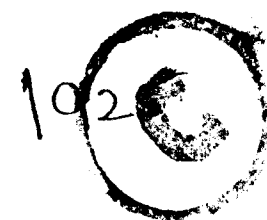


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THE LUCKNOW UNIVERSITY— CONVOCATION ADDRESS.

By Sir TEJ BAHADUR SAPRU, K.C.S.I.

WHEN a few months ago your distinguished Vice-Chancellor, who has honoured me with his friendship for many years, invited me to address you on the occasion of this annual Convocation, I begged him to excuse me for my inability to respond to his invitation on the very genuine ground that I had never aspired and did not claim to be an educationist in any sense of the term, that such views as I held on education wholly lacked the authority and prestige of an expert, and that as a mere layman covered mostly with the dust of law and partly with that of politics, I did not wish to rush in where even men accustomed to the serene and perhaps rarefied atmosphere of academic halls were afraid to tread. Your Vice-Chancellor was,

however, not only insistent but encouraging, for he assured me that the elders of this institution no less than its young men specially prided themselves upon their broad-mindedness, and curious outsiders, occasionally admitted into their cloistered retreat, could feel sure of a generous welcome if only they sought to re-establish, without disturbing the philosophic calm of the institution, some sort of relationship with the restless world outside. Encouraged by such assurances, I have ventured to come to you. I do not expect that my views will be readily accepted. I feel, however, assured of a patient and courteous hearing for the brief space of time I am going to take.

It is no reproach to your University that it is so young. As with human beings, so with human institutions, youth has its advantages and drawbacks. If it lacks experience

and tradition, it makes up for those deficiencies in other ways. It possesses—I hope without extravagance—that virility and elasticity which constitute the grace and privilege of youth. If in the pride of its youth it conjures up visions of glory—spiritual and intellectual—which the realism of experience forbids the older institutions to indulge in, it can in all modesty aspire to an attainable bright and even great future by avoiding their mistakes and profiting by their example. Your University was born in an era of enthusiasm for University reform and for new experiments in Indian education. The impetus came from the Commission presided over by that great educationist Sir Michael Sadler, but for the materialisation of the idea on the spot where we are meeting to-day let us own our gratitude to that distinguished Governor whose zeal for education was only equalled by his close study of the problem. The generous and patriotic benefactions of the Taluqdars of Oudh and the comparatively modest gifts of others have made it possible for Lucknow—the seat of a distinctive culture which in Northern India is one of our rich inheritances from the past—to possess a home of learning for the seekers after knowledge. Nor let us overlook the judgment and discrimination of its founders in selecting its first Vice-Chancellor. Just as a child requires in its impressionable period the wise and sympathetic guidance of a teacher, so also a young institution at the start of its career needs the directing mind and the controlling hand of a capable administrator. I may, therefore, congratulate you on the inestimable advantage of being placed under the fostering care of the accomplished educationist who presides over your administration, who has in the working

of this institution shown that it is by no means impossible to combine a healthy idealism with a keen sense of the real. I sincerely hope and trust that Dr. Chakravarti may yet for several years to come continue to serve and guide this University. Now, gentlemen, let me not be misunderstood when I have said all this. The difficulties that you have felt are not altogether unknown to me. Nor am I unaware that your ardour in the cause of progress, has, as in the case of so many other institutions, to be repressed by the limits of your resources. I should however pity the University which at any time felt contented with its resources. Such contentment would mean not progress but stagnation, and nowhere else more than in University education is discontent the precursor of progress. So far as that discontent relates to your material wants, it will always be a year-to-year struggle with hard-hearted Finance Members, forgetful donors, and possible benefactors requiring some stimulus. So far as you are subject to discontent in your spiritual life, for its removal you must depend upon your own vitality and you cannot blame the Government or the Taluqdars for not helping you to remove it.

I have just referred to spiritual discontent. Before I deal with it directly, permit me to refer to one or two aspects of your corporate existence. The Universities which have come in recent years into existence have been incorporated by Acts either of the Indian legislature or of the Provincial legislature. The constitutions provided for them are marked by a multiplicity of Councils, Committees, Faculties and Boards and other authorities into the details of which it is not necessary to enter. How far such elaborate constitutions facilitate co-ordination between

one body and another, how far they tend to act as so many clogs in the wheel, are questions on which I shall not dogmatise or generalise, but it has fallen to me in one capacity or another during the last few years to construe some of the Universities Acts, and I hope I am not doing any injustice to the Universities when I say that what has impressed me most is the regrettable waste of time and ingenuity over questions of conflict of jurisdiction between one body and another, none of which seemed to me unavoidable. I can conceive of nothing more disastrous to the true interests of education than that the University Executive Councils or other bodies should be converted into Courts of Law for the discussion of arid and technical questions of jurisdiction. Bodies created for the conduct of business cannot afford to be unbusiness-like without serious damage to their reputation and to the interests of those whose business they have been appointed to conduct. I should be the last person to suggest that you should ignore or disregard the law that is your charter, but the habit of mind which revels in stressing the letter of the law and ignoring the spirit of it, though not without profit in certain spheres of life, is scarcely suited to the office and dignity of Senators with a single purpose. I shall be glad to be told that nothing like this has happened in your University, but a word of caution uttered on the subject will, I trust, not be misunderstood.

Another aspect of the present-day activities of our Universities which has in recent years forced itself upon my notice is the keenness of the desire evinced by some if not all to provide for their *alumni* as varied a bill of fare as they can. With this laudable desire for expansion and variety I think it is possible to sympathise, but if I may speak to you

frankly I shall say that in provinces like ours where already there are four Universities in operation the price paid for the fulfilment of this desire may be heavy and the advantages supposed to accrue from a rapid expansion and variety of educational programme may be of very doubtful value. I would much rather that each University developed a special feature of its own, which it might be within its power to do by reason of its local conditions, its associations with the past and its resources. I am aware that you can refute this suggestion by quoting high authority, and urging that no University can be complete and self-contained unless it provides for instruction in as many departments of knowledge as appeal to the younger generation or as are calculated to enrich the spiritual and economic life of the nation. I have no quarrel with the idea and it is certainly not my desire to raise unnecessary controversies by referring to the case of each single University in these provinces. What I am anxious to point out is that if our Universities are to yield better results in the future than in the past, if University education in India is to be rescued, as I think it has to be, from the lowering influences of commercialism, and if the proper function of the University is supposed to be to rear up youths who do not look forward to the possession of degrees merely as passports to Deputy Collectorships, Munsifships, Tahsil-darships and Inspectorships in one department or another, but who are also inspired by the loftier and nobler ambition of widening the domains of knowledge, then I think the time has come for laying greater emphasis upon thoroughness and depth at any rate in scientific and technical and possibly some other subjects than upon a mere spectacular expansion of the programme of education,

unsupported by adequate resources in men and money. Medicine and Engineering will readily come to your minds as illustrations of what I have suggested above, though I see no reason why the principle should have such a limited application. Perhaps you will not consider me to be very pretentious when I urge the claim of law to be recognised seriously and not merely formally as a scientific and technical subject. I cannot understand why it should be assumed that the whole duty of the University in the matter of legal education is done when it has appointed a Principal and two or three Readers, equipped the Law College with complete or perhaps incomplete sets of Indian Law Reports and English Reports and prescribed courses of study not by any means conducive to a growth in the student's mind of a love for the subject. We can, I think, truly boast of eminent Judges and skilful and powerful Advocates, but I am afraid our entire concept of legal education will have to undergo a radical change before we can hope to achieve even a small fraction of what has been accomplished in the field of legal scholarship in some of the Universities of the West and particularly the United States, such as Harvard. Yet it seems to me that if we can agree to concentrate our energies upon the improvement and development of legal education and encourage research in our ancient systems of Hindu and Muhammadan laws, I think we at Allahabad and Lucknow shall be rendering a greater service to the cause of education and to the nation than we are doing at present by a merciless multiplication of indifferent graduates in law.

This naturally brings me to the larger question which is often asked and not always uniformly answered. Has University education in India been a success? It seems to me

that situated as we are it is impossible to answer this question without first knowing who asks the question and secondly, why he asks it. For more than a generation after the establishment of our parent Universities at Calcutta, Bombay and Madras this question did not intrude itself on our notice, but that was precisely the period during which the still waters of Indian life were being stirred by new ideas and new emotions. The forces that were let loose by Western knowledge and science were gradually making themselves felt. They brought into existence a spirit of challenge, and authority and tradition found their position more and more insecure. This new freedom affected the entire outlook of the finished and the unfinished products of our Universities. The bolder among them intoxicated with the new wine asked dogma to justify itself and were curious to know the 'reason why' for everything they were asked to accept. The timid and the easy-going, disposed to accept compromises in life and not prepared to outrage social sentiment, somehow reconciled themselves to the divergence between their beliefs and their practice. Both were, however, more or less affected, and it is not difficult to imagine how their beliefs or rather want of beliefs and conduct were viewed by the elders of that generation. Born in an era in which tradition and dogma still reigned supreme, our elders looked upon our heresies as odious and ominous, and perhaps they maintained that excepting for the material advantages which flowed from it, University education was more of a curse than a blessing. But the spirit of challenge pervaded other fields. It gave its *alumni* a new consciousness, a new self-respect and a new craving for self-expression. Unlike

their elders, they cherished no superstitions about the Government. It may have pleased Providence in 'its inscrutable wisdom' to bring the East and the West together by making England the Trustee and Guardian of India, but neither the wisdom of Providence nor its inscrutability was so apparent to them. Government to them was a human institution and should, they maintained, not merely govern but also satisfy human aspirations. Like our good elders who were alarmed at our spiritual heresies, the Government, it seems to me, were also alarmed at these new political heresies. That the official mind is generally speaking conservative is no reproach to it. I do not know whether there are still officials who share the view held by not a few of their predecessors that if only Macaulay's advice had not been followed and if the last few generations of Indians had only been saved from the unsettling effects of Western knowledge India might still have been a garden of Eden as it was before the serpent tempted our great ancestor. That there were some such fifteen or twenty years ago is perhaps not an extravagant statement to make. That was the time when Burke, Mill and even Macaulay himself were in bad odour with our Senates, and English History and Politics or Civics were solemnly banned from the University curriculum. Judged from the viewpoint which was adopted at that time, it is possible to hold that University education in India has not been a success. The mischief of looking at education through political glasses—English or Indian—has been great, and Universities have, I feel, suffered more from political bias during the last twenty years than from any other cause. No one truly interested in education—not even a prospective candidate at the next general

election—can honestly object to the increase of efficiency in our Universities. But as an uninitiated layman I submit that the multiplication of rules and regulations and reports and references to this authority or that, and low percentages of passes are no more evidence of efficiency or high standards than interminable discussions at 'popular' executive or academic councils or the addition of faculties or high percentages of passes with a bewildering number of first classes. Sound opinion would, I submit, seek efficiency in the thoroughness of the education imparted to students by Professors with a high conception of their duty, in the arousing among the students of a passion for learning, in the awakening among them of a habit of acquiring an ever-widening culture, in the provision for post-graduate study and research in various departments, and finally, in sending them out as men of courage and conviction to fight the battle of life. The demand however, for further efficiency in the working of our Universities need not be interpreted as necessarily implying any very serious condemnation of our Universities, and in my opinion it is obviously unfair to compare them with Universities rich in the traditions of centuries. Whether the founders of our Universities intended them so to function or not, the fact remains that during the first 40 or 45 years of their existence the Universities operated or were supposed to operate more or less as factories for the manufacture of certain types of men—efficient and upright public servants destined to execute the orders of their superiors but not expected to possess the fibre of the latter, clever lawyers not rising beyond a certain height, and school-masters and Professors who chose their profession always waiting for a call from some other

direction. For the seed we sowed, the harvest was not bad, though occasionally we came across tall plants which only served to remind us that Indian genius might yet look forward to a hopeful future. I shall not say that we have now entered upon a period of renaissance, for that is yet a far-off adorable dream, but perhaps it will not, to use legal phraseology, be putting the case too high if I say that the beginnings of a new intellectual life are already discernible. The great work of Sir Jagadish Chandra Bose and Sir Praphulla Chandra Ray and Professor Raman has already added to our stature in foreign countries. A new school of Indian economists is asserting itself and struggling for the recognition of its views against the orthodoxies of unerring Finance Departments of the Government. Indian scholars are rewriting our history and interpreting our past. Indian archæologists and sociologists within their own sphere are re-presenting to us the faded picture of a past which deserves to be rescued from inexcusable oblivion. Indian students need no longer go to the Orientalists of the West to understand the schools of philosophy founded by their great ancestors; Indian scholars have done much to save our pride in that respect. Nor have men lagged behind who tell us that our remote ancestors were ruled by constitutional monarchs and possessed even democratic republics. The fact is that, whether it augurs well or ill for the future, an intense but many-sided 'nationalism' is to-day the dominant note of our life. It is inspiring our entire moral and intellectual life and from it has come the new impulse. How far that nationalism is compatible with the requirements of dry and severe scholarship, how far it needs the restraining influence of a spirit of justice and criticism are questions

which I need not pause to discuss on this occasion, but it is enough to point out the signs of the times—so different from those of a generation back. Nevertheless, it will be admitted by the most ardent admirer of the present-day intellectual restlessness, that our national average is still deplorably low, and that in the case of the vast majority of our under-graduates and graduates it is the examinations and University degrees that count for more than a real intellectual life lived at the University and continued ever afterwards.

It is I fear not to one or two but to several causes that we must attribute the present state of things. For some of them we must look to the organisation of our society. Our social system imposes far too heavy a strain on our young men who are saddled with domestic responsibilities at an age when they should be free to cultivate their minds and build up reserves of intellectual and moral strength not only for bearing the burdens which must fall on their shoulders but also for softening the bitterness of disappointment which is the lot of not a few. The landed aristocracy—I speak with no desire to wound any susceptibilities—proud in the possession of its vast acres, has hitherto ignored the call of culture. The leisured middle class which has contributed so much to the raising of the intellectual level in other countries has yet to come into being in our country. With the vast majority, life is one endless economic struggle, and no one who has a direct and personal knowledge of students in this country can withhold his admiration from many brave young men who pursue knowledge in the midst of so much adversity. But while all this may be admitted, I think it cannot be denied that the association of University education in the minds of our students and

their parents with Government service has had a distinctly lowering effect on the former. No Government—foreign or national—can afford to absorb in its public services the hundreds or possibly the thousands of graduates who leave our Universities every year. The scramble for posts is to my mind not only one of the most unedifying spectacles that one sees but is demoralising to our young men and the Government alike. The question of unemployment of the educated youths and the opening of new avenues of work is already becoming one of the most pressing questions of the day. Whether any solution for it is found now or some time later, I think that the highest interests of education in our Universities require that the possession of University degrees should not, except in very special departments, be recognised as establishing any claim to Government appointments, for which intellectual and other standards should be prescribed independently. This I think should enable us to place higher ideals of knowledge and learning before our young men and to redeem University education from one of those depressing influences which account so much for the superficiality of the knowledge and the looseness of thinking and expression which our critics not unjustly associate with a large number of the products of our Universities. But the most important factor in our system of education of which both its friends and critics must take note, is that English has been the principal medium of instruction adopted in our Universities and even schools. The consequences of this policy have in some respects been deplorable. In the case of most of our boys it must have been a very serious handicap to be instructed at school in a language other than their own, especially in subjects in

which there was no need to exclude our languages. This policy, the mistaken character of which I am glad to observe, has been recognised in recent years, reminds one of the cynicism of Timon who when asked by a parent about the education of his children said 'let them be instructed in that which they will never understand.' In the Universities, however, it is still pursued, and Benares and Aligarh, which might have been expected to take the lead in this respect, have chosen or been forced by circumstances to follow the old models. The credit for courage and imagination must, however, be given to the founders of the Osmania University, who, realising that a foreign language howsoever carefully mastered must always remain alien to our mode of thinking and expressing, decided from the very beginning to adopt Urdu as the medium of instruction. They have within the last few years arranged to get nearly 150 standard books on various subjects translated into Urdu, and we can already see the dawn of an era of the growth and development of a rich and varied Urdu literature in the south. A Professor in these provinces, who has had the advantage of education at one of the leading English Universities, said to me only the other day, that he had recently to examine the answer-books of candidates at an examination held by the Osmania University in Civics, and that he was struck by the maturity of thought and grace of expression which he missed in the answers of candidates who expressed themselves in English. It is by no means an infrequent criticism that our Universities are really no better than higher Secondary Schools. I wonder what English Universities would have been if English youths had received their instruction in History, Logic,

To you and to those who are still in their tutelage, may I now address a few words which I hope will not be resented? Do not allow your life to be vulgarised by petty jealousies, nor treat those who differ from you as your enemies. The need was never greater in our country than it is to day for a genuine spirit of broad toleration. Let a selfish, unthinking, and intolerant world outside these sacred grounds more concerned with the good of the part than with the good of the whole, revel in the din and clash of party or communal strife, but you who are here to cultivate your minds, and to form your character, you who are the votaries of culture in this shrine of light and knowledge—cannot without grave injury to yourselves and to the future of the motherland afford to listen to those counsels of darkness and confusion. Let me be absolutely frank. Do not imagine that the echoes of your domestic differences in your unions or societies have not been heard outside these walls. I should have thought that you were here to form friendships based on common pursuits, and common ideals and sustained by charity of judgment and toleration of dissent in the midst of healthy rivalries. I should despair of the future if the poison of narrow sectarianism affected your blood in the full bloom of your youth. The culture and knowledge which cannot sweeten the acerbities of dissent, which do not enlarge our vision and which result in the narrowing of our sympathies and the paralysing of the will to co-operate, are to my mind things for which we may have to pay too dearly. I suppose each one of you wishes to be a reformer. That is a noble ambition and deserves to be cherished and encouraged, but you cannot be a reformer without the reformer's spirit, and where and when can you cultivate that spirit more generously than now and here? John Stuart Mill in his famous essay on Coleridge

prescribed a prayer for Reformers and I shall remind you of it: "Lord, enlighten thou our enemies' should be the prayer of every true reformer; sharpen their wits, give acuteness to their perceptions, and consecutiveness and clearness to their reasoning powers: we are in danger from their folly, not from their wisdom; their weakness is what fills us with apprehension, not their strength." The enemies he refers to in this sentence are political enemies with power to decide and act. If such a spirit of toleration should mark the attitude of one enemy to another in political warfare, there should be still greater room for toleration in the case of intellectual and academic opponents who are not and cannot be enemies in the peaceful atmosphere of University life. If I have spoken with some warmth on this subject, it is only because I feel strongly on it and do not treat it as trivial. I therefore appeal to you, graduates and under-graduates, to give free vent to your generous impulses and to repress all those that tend to prevent you from rising to the full height of your moral and spiritual stature, and I take leave of you by asking you to remember the advice of Dean Inge: "There is no alchemy by which we may get golden conduct out of leaden instincts—so Herbert Spencer told us very truly—but if our ideals are of gold, there is an alchemy which will transmute our external activities, so that our contributions to the spiritual temple may be no longer 'wood, hay and stubble' to be destroyed in the next conflagration, but precious and durable material."

