
JADAVPUR UNIVERSITY

Convocation Address

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by

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Convocation Address

The invitation to address the Special Convocation of the University is an honour which I greatly appreciate. On this occasion I welcome the new graduates, distinguished in Arts, Science and Technology, in Literature and Law and I rejoice in the fact that these great scholars have agreed to join the fellowship of the University. The University is young and consequently full of energy and vigour. It is transmitting the traditions of the great institution which has served the community since its inception half a century earlier, born in the great nationalist movement of Bengal in the first decade of the century. Its work in the field of Mechanical, Electrical and Chemical Engineering has been appreciated all over the civilized world and its alumni have brought credit to the *alma mater*. Today when we have with us in the new members of the fraternity men who have helped to extend the boundaries of knowledge and who through their work have stimulated original investigation in others, we naturally think of the mission of the Indian Universities in our new democracy.

Here we shall be shutting our eyes to facts if we neglect to note the ferment of the spirit of unrest which exists all round us and which has resulted from a clash of ideals. It is not the symptoms of the disease which I want to elaborate : I want to engage in the task of suggesting remedies with the help of our new graduates present with us today. From time immemorial we have been speaking of the unity of knowledge : we have recognized that the purpose of a University is to provide a coherent picture of the universe and an integrated way of life ; through the education which

is imparted by it, the youth has to acquire a sense of perspective, a synoptic vision of the different ideals of knowledge. Life is one in all its varied manifestation and we have to study the factual relations of these. We cannot, however, be content with a mass of disjointed information ; we must have knowledge of life as a whole. Formerly the Universities tried to pursue the same by insisting on liberal as opposed to servile education. The study of the classics, of the acknowledged master-pieces of human thought and knowledge, was believed to produce a culture which was valuable for what it was rather than for what it did. Learning to be insisted on for the sake of learning and culture for the sake of culture, to cultivate the intellect because of its inner good, was supposed to bring with it a power and grace to every work and occupation undertaken. It was not a narrow field in which the educator worked ; he had to train the students in a few branches of knowledge but all the time making them conscious of the wide field in which there was this elevation, standing on which they could have a vision of the wide extent within their purview. Breadth of knowledge does not mean dilettantism ; the path of the University is the middle one between smattering in a dozen branches of study and exclusive preoccupation with one limited branch. Learning for the sake of learning would imply a complete detachment on the part of the University in matters of current political or religious controversy which engenders heat and passion.

As a thought-organization the University has to cultivate an objectivity and a serenity which may be described as scientific. Moreover the University should be highly selective with regard to the subjects it treats and the methods it employs. The ideal of neutrality and objectivity has been seriously challenged in recent years by thinkers described as scientific humanists. Dr. J. D. Bernal, for example, points out that the teaching of humanities keeps to a very old established tradition and the aim of literary education has been the acquisition of traditional culture by methods of scholarship. To this core of literary scholarship has been grafted

the aim of producing the citizen or the gentleman. At one time the product of this education was the leader of society and with the passing of the rulership of the gentleman, this kind of liberal education has lost its objective. The mission and ends of the humanities are, as a result, hopelessly confused, as on the one hand, there is reluctance to abandon the purely classical tradition and on the other hand there is the desire to extend its methods to cover modern studies like history and economics. Scientific education, on the contrary, started with utilitarian aims and the content of education predominated over the form. There was little claim to build character : its purpose was to produce adepts. Its weakness at the beginning was its extreme narrowness : its strength was the inculcation of doubt in tradition and reliance on direct observation and experiment. According to Bernal, humanistic education gives the view of the totality of human experience, while scientific education gives a much more accurate view of an extremely limited field. What has been left out in the latter, a knowledge of society and its history, of philosophy, art and morals, can be made up through devising new ways. The principles of scientific method have to be applied to other fields of experience leading perhaps to a complete rejection of tradition. The rejection of what it held sacrosanct in the past demands great moral courage and it requires from each individual the difficult task of assessing for himself without the guidance of tradition, the full relations of man and society.

In Bernal's words, "Only the Scientist has to be the leader and if one be a Humanist as well, could the difficulties be overcome, and even then it was much more probable that the extremely difficult effort of harmonizing the Humanities and Scientific traditions would not be made but rather they would be allowed to grow together as completely different parts of the personality. Very few even of the world's greatest Scientists get as far as this. Leonard de Vinci probably did. Newton and Faraday certainly did." Among the Humanists we can find fewer examples. "Goethe comes the nearest approach of a Humanist who tried to

assimilate science, and science was so coloured by his emotion that it had no effect on the general stream of scientific thought." If University education is to provide the foundation for this harmony of science and humanities, its methods have to undergo a radical change. Dr. Bernal thinks that the amount of learning in both arts and science has to be reduced in order to increase the range and depth of understanding. The aim of general education should be to select from the totality of human knowledge elements which are most significant and representative and to present them in such a way as to lead to an understanding of the main principles and classes of phenomena ; to the formation of a habit of objective critical inquiry and of the application of knowledge to the solution of all problems.

