining in India is far from that of a self-governing country or even of a self-governing colony.

The South Indian Teachers' Union.

The second annual Conference of the South Indian Teachers' Union took place on the 21st and 22nd instants at Trichinopoly. The President of the Trichinopoly Teachers' Association welcomed the delegates and in his address he laid stress on the spiritual nature of the work of the teacher. So did also the President of the Conference in his address. This may seem a platitude, but it is a platitude which can bear incessant repetition. Our teachers ruminate too much on their poverty and seem to have lost all power for concerted action. Had they the consciousness of their noble work, they would have mustered in larger numbers at the Conference and there would have been greater enthusiasm. Union is strength and we feel sure that the South Indian Teachers' Union would become a power for good in the land, if every teacher should make it a point to join the Union and give the strength of his vote to its resolutions. The Union may now look as small as a mustard seed, but well nourished and duly cared for it can grow to be a big tree. For accomplishing something noble and great a certain amount of self-sacrifice is needed, and every teacher should rise equal to the occasion.

The subjects discussed at the Conference were opportune. The Government of Madras has been evincing some interest in the establishment of a provident fund for teachers in private schools and colleges. The Union has resolved that any such fund should be wholly managed by the Government and be quite independent of managers. Such an arrangement alone can facilitate the easy transfer of teachers from one school to another. We are glad to note that the Committee has found a means of raising the money needed for adding to the teachers' contributions. It is the parents of the pupils that ultimately bear all the expenses of education. It is but right that they should be taxed, and it would be no hardship to pay an extra one anna for every rupee of the school fee towards the teachers' provident fund. We wish there were a Carnegie in India to establish a provident fund for teachers. All the same a Carnegie gets his money ultimately from the people. No man becomes a millionaire except with the help of the labour of the poor. It is more glorious for the poor labourers to help one another than to depend on a single Carnegie. If all teachers unite, they can do a great deal for themselves. So also all pupils each contributing his mite, can give enough for the establishment of a provident fund for teachers.

Another subject that received attention was the school-leaving certificate. It is feared that the discretion given to principals of colleges in the matter of admission might work a hardship in the case of schools not attached to colleges. But there seems to be no ground for this fear. Economic and other considerations will make principals of colleges receive students with open arms from all institutions, and we hope the special committee appointed by the Conference will frame rules which will be acceptable to all.

A memorandum on the position of technical education in England and Germany has been prepared by Dr. Frederick Rose. Nine years ago Dr. Rose found four thousand academically trained chemists distributed in different branches of German Chemical Industry, and he finds that the number has now considerably increased. When the German students leave the Technical Universities four-fifths of them take up industrial positions, and a large number of these at the time of their entering the University have already gone through a nine years' secondary school course, which equips them educationally equal to the holder of a combined science and arts degree of the Universities of our own country. Students do not begin their work at the German Technical University until they are eighteen or nineteen years of age. In Germany the courses are on the average longer than in England. Further in Germany there are examinations conducted by the State for posts in connection with railways, mines, forests, canals, irrigation building, engineering and surveying, the post office, customs, shipyards, pharmacy, food inspection, and various other departments of public activity. Besides there are in that country a very large number of what are called "Monotechnical Schools," which admit adult students at the age of fourteen or sixteen to technical courses lasting from two to four years. These schools are provided with fine buildings, an adequate staff and complete technical equipment, and they already number nearly two hundred. Some deal with architecture and engineering in general, others with navigation, metallurgy, or mining, or with textile engineering, or some kind of metal manufacture. Dr. Rose doubts if there are sufficient students in the whole of England to fill one of the large German technical Universities. He says that the English technical institutes appear to be more nearly on a level with the best technical schools of Germany than with her technical universities, and that the present organization of English polytechnics is representative of a stage of development which Germany passed through about forty years ago. No wonder that the technical institutions in India are notworthy of mention by the side of the German institutions.

Technical Education in Germany.