PROGRESS OF EDUCATION IN THE MADRAS PRESIDENCY.*

(4) ADVANCE MADE IN THE YEARS AFTER THE FOUNDATION OF THE UNIVERSITY.

By PROFESSOR C S SRINIVASACHARI, M.A.,
Pachaiyappa's College, Madras

I. PROGRESS IN HIGHER EDUCATION MADE AFTER THE FOUNDATION OF THE MADRAS UNIVERSITY (1857-1871).

THE primary object with which the University was constituted was "the purpose of ascertaining by means of examinations the persons who have obtained proficiency in different branches of literature, science and art, and of rewarding them by academical degrees as evidence of their respective attainments and marks of honour proportioned thereto." As we saw the first Entrance or Matriculation Examination was held in September 1857, and the first B.A. Examination in February 1858. In 1863-64 an examination, that of the First Examination in Arts, was interposed between the Matriculation and the B.A. The course for the B.A. Degree Examination was to extend over three years, and candidates for F.A. were allowed to qualify for the examination one year after matriculating. A few years later the interval between the Matriculation and the F.A. was extended to 2 years, so that "those who matriculated in 1869 could go up for the F.A. Examination only in 1871."† As Mr. Sathianathan remarks, the candidates that appeared for the Matriculation Examination in the early years were very small in number, owing to

the fact that the University examinations were not closely connected with Government service. This was due to the rules passed by Government in 1858 which pitched the examinations for admission to the Uncovenanted Civil Service much lower than those of the University. In fact the rules declared that the University Matriculation test should be only equivalent to the lower service test, while in reality it was on the whole higher than that of the higher service test.* But even then the University insisted upon candidates for the B.A. Degree passing in English and an optional language, History, Elementary Mathematics and Moral Philosophy and one of the following subjects, *vis*, Mixed Mathematics, Logic and Moral Sciences and Physics including Inorganic Chemistry, Physiology and Physical Geography. The attainments of a Madras B.A. were relatively higher, in the opinion of the University Examiners, the range of their subjects was wider and the requisite exertion for a pass greater than those required for a pass at Oxford or Cambridge, which is "attainable with very moderate exertions by persons of very moderate abilities." The examiners declared it to be their opinion that "the B.A. Degree of the Madras University may therefore be looked on essentially as an honourable distinction."

Originally regulations were passed in the Faculties of Law and Medicine prescribing ordinary and honours degrees of the same name, similar to those passed at Calcutta. In the Faculty of Engineering there was provision made at first for two degrees, those of a Graduate (G.C.E.) and of a Master

* Continued from (3)—State of Education on the eve of the Despatch of 1854 and After—*Educational Review*, March 1925, p. 148

† Manual of the Administration of the Madras Presidency, Vol. I (1885), p. 572 (note).

* Report of Mr. Arbuthnot to Government, 1860—(Appendix F of the Madras Educational Report for 1858-59).

(M.C.E.). The designation of the degree in Engineering was changed from Graduate to Bachelor; and the higher degree of Master was placed in abeyance. In Law the degree of Bachelor with honours was removed and replaced by that of Master. Generally by about 1870 the distinction originally drawn between ordinary and honours degrees of the same name was done away with and a higher degree in each faculty was created and made to correspond with a higher course of attainments.

Some changes were made in the course of studies for the B.A. Examination. In 1869-70, the *viva-voce* portion of the examination was greatly extended; and in the next year Mental Philosophy was included in the compulsory part of studies; and Logic and Moral Philosophy came to be optional.

A survey of the institutions training candidates for the various examinations is appropriate at this place. The Madras Medical College was established in 1835 by Sir Frederick Adam, the then Governor, as a school in which were to be trained subordinates for the Medical Department. As noticed in a previous number it was made into a College in 1851 and transferred to the Education Department a few years later. The College consisted of two departments. The Senior or University Department trained students for qualifying for the M. B., C. M., and L. M. & S. degrees of the University. The qualification for entry into this department was that candidates for the former degree must have passed the First in Arts Examination and for the latter, the Matriculation Examination of the University. The lower department of the College was for military hospital apprentices qualifying as military apothecaries and civil hospital apprentices qualifying for

employment under Government--the test for entry being a competitive examination in the former case, and the Matriculation examination of the University in the latter. Until 1883 there was a third or junior department qualifying pupils for employment as military and civil hospital assistants. This department was later transferred to the Royapuram Auxiliary Medical School which was established in 1877 to meet a deficiency in the strength of the Subordinate Medical Service during the great Madras Famine of that epoch.

The Civil Engineering College was first established in 1834 as a Government Survey School for training men for service in the Revenue Department. In 1859 it was developed into a Civil Engineering School to meet the requirements of the Public Works Department. Two years later, a special class for surveying, drawing and estimating was formed; while an officers' surveying class was added shortly afterwards. In 1862, the Institution was made into a College by the addition of a senior department for the supply of Engineers to Government. The Collegiate or University Department educated Commissioned Officers of the Army and those civil candidates who had passed the First in Arts Examination of an Indian University up to the standard required for Assistant Engineers in the Public Works Department as well as for the degree of Bachelor in the Faculty of Civil Engineering at the University. The School Department has been training students of all classes for the various grades of upper and lower subordinates and of the office establishments of the Public Works Department. The students include in this section European non-commissioned officers and soldiers and Indians of all classes who

are taught up to (1) the standard required for the grades of Supervisor and Overseer in the P. W. Department; and (2) the standard required for practical surveyors, draftsmen and estimators in the Department. The civil division of the first department was even before 1870 generally well-filled, in spite of the difficulty that successful candidates experienced in getting suitable employment. The second department has always been very popular.

In the Presidency College which was reorganised out of the High School into the Senior and Junior Departments, a Law branch was opened in August 1855, where the course of instruction extended to over three years. The Law classes continued to be conducted at the Presidency College till Mr. Grigg's proposals for the creation of a separate Law College made in 1888 was approved by Government and sanctioned finally by the Secretary of State in 1891. Mr. E. B. Powell was in charge of the Presidency College till 1862 when he was promoted to be the Director of Public Instruction. He was succeeded by Mr. Edmund Thompson who laboured on for thirteen years and did most useful work.

In 1870-71, the two first-grade colleges in the Presidency were the Presidency College and the Free Church Mission Institution which first sent up candidates for B.A. in 1868-69. The number of private colleges at the close of 1870-71 was seven. Besides the Free Church Mission Institution there were the Doveton Protestant College and the Sullivan's Garden Seminary which was partly a theological institution at Madras. The Church Missionary Society maintained a college at Masulipatam, and the Society for the Propagation of the Gospel had one at Tanjore. There was also the St. Joseph's College at

Negapatam and a private institution established by Mr. Stanes at Coimbatore which sent up candidates for the F.A. Examination in 1868-69. Of the Government institutions in the mofussil, those at Kumbakonam, Calicut and Bellary had been raised to be colleges, the Kumbakonam College teaching up to the B.A. standard from 1868-69. Calicut and Bellary came to possess second-grade colleges just in the previous year; while the Provincial School at Mangalore first established in 1866 was raised to be a second-grade college two years later.

The Kumbakonam College was placed in charge of the veteran educationist, Mr. Porter, in 1863, who continued to be its head until 1878 when he went away to serve as the Tutor to the Maharaja of Mysore, and the institution came to be placed under Mr. T. Gopal Rao, another distinguished educationist. The College produced splendid results even in the first years when it sent up candidates for the F.A. and B.A. examinations; and according to the Report of the Director of Public Instruction for 1872, the College under its distinguished Principal "promises to become the Cambridge of Southern India." The Rev. Dr. William Miller came to India in 1862; and under his fostering care the Free Church Mission Institution quickly became the largest and the most efficient of all the aided colleges and schools.

Thus the progress in collegiate education made during the period 1857-71 was very considerable, the total number of Matriculates of the University in the period being 2728, that of F.A.'s being 852, that of B.A.'s 197, and that of B.L.'s being 68. There were besides a few Masters of Arts and Law and Bachelors of Medicine and Civil Engineering and one Doctor of Medicine. "Of the 2728

candidates that matriculated up to 1870-71, 1331 came from Government and 977 from Aided schools; the remaining 420 were educated privately or in schools and colleges beyond the limits of the Presidency. Of the 852 that had passed the F.A. Examination, 414 were from Government and 203 from Aided colleges. Out of the 197 Bachelors of Arts, 157 belonged to Government as against 12 from Aided colleges. The remaining 135 First-in-Arts men and 28 B.A.'s had been educated privately or were from colleges outside the limits of the Presidency."—(Satthianathan: *History of Education*, p. 80).

II. ENGLISH EDUCATION IN THE NATIVE STATES.

Adverting to the progress of education in the Native States adjoining the Presidency, it may be said that Travancore has always been occupying the foremost place. The first English School of the State was started in 1834. Two years later it was taken over by the Maharaja and established as the Raja's Free School. Thus it preceded by a few years the starting of the General Assembly's Institution and of the High School of the so-called Madras University. The first Headmaster of the Raja's School was Mr. Roberts, who succeeded in rousing a "liberal native opinion in favour of the new learning from the West." Under him the curriculum of studies embraced Logic and Mental Philosophy, Natural Philosophy and the higher branches of Mathematics. It continued to flourish under the succeeding Principals, Messrs. Lafrenais, Bensley and Ross, the last of whom became Principal in 1866. Two years earlier, in 1864, the first batch of candidates were sent up for the University Matriculation Examination. In 1870 the first graduate from the College

passed the B.A. Examination; and he was Mr. V. Nagam Iyah, Dewan-Peshkar in the State and Compiler of the *Travancore Manual*. Since then the history of the College has been one of uninterrupted progress and expansion. Besides this there were English Schools started by the efforts of Protestant Missionaries. The Rev. W. T. Ringletaube, a man of great force of character, made pioneer efforts in the spread of English education, assisted by the generous help given by Colonel Munro, the British Dewan-Resident. This was in the first decades of the last century. Ringletaube's work was taken up by the Rev. Mr. Mead of the L. M. Society, who founded the Nagercoil Seminary in 1818. This was the first institution in Travancore to impart an English education. Mr. Mead laboured on in the cause of the spread of education till his death in 1874; he established several smaller schools besides, was the pioneer of female education in the State, established the necessity of starting industrial schools and above all strove hard to bring about the abolition of slavery. The Church Missionary Society also sent its first batch of Missionaries to Travancore about 1816 who first worked along with the Syrians and later independently. They developed the English College at Kottayam from out of the Seminary for training priests which the Syrians had started at Kottayam as early as 1815. All these served as the nuclei for the spread of University education which is now in such an advanced condition in Travancore.

In the sister State of Cochin also Colonel Munro, the Resident, was the instrument for helping the cause of English education. The first English Schools were regularly started in the years 1818-35. In the latter year an English School at Mattancheri taught to

Jewish boys English, Hebrew and Malayalam. Two years later English Schools were opened at Trichur and at Tirupunittura for the education of the princes of the State and others; and in 1845 Ernakulam came to have its own English school. It was in 1868 that the Ernakulam School presented pupils for the first time for the Matriculation Examination; and seven years later it was affiliated to the University as a second-grade college.* Subsequent educational progress in the State has been almost phenomenal.

In Mysore, the Government Education Department was started only in 1857; and till then the English instruction of native youth was entirely left in the hands of Missionaries.† The London Missionary Society commenced its operations in Bangalore in 1820 which were extended to Mysore some twenty years later. The work of the Mission was largely literary and educational; it opened the first Kanarese Girls' School in 1840, and a High School at Bangalore seven years later. The Wesleyan Mission started an English School in Bangalore in 1836 and followed it up with another at Mysore in 1854. The Mysore Administration had been supplying funds to the Wesleyan Mission Schools, besides maintaining a Free English School at Mysore and another for the children of pensioned European soldiers. The Education Department of the State was started in 1857 on the basis of a scheme drawn up by Mr. Devereux, the Judicial Commissioner. Next year a High School affiliated to the Madras University was started at Bangalore; and the Tumkur, Shimoga and Hassan Schools hitherto maintained by private efforts were taken

over by Government. In 1863 the first Mysorean matriculated from the Bangalore High School. Two years later the University course of study was formally adopted; and all the Divisional Schools were enabled to teach up to the Matriculation standard. In 1875 the Upper Department of the Bangalore High School was formed into the Central College; while a School of Engineering and Natural Science was established on a new model for training candidates for employment in the Public Works, Forest and Revenue Survey Departments. A system of grants-in-aid subject to Government inspection was also gradually introduced; and the Department came to have a regular hierarchy of officials from the Director of Public Instruction down to the inspection of village and Hōbli schools.* Before 1880 the Central College had been affiliated to the Madras University up to the B. A. Examination. Bishop Cotton's College in Bangalore and the Maharaja's High School, Mysore, and the Shimoga High School were affiliated, the first to the B. A.; and the others to the F. A. standard. The School of Engineering and Natural Science was at the same time affiliated to the University in Civil Engineering. But shortly afterwards the collegiate grade was abolished; and scholarships were granted to advanced students to enable them to complete their engineering course in the Engineering Colleges at Madras and elsewhere. The School however was largely improved by the opening of botanical classes. At the same time a Medical School was opened in connection with the Bangalore Petta Hospital which provided a three-years' course of study preparing hospital assistants. The later progress

* Achyuta Menon: *The Cochin Manual*, Chap. IX.

† B. L. Rice: *Mysore Gazetteer*, Vol. I, pp. 484-7.

* *Mysore Gazetteer*, Vol. I, pp. 751-752.

of Mysore culminating in the starting of the Mysore University in 1916 and the starting of colleges in new faculties like Engineering will be treated later.

III. OTHER EDUCATIONAL AND QUASI-EDUCATIONAL ACTIVITIES OF GOVERNMENT IN THE EPOCH.

A School of Industrial Arts was established privately by Dr. Hunter in 1850 which maintained itself out of public subscriptions, the payments for engravings, drawings and other work turned out in the school and the fees from pupils. Government took over the school in 1855, and a Committee assisted by Dr. Hunter laid down rules and an elaborate course of instruction which quickly deteriorated on account of lack of competent teachers and apt pupils. The institution had however supplied the models for similar schools started in Calcutta and Bombay. It grew, in spite of the falling off from the high ideal set up initially, under the fostering care of Mr. Chisholm who was for long its head. A new section known as the Drawing and Painting Academy was instituted, where the course of instruction adopted was similar to that at the South Kensington Institute. The object of the Industrial Branch was "to endeavour to some extent to counteract the injurious influence which the large importations of European manufactures of the worst possible designs have had on the native handicrafts and also to train students for engraving and other useful occupations." The school taught free-hand and model-drawing, goldsmith's work, wood-carving, pottery, wood and copper-plate engraving, etching, modelling, glass-painting, house-decoration, etc.

The Board for the College of Fort St. George, started in 1812 on the model of

Lord Wellesley's College of Fort William, was designed to instruct the Junior Civil Servants who came to Madras from England in the literature, law and languages of the country. It also undertook to train Munshies, candidates for the posts of Pleaders and Judges in the Native Courts and to bring out either by direct publication or with financial assistance works on the languages of the country. It kept up a depot for the sale and loan of Oriental books and had later charge of the Library of Oriental Manuscripts transferred to it from the Museum of the Madras Literary Society. It was this College that helped in the bringing out of works like Campbell's Telugu Grammar, Morris' Telugu Dictionary, Rottler's Dictionary of the Tamil Language, Reeve's Karnataka Dictionary and numerous other works which paved the way for a critical study of the linguistics, literature and philology of the Dravidian languages. For some time the Committee for Public Instruction formed in 1826 was amalgamated with the College Board. After 1836, the Committee for Public Instruction was separated; and the College Board reverted to its former duties. Soon it lost by abolition the branch kept up for preparing native pleaders and judges. The staff of *munshies* alone was retained for the instruction of Junior Civilians in the Oriental languages. In 1854, the College of Fort St. George was abolished; and a Board of Examiners was instituted in its place; and it was entrusted also with the duties of a Central Committee for the Examination of Assistants. The new Board of Examiners was to test the Junior Civilians in the vernacular languages studied by them and to prescribe tests for the examination of Deputy Collectors who were then about to be appointed and for admission to the

Uncovenanted Civil Service. The test for Deputy Collectors was not introduced but the tests and examinations for the Uncovenanted Service were conducted by the Board till 1861 when the Commissionership for the Uncovenanted Civil Service Examinations was instituted and entrusted to the Director of Public Instruction. In the same year, the Library of the Madras College was transferred to the Government Central Book Depot. In 1867, the Board of Examiners was also abolished; a Committee for the Examination of Assistants was constituted, the staff of *munshies* was dispensed with; and the Oriental Manuscripts transferred to the Director of Public Instruction. The Board of Examiners was again reconstituted in 1882. It has in charge a large proportion of the departmental examinations and the language tests, including translation, of the Uncovenanted Service. The Board usually consists of certain *ex-officio* and special members.

