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31<sup>st</sup> Oct. 1982

Mr. Vice Chancellor, Members of the Senate, Executive Council and Faculties, distinguished guests and my young friends, I consider it a great privilege to have been invited to address this Convocation. The city of Kolhapur is associated with several important features. First of all, it is the seat of the ancient deity of Mahalaxmi, popularly called Amba-bai and I would like to begin my speech by offering my salutations to the great deity for the welfare of the general public

सर्वस्याद्या महालक्ष्मीस्त्रिगुणा परमेश्वरी ।

प्रणतानां पसीद त्वं देवि विश्वार्तिहारिणी ।

त्रैलोक्यवासिनामीडये लोकानां वरदा भव ॥

Because of the association of Mahalaxmi, Kolhapur has the distinction of being counted among fifty-one 'Shakti Pithas' in India and three and a half Shakti Pithas in Maharashtra.

Apart from its being the seat of Temple of Mahalakshmi, Kolhapur enjoys historic importance in its own right. Yours is an ancient city whose history goes back to second century B. C. The sage Parashar is said to have had a cave resort on the fort of Panhala and of course your city is known as the Kashi of Deccan (Dakshin Kashi). In the Maratha history, the city and its environs including the fort of Panhala have seen many significant battles including the seige of Siddi Jauhar. There is an Ambarkhana built by Shivaji Maharaj at the fort Panhala. The well-known poet Moropant hailed from Panhala.

Kolhapur can also boast of a great heritage in art and culture. The city has thought it fit to erect a statue in honour of the great singer, the late Alladiyakhan. Kolhapur, of course, came into its own when a branch of the kingdom of Shivaji was established with Kolhapur as its capital by Tarabai. In the modern times, Chhatrapati Shahu Maharaj (reign-1874-1922), by his reform activities, made a name for himself and put Kolhapur on the All India map. The personality of

Shahu Maharaj was a many-faceted one and it is beyond, my purview to deal with it at length; but I would like to briefly refer to his educational activities which made Kolhapur one of the leading centres for the spread of education in Maharashtra. Chhatrapati Shahu Maharaj was a great seer who realised the importance of free and compulsory primary education ahead of his time and introduced this measure in his State thirty years in advance of the introduction of a similar measure in the progressive Bombay State. While speaking at Khamgaon in December 1917 in his capacity as President of Maratha Education Conference, he declared. शिक्षणानेच आमचा तरणोपाय होणार आहे, असे माझे ठाम मत आहे. शिक्षणाशिवाय कोणत्याही देशाची उन्नति झाली नाही असे इतिहास सांगतो. अज्ञानात बडून गेलेल्या देशात उत्तम मुत्सद्दी व लढवय्ये वीर कधीही निर्माण होणार नाहीत. म्हणून सक्तीच्या व मोफत शिक्षणाची दिहंदुस्थानला अतिशय आवश्यकता आहे.

He started opening schools in villages in 1912. He introduced compulsory education in Kolhapur city in 1916 and extended that measure to the villages of Kolhapur State in 1918. Altogether hundred schools were opened by him. He was particularly keen to ensure access to education of what are now called Scheduled Castes. He was a pioneer of Boarding House Movement in Maharashtra. He gave financial assistance for opening and construction of boarding houses & ensured their proper management. He used to say that "Just as the U. K. is the mother of Parliament, Kolhapur is the mother of Boarding Houses." When he ascended the throne, the expenditure on education in Kolhapur State was in the range of Rs. one lakh per year. At the end of his reign, the expenditure had increased three-fold to Rs. three lakhs. In the present times of inflation, this amount may indeed appear to be paltry, but if you consider the prices in the pre-First War period, you would realise that this was a very large amount for a small State like Kolhapur to spend. The greatness of Chhatrapati Shahu Maharaj rests in the fact that not only did he initiate significant reform measures but he institutionalised the educational movement as a result of which Kolhapur, in times to come, became an important seat of educational innovation in the South of Maharashtra. The Gargoti School established by him went on to develop into a University for rural reconstruction called Mauni Vidyapeeth. This rural university produced eminent educationist like the late Shri J. P. Naik whose name is inseparable from educational reconstruction in the post-Independence India. But more importantly, the example of Shahu Maharaj inspired Karm Yogi Bhaurao Patil who, through his Rayat

Shikshan Sanstha, spread the message of education right from primary to the higher stages in all the districts, talukas and villages in South Maharashtra. I would like to take this opportunity of paying my homage to the sacred memory of Chhatrapati Shahu Maharaj. It is on the firm foundations laid by him that the University of Kolhapur stands so proudly today.

