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Examinations and Education.

ONE of the reasons why examinations have acquired a vicious influence and undue importance in some of the Indian universities is that they constitute the only avenue for preferment in government service and more recently other employing agencies also have begun to appreciate the value of higher education in their servants. This intimate association of a purely academic function with the economic and service problems must necessarily produce a baleful effect upon both. The vision of an educated young man is restricted by the four walls of the office room and he devotes all his energies to pass his examination for the realisation of his modest ambitions. Government should have at their disposal means other than the university examinations for discovering those qualities in their employees for the proper and efficient performance of administrative duties but the touching confidence they have all along reposed in the universal efficacy of these tests is a credit to the honesty of the whole transaction. This relationship has unfortunately exposed the system of education and examination to the unmerited criticism that they are a cause of the evil of unemployment among the educated young men. In India failure in an examination amounts almost to forfeiture of one's social status and the young men whom the universities reject annually have no alternative except to pass through life like a perpetual blister. The remedy seems to be to throw open those services for their absorption, which are at present treated as close preserves and to encourage settlement on the land, to promote cottage and minor industries and to facilitate emigration.

The prevailing dissatisfaction and the public criticisms which we repeatedly hear in regard to examinations will on ultimate analysis be found to lie in three defects which have unconsciously been permitted to creep into the system. Those who are conversant with the history of education in India might remember that in Tols and Patasalas, there was abundance of good learning but little or no examinations. In the ancient universities of India, the process of weighing knowledge attained by the scholars used to take the form of disputations among themselves, in which they were permitted to engage under the presidency of their teacher and in

accordance with the well-known rules of debate. Viewed from any standpoint, an examination is essentially in the nature of a contest. If this view be correct then it follows that justice and fairplay require that the scholars themselves should be permitted to find out the profundity or otherwise of each other's learning and the function of the teacher should be restricted to the maintenance of the standard and the appropriate rules of disputation. The professor in the ancient universities did not enter actively into these literary contests for he was conscious that his vast store of learning and his highly sophisticated mind with its powers of defeating the opponent would be unfair implements to be used against young and growing minds and the whole engagement would be unnatural. In our present-day academic tests we are employing methods which can never be permitted in physical contests and athletic sports. Our public examinations are not different from a five days' cricket test match in which a hundred youthful players are gathered at Lords, trained for four years in different centres by coaches whose skill and proficiency are not of the same order and under conditions of equipment never uniform. These young men are called upon to defend their wickets and in a single over are required to hit boundaries against professional bowlers who however are asked to adjust the pace, length and spin of the ball to the level of the skill and attainment of the juvenile team. These bowlers constitute themselves into referees to declare l.b.w., decide boundary hits and all other intricate and delicate problems in the decision of which one of the parties is to maintain absolute silence and to give unquestioning acquiescence. If this is a fair game then the university examinations are only artistic perfections. The examiner enters the lists throwing out the challenge of a question paper to be picked up by the young aspirants for laurels; he determines the rules and declares the issues of the contest and it is no wonder that the young men treat it all as a game of manœuvres in which they employ all the instruments which their external supporters have placed in their hands for confounding their assailant. The system which we have evolved is inevitable in view of the magnitude of the material to be dealt with and the speed and simultaneity of action involved. Its merit perhaps is that it is impersonal in its dealings and uniform in its applications.

However, it cannot escape the charge that for purposes of measuring the amount of intellectual proficiency that the young man has acquired during his four years' training, we have introduced weights which are of a totally different order and which always succeed in discovering the want of knowledge. We have travelled far too great a distance in organizing our educational institutions to be able to restore the more natural scheme of examinations once prevalent in the ancient universities.

Perhaps a graver defect of our existing system is the negative correlation of the age of the pupils and the total amount of knowledge they are required to bring up for the examination. A candidate whose age is eighteen years and who appears for the degree examination is expected to read about twenty books (and more in the case of an intermediate candidate) and to acquire complete and detailed knowledge of every one of them to be ready to be reproduced at a given moment in an ideal form. We forget that the contents of each book represent a body of knowledge in the building of which several adult minds have laboured incessantly over long periods of time and if the author of the book were required to sit for an examination it is doubtful if he will get the necessary minimum mark. In fact we are asking the young men to perform a task which it has taken the human race ages of unremitting work to complete and to consolidate. The examiners besides have little patience with the candidates when they commit errors and it would be unnatural for a young man not to do so, for a growing mind must necessarily trace the lines along which the racial mind has travelled in the quest of knowledge. The history of the rise and growth of science reveals the fact that adult minds were not infallible and if we excuse the mistakes made by experienced adult minds working in a free atmosphere, with plenty of leisure and all the resources of reference and personal consultations, what justification have we to reject the candidates for committing similar errors which are inevitable in the feverish state of their mind working unassisted against time? Public examinations make little allowance for, nor recognise the biological history of the human mind and the arbitrary standards we have set up for the young men will stagger the authors themselves and in almost every case if the question paper setter were required to

answer his own paper within the limited time permitted to the candidates, it is doubtful if when his answer scripts are valued by his colleagues, he will get marks sufficiently high to place him in the first division.