The Educational Despatch of 1854 approved of the general institution of examinations for candidates for offices under Government. In 1858, a scheme of examinations for all Government appointments in the Presidency was promulgated. The scheme was to consist of two divisions, the first including all appointments with a salary exceeding Rs. 50, and the second embracing all appointments below that grade and above the grade of peon. The examinations for the two divisions were held for a short time under the direction of the then Board of Examiners. In 1860, modifications were made in the scheme; all appointments of Rs. 25 and under per month were exempted; and fees were to be paid by candidates. The Commissioner who was appointed shortly afterwards was entrusted with the management

of these examinations. The test long known as the General Test, which was an elementary examination in Language, Handwriting, Spelling, Arithmetic, Indian History and General Geography, was divided into three branches, English, Vernacular and Anglo-Vernacular, there being a corresponding division of appointments also. The General Test Examination was held for the last time in 1880 and it was modified into what was known as the Middle School Examination. The Commissioner also undertook the Special Test Examinations to test the fitness of candidates for particular appointments. The first Special Text Examinations were held in 1863, in subjects relating to the Magisterial and Judicial departments, quickly followed by Revenue tests. For these no persons were admitted except those who had passed the General Test and the later Middle School Test or the University Matriculation supplemented by a test in handwriting. Besides these, departmental officers in Agriculture, Civil Engineering, Education, Medicine, and Police were entrusted with the conduct of miscellaneous examination tests.

The starting of a Museum under direct Government auspices may be included as a phase of its activity in the field of educational promotion. The Madras Literary Society presented to Government in 1851 a collection of its geological specimens; and "this with the duplicates left after despatching the articles for the Great Exhibition in Hyde Park, London, formed the nucleus of what is now the Government Central Museum."* At the same time *mofussil* museums were started at Bellary, Cuddalore, Mangalore, Rajahmundry and Ootacamund, partly for local purposes and partly to serve as feeders

* Manual of the Madras Presidency, Vol. I, p. 537.

to the Central Museum at Madras. These were not successful mainly on account of a lack of "competent agency;" and in 1862, many of the articles collected in them were transferred to Madras. The museum at Rajahmundry alone continued for some more years. A Zoological Garden in connection with the Madras Museum was started in 1855, it was transferred to the Peoples' Park and soon afterwards became a municipal charge. The Museum was intended to afford means for popular instruction in Indian Geology, Botany and Zoology, to illustrate the Ethnology and Archæology of the Presidency and the manners and customs of its original inhabitants and also to provide facilities for the scientific teacher and student of natural history and forestry. The various sections included economic and district geology, practical, systematic and morphological botany, mammals, birds, fish and reptiles, mollusca, crustacea, osteology and lower forms of animal life and insects, raw products and manufactures, numismatology, antiquities and ethnological specimens. Its value has been greatly increased by its numerous publications starting from its very early years. There were also delivered lectures under the auspices of the Museum on subjects like Comparative Philology, the Science of Language, Sub-Marine Telegraphy, The Madras Harbour, Spectrum Analysis, Tramways and Light Railways, Cyclones, Human Physiology, the ancient commerce of India, etc., by scholars and scientists like Dr. Furnell, Major Bidie, Dr. Oppert, Dr. C. Mitchie-Smith and others.

Government also interested itself in Archæological Survey which was begun for the whole of India by General Sir Alexander Cunningham in 1871. Some years later, the

Secretary of State proposed arrangements for an Archæological Survey of Madras; and first Mr. R. Sewell was put on duty to collect and arrange complete lists of all antiquarian remains. Dr. Burgess took up his appointment as Special Archæological Surveyor in 1881 and began to interest himself in the *stupas* and marbles of Amaravati. The first geological survey of India was done in the Nilgiri Hills and the report published in 1858-59 as the first volume of the Memoirs of the Geological Survey of India. Other regions like Trichinopoly, South Arcot and Cuddapah were next taken up for survey, and separate reports published quickly in succession. Before the regular survey was started, Captain Newbold, Assistant Resident at Kurnool, had personally investigated much of the geology of Southern India in the years 1844 to 1850, of which he had published a summary also. His work was improved upon by Dr. Carter. Antiquarian research into historic relics and pre-historic antiquities like tumuli, cairns and cistvaens in which the Presidency is peculiarly rich had also progressed largely under private effort, before Government took a hand in its encouragement.

Regarding Government's part in the work of publication it is enough if we point out here that the series of District Manuals was projected in 1862 intended to be illustrative of the permanent characteristics of the several revenue districts. The first Manual to be published was that of Vizagapatam by Mr. D.F. Carmichael in 1868; it was followed by Nelson's *Madura Manual*, published in 1869, a work that entailed much original labour and research on the part of the author, and by the Manuals of North and South Arcot Districts and Canara, Chingle-

A SHORT HISTORY OF ELEMENTARY PLANE TRIGONOMETRY.

By

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THE history of Trigonometry in its initial stages is closely bound up with that of Astronomy. In fact it developed only as a handmaid to the science of Astronomy in the hands of the ancient Hindus and the Greeks and this explains 'the rather startling fact' that Spherical Trigonometry was developed more fully much earlier than Plane Trigonometry.

Our history may well be divided into three periods, the first period from the most ancient times to the middle ages, the second from the middle ages to the middle of the seventeenth century, and the third from the middle of the seventeenth century to the present time.

In the first period, a number of fundamental formulæ were established, though not exactly in the modern form, by the Hindus, Arabs and Greeks and employed in their astronomical calculations.

The idea of ज्या or chord of a circle occurs even in the Vedas. For example, we find in Taittiriya Aranyaka, Prasna 1, Anuvaka 5, the following:—

तस्येन्द्रो वसि रूपेण ।

धनुर्ज्या मच्छिनत् स्वयं ।

तदिन्द्र धनुरि त्यज्यम् ।

In fact, it was the picture of the bow, the chord and the arrow (the central line between the chord and the bow) that suggested to the Indian mind that they could be related to each other mathematically. Thus the semi-chord and the arrow gave rise to the sine and the versed-sine functions.

put, Bellary, Godavari, etc. Government even contemplated the compilation of a Gazetteer for the Presidency compiled from the District Manuals which would correspond to the Provincial Statistical Accounts of the other provinces. Government had all along been assisting private authors, by purchasing numbers of copies of their work, by getting their copyright and by publishing some books themselves. In 1861 a large number of volumes was sent out to Madras from the surplus stock of the Libraries at Haileybury and the India Office; and this collection was handed over by Government to the Museum to form the nucleus of a public library. This collection was largely increased and later became the nucleus of the public library attached to the Museum. Government had also largely helped the Madras Literary Society started by Sir Thomas Newbolt, the Chief Justice of the Supreme Court, in 1817 and managed by a Committee. This short account is but a brief notice of a few prominent branches of Governmental activity tending to promote learning, but it claims to be neither exhaustive nor very wide.

(To be continued.)

SUMATHY

OR

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The Papyrus of Ahmes also speaks of a quotient called 'seqt' which corresponds to the cosine of the angle (52°) which an edge of the Egyptian pyramids makes with a diagonal of the square base.

According to Theon of Alexandria, the inventor of Trigonometry was Hipparchus, a Greek astronomer, born about 180 B.C. Before him, Hysicles had divided the circle into 360° and laid the way for the sexagesimal fractions of angles. The astronomical researches of Hipparchus led him to develop Trigonometry. He completed a table of chords and is said to have enunciated the well-known theorem now known as Ptolemy's Theorem which contains explicitly the addition formula for $\sin(A \pm B)$, and $\cos(A \pm B)$.

About a hundred years later, Heron found actual trigonometrical formulæ involving $\cot \frac{2\pi}{n}$ for the calculation of the areas of regular polygons.

Claudius Ptolemæus is a central figure in the history of ancient astronomy. He was a native of Egypt and flourished in the latter half of the second century A.D. Starting from his theorem that the rectangle contained by the diagonals of a cyclic quadrilateral is equal to the sum of the rectangles contained by the pairs of opposite sides, he deduced the lengths of the chords of the sum or difference of two arcs whose chords are severally known and hence calculated the chords of arcs at intervals of $\frac{1}{2}^\circ$. But, even Ptolemy failed to substitute the modern sine or the semi-chord for the full chord though he came very near the modern notation.

It is to the Hindus the credit is due, though reluctantly given by modern European Orientalists,* for introducing the अर्धज्या or the semi-

* The modern Orientalists, who profess to adopt sounder methods of investigations than their predecessors, observe that there is no originality in Indian mathematics. Their charge against the Hindus is that they don't acknowledge the sources of their information but regard everything as a direct revelation from God. (Vide: 'Indian Mathematics,' by G. R. Kaye). In their

chord which is the same as the modern sine in a circle of unit radius. The Hindus did not divide the radius sexagesimally after the Greek fashion, but expressed the arc of the same length as the radius in minutes (of arc). Thus, using the formula that the circumference of a circle, i.e., 21600 minutes, is equal to the diameter multiplied by 3.1416 , they obtained for the radius 3438' to the nearest integer. For them, the arc opposite to an angle at the centre served the same purpose as the angle; in other words, they employed a sort of circular measure.† They knew the formulæ corresponding to the following modern formulæ:

$$\sin^2 \alpha + \cos^2 \alpha = 1; 4 \sin^2 \frac{1}{2} \alpha = \sin^2 \alpha + \text{vers}^2 \alpha;$$

$$\text{and } \text{vers} \alpha = 2 \sin^2 \frac{\alpha}{2}, \text{ having perceived their}$$

truths geometrically. With the help of these, they computed relations between half-chords and their arcs. They also calculated the versed sine (उत्क्रमज्या) and the cosine (कोटिज्या). All their trigonometrical formulæ involve only these three as trigonometrical functions. It is a common criticism that in the hands of the Hindus the invention of the sine was comparatively barren and they did not appreciate the significance, even, of the cosine. But the critics fail to realise the economic advantage of expressing mathematical results in as few variables as possible, and one cannot help admiring the ingenuity with which the Hindus manipulated all their results with the help of the sine and the versed sine formulæ.

The most important astronomical works of the Hindus, which contain chapters in Trigonometry, are in chronological order:—

anxiety to attribute to a foreign source all that is really indigenous to Indian soil in the field of mathematics, they often overstep the limits of reason and common sense and at any rate certainly do not show the larger spirit in the mean suppression of the contributions of an Asiatic nation and the jealous exaltation of that of a European nation.

† They readily recognised $\sin \theta = \theta$ (a small angle in circular measure) about which the Greeks had a lot of scruples.

(i) The Surya Siddhanta—the author unknown—and the work supposed to be written only about 400 A.D.

(ii) The Arvabhattiya of Aryabhata born about 476 A.D.

(iii) The Pancha Siddhantika of Varahamihira, who flourished about 600 A.D.

(iv) The Brahma-Sphuta Siddhanta of Brahmagupta, son of Jishnu, born about 598 A.D.

(v) The Siddhanta-Ciromani of Bhaskara, born A.D. 1114.

The subject-matter of the above books is more or less the same and in the first three treatises, an interpolation formula is given for the tabulation of successive sines, in addition to the formulæ given above for the calculation of the sines of half arcs from the known sine of the full arc. Aryabhata or the Newton of Indian Astronomy gives the following rule for the calculation of the successive sine-differences

प्रथमाप्यर्धज्यायैरूनं खण्डितं द्वितीयार्धे ।

तत्रप्रथम ज्यार्धेशै स्तैस्तरुनानि शेषाणि ॥

Expressed in modern notation, the rule is $\sin(n+1)\alpha - \sin n\alpha = \sin n\alpha - \sin(n-1)\alpha - \frac{\sin n\alpha}{225}$ where n is an integer < 24 and $\alpha = 3\frac{1}{4}^\circ$.

The rule is rather remarkable and nothing of the kind occurs in the works of Ptolemy or any other Greek or Egyptian writer. The rule, however, can be and must have been perceived geometrically from the consideration of similar * right-angled triangles, and hence need not be supposed to have been obtained empirically, as remarked in the Translation of the Surya Siddhanta with Notes, etc., by Rev. E. Burgess.

In the chapter on ज्योतिष in his Siddhanta Ciromani, Bhaskara gives the modern formulæ for $\sin(A+B)$ and $\sin(A-B)$ under the designations समासभावना and अन्तरभावना. He also mentions

* Vide an article entitled 'The Hindu Sine-Table,' by the present writer in J. I. M. S., Vol. XV, Dec. 1923.

a remarkable quadratic interpolation formula applicable to the Table of Sines at intervals of 10° , which may be paraphrased in modern symbols thus:

$$\sin(x-h\theta) = \sin x - \frac{\sin(x+h) - \sin(x-h)}{2} \theta$$

$$+ \frac{\sin(x+h) - 2\sin x + \sin(x-h)}{2} \theta^2$$

where $\theta < 1$. It is worthy of note that the terms on the right-hand side of this approximation correspond to the first three terms in the well-known general interpolation formula due to Newton.

As in the rest of mathematical science, so in Trigonometry, the Arabs were pupils of the Hindus and the Greeks but not without some devices of their own. The Arabs adopted Sanskrit 'jiva' into their Arabic as 'dschiba' which they naturalised as 'dschaib' (meaning bosom.) Later, this was translated by Plato of Trivoli into 'sinus,' from which the modern 'sine' arose. The earliest use of the sines in Arabic Mathematics occurs in the *Almagest* translated by Al-Battani, one of the foremost astronomers of the ninth century A.D. Al-Battani gets from an equation $\sin \theta = d \cos \theta$

the value of $\sin \theta = \frac{d}{\sqrt{1+d^2}}$ —a process unknown to the ancient Greeks. Abul Wafa (940—998), the successor of Al-Battani, gives a Table of Sines correct to nine decimal places and reckons for each degree the quotients $\frac{\sin \alpha}{\cos \alpha}$ and $\frac{\cos \alpha}{\sin \alpha}$, but without giving them the specific names 'tangents' and 'co-tangents.' He and his predecessor studied Shadow-triangles with the help of the functions $\frac{\sin \alpha}{\cos \alpha}$, $\frac{\cos \alpha}{\sin \alpha}$, $\frac{1}{\sin \alpha}$ and $\frac{1}{\cos \alpha}$. The next Arabic writers on Trigonometry were Dschabir ibn Aflah of Seville in distant Spain and Nasir-ud-din of Persia, who were the first to develop the subject for its own sake independently of Astronomy.

Henceforth, the centre of development shifts to Europe and we find that the second period, i.e., from the middle ages to the middle of the seventeenth century, established the science of

IDEALS OF MODERN EDUCATION.*

IT is not possible to survey the whole field of educational ideals and reforms in such a short time as is placed at my disposal. So I propose to confine my remarks to the educational ideals and achievements of the West within the last twenty years only.

The various types of institutions for primary, secondary and higher education were started in most parts of India first by Christian Missionaries, who are gratefully acknowledged as the pioneers of modern education and then since India passed under the Crown by the British Government. The schools and colleges were naturally organised on the model of English institutions and the same ideals of discipline and class-management and methods of teaching were adopted as were in vogue in Great Britain.

About thirty years ago some changes were introduced in the method of teaching in the primary and secondary schools, and a number of training colleges and normal schools were established with a view to train men who intended to serve as teachers.

But most of the changes that have taken place in the Western ideals of education during the last twenty years and the reforms introduced consequently, are still unknown in this land, and we are carrying on the most important work of educating the youth of the country in the same conventional, dogmatic and cramping atmosphere as we did a generation ago. What is called the new era in education in England and other Western countries, has not yet dawned on the horizon

of India. Who is responsible for keeping us behind is not for me to inquire into. All that I am concerned with is simply to draw the attention of my community and my countrymen to some of the more important matters and to the ideals of educating the citizens as they are conceived and pursued in Europe and America. As we have gathered together here for considering educational matters affecting the welfare of the Muslim community, it will be worth our while to devote some time to the deeper aspects of education also, because without properly appreciating them we cannot make any progress in the true sense of the word. It is the duty of both the State and the community to advance the cause of education as much as possible. No community or nation can ever keep pace with the advancing world unless it discharges its duty in improving the condition of education in the light of the highest ideal known to humanity.

It is idle to deny that Western thought and Western ideals have greatly influenced Eastern nations. So far as mental and moral evolution and researches in the realm of positive science are concerned, they are, by virtue of their ceaseless and strenuous efforts, far ahead of us, Eastern people; and as they are in the vanguard of civilization, we cannot help learning from them and imbibing their best ideals. I have often wondered why it is that we Indians who keep in touch with the latest scientific discoveries, inventions, movements in politics, social changes, etc., in the West, however, neglect entirely educational reforms? The moment a new thing is made, it is imported into this country and we readily and eagerly begin to use it in preference to old ones.

But the same earnestness is not shown in keeping ourselves abreast of the times in matters educational.

(a) One of the most distinguishing features of the modern ideals of education as opposed to ancient ones, is the recognition of the right of every one, high or low, prince or peasant, to be educated. Education is the basis of all types of democratic institutions; so it should be spread as widely as possible and it is the duty of the State to bear its cost to as great an extent as possible. Education should be so organized and reformed that it should help in turning out good and responsible citizens—with a full sense of their duty to themselves and to the State. Therefore it should develop not only their intelligence but also their character.