Your University which was established in September 1962 has made impressive progress in the last 20 years. Beginning with 34 colleges with 1400 student, your University now boasts of 92 colleges with a student strength of 40,000. You have an imposing campus spread over an area of 400 hectares. You have at present 17 postgraduate departments including University Service and Instrumentation Centre; and I understand that a new department, namely, Department of Statistics, is being inaugurated in the current year. In addition, postgraduate teaching is also imparted in various colleges at district places. Your University has so far produced 278 Ph. Ds and has under taken several departmental and inter-disciplinary projects under grants drawn not only from the U. G. C. but also from other agencies like CSIR, Department of Science Technology and Indian Council of Social Science Research. I understand that your University is collaborating in the Planning Commission's Western Ghat Coordinated Research Project with universities not only within the region like

Bombay and Poona but also universities outside the region like Calicut, Karnataka, Cochin etc.

I am given to understand that the University has also started a Consultancy Service to give advice to the public at large especially to the industrialists and farmers and that short-term production-oriented courses like media production, photography, radio and T. V., film production, etc. have been started.

I also understand that you have encouraged students to participate in " Earn and Learn Scheme "under which poor students work on the University farm, University canteen, and also engage in flour milling and brick making to earn their maintenance simultaneously attending classes.

You are all aware that our educational system today is gigantic in its dimensions with about 6 lakh institutions, more than 30 lakh teachers and nearly 10 crore of students. The public sector revenue expenditure is of the order of Rs.3,605 crores per year for maintenance of the system. This huge system is run

by co-operation between all the three levels of Government, namely Central, State and Local. Whereas primary and secondary education is mainly a matter of co-operation between respective State Governments and the local bodies like Zilla Parishads or District Education Boards under the overall guidance of the Central Government, the higher education including technical education is a matter of co-operation between the Central Government and the State Government. You would thus see that education pervades all levels of Government and it is in this context that education has been made a concurrent subject by the 42nd Amendment of the Constitution which came into effect in January 1977.

Within the field of higher education, we have at present 118 universities and 13 institutions deemed to be universities and 5,000 colleges with student strength of 27.5 lakhs and teaching strength of 1,93,341 of whom about 40,000 teachers are in university departments and university colleges and the rest are in the affiliated colleges. The total budgeted expenditure on higher education including technical education in 1981-82 was 695 crores which was 19.3% of the expenditure on education as a whole. The expenditure on education as a percentage to total budgeted expenditure was 15.1 which is perhaps the largest single component of our budget, next only to Defence.

If education represents and is bound to represent such a large chunk of Government expenditure and if higher education accounts for a similar chunk of overall expenditure on education, it is appropriate that education is made an integral part of the development process of any nation and, in a country like ours which has adopted the path of planned development, an integral part of development planning. In this context, Pandit Jawaharlal Nehru had observed that all our progress depends not on the factories and plants that are put up, but on the quality of human beings that we produce and train. According to him, no subject can be of greater importance than that of education, as it is education which is supposed to build those men and women. Prime Minister Indira Gandhi in one of her recent speeches has aptly observed that "one's education is not judged by what one knows but what one becomes. Education is not merely accumulation of information but the discipline of mind that makes for a balanced and well adjusted person who is capable of meeting the changing challenges of life". According to her, education and development are intimately connected and the spread of knowledge is the first step in creating wealth and sharing it.

When education is regarded as an aspect of human resource development, a little reflection will show that programmes of human resource development would have fourfold aims -

- i) to prepare individuals for assuming their role as responsible citizens;
- ii) to develop in them scientific outlook, awareness of their rights and responsibilities as well as a consciousness of the processes of development;
- iii) to sensitise them to ethical, social and cultural values which go to make an enlightened nation; and
- iv) to impart to them knowledge, skills and attitudes which would enable them to contribute to the productive programmes in the national development.