Another defect which is perhaps inseparable from the existing conditions is the medium of instruction and examination. All the energy of the Indian student is spent in acquiring mastery over a foreign language and very little is left to develop a deep acquaintance with the subject-matter. From this handicap, his cousins elsewhere are exempt. This must account for the very superficial knowledge which the bulk of the candidates present at the public examinations and in marking their papers no allowance is made for the inadequacy of expression due to a fundamental defect in the organization itself. In India where there is a multiplicity of languages, the problem of instituting a common medium of instruction and examination is really fraught with difficulties arising from various causes. But if her people are determined to place their country in the forefront along with others which lead in the world of science and education, they must sacrifice sentiment and put aside all other considerations than those of the true interests of the nation. A common language for imparting instruction to the youth of the country is possible provided the people will to adopt it and in case they are to decide in favour of that virile and widely spoken language, Hindi, then the commencement should be made in the lowest grades of instruction and books in all branches of knowledge would have to be written. This is almost a task of insuperable difficulty but if the cause is good enough, the trouble alone should not deter its being undertaken. If, however, the psychologists were to prove that Hindi would offer the same difficulties to the non-Hindi pupils as English presents to both, then we have to revert to the days when in South India, English was used in the instruction of all subjects excepting the vernaculars in the middle school grade and endeavour to improve the methods of teaching in such a way as will reduce the obstacles to the acquiring of mastery over it for purposes of free and full expression. The difficulty in assimilating a foreign language is not inherent in it nor is it that an Indian student lacks power to master it but it

arises entirely from faulty methods of teaching, the prescription of unsuitable books and perhaps also in some cases from want of competence on the part of the teachers.

At present the undue importance attached to examinations and the unpsychological methods in which they are conducted are exercising a pernicious influence on education which is frequently adjusted to comply with the requirements of their arbitrary standards. The improvements of education are always conceived in terms of the examinations which are considered to be its fitting conclusion. It is the common experience of all Universities that where examinations are permitted to direct and dominate their activities, post-graduate work on the part of such universities tends to counteract. It ought to be possible to strip the Indian university examinations of the terrible aspect which they now wear and make them a part of the regular educational work as they have done in America and most of the European countries. A great and radical reform of examinations is overdue and we feel that this task ought to be entrusted by the Indian Government to the hands of a Commission of educational experts.

One of the reforms that we are thinking of at the present moment refers to the practical examinations in scientific subjects for the B.A. and B.Sc. Pass Degrees and the Intermediate subjects in which practical examinations are conducted. The prevailing practice of assigning an independent problem to be worked out by separate candidates taking physical sciences or a common problem as in the case of those electing biological studies, is unsound as an educational principle. The requirements of the Honours candidates who take a more specialised course over a more prolonged period are different, for their scientific outlook and their intensive training demand evidence of a capacity for continuous application in the investigation of a special problem or the elucidation of complex structural relation in the material provided, including the presentation of a scientific report on the collections of specimens. The scientific courses prescribed for the ordinary pass degree aim at a cultural training while the Intermediate stage attempts at an illuminating general introduction to science. The practical examinations for these candidates ought to be devised to test their acquaintance with the general use of

apparatus, their principles of construction, their working parts and how they are fitted for the purposes for which they are intended, with taking readings, testing and handling particular parts, making connections and so forth. While dealing with the range of the practical acquaintance of each of these assembled pieces of apparatus the examiner has the invaluable opportunity of testing the mental alertness of the candidates whom he takes through an easy *viva voce* examination as well. Similarly in the biological studies, the use of several instruments and how and when to employ them, the identification of specimens with a short account of their structure, habits and modes of occurrence and the description of gross and microscopic preparations will reveal the potentialities of the candidates' mind which the prescription of a definite problem will fail to discover. The scope of the practical examination should be limited to testing the knowledge of the candidates of the apparatus in common use in the laboratory, their manipulative skill and truthfulness in recording results of observed facts. If this system in some form were found desirable to be adopted in regard to Honours examinations, the candidates should be required to give evidence of their power of adopting new methods in the use and application of the instruments and of drawing general conclusions from a mass of experimental data or field notes and observations with a view to test whether the mind works in routine or is capable of devising new methods in dealing with altered situations.