(b) Strictly speaking, this new era in education commenced when thoughtful people all over the civilized world began to be guided more by reason and scientific facts than by dogma and hearsay.

Along with the physical science, the mental and moral sciences are also being systematised and developed. The development of mental science or the science of psychology has given rise to a new basis for a rational system of education. It is this science which teaches that the human mind is a unity and that the human consciousness is indivisible: that the whole of human nature is composed of three aspects of consciousness—cognition, volition and emotion—and that these are affected by one another.

(c) Another sound ideal that owes its origin to the development of the sciences is that man's whole being should be harmoniously awakened, nourished and cultivated, in the process of education. Lopsided develop-

ment will not do. Intelligence alone should not be sharpened but will and emotion should also be equally fashioned and cultured.

It is on this principle that in the modern schools of the West equal attention is paid to the aesthetic side of a child's nature and he is encouraged to learn music, art and painting. He is also given reasonable freedom to act, to draw and to learn many useful things by doing them. This is the underlying principle of the Boy Scout Movement, Pupil-Self-Government and the Project Plan.

(d) If the intellect is to be developed soundly and effectively, the senses must be proportionately trained first. That is the message of Dr. Montessori to Humanity on which her whole admirable system is based.

(e) The fifth ideal of modern education is directly derived from the Philosophy of Idealism, so well known in India as the Vedantic school of thought. Knowledge is not to be thrust from outside. It is to be evolved, drawn out from the innermost depth of a man's being. The same fundamental principle is expressed in a verse by that prince of mystics, Maulana Jalaluddin Rumi, who says, "Verily thou art the mother of all books."

On the basis of this sound principle in some schools in the West, such as Egeria's, McMunn's and all Montessori and Dalton Plan schools, children are given reasonable freedom to grow for themselves as unconsciously as a plant or a flower grows.

"If the child is to grow," says Edmond Holmes, "he must do the business of growing by and for himself. He must himself digest and assimilate the food that is provided for him. He must himself exercise all his organs and faculties. And he must do these things

* A Paper read by Mr. M. Hafiz Syed, B.A., L.T., Training College for Men, Poona City, before the Muslim Educational Conference, Poona.

on all the planes of his being—the mental, moral and spiritual planes, as well as the physical. In other words, he must be allowed to live and work in an atmosphere of freedom."

As a corollary of this indisputable principle it follows that the human element in education is a factor which has been greatly ignored here and elsewhere. Sheer humanity demands that children should be treated with as much respect, love and consideration as possible, both by the teachers and the parents alike. Fear, punishment and cruelty should have no place in their life.

(f) The corporate life of the school should be so organised as to help and encourage the students to learn and practise more of co-operation, working in combination, in team, than in competition and rivalry, which are the mainspring of so many vices and cruelty in this world.

(g) In some of the Western countries an earnest study is being made of child-psychology as distinct from adult psychology. If there is one subject that is engaging the attention of present-day educationists more than another, it is the subject of psycho-analysis. It would not be wrong to suppose that the method adopted by the new psychology is going to revolutionise educational theory and practice.

Psycho-analysis teaches that the boy in the class-room who apparently listens and attends to your lesson very often only misrepresents himself to you. He lives in a world of his own, where the teacher can seldom follow him. Absorbed in his secret thoughts and wishes he vitiates all your calculations and upsets your expectations.

You may teach him as methodically as possible, yet you fail to keep his attention. How is such a case to be dealt with? Not by exercising the proverbial rod but by clearly recognising the necessity of knowing as much of his mind as it is humanly possible by close observation of his free movements, sympathy, love and confidence.

(h) Education is compared to an edifice whose base is primary education and summit secondary and higher. Therefore, it is a complete whole and if the whole structure is to be well built and strong, its foundation must also be deep, sound and efficient in the true sense of the word.

Consequently it is considered highly desirable, nay imperative, that those in charge of infant classes and young boys should be men of competence, intelligence and wide sympathy. They should know not only the elements of physiology and biology but have a good grounding in child-psychology. It is nothing short of a crime to entrust the children of a nation or a community to men who are most incompetent in every way.

(i) Some thoughtful educationists have begun to condemn the examination system, and are advocating in its stead what is called estimation. Prof. Geddes says, "If we can estimate a classical work of art, of literature, or of science—without which trained capacity we have no competence as teachers—and if we also estimate a doctoral thesis, what is to hinder us from estimating a student's essays, or his observation-records?"

SOME GEOMETRICAL DEFINITIONS.

By Mr. U. PUNDALIK SHENOI, B.A., L.T.,
Asst., Christian High School, Udipi (S. Canara).

IMPORTANT among definitions and constructions in Geometry are those of a right angle, parallel straight lines and a tangent to a circle. But many teachers even of Theoretical Geometry have probably experienced some difficulty in driving home into the students' minds the definitions of these as ordinarily given in text-books and then proceeding to teach the constructions of the same. And in the case of teachers of Practical Geometry, considerable difficulty must have been experienced, as a proper understanding of these definitions demands a good deal of imagination and as the constructions are not directly based upon the definitions. Much ground has to be traversed from the definitions to the constructions, before the two could be clearly grasped by the students.

The definition of a right angle as commonly given in text-books is this: When one straight line stands upon another so as to make the adjacent angles equal, then each of the angles is called a right angle. Now a right angle is taken to be the primary unit of measuring angles. And what this unit of measurement is, and how it is to be obtained, is to be sought in the above definition. But the primary unit of any measurement should be convenient and easily obtainable. Which is more convenient and more easily obtainable? An inclination between two straight lines such that the inclination of one of them to the other on each side of it is the same, or that of two straight lines which are in one and the same straight line? In other words, a right angle or a straight angle? At present a

straight angle is taken to be a multiple of the primary unit, a right angle. But may not a straight angle be taken as the primary unit, and a right angle a sub-multiple (half) of it? This seems desirable. Because the definition of a straight angle is much simpler and more readily intelligible than the present definition of a right angle; and after defining a straight angle, a right angle might be defined to be an angle equal to half a straight angle, and then everything would be all right for the student. Moreover, because we do not start with a straight angle, we are having the construction of a right angle and the bisection of a given angle as two different problems in text-books, although the constructions for the two are exactly the same. But if a right angle be taken as half a straight angle, the construction of a right angle would only be a particular case of the general problem of bisecting a given angle. Again, because we do not start with the straight angle, we are feeling the need of the two theorems which we usually find in Theoretical Geometry at the very beginning. But they could altogether be dispensed with, if the straight angle be taken as the basis. How? When one straight line stands upon another, the sum of the two adjacent angles is *evidently* a straight angle or two right angles, being the parts of a straight angle—which truth therefore need not be proved as a theorem. Again when three straight lines meet at a point so as to make the sum of the two adjacent angles two right angles, the outer arms are *evidently* in one and the same straight line, being the arms of a straight angle—which truth therefore requires no proof as a theorem.

Now coming to the definition of parallel straight lines, we find that they are generally defined as straight lines in a plane which do

not meet however far they are produced in either direction. Now how can the students imagine the *possibility* of two straight lines in a plane not meeting *however far* they are produced *in either direction*, before calling them by any name? Can the possibility of such straight lines be taken as an axiom? Is it not rather a thing to be proved than an axiom to be taken for granted? Moreover, in accurate construction we invariably draw straight lines equally inclined to a fixed straight line and take them as parallel straight lines. Hence, instead of giving the above half-intelligible definition and then giving a construction inconsistent or unconnected with that definition and thus causing unnecessary confusion and difficulty, why may not parallel straight lines be defined as straight lines in a plane which make on the same side equal angles with a given straight line? In that case, the fact that parallel straight lines do not meet however far they are produced in either direction would be a property of such straight lines, which has to be, and can be easily, proved if necessary. But as its application is involved in no theorem to follow, any theorem about it is not necessary. If the change be made in the definition as stated, the first of the two theorems on parallel straight lines usually found in text-books would disappear and the second stand as it is.

Now, for the definition of a tangent to a circle. This is usually defined as a straight line which, however far it may be produced, has one and only one point in common with the circle. What has been remarked about parallel straight lines can with equal force be repeated in regard to the definition and construction of a tangent to a circle. First, it seems rather a thing requiring proof than an axiom that there *can* be a straight line which

has one and only one point in common with a given circle. Moreover, this is not used at all in accurate construction of a tangent to a circle: we construct it invariably by drawing a perpendicular to a radius of a circle through its extremity. Hence why may we not have this as the definition?—"A tangent to a circle at a point is a straight line perpendicular at that point to the radius through the point." Then the present theorem on a tangent to a circle would no longer exist. And the fact that a straight line perpendicular to a radius of a circle through its extremity touches the circle, or in other words, has only that and no other point in common with the circle would be a property of a tangent, easily proved.

Lastly in connection with the definition of a tangent to a circle, it seems quite in place to examine the definition of two circles which touch each other. "Two circles are said to touch each other at a point when each of them touches a given straight line at that point." As the *touching* of a circle and a straight line or of one circle and another has the same definite meaning alluded to in the previous paragraph, it is obvious that what is within quotation marks is no definition, but a theorem to be proved: when each of two circles *touches* a given straight line at a point, it does not necessarily follow that the two circles *touch* each other. Though it is a fact that two such circles *touch* each other, it requires a proof which involves no large amount of easiness. Hence this has to be proved before the usual expression "circles touching each other" may be used, or in its place the expression "circles having a common tangent at a common point" must be substituted in whatever theorem the former expression is used.

THE PROPOSED REFORM IN LEGAL STUDIES.

By Mr. S. SANKARANARAYANA, M.A., B.L.,
High Court Vakil, Madras.

THE present system of legal studies leaves much to be desired. The portals of the Law College are open only to students who have undergone the graduates' course. By the time a normal student enters the Law College he is aged about 21 or 22. A three-years' course more will enable him to enrol himself as a High Court Vakil. He will be 24 or 25 when he enrolls himself.

B.A. COURSE.

Let us recollect what a student after he passes his B. A. and B. L. gains by his studies. First take his degree course. We can safely assert that he remembers nothing of his optional subjects. He gains nothing by his B. A. course except perhaps a greater conversance with English language and greater ease in expression. What we are immediately concerned with is the utility of the subjects of the B. A. course to the law course. Since the student practically forgets all his optional subjects and since the subjects themselves are of no use to the student of law, we can assert that a pass in B. A. is an unnecessary qualification for admission into the Law College. It is sometimes said that the law course requires a very high standard in English and that if the qualification of B. A. is taken out for the admission into the Law College, the standard and quality of the lawyers will be diminished. But we are unable to understand how the standard will be lowered when an Intermediate can be expected to be quite as able as a B. A. so far as general English is concerned. We do enter into English literature or language, for they

are of no use to a student of law, and as a matter of fact the present Honours graduates know little of English language or literature. But as regards the general conversance with English language an Intermediate is as competent to learn law as a graduate.

F. L. AND B. L.

The two years' course of law prescribes subjects which are most of them useless, and omits subjects which are of great use to a lawyer. Roman Law, Jurisprudence and Constitutional Law which are practically of no use to a lawyer form part of the F. L. course. English Law of Real Property which forms part of the B. L. course is of no use to the practising lawyer. The Codes of Procedure, the Limitation Act, etc., which are of great use to a lawyer are left out.

Apart from the subjects taught in the courses, the method of instruction is far from satisfactory. The Professors take the easy course of *dictating* notes. While it saves them the trouble of having an intellectual discussion and wading through current case-law, the students are saved the trouble of going through books and learning facts themselves. So they merely play the game of scratching each other's backs. The Library is almost a huge waste, for about 80% of the students do not even enter the Library but are content with the notes dictated by the respective Professors.

THE APPRENTICES' COURSE.

While the Apprentice Course has been provided with a laudable ideal in view, it is being abused to a great extent. While it is provided to learn practical law, it has at present become a field to unlearn even the theoretical law that the student had learnt in

the past two years. The master to whom he is apprenticed has very little time to attend to his pupil: and the pupil is too lazy to be punctual. As soon as one year elapses the deed attains maturity, the questionnaire is signed by the master, and the apprentice is enrolled.

THE PROPOSED REFORM.

To escape the defects incidental to this system of legal education, Messrs. K. V. Krishnaswami Iyer and K. S. Venkataramani have proposed different methods of reform. The former proposes to have a different branch in B. A. containing legal subjects, a sort of preliminary training or preparation for those who wish to take law as their profession. The latter proposes to fix the Intermediate as the minimum standard or qualification required for those who wish to join the Law College.

There has been a regular chorus of praise about Mr. K. V. Krishnaswami Iyer's proposal. While it must be recognised that it has its own merits, it cannot be accepted as a system satisfying all the wants that are felt at present. Mr. K. V. Krishnaswami Iyer goes along with us so far as we recognise that the present optional subjects in B. A. are of practically no use to the students of law. He recognises that the B. L. students instead of wasting their studies in B. A. on subjects which are of no use, may profitably spend their time on allied subjects such as Jurisprudence, etc., which form the basis of all law, and which therefore may be a preparation for further detailed legal study. Nobody can dispute this fact. But this goes on the assumption that the present minimum qualification required for admission into the Law College need not be changed.

While we are unable to find any reason why the minimum standard should not be reduced to the Intermediate, we cannot but state that if the attainment of a degree is retained as a pre-requisite to legal studies, the subjects prescribed for B. A. may be altered so as to be more and more able to satisfy the needs of modern days. Mr. K. V. Krishnaswami Iyer is of opinion that Jurisprudence, Roman Law, and Constitutional Law may form the optional. It will be more beneficial if subjects of ordinary necessity, *i.e.*, subjects which everybody ought to know if he is to understand the civic rights of a citizen, ought to be included in the curriculum. Mention may be made of laws relating to Income-Tax, Local Boards, Municipalities, Irrigation, Revenue, Railways, Post Office, Co-operative Societies, Registration, etc., a knowledge of which is necessary for the equipment of a citizen. What we wish to suggest is that what every citizen ought to know in order to avoid the difficulties in ordinary work-a-day life in order to make himself a real citizen, should be included in B. A. While the lawyer must know these in detail to practise his profession, the ordinary citizen should know these to avoid the penalties arising therefrom. This does not mean that the ordinary citizen need not know the subjects taught in F. L. and B. L. We mean that B. A. should comprise subjects which are not prescribed for F. L. and B. L. but which may be a necessary appendage to a lawyer but an utter necessity to a citizen.

The Pledership Course should be abolished at once. The Apprentice Course may be included in the regular law course itself, and the Codes of Procedure may be included as a subject for B. L. Library periods may be provided with a separate Professor to super-

wise the classes. An effective superintendence may be had of the Apprentices' work in their masters' offices.

There should be an end to this sham course of the Apprentices, and the masters should be given the option either to attend to the Apprentices or not to take them at all. A more effective check should be placed on the Apprentices to ensure attendance in the High Court than what is simply seen from the cooked-up notes of cases and diaries. If these are not done, there is no use whatever in the proposed reform.

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YOUTH—THE SAVIOUR OF HINDU ARTS.

By Mr. K. ANANTHACHARI, B.A.,

Madras.

"It is not growing like a tree
In bulk, doth make men better be;
Or standing long an oak, three hundred year,
To fall a log at last, dry, bald, and sere;
* * * * *
In small proportions we just beauties see;
And in short measures life may perfect be."

—BEN JONSON.

"The ultimate end of education is not the mere quest for bread and butter," says a great writer. This to many of us may seem controversial; yet most of us are apt to think that the end and aim of every student is getting success in the examinations. In modern times, the epithet 'ideal' applied to students, conveys not the sense of perfection and superior attainments, but has been indiscreetly applied to the industrious book-worm.

The modern ideal student has always his eye on the examinations, and his success in the same, for the attainment of which he sometimes sacrifices more important ends. He is indifferent to all other activities which bring pleasure to the mind and is deprived of much that makes life worth living. He shuns company and sits always in his study-room "with carpet slippers and a laden inkpot" and is just an *Il Penseroso* in his solitary cell. After strenuous and hard work for months together, even at the risk of his health, he finds himself greatly relieved and perfectly contented that the goal has been reached on passing the examination. This kind of solitary living confined to the text-books makes him very narrow-minded and pessimistic. He puts up a very gloomy appearance both in

the class-room and outside, loses the buoyancy of youth and is a source of disgust to his fellow-students.

This sort of narrow concentration on the part of young men has not only produced crazy and disgusted men but has also caused to a very great extent the disappearance of our ancient Fine Arts and Sciences. Our young men even seem to have a contempt for our arts. Sanskrit has been neglected very much with the result that the medium of learning some of those valuable books of Indian culture is lost.

The Hindu Philosophy, Ethics, Astrology, Astronomy and other sciences are all forgotten. University education does not prevent us from studying all these sciences and knowing much about ourselves. Even the most industrious student has got some time to devote for the study of these. About four months in the year are holidays and it is a known fact that every student wastes all these days in useless ways. There is enough and more time for the ideal student to spare for other things than the University texts. He may learn some of the main principles and doctrines on which Hinduism rests, the important ideals which our philosophy and religion preach, and some of the anecdotes about our ancient Kings and Rishis who have led ideal lives and set for us noble examples to follow.

Astrology, for instance, is a very important and tempting science. If only a student takes the trouble of peeping into one of the introductory books, surely he will not leave the study. But though it will be very difficult to pursue the study of the science to the very end with success, still he can pick up at least some of the preliminary things, for example,

the names of the Tamil years, the twenty-seven popular stars, to cast a horoscope, to calculate auspicious times and such other informations which will be found very helpful in our every-day life. Many of the students are not able to give out their date of birth, or even the year; they do not know the significance of our festivals and pandigais, and these defects must be rectified.

The main principles of Hinduism and the Hindu Philosophy must be known to every Hindu. It is not necessary that one should know Sanskrit for this. Swami Vivekananda has delivered learned lectures on these subjects in India and America, which have been published in English, and a study of his speeches and writings will give the reader very good ideas about our religion and philosophy.