This gospel of scientific humanism leads to some corollaries. There must be deliberate planning in all Universities so that they may be something more than a mere collection of faculties and departments. The bias of a University must be more practical than it has been before and its teaching more topical. The pretence of neutrality must be abandoned and a thorough rationalism demanded. Professor Bernal laments that man at present attempts to control every part of the universe other than himself and he hopes that we shall find many new means of controlling life to an extent at present un-dreamt of and that genetics will furnish us with independent means of modifying life through selective breeding and even by the creation of mutations. It is doubtful whether this prospect will be attractive to all men even though Professor Bernal anticipates, through these, a finer and more harmonious way of living. While we would agree that the function of science is to study man as to study nature, one would not like the conquest of man in the same way as the conquest of nature. We may be willing to concede to the scientists the capacity of looking ahead and determining clearly which are the real and which the fantastic element of personal and social desires. But to the claim of the scientist that he alone can discover the art of living, we may put a

rejoinder that he assumes the application of the methods of natural science to the fields of psychology and sociology and does not recognise the possibility of other categories of interpretation. Moreover the assumption that the desire for something is conclusive proof of its desirability is disputable. We may not agree that things are good because they are desired. One claim made by Professor Bernal for science as an adequate basis of life of the University has to be conceded ; he indicates that science diffuses a spirit which the world greatly requires. Scientists get their results through teamwork and through a spirit of comradeship, discipline and patience. The humanist on the other hand is very often the lone worker who is engaged in the new interpretation of problems which had been discussed by his predecessors in other ways. The co-operative work of the scientist undoubtedly places before all academic people an ideal of a fraternity. But one may doubt if it is always international as has been frequently claimed. If scientific investigations were confined to the Universities, such a universal outlook might be possible. But today scientific research is often organized in national centres in order that its results may benefit the members of one single state and make it more powerful. Similarly when leaders of industry foster scientific research in institutions under their supervision, they want science to assist in their aim of obtaining monetary gain.

The University is differently constituted. It is not only concerned with the advancement of knowledge but with its communication. Which of these tasks is essential and which incidental, we shall not try to decide. So long as the University recognizes that additions to scientific knowledge are for the benefit of the whole of humanity, there can be nothing but praise for the spirit of investigation. It is only thus that science can progress ; for, in the sciences, thought is progressive ; the later stage corrects the earlier and includes the truth of the earlier. It is here that the scientist radically differs from the humanist. It is impossible to say with assurance that our philosophy or artis better than that of

the ancients, as the work of any genius in philosophy or literature represents in some sense a complete and absolute fusion. Tagore does not make Kalidasa obsolete, nor Shakespeare, Sophocles ; but if Newton were to return today to the land of the living, he would certainly regard later changes in physical theory as an improvement on his own. International communication of scientific discoveries is essential but the nations have to reconcile themselves to the fact that in trying to serve humanity they may be reducing the prospect of reaping the immediate gains accruing from such discoveries. It is an unfortunate fact that while the scientists themselves are self-less, humble and co-operative, the wider public who have claims and make use of scientific achievements regard them as their road to power. The craving for domination unfortunately is one of the most elemental of human urges. The incidence of knowledge as power may naturally become a social danger inspite of emphasis on propositions like "exploitation of any human being is vile."

The fusion between arts and science is not only desirable and possible but a vital necessity ; but the scientific humanist must recognize his own limitations. He shirks, for example, the challenge of the problems of spiritual life or of anything transcending nature. He wants us to face unpalatable facts but does he face the problem of spiritual decay and death ? He may recognize the limitations of the exact methods of science in understanding social situations, he may be willing to adapt the methods of the laboratory to situations where the reproduction of old conditions is impossible, where the facts are unique and unpredictable. But can the scientific humanist find a relief for the pessimism about the future of the race overtaking many thinkers ? Does he have a satisfactory reply to Bertrand Russell when he asserts "all the labours of all the ages, all the devotion, all the inspiration, all the noon-day brightness of human genius are due to extinction in the vast death of the social system when the whole temple of man's

achievements must inevitably be buried beneath of debris of the universe in ruins."

I have been dilating on scientific humanism to gather inspiration from the leaders of thought admitted to our fellowship today, to understand with their assistance how the present crisis in the life of the human race is to be solved and what contribution the Universities may make towards the solution. We are fond of the platitude that now the greatest danger to man comes not from nature but from himself. In the course of drawing from the material world one secret after another, in the process of teaching man how to escape all material dangers, natural science teaches him at the same time how he can destroy humanity and all that has been built by human effort. "The 19th century, the age of engineers, prepared the way for the war of engineers which broke out in 1914. The 20th century having given us this war, has already in its first half proceeded to the war of physicists with radar and the atomic bomb as their most spectacular but not their only contributions. In the second half of the century we are told the physiologists may have their turn: deliberate spreading of disease among men, animals and plants opens the possibility of all nations on both sides of the next contest being equally and simultaneously destroyed."