The influence that examinations now exercise on the destiny of education will relax the moment the government and other employing agencies cease to look upon them as a *sine qua non* for employment in their services. It is true that a specialised knowledge of any narrow field of science such as an Honours graduate possesses may not be of direct use in the discharge of the administrative duties, but what is invaluable in him is the disciplined training, the mental alertness and the power of applying scientific knowledge to the problems of government and those of the practical affairs of the people. Admirable as these qualities are, they are not enough in an administrator who needs wisdom, foresight, driving power, ability to command men, to organise and consolidate the forces of civic life and finally the power to take quick and correct decisions

and most important of all a natural sweetness of temper. The competitive examinations which are only duplicates of university examinations are, when applied to discover these traits of character, undoubtedly a bad test. Examinations on prescribed books or on definite fields of knowledge can be easily and successfully met by resorting to the aids provided by the ingenuity of commentators and annotators. What the competitive examinations really test is not the knowledge or intelligence, much less any of the personal qualities of the candidate but the amount of cunning with which he can anticipate the questions and provide the examiner with information crammed from 'tips'. There can possibly be nothing better than a wise education for the making of public servants but little can be said in extenuation of an employing agency which requires the best public service and applies the wrong tests for securing it. Is it impossible for the Government to devise a scheme other than competitive examinations for the purpose of selecting competent and wise public servants? The merit of a competitive examination is not the logic or the fairness of it but its power to fulfil the purpose for which it is instituted. Ostensibly the university examinations are intended to test the power to think on the part of the candidates but, generally speaking, the question papers succeed in finding out how much of literary and scientific lumber is stored in the mind and is capable of being unpacked. The Public Services Commission attempt nothing better. We cannot go back to the system of nomination which is attended by fear and distrust, but probably a scheme in which the co-operation of the university professors is enlisted may be found more satisfactory. A panel of distinguished graduates who have shown a distinct aptitude for sports and have taken a leading part in the activity of the university unions may be prepared by the collaboration of the professors of each of the universities for submission to the Public Services Commission who will proceed to invite such nominees for an interview for a detailed *viva voce* examination intended to test those very qualities which the Government would desire in their administrators. If this examination be sufficiently searching and exhaustive the Public Services Commission would succeed in securing for the Government a band of capable officers distinguished alike for their academic scholarship and

administrative qualities. The meaningless duplication of the university examinations can then be dispensed with, resulting in financial saving.

The problems of reforming the public examinations conducted by the universities and by other educational bodies must in their nature be numerous and complicated and would be a fitting subject for detailed investigation by a Commission to be

appointed by the India Government. It is true that education is a provincial subject but its importance is an all-India question. The urgent need of assigning examinations to their proper place in the household of education where they are now playing the part of a parvenu mistress is to be recognized. We hope to be able to indicate in a future issue of our Journal the broad outlines on which the reform is to proceed.

Announcement.

Sir C. V. Raman, Kt., M.A., D.Sc., LL.D., F.R.S., N.L.

WE have pleasure in offering our felicitations to Sir C. V. Raman on the occasion of his assuming charge of the Directorship of the Indian Institute of Science, Bangalore. We hope that in augmenting the high traditions of the exalted office he is called

upon to occupy, his administration of this important scientific Institution in India will witness a rapid and uninterrupted growth of fresh scientific research conducive to the general progress and industrial prosperity of the country.

The Everest Expedition.

THE successful test flight over Mount Everest by the Houston expedition will always rank as one of the magnificent achievements in the history of aviation. As a public demonstration of the British spirit of enterprise and as a deed of daring, it surpasses in interest and in romance the great enterprises of Peary and Scott. But nevertheless these undertakings cannot be compared with the maritime discoveries of the Italian sailors and the English seamen of the sixteenth century, which opened up the economic resources of vast continents for exploitation by the civilized European nations, converted the impassable oceans into commercial highways and paved the way for the spread of knowledge and civilization, besides adding to our knowledge of the human races, the fauna and flora and the geological conditions of the hitherto unknown tracts of the world.

The previous expeditions on land have not succeeded in attaining the summit of Mount Everest and the flight therefore over this highest peak is attended by more than usual interest. The Westland 'planes used by the party are provided with every equipment which modern science can devise and human resources can supply. The problems of flying in the higher altitudes are severely exacting and unexpected developments in the weather conditions may frustrate the

hopes raised by the completeness of equipment, the foresight, efficiency and experience of the party. The fierce hurricanes and the poor visibility in the higher altitudes are factors which no pre-vision or calculation can provide for on account of our imperfect knowledge of the meteorological conditions and the range of their variation in upper atmosphere. The problem of warming food and the kind and quantity of nutrition required for keeping the party fit for carrying on the scientific observations have been carefully thought out and amply provided for. If the air party can establish communications and collaborate with the expedition on foot under the leadership of Mr. Rutledge the scientific results of this undertaking will be of inestimable value. It is too premature to estimate their importance or to envisage the directions in which they may be of practical value. But the knowledge gained by the behaviour of the 'planes in upper air will be of immediate assistance in perfecting the civil aviation for the promotion of peace and goodwill among the nations of the world. It is chiefly in this direction that we look forward to suggestions being made by the Houston party with a view to facilitate easy, cheap and safe communication between nations of the different countries for the consolidation of the higher destinies of humanity.