The Hindu Ethics are the most useful science for us. The great Epics, the Ramayana and the Mahabharata, are good reading on the subject. It is a pity that many young men of to-day mock at them as mere monstrous stories which cannot be based on any scientific truth and practicability; and having these doubts they avoid reading them even as stories. But the moral principles and duties which the two Puranas teach, the noble examples they give, will no doubt produce a wonderful effect and an everlasting impression on young minds and make our youngsters more steady in their character and be more careful to their moral duties.

The Hindu theories of the general Universe, their ideas about the occult worlds, and life after death, are quite true and most interesting to know. They are elaborately dealt with in the Vishnu Purana and other Puranas. Till very recent times, we were

mocked at by the Westerners as superstitious believers in the fatalistic theory and in the existence of several worlds, both above and below this world. But the experiments of Sir Oliver Lodge, the greatest scientist of to-day, and his psychic researches have clearly shown to the world that the Hindu theories are quite correct and true. Raymond, the son of Sir Oliver, who died in the battle-field, being invoked through psychic mediums, gave an outline of his life on the other side of the grave. How strikingly these descriptions of the various spheres that rise up beyond this mortal earth read like the Hindu Scripture on occult topics! But after all the modern research has been on a par with the first page of Hindu occult history. Sir Oliver says: "There is no real breach of continuity between the dead and the living... I am as convinced of continued existence on the other side of death, as I am of existence here. I shall go further and say I am reasonably convinced of the existence of grades of being not only lower in the scale than man, but higher also, grades of every order of magnitude from zero to infinity."

Hypnotism is one of our secret treasures and it can be practised successfully if some of the best books on the subject are followed. We can be proud of having had wonderful magicians (Manthrathees) in the past, who had been very useful to the people. For instance, they cured snake-bites and other incurable chronic diseases in no time. Even now these mystic sciences are studied by the Malayalees.

One may be curious to know how Hypnotism may be useful to the people. An experience given by an English Professor will clear the doubt. He had some half a dozen of his class-mates who were practising hypnotism

when they were college students. Some years later, the Professor chanced to travel with one of them who had trained himself as a successful hypnotist, though he got the degree and was employed in a high post. It also so happened that the hypnotist's sister who was in her full pregnancy began to labour in the Railway compartment. The hypnotist was able to make her have a very easy delivery without any help and without alighting from the train.

Music has been one of our finest and charming arts, which no other country can be proud of. Any one who only has some curiosity can easily learn to appreciate music and to differentiate between the various parts of it—Ragams, Keerthanams, Swarams, etc. Shakespeare has said:

"If music be the food of love, play on;
(Give me excess of it, that, surfeiting,
The appetite may sicken, and so die."

Then there is the fine art of Painting. The modern students have a very poor idea of the excellence attained by some of our Hindu painters. Painting is a very interesting and pleasing art. A finely-painted picture pleases everybody in a way. This art can be practised by young men, and though they may not easily attain perfection, still they can produce good paintings quite amusing and pleasurable to themselves.

"Desire and curiosity are the two eyes through which a man sees the world in the most enchanted colours," says R. L. Stevenson. Hope and aspiration are the sources of inexhaustible joy for a man and they lead him to some pleasurable activity. Stevenson continues: "Life is only a very dull and ill-directed theatre unless we have some interests in the piece; and to those who have neither art nor science, the world is a mere arrangement of colours, or a rough foot-way where they may very well break their shins." Hence it is that the young men with hope, aspiration and curiosity—these are things which our elders lack very much—must try to know more about ourselves and have a peep now and then into our ancient sciences and practise some of the fine arts, and thereby make not only their lives pleasurable but also do a great service to the country by keeping alive the glory of Hindu culture.

THE TEACHING OF ENGLISH TEXT-BOOKS.*

It is needless to expatiate at length on the many obstacles that beset the path of the English teacher who has to contend against them with all his might throughout his professional career, for the very simple and obvious reason that it is only too well-known to every one of us. The teaching of a foreign language, especially of the type of English, taxes the best energies and talents of the teacher who is compelled by the force of circumstances to be ever on the alert and to keep himself in touch with the latest developments in the field of foreign language teaching; for any slight negligence on his part to do so implies his being relegated to a position of comparative unimportance and inefficiency by the more prudent or fortunate members of his profession. Hence it is that he has the feverish anxiety to keep himself informed of the most up-to-date methods in the field, lest he should be branded as being addicted to old-world methods and principles.

I think it will be freely granted that the text-books are the core round which the whole fabric of English teaching is built up. They are the source and centre of all instruction as they supply us the necessary subject-matter without which instruction in any language would be an impossible affair. Such being the case it will not be quite out of place, nor wholly unproductive of any advantage, if, in the following pages, an attempt is made to discuss the place and scope of text-books and the best methods of handling the same in the class-room.

* A Paper read before the Teachers' Union, D. J. High School, Gobichettipalayam, by Mr. S. S. Visvanatha Iyar, B.A., L.T.

As matters stand at present the majority of English teachers seem to entertain not very clear notions about the utility of text-books and the methods of handling the same in the field of education in the English language. The present-day methods of handling text-books can broadly be indicated thus. After the customary drill in reading and pronunciation, the teacher proceeds to explain the passage, which mainly takes the form of giving English equivalents or synonyms to every one of the difficult words and phrases met with in the passage read. This is invariably followed by illustrations of the use of such words by means of sentences either elicited from the pupils or given by the teacher himself. If any exceptionally difficult sentence having a complicated construction intervenes, the pupil is usually asked to analyse it, the idea being that the very process of analysis clarifies the meaning of the passage where difficulty is met with. The lesson is then brought to a close by giving exercises to the pupils in parsing some difficult words and phrases chosen at random by the teacher.

The chief defect in the above scheme lies in the fact that the subject-matter is relegated to the background, the attention of the pupils being diverted mainly to the words, phrases and grammatical forms and their uses. At the end of the lesson the pupil may not be able to give a connected and brief account of the contents of the passage taught; on the other hand, he feels it easier to answer questions in grammar, analysis, parsing, use of words and phrases, transformation of sentences, etc. The result is that he gets little or no training in the use of language, which is the first and foremost aim of English teaching. It is no wonder therefore, that his composition is defective

in many respects, though he is able to understand and answer questions in grammar. To him grammar is a separate thing, all by itself, unconnected with composition.

The above state of affairs has thoroughly to be overhauled if the pupil is to make any headway at all in the direction of proper use of English and it can be done only by restoring subject-matter to its rightful place of importance. It need hardly be pointed out that it is always preferable to present to the pupils the whole, or, at any rate, a distinct portion of the passage to be taught both in prose and in poetry. If the passage is sufficiently short and not very difficult, it is always better to present the whole of the passage to the boys, thus complying with the pedagogical maxim, "*From the whole to the parts.*"

A distinct and well-accentuated reading of the passage on the part of the teacher, with due emphasis on the proper places, facilitates to bring home to the pupils the gist of the passage, or, in any event, the central idea underlying it. The pupils then should be questioned on the substance of the portion read to them and the gist of it should in most cases be elicited. They may be made to put questions to each other, which process trains them in the proper use of interrogative sentences, a thing, in which the boys are, as a rule, woefully lacking in skill. This should be followed by drilling some of the pupils, at any rate, in continuous narration of the story or event exemplified in the portion read. Some others may be called upon to assume the role of any one character in the event or story and made to recite the experiences. If the passage is such that it easily lends itself to being converted into a dialogue, it should then be adopted and tried. It is not intended

that every one of these devices should be adopted in connection with each lesson; but it cannot be denied that some at least of the above methods should be capable of being put into operation in connection with almost all lessons.

The foregoing remarks apply not so much to the lowest classes, namely the IV and V classes but only to the forms. In the former case the text-books should be made to serve the purpose of a suitable basis for carrying on conversations in English with the boys.

The chief advantage of the plan sketched above lies in the fact that the pupil is enabled to hear English spoken constantly by the teacher and by his friends in the class. He himself is made to put questions to the teacher and to others in English and answer questions put by them in the foreign tongue. It is almost a truism that ability to speak a foreign language is gained only through constant oral practice of the same and also through its being spoken by others frequently. It is clear that this desired consummation is attained not so much through parsing, analysis, and other grammatical exercises, nor through the illustrations of uses of words and phrases by means of disjointed and isolated sentences torn from their context, but only through constant oral drill in continuous narration or description as the case may be.

Apart from the fact that the above plan affords an occasion for expression in the foreign language on the part of the pupils, there is one other advantage which we can claim for it. The pupil might have been made familiar with new words and phrases or good grammatical forms in earlier lessons. Left to himself the pupil almost always fails to employ such forms and modes of expres-

sion in his speech, his stock of vocabulary remaining invariably a constant factor with him. Hence it is that the teacher is expected to create necessities for him so that he may be forced to use what he had been taught. Such occasions for the use of desirable idioms and forms of speech cannot be provided for, except while he is actually engaged in continuous narration or description. For example, one common defect among pupils is the frequent repetition of one or other of the various inflections of the words like, "say" or "tell" in his expression. In such a case the teacher might very well point out to him that he is expected to use other words like "remark," "reply," "question," "answer," etc., in his speech and writing.

After this drill in continuous expression with regard to the substance of a passage read, the teacher is expected to take it up for detailed treatment. Even here the gist of a paragraph may be elicited before going to individual sentences. Only those sentences or parts of a sentence should be explained by the teacher, which cannot be understood by any amount of exertion on the part of the pupils. When a difficult word occurs in the middle of a paragraph, the teacher may try to obtain its meaning from the boys from the context where it is used and, only when he fails in this attempt, is he called upon to make its meaning clear by other devices. But it should be borne in mind that the progress of a lesson should on no account be arrested by asking the pupil to use such words in contexts which have no bearing at all on the substance of the passage that is being taught to him. For in that case the pupil loses interest in the subject-matter of the lesson and becomes pre-occupied with ways and means of using the words in as many

instances as possible. I do not mean to say that this work should altogether be neglected or given up; but what I wish to convey to you is that such work should be postponed to the end of the lesson, when all the words and phrases met with in the course of the lesson may conveniently be taken up for thorough drilling.

Drill in the use of idioms and words is, therefore, the next important item of work that should engage the attention of the teacher. At the end of the lesson such of the words and phrases, as have been already explained, should be carefully chosen by the teacher for detailed treatment. The circumstances, in which a word or a phrase may be employed, should be elicited from the pupils or mentioned to them in English or even in the vernacular if the former is found to be impossible. Let me illustrate my meaning by taking a concrete example. Suppose there is a sentence "*Ceylon is surrounded on all sides by water,*" in one of the texts. After explaining the passage the teacher proceeds to ask a pupil to use the word similarly in a sentence of his own. The boy naturally tries to find out an exact prototype of the one that he has met with in the text and so he hits at the answer, "*Japan is surrounded by water.*" By this time the other boys also come to know that it is after all not very difficult to use the word, and sentences like "*The Andamans are surrounded by water,*" "*Srirangam is surrounded by water,*" etc., are hurled at the teacher in quick succession. If the unwary teacher were to be satisfied with these answers, then he has failed to notice that a mistaken impression has gained ground in the minds of the pupils that there is a close and indissoluble connection between the two words "*surround*" and "*water,*" and that the

former can be used only in connection with the latter. This melancholy effect can be easily avoided by mentioning and explaining to the boys varied circumstances in which the word can be employed and by getting them to use that word in connection with those circumstances. The latter should never be left to the boys; on the other hand, the teacher should supply them himself. It will be seen from this that the teacher has to fully think out and evolve a plan for teaching the use of every difficult word and phrase.

The experience of every English teacher tells us that even this drill in the use of words and phrases does not enable a pupil to use them voluntarily in his composition exercises and in answering examination questions. He goes on with his original stock of vocabulary unmindful of the new words and phrases that he has learnt. This state of affairs can be remedied only by forcing the pupils to use a given set of words and phrases in the case of each exercise, written as well as oral. The teacher should keep a list of desirable words and phrases that occur in the texts and from this he should carefully select such of the words and idioms as can be naturally used in connection with any particular exercise. I do not see any reason why each question in an examination paper, involving a sufficiently long answer, should not be followed by a short list of words and phrases that the pupil is expected to use in connection with that question. Of course the teacher should be careful not to include only those very words and phrases that occur in the text bearing upon that question; for the pupil will simply repeat the book sentences. The teacher may ask the pupils to use certain of the words and phrases that occur in the detailed text in connection with a question on the non-detailed texts or in connection with a general question.

We often meet with questions such as "*Use the following words and phrases in sentences of your own*" in English papers. If they test anything at all, it is only the pupil's act of memory; for he simply repeats what he has taken down in his note-books during his English class. The object of asking such questions is simply to test whether the pupil is able to use these words and idioms in sentences of his own. I wish to impress upon your mind that this purpose is better served and the words and phrases are made the private property of the pupils by distributing them over all the questions that the pupil is called upon to answer.

Next in point of importance to drill in words and phrases is the use of grammatical forms that occur in English text-books. This work also should be taken at the end of a lesson. The new forms that occur should thoroughly be drilled in connection with each lesson and after finishing a sufficient number of lessons, they may again be collected for inductive treatment during the regular grammar class. For example, the pupils might have been made familiar with the use of many adverbs in the course of the lessons occurring in detailed text-books. When the teacher comes to "Adverbs" in the Grammar class and wants to proceed on the inductive plan, he may ask the pupils to collect the various adverbs from the past lessons, write them on the board, and, with the help of the pupils themselves, classify them and deduce rules of grammar from them. He may then proceed to give exercises in grammar to see whether the pupil has understood the use of "Adverbs."

The pupils might have been taught various kinds of clauses both in connection with the detailed lessons and in the regular grammar

classes. But the pupil invariably fails to introduce any of these clauses in his answers which mainly consist of monotonous simple sentences containing nothing but a subject, a predicate, and an object wherever possible. All the sentences may be grammatically correct; but the teacher should not feel satisfied on this score. For, though he has been taught many kinds of clauses, the pupil has not succeeded in making them his own. For this purpose, therefore, the teacher may ask the pupil, while he is engaged in continuous oral narration to use specified clauses in his answer. I fail to see why examination questions (in the lower forms at least) should not be followed by some such instruction as follows:— "Use two noun clauses, three adjectival clauses, and three adverbial clauses in your answer to the above question."

We often meet with questions bearing upon the context of a passage in the English papers. It is to be admitted that pupils have received very little training in answering these questions. Whenever the pupils are asked to explain the context of a passage occurring in the text, they simply summarise the whole of the preceding part of the story, or if they are asked to be brief, they mention only that the passage occurs in such and such a place in the lesson. Both these answers are clearly wrong. This defect can be removed by asking them in the class itself to explain the context of the passage orally. The teacher may then correct them then and there, if they go wrong in either of the two ways mentioned above. From the lowest classes the pupil may be asked to explain the context of a passage occurring in the Tamil text orally. Why should the boys be sprung upon with such questions in the English paper as soon as they reach the

II or the III form with little or no previous training? I wish to tell you that much of the difficulty that is now experienced by the boys in this matter would vanish in a moment if in the Tamil class they are asked to explain the context of a passage occurring in Tamil Prose or Poetry from the lowest standards. The English teacher may also ask the boys first to explain the context of a passage in the vernacular and then in English. If such spade work is done during class hours, I think I can safely assert that many of the absurdities that we ordinarily meet with in context questions would disappear.

The object of setting apart certain books for non-detailed study is that the pupils should receive as little help from the teacher as possible and that they should be encouraged to study and understand English books by their own efforts. The teacher should not explain them to the boys. Books for this kind of study should be carefully selected, so that they may be neither above their standard in which case they cannot understand them, nor, far below their level, in which case the very object of having them is defeated. The pupils must be asked to study at home sufficiently long passages from their non-detailed text-books and the teacher should elicit the main story by carefully-graded questions in the class. This kind of work is unnecessary in the higher forms, where pupils must be asked to study specified portions from their non-detailed texts and come prepared to the class with their analysis of the same. In either case the portion of the story studied by them should be divided into various parts and the hints should be written on the black board. Then the boys may be asked to develop the hints one after another, each boy being asked to develop a hint at

a time. This may profitably be followed by asking them to narrate the whole of the portion studied as reported by any one of the characters therein. Such work, it is unnecessary to point out, engages the boys in English conversation and continuous narration, and it is of the highest value as subserving the higher ideals of composition and essay-writing.

To sum up then, subject-matter should be given as great a prominence as possible, oral continuous narration as a means of training the powers of expression of the pupils being the chief aim. Drill in the use of words and phrases should be reserved to the end of the lesson instead of arresting the progress of it then and there, and thus diverting the attention of the pupils from the substance of the passage taught. The pupils should be encouraged and even compelled to use the words, phrases, and grammatical forms studied in his oral as well as written composition and in his answers to questions in the examinations. The difficulty felt with regard to context questions may be easily solved by asking such questions from the lowest standards in connection with Tamil Prose and Poetry. The non-detailed texts should be made to subserve the higher ideals of composition and essay-writing by making the boys study and understand the text-books by their own individual efforts and by engaging them mainly in oral continuous narration with a view to develop their powers of expression. It is only by such untiring efforts that the pupils can be trained to use the English language with freedom and ease.

THE BUDGET AND EDUCATION.*

BY THE REV. W. MESTON, M.A., D.D.

THE present meeting affords us an opportunity of reviewing once again the Budget of the Government of Madras in so far as it affects education. The full figures are given on pages 192 to 238 of the Civil Budget Estimates for the year 1925-26. Interesting notes are to be found on pages 40 to 42 of the Budget Memorandum. We shall confine ourselves, as formerly, to a consideration of the provision made for general, as distinct from professional and special, education. Our review will deal with University, Secondary and Primary Education, and the Inspection of Education. It will close with a few general conclusions.