In a lecture recently delivered Professor M. E. Sadler traced in outline the chief characteristics of the new movement in education which was modifying public opinion and beginning to change the course of administration. Education, being a conservative thing, still retains some colour of the mediæval prejudice against respectful care for physical development. But the new trend of thought is bringing care for the children's health into the forefront of educational duties. About two hundred years ago John Locke attempted to give this turn to educational thought and practice. And now the English Government has officially declared that "the physical health of the children lies at the root of education properly conceived." Healthy physical conditions form great factor in the development of moral health and intellectual vigour. Proper nourishment, a practical knowledge of which can be furthered by direct instruction; medical inspection, followed by prompt and efficient medical treatment at school or in school clinics; hygeinic surroundings at home and at school, to be secured by a steady unhurried aim in social reform and by prudent liberality in educational expenditure; and physical exercises,

The New Movement in Education.

practised through the school life and carried on through adolescence into manhood and womanhood, are all necessary parts of one policy designed to secure the well-balanced cultivation of the physical powers of each individual child. The establishment of open air and country schools for backward town children is another effort in the same direction. Work in the open air rather than in stuffy school rooms, school journeys, the organisation of school games, and the better provision of playing fields, are further signs of this new focus in educational thought. It is right, however, to be on one's guard against the fallacy of regarding material or physical conditions as dominant in the direction of the spiritual and intellectual life. As Mr. Keatinge has pointed out in his *Suggestion in Education*, one great purpose of the teacher is to stir the creative energy of the mind by the suggestion of ideas which attract the learner's attention, start trains of association, and form centres round which a system of thought and of purpose can gradually consolidate itself. But a large part of the operations of the mind take place outside the threshold of consciousness. The educator must therefore so adjust his methods as to allow for the working of the subconscious mind, and must rely upon indirect methods of suggestion as well as upon direct methods of instruction. The perception of this fact rightly leads us to value the educational influence of a healthy-minded school community upon the ideals and character of the individual pupil. The magnetic personality of a gifted teacher conveys more than is expressed in words. The sense of duty towards the corporate body of which he is a member makes a deeper impression upon the mind of a youth than does set phrases from the desk of the teacher.

We have before us the report of the Committee appointed by the Senate on the 3rd March 1909 to consider and report on the proposals contained in a letter from the Government of Bombay. We drew attention to this letter in a previous issue. The letter contained a request for information regarding certain changes which the Government thought were necessary in the curriculum of the university. The report now published forms a curious document, as it is signed only by six members of the Committee out of a total of sixteen, while there are three long minutes of dissent. In our notice of the letter of the Government we pointed out that the changes proposed were necessary calculated to advance the cause of higher education in Bombay. The enlightened and sympathetic Governor of Bombay desires to lift the University above dull routine and set it, as the Registrar of the University points out in his able dissentient minute, on the track of progress and research. We cannot understand why there should be any opposition to the scheme of the Government. We are sure that Sir George Clarke will carry his point just as he did in the matter of medical education. The Registrar has pointed out the fallacies underlying the arguments of the opponents of the Government scheme.

Higher Education in Bombay.

It is a matter for regret that the questions in the philosophy paper of the B.A. examination appear to have leaked out. It is reported that one of the superintendents in the examination hall found out some questions on philosophy in a few note-books. To the surprise of every body the printed question paper that was afterwards given out contained the same questions exactly in the words of the already written out questions. If it

The Madras University.

be true that the question papers of this year were printed in England, the questions could have leaked out either from the office of the Registrar, or from the house of the Examiner. The questions may also have unconsciously escaped from some professor-examiner. It is a common practice in many colleges for the professors to meet their examination-going students just a few days before the examination with the object of returning the answer papers of the college final examinations. The belief among students is that on such occasions many valuable hints helpful in answering the University questions are given. We need not say what baneful effects such beliefs produce. It can not, however, be denied that such beliefs rightly or wrongly make students prefer some colleges to others.

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வழங்கிய நாள். (1)	திரும்பிய நாள். (2)	வழங்கிய நாள். (1)	திரும்பிய நாள். (2)

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