It is easy to see that objectives at serial No. (ii) and (iv) co-relate to education in science and technology and the objectives at serial No, (i) and (iii) co-relate with what used to be called in the past moral and spiritual education and, in more modern times, is called value-oriented education.

It is recognised on all hands that the progress, welfare and security of the nation depend critically on a rapid, planned and sustained growth in the quality and extent of education and research in science and technology. With the close connection between national productivity and investment on education and research, it is not a simple cause-and-effect relationship. What is implied is that science education and research of the right type and geared to national needs will lead to rise in productivity. The increased productivity in its turn would provide more resources for science and research and thus will be generated the rising spiral of science technology and productivity or in short S. T. P. The industrialised countries have a much higher G. N. P. per capita and this they can and do invest in education and research on a much higher scale than the developing countries like India. We often pride ourselves on the fact that India has the third largest manpower participating in science and technology, next only to the United States and U. S. S. R. The fact of the matter, however is that if the figures are to be in comparable perspective with reference to population, the scientific and technological manpower in the country does not compare at all favourably with many countries in Asia and Africa, not to speak of the United States and Western Europe. There is no doubt, therefore, that India needs to devote a larger percentage of its G. N. P. to science and technology education and research, not necessarily for

establishing more and more institutions but for increasing the output of science and technology graduates, for increasing the number of science and technology teachers and for more research in the area of science and technology. All this is required to be done without detriment to standards. In fact, the aspect of standards is so important in this field that I would go to the extent of saying that we should, under no circumstances, sacrifice quality at the altar of quantity.

When we consider the role of higher education in relation to science and technology, we have to consider the three aspects of teaching, research and extension. I would consider these aspects in turn.

If science is poorly taught and badly learnt, it is little more than burdening the mind with dead information and it could degenerate into a new superstition. What we need is improvement in the standards of science education at all levels in the country. To achieve quality in science education and research demands serious and sustained effort, full and vigorous government and public support, relentless pursuit of excellence and above all, it needs determination, hard work and dedication. In this context, one cannot but strongly emphasise the need for updating the curricula in science and technology education. The latest technologies have to be learnt and assimilated in order to keep abreast with the developments in the world. The curricula have to be continuously revised with a view to incorporating these new ideas in scientific and technological fields. Here, the role of teachers is of paramount importance. It is the teachers who have to maintain their thirst for newer knowledge and to quench it by acquaintance with latest scientific literature, be it from the Soviet Union or from the United States. They have to prepare instructional material and textbooks which are up-to-date and, with progressive adoption of regional languages as the media of instruction, they have also to translate these textbooks into regional languages. There is sometimes a deplorable resistance from those who are already in service to adopt new technologies because that will mean re-orientation of those who have been teaching obsolete technologies. We must meet this resistance head-long so as to avoid deterioration in standards of our education.

Sometimes, there is a tendency to underestimate the role of universities in the field of research. No doubt, research is of various types including fundamental research, applied research and development research. No doubt, we have a tradition of departmental scientific laboratories which have tended to attract the best manpower for conducting research, especially in applied and development fields.

The fact, however, is that in all educationally advanced countries, the expenditure on university research constitutes about 1/2 of the total expenditure on higher education. The Education Commission observed that the present expenditure on university research is negligible and we should aim to devote at least 25% of the expenditure on higher education towards research by the end of the century. While reviewing the research function of the university, they have also identified several important aspects. These are

- i) production of researchers
- ii) performance of research
- iii) quality of teaching
- iv) production of teachers
- v) training of teachers
- vi) consultative function
- vii) research policy
- viii) scientific tradition
- ix) international contacts
- x) governments and universities.

The mere listing of the aspects of research function of the university should serve to warn us that we can neglect research in universities only at the grave peril to the overall standing of our country in the unity of nations.