A. UNIVERSITY EDUCATION.

We are concerned with the allotments under this head which are made in respect of general education; and in the Budget there are three such items:—

	Rs.
Grants to Universities	... 1,52,800
Government Arts Colleges	... 9,28,700
Grants to non-Government Arts Colleges	... 4,63,700

The most that can be said with regard to the University is that so far it is costing the tax-payer very little. The amount budgeted for is an addition of only Rs. 37,300 upon last year's estimate, and the total is so small as to lend itself readily to misconstruction. This would be unfortunate. For the meagre sum must not be taken as an index of the Government's interest in the work of the University. Within the year, the rules relating to the payment of grants have been satisfactorily arranged, and the Professorship of Indian Economics has been placed on a

* A Paper read before the Missionary Educational Council of South India, Aug. 22nd, 1925.

permanent footing. When the University is prepared to embark on a programme of expansion there is no doubt that the needed money will be forthcoming. There is some prospect that an Institute of Advanced Oriental Studies and Research may be established within a year or two and may thus remove from the University the reproach of evincing little interest in those subjects which come most appropriately within the sphere of its investigation and encouragement. But before the University of Madras as defined in the Act of 1923 becomes a really effective place of learning, its present affiliating functions must be reduced to a minimum if not wholly abrogated. And it is worth while noting that the heading which in previous budgets read 'Grant to University' now reads 'Grant to Universities.' The Andhra University Bill has been introduced into the local Legislative Council, and the hope of all interested in the advance of higher education is that the Act which will emerge may be the means of establishing in the northern portion of this Presidency a strong and influential University. The Missionary societies concerned have taken time by the forelock and have their plans ready so that they will be in a position to take their appropriate share in the life and administration of the new University. The Report of the Committee on the Travancore University has been published and is interesting reading. We anxiously await the action which will be taken on it. Another scheme which may soon claim our attention is the proposal to utilize certain religious endowments for the establishment of a Hindu University near Tirupati. The whole situation calls, in my opinion, for a very definite review of the part which Missionary societies are taking in University education. Conditions have changed very greatly within the last three years and every change seems

to me to make a more and more definite appeal for concentration. But this matter would require a paper for itself, so we may now turn to the next item on the Budget.

The expenditure on Government Arts Colleges is estimated to be Rs. 9,28,700 as against Rs. 8,86,300 of the preceding year, a rise of slightly over Rs. 40,000. The grants to non-Government Arts Colleges for which provision has been made in the Budget total Rs. 4,63,700, an increase of a lakh on last year's estimate. Now regarding these figures let us pay attention to the following points:—(1) The ten Government colleges are attended by, in round figures, 2,500 students, the thirty-three non-Government colleges by 7,500. The colleges which provide instruction for one quarter of the students of the Presidency cost from public funds Rs. 9,28,700, the colleges which provide for three-quarters of the Arts students of the Presidency receive in aid from public funds Rs. 4,63,700. Thus the cost of the agency which supplies the quarter is double the cost of that which supplies the three-quarters. (2) The teaching grant voted in the Budget for non-Government Arts colleges is a lakh and a half, the amount paid for what are known as the 'officers', i.e., those in the I.E.S. and M.E.S., in Government Arts colleges under the head of salaries is Rs. 3,95,000. Thus the work of all the teachers of non-Government colleges is at the service of the young men and women attending colleges for a charge on public funds of much less than half that of the 50 Government educational officers. And let it not be forgotten that under teaching grant to aided colleges is included office expenses, ordinary repairs, rents, taxes, contingencies. The 'Pay of Establishments' alone in Government colleges is over 3½ lakhs. (3) The salaries of these officers is only Rs. 70,000 less than the total amount voted

to non-Government colleges for teaching, building and equipment. (4) The grant which aided colleges receive for buildings is Rs. 1,57,800. For the 'Umdabagh' buildings Rs. 80,000 is included in the Budget, and for a Science block for Queen Mary's College Rs. 1,00,000. So that on two Government schemes alone much more is being expended than is being given for the buildings of all the non-Government colleges, and these two colleges between them are attended by some 300 students. (5) There is a welcome increase on the amount of grant given for equipment. Last year it was put down at Rs. 37,000, this year it figures as Rs. 1,46,500. But while there is now some indication that the State does wish to co-operate with private effort in the provision of books, apparatus and material, the co-operation after all is on the meagrest basis. For, while it is not easy to find out details of expenditure in Government colleges, or to be quite sure what is included under some of the headings, this at least is true, that the provision in Government colleges for books, periodicals, apparatus and materials amounts at least to Rs. 89,300. So that even the greatly enhanced allocation to non-Government colleges under the heading of equipment amounts to only Rs. 60,000 more than what is given to the few Government colleges as part of their 'Contingencies' and part of their 'Supplies and Service.'

While readily admitting that as far as equipment goes the Budget is an improvement on last year, I do not think that even its most sanguine supporters could regard it as at all satisfactory in the allotments that it makes to aided colleges for teaching and buildings. When the amount of work which is being done by these colleges is remembered,

the complete inadequacy of the grant of Rs. 4,63,700 hardly requires to be emphasised. When is the Ministry to encourage education?

B. SECONDARY EDUCATION.

The Budget allotments for Secondary Education are as follows:—

	Rs.
Government Secondary Schools ...	2,70,100
Direct grants to non-Government Secondary Schools ...	10,43,800
Grant to local bodies for Secondary Education ...	10,70,000

The figures follow much the same lines as last year. The amount given to Government schools is Rs. 60,000 less than it was last year, while the grants to non-Government schools have increased by Rs. 60,000 and the grants to local bodies for their secondary schools has been increased by Rs. 1,40,000. It is difficult, from the Budget, to say with any assurance how the saving of Rs. 60,000 has been effected on Government Secondary schools, for many details which one would wish to have are not set forth. But there is one fact which strikes one at once, namely, that forty-five fewer temporary teachers and Pundits are budgetted for than was the case last year, and the number of permanent teachers is also slightly diminished. How can such a diminution in the staffing of the Government schools be effected without a considerable loss to the educational value of the schools? One Government Secondary school has been transferred to the management of a Municipality, so the Budget Memorandum tells us, and the transfer may account for the diminution in the number of permanent teachers. But when all is said, we are left wondering whether a real saving

has been effected. Passing from this aspect we may note four points to which the Budget allotments draw our attention.

(1) Government manages 37 Secondary schools, attended by 10,000 pupils, and receives from public funds Rs. 2,70,000 for their maintenance; private effort manages 315 Secondary schools, attended by 111,000 pupils, and receives from public funds Rs. 10,43,800, that is to say, private effort educates eleven times as many pupils as does Government and the cost to the tax-payer is not quite four times that of the Government schools, distinctly below the four times, if to the Rs. 2,70,000 in the Education part of the Budget there is added the amount charged by the Public Works Department for the maintenance of school fabrics. (2) Boards and Municipalities manage 203 Secondary schools, attended by 46,000 pupils, and they receive from public funds Rs. 10,70,000, while as already mentioned there are 315 Secondary schools with 110,000 pupils under private management and the grant to them from general revenues is Rs. 10,43,800. On the face of it there is something unsatisfactory in this distribution. Boards and Municipalities have statutory powers to raise funds for educational purposes. The amount thus raised may be taken as corresponding to the amount which private managers put into education out of their own pockets. The grants or subsidies made to these forms of management should, one would naturally think, bear some relation to the contributions from their own resources which they respectively make. But this is not the case, as a reference to the Director's Report for 1924 shows. For while local bodies put the sum of Rs. 3,77,000 into secondary education and receive

in subsidies Rs. 5,84,000, private agencies put in over Rs. 14 lakhs and receive in grants just over Rs. 9 lakhs. Then again one would think that the amount given would bear some relation to the work done. But, once again, this is not the case. For in regard to secondary education, private effort is educating much more than double the number of boys and girls that are being educated by local bodies and the grant which it receives is less than that allotted to local bodies. Let nothing be done to impair the educational efforts of Boards and Municipalities, indeed let everything be done to foster them. But let not the agency which is educating 66 per cent. of the boys and girls attending secondary schools receive a treatment which is to its disadvantage and certainly shows no fostering care. (3) The amount allocated under the head of Building to local bodies remains unchanged from last year, while the allocation of non-Government Secondary schools is raised by Rs. 27,000. Against this rise for all secondary schools under private management set the expenditure of Rs. 65,000 on one departmental school, the Government Secondary School and Training School for Mistresses, Mangalore. (4) As regards equipment the secondary schools under private management receive an increase of Rs. 5,000; the allocation to local bodies is ten times what it was last year. The rise of Rs. 5,000 to private managers is less than the amount put down for 'Miscellaneous Contingencies' in Government secondary schools whether for boys or for girls.

To this I would add one matter which should be raised in the interests of education and of expenditure thereon. Are the sums which are being spent on vocational education

well spent? The recurring expenditure under this head is now up to Rs. 22,000 in Board and privately-managed schools together, while the non-recurring expenditure comes to nearly half a lakh.

I cannot pass from this part of education where the Budget does so much to depress the efforts of private managers without expressing the satisfaction that comes to me as I see an allocation of Rs. 5,700 for the Medical Inspection of non-Government Secondary schools. It is good to see that the State recognizes some responsibility in this all-important matter.

C. ELEMENTARY EDUCATION.

The Budget provisions for Primary Education are as follows:—

	Rs.
Government Primary Schools ...	30,900
Direct grants to non-Government Primary Schools ...	32,000
Grants to local bodies for Primary Education ...	83,77,800

The following points are worthy of notice:—

(1) It is satisfactory to note that the Government policy of withdrawing from primary education is being given effect to. Two years ago the Budget allotment for Government Primary schools was Rs. 1,24,000; last year it was Rs. 39,400; this year it is Rs. 30,900. (2) Of the Rs. 83,78,000 allocated to local bodies, Rs. 53,00,000 goes to Boards and Municipalities, while Rs. 30,78,000 goes to District Educational Councils, which means that the former receive Rs. 5½ lakhs more than they did last year, and the latter not quite one lakh. (3) As has been reported to this Council, an endeavour has been made by Government to rectify the admitted inequality of last year so far as aided schools were concerned. Much leeway has

still to be made up. (4) Government primary schools are attended by 46,800 boys and girls, Board and Municipal schools by 675,800 pupils, and primary schools under private management by 1,048,100 pupils.

D. INSPECTION OF EDUCATION.

I am sorry to see that the amount devoted to Inspection is only Rs. 14½ lakhs, just half a lakh above the sum entered in last year's Budget estimate. As far as I can make out, provision is made for one additional inspecting officer in the Women's Branch, and for one fewer in the Men's Branch. I pointed out the danger in 1923, of a diminished inspectorate and very little has been done to allay one's fears. I do not like the method of supporting the inspectorate by what the Budget enumerates as 'temporary' officers. I need add little to what I have already said regarding this educational provision. In the inspectorate we have the key to the situation, the real means whereby education may be advanced. Education cesses may be levied, and Municipalities may adopt compulsory primary education, and discussion may continue over the S. S. L. C., but all these will be either futile or disappointing unless the matter of the inspectorate is taken up in real earnest. Much more money must be allotted for it and high professional qualifications must be demanded for admission to it, while the whole lines of service would stand a complete re-consideration. When efforts are made in these directions and satisfactory provision is made in the Budget we may hope for a real advance in our educational work. As far as boys' schools go I have one suggestion. One District Educational Officer is not equally at home in all the subjects of the secondary school course, while he may have special qualifications for one or two subjects,

and his colleagues in surrounding districts may have the qualifications in subjects which he does not possess. Why should there not be a grouping of districts and a pooling of the inspectorial resources? This would not make any appreciable addition to expenditure, while it would add to the effectiveness of the work of inspection.

E. CONCLUSIONS.

This is now the third time that I have had the privilege of passing in review before you the provision in the Madras Budget for Education. We have in this way considered the Budget estimate passed by the Legislature in 1923, 1924, and 1925. There are certain points which stand out clearly as the result of these analyses.

(1) First and beyond any doubt Aided Education is not receiving its due. In a communication addressed to this Council on the 4th December 1924, this sentence occurs: 'The policy of Government has always been to carry on the expansion of higher education as far as possible through the aided agency.' It is very hard to reconcile this statement with what the Budget provisions contain. It is idle to send such a communication as that if the emphasis has to be placed on the words 'as far as possible.' The amount that is being absorbed by Government schools may be reduced by a definite policy of transfer, the subsidies to local bodies which are out of relation to the grants made to aided bodies may be equalized by a definite policy of standardized aid to all bodies, local as well as private. There is nothing that stands in the way of giving the fullest expression to avowed policy. But whatever policy may be in the mind of Government, no one who goes carefully over the last three Budgets could

possibly assert, as far as financial support goes, that the policy of Government is to advance higher education as far as possible through the agency of private effort. For the sake of the country and for the sake of the spread of education, Government must be given no rest till it sets itself resolutely to give effect to its own policy.

(2) It is equally clear that the whole Educational Department requires re-organization. At the present time it is overburdened. Every year makes it more difficult for those at the head of it to escape from details and routine and to devote themselves to policy and principles. In the present state of affairs such attention is what is being clamantly called for. We may do something to advance this end if we definitely raise our voices on two points:

(i) The appointment of the Director of Public Instruction as a Secretary to Government. His present position is anomalous. Surely the Director of Public Instruction is doing as much in the way of 'Public Works' for the Presidency as the Chief Engineer of the Public Works Department, who is also a Secretary to Government.

(ii) The restriction by the Educational Department of its sphere of activity to that of Administration and Inspection. Then the Department will have some chance of shaping a stable educational policy.

(3) There is need for Government to adopt in all grades the definite policy of withdrawing from the management of schools and colleges. It is steadily following this policy in regard to primary schools the management of which it is transferring mainly to local bodies. It is hampered in carrying out this policy in regard to secondary schools by its

management of training schools which require schools attached to them. But a generous policy of grant or subsidy would effect the transfer of these to local or private management. And the same policy would be equally effective in regard to the transfer of colleges of general education. Professional schools and colleges would for the most part remain in the hands of Government for some time to come, but even here a beginning might be made at once without disadvantage. Such a policy has two great merits: it sets money free, and it unifies the teaching profession.

(4) The greatest need is a strong inspectorate. The money budgetted for this object is at present wholly inadequate, and the cadre is (because of its smallness) set a task wholly beyond its powers. When Government determines to restrict itself to administration and inspection under education, inspection will benefit at once, and the whole outlook of education will be brighter.

(5) A policy of grants-in-aid based on definite principles requires to be enunciated and adhered to. The Budget shows that the present condition of affairs must be changed. It will not do to avow a policy of grants-in-aid and then years later to bring in legislation which may hinder the execution of that policy. Local bodies and private managements engaged in education are equally rendering a national service. There must be an equality of recognition. That is what the Budget does not show. And education all over the Presidency is losing because of this. A general system of subsidies and grants based on service rendered and contribution made is urgently required in the interests not of managements but of education. And this might be secured by

means of amendments to the Elementary Education Act, and by giving appropriate statutory powers to Secondary School Boards. How long are we to wait for this legislation?

We as a Council are believers in aided education because of what it means to the country. And if Government is not able to give effect to its policy, as expressed in many official documents in the past and the present, it is for us to do everything in our power to uphold that policy and to advance it. And I submit that we can give Government the help that is required to make its policy effective by steadily pressing for four things:—a re-organized Educational Department; the abandonment by Government of its management of schools and colleges; the establishment of a strong inspectorate; and the institution of a generous system of grants and subsidies applicable alike to Boards and private managements.—*The Madras Christian College Magazine*, Oct. 1925.

THE SCHOOL ARITHMETIC BEING SOLUTIONS OF THE QUESTION PAPERS SET FOR THE LOWER SECONDARY EXAMINATION FOR THE YEARS 1880 TO 1904

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Reviews and Notices.

SPECIAL PERIODS OF HISTORY. (GEORGE BELL & SONS, LTD., LONDON). *2s. each.*

1. BRITISH HISTORY (1660—1714) BY N. P. BIRLEY. pp. 164.
2. EUROPEAN HISTORY (1789—1815) BY J. A. HIGGS-WALKER. pp. 184.
3. BRITISH HISTORY (1509-1563) BY G. B. SMITH. pp. 157.

We have had occasion recently to review two books earlier published in this series under the general editorship of Mr. D. C. Somervell, who intends that these books should challenge comparison with the well-known "Epochs" published by Messrs. Longmans and Co. many years ago and written by professorial experts. The books in this series are written only by working teachers who are very much alive to the needs, tastes and weaknesses of the High School pupils for whom these are mainly intended. Every one of these books is designed to give the student a detailed history of the selected special period, after he should have acquired a general survey of the outline of European History.

The period 1660—1714 is a great formative epoch in British history when a substantial superstructure was erected on the earlier foundations laid by Eliot, Pym, Hampden and Cromwell, though the structure lacked symmetry and beauty in many details. In the field of thought the epoch forms the connecting link between the age of Reformation and the age of Rationalism when religious controversy ceased to be of fundamental importance in national life. The first book describes the Revolution Settlement in fair detail and in full relief showing also the development of the new constitutional methods which it generated. Ireland, Scotland and the Colonies receive proportionate attention, as well as social life and the progress of letters.

Mr. Higgs-Walker traces the mutual and intertwining operation of the social and the economic

causes that brought about the French Revolution, together with the intellectual and literary factors that operated. The first phase that the Revolution took is termed by him as "a somewhat disorderly period of reform" when citizenship was made to take the place of caste and class. Mirabeau changed the States-General into the National and Constituent Assembly; but the failure of the Constitution of 1791, the beginning of the Revolutionary Wars, the excesses of the Terror are all detailed with the fruits they bore which made it possible for Napoleon to build on, so easily later on. The achievements of the Consulate at home and abroad, the expanded empire of Napoleon which produced national reactions that ultimately triumphed leading to the reconstructions of 1815 are prettily told, though not very exhaustively.