The misuse of science is not limited to the ravages of war; there are by-products of the control of natural forces, particularly of industrialization leading to numerous evils which include class-disputes, waste of natural resources and man-power, all the evils of ill-planned city-life. If the best use is to be made of man's mastery over nature, he has to master himself, not in the way that the physiologist may dream of, but in human training of the spirit in man. In order to achieve this man must know the immortal human creations in literature and art; he must be conversant with the adventures of mankind revealed in the pages of history. He must

be familiar with the social relations of man, not from abstract analysis or deduction from concepts but from the study of facts. The Economist studies human behaviour in the disposal of scarce means between alternative uses. The political scientist explains how man uses force to control human activity. There are special techniques in the so-called social sciences as in natural science and fine art but no one man can master all these techniques. Even as a specialist the scientist has to master the art of communicating his ideas. The historian and the economist have to analyze observed facts and make deductions,—in other words,—to use scientific technique. Literature creates imaginary beings but the training of the imagination can be through the knowledge of the main-springs of human action, the understanding of logical sequence, of the relationship of cause and effect. One can be a specialist only in a narrow field but he must be familiar with the wider area of human thought and behaviour : he should be able to correlate his special knowledge with the outlines or principles of other branches. The aim of education should be in the words of Whitehead, to “construct a system of ideas which would bring the aesthetic, moral and religious interests into relation with those concepts which have their origin in natural science.”

Public interest in these sciences arises from their technical applications : the atom bomb, television, anti-biotics, jet transport. The University is concerned with their first principles and methods, observation and analysis, logical thinking and explanation. The greatest attraction of science is its relentless march forward. It poses its questions carefully and systematically ; and it has a method which can be relied upon to answer them. If a question is posed which cannot be answered by the method of science it must be replaced by one that can be dealt with in this way, it must be turned into a question about quantities where accurate measurement can be used and where, if possible, the whole armoury of mathematical calculation can be brought into play. The scientist

will not worry himself with questions about which you cannot come to anything better than personal opinion. He will not tackle fields of studies where the areas are large and the evidence incomplete. A Student of history or sociology, for example, deals with facts which are unique and unpredictable, with variables which are numerous and which have interactions too complicated for precise calculation. The relational thinking which is here necessary is rejected by the scientist as it cannot reach the same degree of preciseness which is possible in the analysis of simpler materials and of recurring events. The scientist abstracts properties from their total background to describe, analyze and explain. He then ties up his results in a neat formula or a collection of symbolism which are to be understood by later votaries of science and applied in devising new methods for the conquest of nature. At the same time it must be remembered that the conjunction of Science and Technology is not a natural and inevitable one. The Technologist is one to draw up specifications of things which can be made and operations which can be carried out. He utilizes information about the natural world, theories which predict the behaviour of substances and systems and proceeds to specifications for the assembly of new arrangements of objects. Once these specifications are made the technician can repeat the process of production and can go on doing so without insisting on change. If change of specifications were required the technician could supply them without necessarily demanding more original discoveries. The technician, therefore, need not necessarily have a place in the academies or universities.

Moreover the aim of the University is not merely to understand the forces of nature, it is also that transmission of culture and the appreciation of human values. "Culture requires that we possess a complete concept of the world and of man ; it is not for culture to stop, with science, at the point where the methods of absolute theoretic rigour happen to end. Life cannot wait until

the sciences may have explained the universe scientifically. We cannot put off living until we are ready. The most salient characteristic of life is its coerciveness. ...And culture which is but its interpretation, cannot wait any more than can life itself. ...This sharpens the distinction between culture and the sciences. Science is not something by which we live....The internal conduct of science is not a vital concern : that of culture is." The nourishment and transmission of culture has, however, been generally effected by an *elite*. The cultured *elite* has to be distinguished from the specialised *elite* mainly in this that the role of the former is to preserve and transmit the heritage unchanged ; while the latter deliberately attempts to bring about change : the resultant balance between continuity and change is conducive to health and prevents decadence. Here again one must distinguish between the creator and the critic : the artist, be he a composer, painter or writer, will not necessarily promote the welfare of the art which he practises. There has to be criticism of the new, at the same time as appreciation of the best of the past. The lay-man's ability to distinguish between the creation of the past and the present rests on the background of criticism and of comprehension of the cultured group of which he is a member. The scientist of the past does not however survive in the common estimation in the same way ; but even in science we cannot completely forget what has been superseded. The superseded past may be looked at historically as part of something continuing. It is necessary for the true humanist to know the life of Science as he knows the life of Art and of Religion.

Finally, a word of explanation. If in my remarks I have dwelt more on the shortcomings of science than on those of the humanities, it is not as one who is more familiar with the latter than with the former nor as one who values the education of the emotions more than the training of the powers of reasoning. It is because the triumphs of science are patent to all and the omnipo-

tence of science universally assured that I have laboured on a different view-point to bring out the equally important function of the humanities in the building up of the whole man.

Today in the company of the illustrious humanists and scientists, I have hopes of the future of Universities which in my daily routine of work I cannot cherish. Today I can look forward to a future where the Indian Universities will play their legitimate part in producing leaders of men and guides in the darkness which threatens to envelop us.

“TAMASŌ MĀ JYOTIRGAMAYA”



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Arts - ^{min}2, Sa - 2

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