The third aspect of science and technology education is that of extension. Here, there are several areas in which a university can perform a useful role. First of all, a university can try to help the lower stages of education, namely, secondary and primary, in improving and enriching science teaching. Secondly, a university can, through organisation of extra mural lectures or science museums and exhibitions, acquaint the citizens in general with the latest advances of science and technology, and enlarge our understanding of the ways in which science and technology can improve the quality of daily life. Thirdly, the university can try to establish contacts with the industries so as to extend the results of research for promotion of new industrial processes and products. In the western countries, university-industry cooperation has made great strides. There are science and

technology “parks” as part of the universities. The reputed universities like Harvard, California, have entered into collaboration with leading industrial firms in promising fields and new “thrust” areas like bio-technology, fibre optics and micro-processors. In our country, the industry-university inter-face presents a very low profile. In this context, I must congratulate your University for having made a begin-ning in the field of university Consultancy Service. I must, however, caution you that it would be advisable for you to lay down in advance appropriate rules and procedures in relation to sharing of funds and share of research results so as to maintain the university tradition of comparatively open and public spirited research.

The University Grants Commission has devised several schemes so as to assist the universities in fulfilment of their teaching, research and extension functions in relation to science and technology. The U. G. C. is assisting in the holding of summer programmes and other workshops so as to upgrade the professional competence of teachers. It has a scheme for assistance for the preparation of university level textbooks by authors. In the field of research, its most important scheme is that of Centres of Advanced Study Departments of Special Assistance. The scheme of recognising certain departments as centres of advanced study was initiated by the Commission in 1963-64 with the object of strengthening postgraduate teaching and research. The scheme is intended to encourage the pursuit of “excellence” and team work in study and research, and to accelerate the realization of “inter-national standards” in specific fields. The scheme of providing special assistance to a limited number of selected departments (Departments of special assistance) was initiated in 1972-73 with the objective of enabling these departments to develop their existing potentialities and to become active centres of teaching and research in selected areas and also to attain the level of centres of advanced study in course of time. At the end of March 1981, there were 18 centres of advanced study and 31 departments of special assistance in science and engineering. I had gone through the list of these centres to see whether your univer-sity is listed among them. Subject to correction, I find that this is not so, although I was also happy to note that some other univer-sities in Maharashtra find a place. Thus Department of Chemical Technology and the Department of Mathematics of Bombay University are recognised as centres of advanced study. Poona University has Departments of Special Assistance in Physics, Chemistry and Statistic and Marathwada University has a department of Special Assistance in Zoology. Here, then, is a challenge for your university which I have no doubt you would try to meet.

The U. G. C. also has a scheme of College Science Improvement Programme (COSIP). This programme was initiated by the U. G. C. in 1970-71 in order to bring about qualitative improvement in the teaching of science at the undergraduate level. The purpose of the programme is to accelerate the development of science capabilities of undergraduate students and to initiate a process of continuous self-renewal. At present 171 colleges and 40 departments all over India are being assisted under COSIP.

We thus observe that the UGC is doing its best to improve the capabilities of the university system in the fields of science and technology education. But much more needs to be done. Here, the scope for non-monetary inputs needs to be stressed, especially in the context of the great resource constraints. We can try to maximise utilization of existing resources through better planning and efficient management. Participation of students and teachers in the institutional management, switching over to the technique of learning by doing, the development of relevant academic ethics and application of productivity concepts and techniques are some of the measures which do not call for much of financial inputs but can help a lot in creating an atmosphere conducive to appropriate development of the universities and colleges. I have no doubt that your university, which has already broken new ground in several fields, would not lag behind in the quest for devotion of non-monetary inputs to higher education.

While a lot needs to be done, we should not at all remain complacent. We should also avoid the opposite danger of self-denigration. We should not try to underrate our achievements in the field of science and technology, especially after Independence. We were very fortunate indeed in having as our first Prime Minister the great leader Pt. Jawaharlal Nehru, who fully realised the importance of science and technology for the future development of the country and who laid the foundations for a strong infrastructure in science and technology by way of educational institutions, scientific laboratories and diversification of research in new fields like atomic energy and space research. We have talented and brilliant people in all fields of science and technology and we can legitimately take pride in achievements in different fields. We feel quite confident that we can compete with any of the developed countries of the world. Our technicians have earned good name wherever they have been sent for doing any assignment. Indian scientists and technologists are recognised as being highly skilful, versatile and sophisticated.