The third book on hand deals with the formation of the new Tudor monarchy and the new spirit of nationalism which it succeeded in awakening. It pays due attention to the doctrine of Balance of Power and to the progress of religious reform which had so largely a secular and national aspect in England. The book closes with an account of the character and value of Elizabeth's Church Settlement and of the Constitution as it worked in the beginning of her reign.

OUR WORLD—A HUMAN GEOGRAPHY—FOR USE IN INDIA, BURMA AND CEYLON, BY CAMERON MORRISON—WITH A FOREWORD BY SIR P. RAJAGOPALACHARIAR, K. C. S. I. (MACMILLAN & CO., LTD., 1925). Pp. xxii & 662, WITH SPECIALLY PREPARED MAPS AND ILLUSTRATIONS. Price Rs. 3-2-0.

This excellent manual of geography prepared by an expert is the fruit of more than thirty years of his experience and study in the subject. Apart from the preliminary and very necessary account of the Earth in its position in the Solar System and of the influence of the atmosphere, etc., we have got altogether a new treatment which shows very

clearly how the earth is being used by man as his dwelling-place, his field and his workshop; and how he uses and modifies to his needs the physical features and the resources of the country where he lives—thus the human aspect of geography is seen stressed in almost every page of the book. The treatment, so to say, has an Indian and an Eastern setting and is very well adapted to the minds of our students. Everywhere Indian illustrations abound. In the chapter on Climate, the Indian monsoons are treated very fully; and illustrative temperatures of Indian places abound. We find difficult topics easily explained in what may be termed a graduated scale—ideas such as Mercator's Projection; the usefulness of the atmosphere, the orbits of the planets—supplemented wherever necessary by delightfully simple illustrations. It is a great pleasure to read through the chapters dealing with the work of rain and rivers, denudation and deposition, of the sea and winds in changing the earth's surface, the formation of secondary rocks and of land and water-forms, etc. The geography of animal-life and of vegetation includes a specially clear account of the use of the wealth from lands, mines and seas to man. The races, the habitats of man, and the various formations he has made supplement the main current of the book, "how man has made the earth his dwelling-place."

The treatment of the various continents of which Eurasia comes first, keeps up a high level showing grasp and wonderful clarity of account. India occupies a large space in the treatment and attention is paid in full to its products and trade, particularly with the British Empire. Everywhere the author tries to familiarise the student with the latest available knowledge. He strongly strikes at the end the note that all progress that man has made is only an earnest of the further progress that he is likely to make in the future, that he never comes to the end of his lessons and always strives to win some new secret from the earth, or air, or fire or water. The story of man's activity

on earth is thus never-ending also and is one continuous tale of advancing progress. Such a book as this, rightly and easily making geography a specially human subject of study, ought to form part of the equipment of every teacher, young or old, and studied avidly by every high school and college student.

MATRICULATION ALGEBRA, BY C. V. DURELL AND G. W. PALMER. (G. BELL & SONS, LTD., LONDON, 1925). Pp. xii + 256 + 144 + xvi. Price 6s.

This book on Algebra is divided into two parts: Matriculation Algebra Part I of 256 pages, being a first course in Algebra, leading up to Quadratic Equations, and Part II of 144 pages, being a second course treating elementarily of the theory of indices, logarithms, surds, simple series, the theory of quadratic equations, permutations and combinations and the binomial theorem. The authors have strictly confined themselves to the requirements of the University Boards (in England and the Dominion) for Matriculation; yet, the first part may be safely recommended to the Elementary Mathematics students of the S.S.L.C. standard in the Madras Presidency and Mysore. The second part would have been more useful to the Entrance students of the Mysore University and also the Intermediate-in-Arts students of other Universities, had it contained a little more of formal book-work in algebra which is the main-stay of the dull pupils.

The distinction made between formal and informal book-work is rather meaningless and leads the authors to a dilemma in places; for example, the limit of r^n as $n \rightarrow \infty$ is merely asserted, while the sum of an arithmetical series is assumed without proof as the average of the first and the last term multiplied by the number of terms. Probably, in such cases, the authors are in a doubt whether to include them among formal book-work or not and so intend to appeal to the mathematical intuition of the reader, though it may not always be safe to do so.

There are, however, several good features in the book. There is a good collection of interesting and stimulating examples given at the end of each part. The chapters on Graphs are sufficiently informing but the treatment of negative numbers could have been improved. The book is well got-up and the printing and the diagrams are quite commendable. The logarithmic and the anti-logarithmic tables at the end of Part II are an additional attraction.

The book is strongly recommended for use in the S.S.L.C. classes.

MISCELLANEOUS EXERCISES IN SCHOOL MATHEMATICS—COMPILED AND ARRANGED BY H. E. PIGGOTT AND D. F. FERGUSON. (G. BELL & SONS, LTD, LONDON, 1925). Pp. vii + 250 + xxxii. Price 4s. 6d.

This book of exercises contains a good set of revision papers divided into four convenient stages. The harder questions of Stage A (Arithmetic, Algebra and Geometry) may suit the Elementary Mathematics standard of the Indian S.S.L.C. Examinations; but the questions in Arithmetic especially are too trivial for the standard. Stage B includes Trigonometry up to the solution of right-angled triangles and contains many interesting questions useful for students preparing for the Intermediate Examinations in Arts. The questions in Geometry in Stage C are clearly above the Intermediate standard, while those in Algebra and Trigonometry come fairly within the Intermediate Standard in Mathematics in Indian colleges. Stage D deals out problems on more Advanced Mathematics, Co-ordinate Geometry and Calculus, which are well worth the attention of the B. A. Pass course students.

With certain stated exceptions, the problems appear to be original and many of them are real and practical displaying considerable ingenuity and skill in devising.

A short supplement has been added at the end with a view to put the mathematically gifted

pupils on the track of 'investigation' or 'research.' The group of miscellaneous problems at the end of the supplement may well have included a larger and worthier collection of really inspiring mathematical bits.

The book is strongly recommended for the earnest scholar who wishes to secure more than the pass minimum in mathematics.

INTERMEDIATE MATHEMATICS (ANALYSIS). BY T. S. USHERWOOD AND C. J. A. TRIMBLE. (MACMILLAN & CO., LTD, 1925). Pp. xii + 454 + xxiv. Price 7s. 6d.

This is a book intended for students reading Mathematics of the Intermediate standard in English schools. It begins with Elementary Algebra treating of equations, simultaneous and quadratic, graphs of linear and quadratic functions, maxima and minima, surds and logarithms. All these take up 120 pages. There are then 50 pages of Trigonometry leading up to the general solution of Trigonometric Equations. This is followed by 50 pages of Co-ordinate Geometry of the straight line and the circle. Three chapters on Higher Algebra are then introduced, dealing with the Remainder Theorem, Partial Fractions, Determinants, the Three Progressions, Infinite Series, Permutations and Combinations, and the Binomial Theorem with its application to the summation of series. There is also a good chapter on Vectors. A chapter on Trigonometry then intervenes, taking the reader to the solution of triangles, with a digression in Co-ordinate Geometry in the polar equation of the straight line and the circle. The book ends with two good and long chapters on Calculus which correspond more or less to the portions of the B. A. pass-standard of Indian Universities.

As the book is mainly intended to suit the curriculum of English schools, it cannot be confidently recommended to any particular class of students preparing for mathematical examinations in India. But the first twelve chapters of the

book may be read with advantage by the Intermediate students.

The general style and get-up of the book compare favourably with any other book covering the same ground.

AN ELEMENTARY COURSE IN ANALYTICAL GEOMETRY, BY THE REV. B. C. MOLONY. (G. BELL & SONS, LTD, LONDON, 1924). Pp. viii + 167 + xvi. Price 3s. 6d.

This book deals with the elementary properties of the conic sections as a particular case of those of simple curves of any degree. The plan adopted by the author compels him to assume a knowledge of some Calculus which is necessary in treating of higher curves than those of the second degree. But one does not see any reason for the author using the Calculus in deriving the equation of a tangent to a conic in polar co-ordinates, especially when he has avoided the discussion of higher curves in polar co-ordinates beyond some hints on tracing a few of them.

The book is divided into Parts I and II and the chapters in Part II are intended to supplement the corresponding chapters in Part I. Part I is intended to be useful to candidates preparing for the Army Examination and Part II for boys taking a more advanced course. The book furnishes only a fraction of the information needed for students preparing for the B. A. Degree Examination of any Indian University, while its introductory chapters give but a scrappy idea of the treatment of higher curves which is to be found in any elementary book on Differential Calculus with which our students are familiar. Though the author gives Newton's Diagram of Squares and other artifices for tracing curves of higher degree than the second, it is unfortunate that no hints are given for tracing a conic accurately. But the author must be congratulated for having given, within a brief compass, a good synopsis of the essentials of Elementary Analytical Geometry.

XXXI—81

There are a few minor errors in the book. For example, on p. 38, the condition for maximum and minimum values of y is given as $\frac{dx}{dy} = 0$ instead of

$\frac{dy}{dx} = 0$; on page 41, Question 3 (Example V)

reads: 'The curve $ay = x^3 - 3x^2 + 6x$ has a maximum value of y at the point where $x = 1$. Find the value of b'; the question is wrong, for $\frac{dy}{dx} = 0$, at $x = 1$ when $b = 3$ and at

the same time $\frac{d^2y}{dx^2} = 0$; thus the point $(1, \frac{1}{a})$ is

a point of inflexion and not a maximum point; curiously enough, the answer to this question is also wrongly given as $b = 1$. But to be fair to the author, one should say that the author does not guarantee in his preface that all the answers to the examples are correct. Besides, there are also such undesirable abbreviations as 'pt.' for point; 'eqn.' for equation; $= \therefore x, \cos \alpha + y, \sin \alpha = p'$; and loose expressions such as $-\frac{8}{4-4} = \text{an infinite quantity (vide p. 30)}$. Sometimes there is overburdening of the figures with too many arrow-marks, words and expressions as on pp. 9, 16 and 56.

The book contains a good collection of interesting examples for the diligent student and should prove useful.

EXAMPLES IN PRACTICAL MATHEMATICS, PART I, BY A. DAKIN. (BELL & SONS, LONDON, 1922). Pp. viii + 143 + xxi. 2s. 6d.

This book contains a fine and copious set of stimulating and useful exercises in Practical Mathematics, suited to the ordinary S. S. L. C. standard in Elementary Mathematics in any of the Indian provinces. In the reviewer's opinion, there is a special need for using such a book in the Indian schools which have always a bias for too much of theoretical work. One of the good features of the book is the number of excellent diagrams illustrating problems bearing on

machines particularly. The exercises on graphs of statistics and graphing of functions deserve special mention. Logarithmic and anti-Logarithmic tables given at the end of the book should prove very useful to students of Practical Mathematics.

We strongly recommend the book to Indian High School students.

A SHORTER SCHOOL GEOMETRY, BY H. S. HALL AND F. H. STEVENS. (MACMILLAN & CO., LTD., 1924.) PART I: pp. x + 164 + iv AND PART II: pp. viii + 140 + viii. Price 2s. 6d. for each Part and 4s. 6d. (complete).

The Shorter School Geometry has been prepared by these well-known authors, in agreement with the suggestions made in the syllabus of Elementary Geometry put forward by the Incorporated Association of Assistant-Masters in Secondary Schools in England. It is, however, unfortunate that the authors could not make use of the report recently issued by the Mathematical Association.

The book differs in plan and detail from the authors' earlier work—School Geometry—and is not intended as a substitute for it, though School Geometry Parts V and VI may well form a suitable sequel to it. The Introductory pages supply systematic course in Experimental and Practical Geometry necessary for a good grasp of the later

theoretical work. Section I deals with angles, parallels, congruent triangles, and parallelograms; Section II with areas of rectilinear figures and the theorem of Pythagoras; Section III with the two fundamental loci; Section IV with the properties of the circle; Section V with Algebraic Geometry, extensions of the theorem of Pythagoras, and the rectangle of segments of chords of a circle; Section VI with theorems on proportion and similar rectilinear figures; and the book ends with such additional theorems as Ptolemy's Theorem, theorems on the nine-points-circle, the Simson-line, and such constructions of circles as are simpler cases of the Tangency or Contact problems so called.

Throughout the work, theorems and constructions are separated and there are copious numerical exercises. There are, of course, several good points in the work. Only the treatment of parallels is regrettable. The authors define parallel straight lines as those having like directions and thus conceal in the definition what they expressly state later as an axiom: 'When two parallel straight lines are cut by another straight line, the corresponding angles so formed are equal.' Had the work been prepared after the recent report of the Mathematical Association, the treatment of parallels would certainly have been considerably improved.

The book is warmly recommended to teachers and students of Reformed Geometry in India.

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The Educational Review.

It was an excellent address which Sir
Tej Bahadur Sapru delivered at the recent Convocation of the Lucknow University. Sir
Sir Tej Bahadur
Sapru's Convo-
cation Address.

Tej Bahadur started by making a reference to two features which seemed to handicap most of our new Universities. One is the cumbrousness of their constitutions, which entailed considerable loss of time and energy and often resulted in the overlapping of jurisdictions and in the doing of things over and over again. He appealed to those responsible for the running of these Universities to look more to the spirit than to the letter of the law. The introduction of wider democratic forms into the constitutions of our Universities must necessarily tend to make them somewhat cumbrous, but we wonder if they cannot be made simpler with the help of jurists like Sir Tej Bahadur. It would be worth while revising the constitutions from this standpoint. Another useful warning which Sir Tej Bahadur wanted to convey was against the prevailing practice of many of our Universities to attempt to teach every subject. The word 'University' may represent, by derivation, the whole corporation of learning, but human resources and other limitations being what they are, it is obviously better that each University should try to run a few departments efficiently than that it should attempt to embrace universal knowledge within the scope of its activities. Sir Tej Bahadur spoke with special authority and

experience when he referred to the poor teaching of Law in most of our Universities and pleaded for the raising of the standards of scholarship in the subject to the level obtaining in the Western Universities, particularly in Harvard.

Sir Tej Bahadur invited attention to some of the highest aspects of a really good University when he said that the aim should be "to seek efficiency in the thoroughness of the education imparted to students by Professors with a high conception of their duty, in the arousing among students of a passion for learning, in the awakening among them of a habit of acquiring an ever-widening culture, in the provision for post-graduate study and research in various departments, and finally, in sending them out as men of courage and conviction to fight the battle of life." Instancing the example of the Osmania University, Hyderabad, he also pleaded for the use of the vernaculars as media of instruction in our Universities. Sir Tej Bahadur has probably been led to think too highly of the supposed success of the experiment—we are afraid it is still in the nature of an experiment—at Hyderabad, but it does not of course detract anything from the soundness of his main argument on the subject. Sir Tej Bahadur could not offer any satisfactory solution to the problem of unemployment in our Universities, but he was right in saying that University degrees should not be looked upon as passports to Government service for which independent intellectual tests should be introduced as far as possible,

The taint of communal differences has unfortunately begun to infect even the younger generation in the United Provinces, at least at the University of Lucknow, and his exhortation for the cultivation of broad-mindedness and friendship among the students was therefore very opportune. "To you, and to those who are still in their tutelage," he said, "may I address a few words which I hope will not be resented? Do not allow your life to be vulgarised by petty jealousies, nor treat those who differ from you as your enemies. The need was never greater in our country than it is to-day for a genuine spirit of broad toleration. Let a selfish, unthinking and intolerant world outside these sacred grounds more concerned with the good of the part than with the good of the whole, revel in the din and clash of party or communal strife, but you who are here to cultivate your minds, and to form your character, you who are the votaries of culture in this shrine of light and knowledge, cannot without grave injury to yourselves and to the future of the motherland afford to listen to those counsels of darkness and confusion."

We must congratulate the Madras Legislative Council on its having passed the Andhra University Bill, though it must be qualified to a considerable extent by the unfortunate compromises into which those concerned have had to enter with regard to the scheme, and the inability of the Andhra representatives to rise above their district

patriotisms in the discussion of the Bill. It is a pity the Andhra University could not be made a unitary and residential University, because the representatives of the various districts had to be placated for the sake of their votes in the Council, by offers of various "University centres." What Cardinal Newman said nearly two generations ago with regard to the need for concentrating University effort in the remark that "Unity and excellence go together" holds good even to-day. We wonder why our Andhra representatives from the various districts cannot see that it is difficult enough to establish even a single centre of high class University life in the Andhra country comparable with the great Universities of the West, and it is idle to think of having University 'centres' in every one's district. The people of Bellary and Anantapur have unfortunately not much to gain by being associated with the proposed Andhra University in preference to the University of Madras, but they had to be compelled by sheer superiority of voting strength to fall into line with the scheme, though provision exists for their exclusion by Government. Again, we think it a great mistake that Bezwada should have been chosen as the head-quarters of the University, though we are conscious of the offer of the Kistna District Board to give three lakhs to the University which was apparently the attraction in the minds of some of the voters. Bezwada is an ugly railway junction, with a very

bad climate, full of the din of commerce and reeking with offensive smells, and with an atmosphere thoroughly devoid of any kind of intellectual culture, and it will take a long time before the University can surmount such an initial handicap. We regret there should not be any definite promises yet on behalf of the Government, of liberal financial assistance to the new scheme of a University, but we hope something more will be accomplished than the mere reproduction of a University machinery, with a Vice-Chancellor and a Registrar's office with all the usual paraphernalia. We are afraid in any case, there is not much chance of a really great University being established in the Andhra University, a University worthy of the aspirations which have been rightly entertained at least by some of those interested in the Andhra Desa.

The Ceylon Administration Report for 1924 on "Education, Science and Art" furnishes interesting reading

and is enough testimony to the energy and comprehensiveness of the educational work of the authorities in Ceylon. There is progress in almost every direction. The total number of pupils attending schools rose from 441,938 to 453,625, showing an increase of 11,687 pupils. The proportion of pupils attending school to those of school-going age is one half, and it shows considerable advance, as our readers will realize on the figures for British India. Without proceeding further with mere statistics, we would

like to draw attention to one or two passages in the Report containing accounts of educational experience which may be useful in this country. The following passage, for instance, with regard to Industrial Education would apply in every detail to conditions in India:—

Unfortunately for the progress of this form of education in Ceylon, public opinion has relegated the arts and industries to the dull, the uneducated, and the unintelligent. A high level of general intelligence is necessary for the efficient performance of any work and the secondary school education should be broad enough and liberal enough to make a pupil more efficient in any work which he cares to take up. This standard of intelligence applies with equal or greater force to the arts and industries of Ceylon which require for their success the attention of the most intelligent boys of the country.

It is commonly supposed that the ordinary course in an elementary or secondary school has little to do with vocations other than clerkships and the professions. Our English schools are supposed to be vocational, but the vocations for which they train are very limited and they are vocations which do not involve hand work. If it were true that this is the function of our English schools, then we could do with less of them. Two or three schools in the whole Island could supply all the clerks and the professional men required. But this narrow view of our English schools is not true and the sooner this is realized the better for the country it will be.

There are some schools like commercial schools, carpentry schools, and technical schools which are directly vocational, there are others such as the ordinary elementary and secondary schools which are indirectly vocational. Every school should be regarded as vocational in the sense that it should make its pupil better able to learn an honest living, but ordinary English schools should not specialize

on one or two vocations; they should prepare the foundations for many.

The problem of how our ordinary schools are to make their pupils fit for employment and yet are not to specialize and become directly vocational is a very big one. Unfortunately an easy solution is commonly adopted and that solution takes the form of: "We have nothing to do with our pupils after school-life; all we teachers have to do is to get them to pass certain examinations and there our responsibility ends." This is not a fair and honest way of looking at the question. The true school-master cannot be content with that attitude. What its pupils are doing after they leave school is a far better index of a school than a high percentage of passes at examinations.

Some Principals try to solve the problem by attaching to their schools directly vocational classes, such as commercial courses and agricultural courses. That great Headmaster, Sanderson, of Oundle, worked out another form of this solution and gave twenty or thirty courses which were indirectly vocational. In fact he insisted that every pupil who came to his school should not only learn something but should do something. His famous dictum is that "boys come to school not so much to learn as to do things."

That Ceylon is considerably in advance of India in educational matters is clear from the circumstance that there is not only a thorough medical inspection of pupils, but there are even school-clinics where hundreds of cases of defective vision and tuberculosis are treated every year. There are also arrangements for feeding poor children at school. An enquiry was undertaken at Colombo at the request of the Mayor of the city not only into the conditions of feeding, but also into the relations between the conditions at home and the state of the children at

school. Will our Educational Ministers feel any sense of regret that conditions are so far behind in India than even adjoining Ceylon?

Thanks to the guidance of Prof. P. T. Srinivasa Iyengar, the Trichinopoly Teachers' Guild.

The Trichinopoly Teachers' Guild has been able to make valuable suggestions towards educational reforms from time to time, the recent annual meeting being responsible for representation on various educational subjects which will receive, we hope, the serious attention of the authorities concerned. While appreciating the introduction of the Provident Fund for teachers, the Guild mentioned many reasons of dissatisfaction with the work and policy of the present Educational Ministry. We may mention that the present Educational Ministry does not really deserve the credit even for the introduction of the Provident Fund, as all deliberations with regard to the matter were more or less complete before the subject of education was transferred and the Ministry only got the credit for the work of their much-abused bureaucratic predecessors in office. The Guild rightly complains that the District Educational Councils are farces and are not at all qualified for the responsible work they have to discharge. "What teachers object to is not the association of enlightened popular men in Educational bodies, but the attaching of men of indifferent culture to responsible educational councils. Teachers insist that these Councils should be manned mainly

by educationists." We have always stood for the same principle ourselves. The Guild proceeded in the annual report to make the following indictment on the Ministry:—

(a) The Ministry has not given adequate representation to teachers in Councils and Boards:

(b) The Ministry has neither treated the representations of teachers' organisations with the consideration they deserved, nor acknowledged the volume of work done by teachers' organisations in helping the Ministry to frame an educational programme:

(c) The Ministry has turned a deaf ear to the demands of teachers for a standardization of the scales of salaries;

(d) The Ministry has failed to revise the Grants-in-Aid Code:

(e) The Ministry has not during the period of five years been able to give the nation an all-round national programme of education which would spread literacy nation-wide.

Many reasonable requests were made on the occasion: that Geography should be restored to its old place in the S. S. L. C. scheme; that an interest of 6% should be allowed on the contributions made to the Provident Fund; that leave-rules similar to those obtaining in Government service should be made to apply to private schools; and that teachers under local bodies also should be given direct representation on the District Secondary Education Boards. The annual Conference also urged that steps should be

taken to start a University for the Tamil Districts and we hope the Government will have the question examined at an early date by a special officer appointed for the purpose as in the case of the Andhra University. The following are among the other important resolutions passed by the Guild:—

That in the opinion of the Guild candidates for public examinations suspected by examiners of copying or other malpractices should not be punished without a thorough investigation and without giving an opportunity to candidates to offer their explanation.

In the opinion of the Guild the S. S. L. C. public examination as conducted at present is so unwieldy as to make careful and uniform valuation of papers impossible and therefore recommends that in the place of the S. S. L. C. Boards, the District Secondary Education Boards may be empowered by the Government to hold District examinations and issue certificates of proficiency and eligibility to University course.

That the District Secondary Education Boards be so reorganised as to include a large number of educationists.

That the Director of Public Instruction be requested to do away with the marks of boys and girls of the IV and V forms being entered in the S. S. L. C. books.

That the Headmasters of all High Schools in general and in big schools in particular, be requested not to give extra work to teachers in High Schools whenever some teachers are absent, but they may arrange with the management to appoint one or more tutors to do so.

The Guild is of opinion that as moderation has been unceremoniously abandoned, the marking system should go and urges upon the S. S. L. C. Board to abolish the same.

[Nov. 1925.]

That in all Educational Boards of Studies and Examinations constituted under Local Boards, competent and capable assistant-masters be also included by nomination or election.

The Subordinate Educational Service of Madras has been a long-suffering one and we have drawn attention, from time to time, to

The Madras Subordinate Educational Service.

the need for redressing the grievances of its members. Some of them do work comparable to that of members of the Indian Educational Service and they are expected to live a decent life on ridiculously low salaries. We are not surprised that a deputation of the members of the Subordinate Educational Service waited recently upon H. E. the Governor with a list of grievances. We hope they will receive early consideration. Out of 143 officers in the Government Colleges at present, 81 have to be in the Subordinate Educational Service on 125-5-175-74-250. With the increase of appointments in recent years owing to the expansion of educational work, there has not been a corresponding increase in the higher ranks and what is worse, the Subordinate Service has often been deprived of chances of promotion by direct recruitment to the Madras Educational Service. There has also been considerable heart-burning in the service by the promotion of people in recent years, entirely on communal grounds. It must take the heart out of any loyal worker to find that in spite of all his ability and hard work, his junior is put over his head, merely because of the accident of his

belonging to another caste. The lowness of initial pay, the smallness of increment, and the poor chances of promotion into the higher services, were among the grievances and the deputation made the reasonable request that the members of the service should be put on Rs. 150-10-250-20-450. We hope something will be done to improve the prospects of this branch of the profession. It is demoralising that there should be such discontent in the service.

We confess to a sense of disappointment at the poor attention the problem of the unemployment of our educated people is receiving at the hands of our publicists and the Government. In more than one province in India, the number of graduates has been increasing at such a pace that hundreds of them have to wait for long periods before getting any kind of employment, and when they actually get it, it has such poor emoluments that it is becoming increasingly impossible to eke out one's bare means of existence out of them. Father Bertram is one of the most experienced educationists of Southern India, having nearly a generation of educational work to his credit, in the course of which he has seen thousands of graduates pass through his hands from the comfortable surroundings of the college to the wide, unsheltered expanse of the world. Speaking at the Rector's Day at the St. Joseph's College, Trichinopoly, he therefore rightly drew attention feelingly to

The Problem of Unemployment.

[Nov. 1925.]

the seriousness of the problem. After congratulating the students, he said he could not help feeling that the congratulations were overshadowed by the problem of unemployment.

Unemployment had become so widespread that it had almost assumed the proportion of a public calamity. It was so serious an evil that it exercised the best minds in the West, the Government, the University and the public. They heard of resolutions tabled in the Legislative Council, in the University and other public bodies calling on the authorities to deal with the problem of unemployment: yet, to his mind, unemployment was not likely to be easily solved by University regulations. Every expert had some remedy to recommend, but he believed it was not one particular remedy that would set matters right. The remedy depended on a number of factors, all working together. The evil had got its roots very deep, it was no longer a mere economical problem, it was also a more social, and psychological problem. The evil required that all should put their ideas together to revise their notions about social customs, bring about a change in their angle of vision, in their outlook on life in general and there should be widespread public movements for this purpose. It would, therefore, take time to remedy the evil. Yet it depended on the goodwill of the countrymen at large. The cure would be worse than the evil if boys were kept out of school; they would have to go to school. The system of studies should be reorganised. They heard of the bifurcation of the school course, the practical and technical side. The technical side would in some way at least solve the problem of unemployment, but from actual experience it was found that pupils who returned from a School of Accountancy with diplomas or technical researches could find no billets. The truth was the country was not prepared to absorb their talents. The state of the country at present did not call for an unlimited supply of Engineers or technical experts. The

remedy for unemployment should therefore be sought by the best brains of the country. Whatever it was, young men and their parents should make up their minds as to what they were going to do when the time came.

A large amount of solid educational work having been accomplished in the earlier years in the Baroda State, it is not possible to expect startling progress chronicled in the annual reports of these years. The report however for 1922-23, which is the latest, is a record of steady progress in the State. There has been an increase in the year in the educational institutions as well as in the number of children attending them. The total number of institutions in the year under report was 2,836 as against 2,814 in the last year, showing an increase of 22. The total number of pupils rose from 2,03,865 to 2,03,920. The total expenditure on education also showed an increase from Rs. 29,43,403-13-2 to Rs. 30,10,005-6-8, the excess being Rs. 66,601-9-6. The amount spent on education is 15 % of the total revenues of the State and it is a proportion extremely creditable to the administration of H. H. the Gaekwar of Baroda. Steps have been taken to consolidate the progress made in many directions and to make a distinct advance over some of them. An endeavour is being made to expand the existing Kala Bhavan, which draws students even from outside the State, to a high-grade technological college, and we hope it will play a prominent part in the University which

Education in Baroda.

the people of the State have been expecting for a long time to come into existence. Mr. W. K. Dixit, the Commissioner of Education and other officers deserve to be congratulated on this record of work.

We would invite the attention of our readers to the very valuable report which has been issued by the Committee appointed by the Government of Bombay to make suggestions on University Reform. Though intended mainly for a consideration of the problems of education connected with the University of Bombay, the report will interest people even outside the province, as a number of useful suggestions have been made. There is an excellent scheme for concentrating all University work in one area in the city

Bombay, though we are afraid that the financial responsibilities involved will probably scare away Government from a consideration of the proposal. The question of starting additional Universities in the province is also ably discussed and there are suggestions for a new University in Poona. It is interesting to note that the Committee insists on the continuance of English as the medium of instruction, after a careful consideration of all the evidence against it. Adult education, the introduction of the Fine Arts into the University courses are among the subjects dealt with in separate sections. The report furnishes useful reading and throws considerable light on some of the current problems of higher education in India. Copies of the report can be had from the Government Central Press, Bombay.

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The Madras Mail, Friday, October 31, 1924:

Books which deal with the problems of educational psychology from the Indian point of view are too few, and we, therefore, welcome most cordially one which makes such a study and makes it well. Miss Gordon's contribution to this field is one which ought to be read carefully and digested thoroughly by all those who have to do with the education of children, whether teachers or parents.

The value of Child Study is twofold, first from the point of view of theoretical psychology, and second of education. Education along with psychology has much to learn from the science of biology which suggests to both of these sciences the unit for study, viz., a reaction which is a response to a stimulus. The mental life ought to be viewed as is the physical from this point of view. Further, biological science is showing the usefulness both as to method and content of the observation of development. The study of child-nature is in accord with the genetic method which characterises all the biological sciences. Educationally we have more to do with children than with adults in our schools and so from the practical point of view also the more that we can learn about the natures of educands the better for our work. Miss Gordon's book is thus a real contribution to our literature for it considers these questions with special reference to conditions in South India.

One of the most important of modern developments in this science is that made through the observation of individual differences. Although education is a social process and children are social in nature, yet we cannot deal with them too much in groups without doing great injustice to matters in which they are unlike. Studies made in Europe and America have their value for Indian teachers, but observations made in India, as Miss Gordon's have been, are of great value in enabling us to ascertain the similarities and differences with children of other countries, and the differences among groups and individuals here. Miss Gordon has not only given the result of her own observations but—what is even more important—she has shown teachers and others how they may observe for themselves.

The book surveys the more important problems connected with the study of child-nature. It deals with the stage of child development, with the processes of sense-perception, with play, hand-work, and fatigue, with exceptional children, both sub-normal and supra-normal, with measurements of intelligence, and with the application of the Kindergarten system to the Indian system. It is one of the books which the Academic Council on the recommendation of the Board of Studies in Teaching has declared as suitable for candidates for the L. T. degree. We hope that it may have a wide circulation as its influence is sure to be for good.

Education (Allahabad), March 1925.

The distinguished author of the book under review is one of the few enthusiasts in India who have taken to a systematic study of child-nature. The book embodies the results of close study by the author, not merely of the existing literature on the subject, but of the actual mental and physical growths of children, as witnessed by her in several schools in Britain and India where she has had the opportunity to work. Within a brief space of 200 pages, the author has contrived, in her plain, matter of fact, and at the same time, engaging style, to elucidate the various topics connected with child life such as the sense perception, play, the service of Hand in Mental Development, fatigue, exceptional children, measurement of Intelligence and the Kindergarten system; touching the various theories on these topics and supplementing them by her own views based on personal study and investigation. We would especially commend to our readers the beautiful and inspiring chapter on the Kindergarten system in which without going into technical detail, the author has surveyed the basic principles of the system and pleaded in accordance with these principles for the Indianisation of Indian education. We are sure that this little book will prove an excellent handbook for teachers as well as parents and others interested in the subject and kindle in them a deeper interest therein. It has been already recommended by the Academic Council of the Madras University as a suitable text-book for the students appearing for the L. T. Examination and we hope that other Universities will soon follow suit. We congratulate both the author and the publishers on this valuable publication and recommend every teacher to secure a copy thereof.

The Madras Christian College Magazine, January 1925.

The study of child-nature is exceedingly important for both of the sciences of Psychology and Education. Its importance for Psychology is from the genetic point of view. In the child one is able to observe in simpler forms many of the processes at work which in adult experience become so complex as to make them difficult of analysis. Its importance for Education is too obvious to need extended notice, and yet there are some who are so short-sighted as to neglect it. Here in South India there are a great number of schools in charge of teachers who do not know the elementary facts about child-nature. But with the progress of education the time will surely come when it will be considered as dangerous to employ a teacher who is ignorant of child-nature as it is to employ a man for a physician who knows nothing of anatomy and physiology. Such a book as that which Miss Gordon has written will serve a useful purpose in hastening that day by putting teachers in possession of a primer which contains the fundamentals of the subject in a readable style. It is the type of book which we would like to see translated into our South Indian vernaculars, because it not only includes the principles of the science, but states them with special reference to the needs of Indian teachers.

A personality is the outcome of forces which are both hereditary and environmental so that child study must take account of both sets of factors. Much more is to be gained by teachers through the study of children for themselves than the mere perusal of books on the subject, however authoritative they may be. The trouble with so many students of other things as well as of child-nature is the evident desire to be spoon-fed. They desire to get their information at second-hand rather than take the trouble to study for themselves. In many instances teachers have not the technique necessary to observe intelligently. Very valuable, then, is Miss Gordon's chapter on 'How to Study a Child,' particularly for those who are beginners in child study and it is a matter of vital concern as much for the parent as for the teacher.

Certain subjects have been especially studied recently by educationists, and Miss Gordon gives useful accounts of the results of these studies. One chapter is devoted to the place of play in child life, and in the educative process. It is a wholesome corrective for the old-fashioned idea that play is a superfluity. The author brings out some of the most useful services which are rendered by play, for play has direct educative value, assisting in the training of the judging and other mental processes, as well as in the spirit of fair-play and other moral qualities. The play-ground affords a splendid type of voluntary democratic organisation. Another chapter is devoted to 'The Services of the Hand in Mental Development.' Sometimes the school in emphasising the development of the mental processes has tended to neglect the fact that intelligence is sometimes motor, and that these two factors, the mental and motor, are closely related to one another. The questions of 'Exceptional Children' and 'The Measurement of Intelligence' are closely related, since it is through the latter that we get our most accurate knowledge of the former. A final chapter deals with a question on which Miss Gordon is surely competent to speak 'The Kindergarten System and Its Application to Indian Children.' Altogether she has succeeded in writing a most useful little book, and we hope that it may have a good circulation among teachers and parents who cannot but profit by what she has written on the nature of children and how they should be educated.

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