What, then, is the reason that the same people, when they work in our own country, somehow give an impression of lack of efficiency and requisite standards? We, as a nation, will have to identify the causes and apply the correctives so that these talents are put to the best advantages of the country. Besides other factors, the main reason seems to be the atmosphere of lack of discipline. The sense of discipline and a sense of purpose have to be inculcated by educational institutions and the universities as temples of learning have to ensure and encourage this.

The indiscipline and unrest on the campuses is said to be part of the general malaise of our society. The remedies suggested for dealing with this problem would depend on our reading of the causative factors. Although there is a tendency to emphasise the social, external and environmental factors including even international factors, I, for one, believe that the causes are related to the deterioration of moral fibre and that the remedy, therefore, has to be sought in imparting moral and spiritual tone to the education of the young generation. It would also be observed that we link up with the important objective of human resource development, earlier mentioned sensitization of human material to ethical, social and cultural values which go to make an enlightened nation and prepare individuals for assuming their role as responsible citizens.

Although value-oriented education is a new term, as a subject, it goes back to ancient times. So far as our country is concerned, it is rooted in our ancient tradition and culture. Dr. Annie Besant in her Kamala Lectures delivered at the Calcutta University in 1924-25, vividly depicted the detrimental effects of the neglect of this aspect in the formal system of education inherited by us from our western rulers, and I quote -

“Modern Education in India has practically conned itself to the training of the mental and intellectual nature, and has ignored the unfolding of the spiritual nature, the evok-ing and training of the emotional nature, and, until lately, the development and training of the physical body to a high state of efficiency. The result has been, in the older generations, the over-strain of the nervous system, the enfeebling of the physical health, the shortening of the period of vigorous maturity, often a sudden breakdown, or, at best, the premature appearance of debility and old age. Further, the exclusive development of the intelligence and the neglect of the emotions has overstimulated the self-regarding instincts, and has largely destroyed the feel-ing of Social and National Dharma, of duty to Society

and to the Nation; hence the decay of public spirit, of social service, of responsibility and of sacrifice for the common-weal, which characterize the good citizen as distinguished from the good man.”

Other wellknown educators of India like Raveendra Nath Tagore, Mahatma Gandhi and his illustrious followers like Dr. Zakir Husain, Dr. Radhakrishnan, Dr. Sri Prakasha, have all emphasised the great importance of imparting of moral education. More recently, the Education Commission has recommended that a conscious and. organised attempt should be made for imparting education in social, moral and spiritual values with the help, wherever possible, of the ethical teachings of great religions.

Moral values should not be confused with theological values. In fact, the moral values in real sense will represent the quintessence of values propagated by different religions.

In the context of the introduction of value-orientated education, there is need for good teachers and good quality books. Arrangements need to be made for appropriate teacher training programmes and teacher orientation programmes. We are also required to involve State level and National level councils for educational research and training in the effort to produce good, quality, non-controversial textbooks in various languages of India.

In this connection I wish to invite your attention to the new Article 51A under the heading “ Fundamental Duties “ which was introduced in the Constitution by the 42nd Amendment. I would like to quote the relevant entries from this Article as they very pithily bring out most of the objectives of the human resource development mentioned by me earlier.

- b) to cherish and follow the noble ideals which inspired our national struggle for freedom;
- e) to promote harmony and the spirit of common brotherhood amongst all the people of India transcending religious, linguistic and regional or sectional diversities; to renounce practices derogatory to the dignity of women;
- f) to value and preserve the rich heritage of our composite culture;
- g) to protect and improve the natural environment including forests, lakes,

rivers and wild life, and to have compassion for living creatures;

h) to develop the scientific temper, humanism and spirit of inquiry and reform;

j) to strive towards excellence in all spheres of individual and collective activity so that the nation constantly rises to higher levels of endeavour and achievement. Friends, I have expressed some of my ideas which to my mind are of concern to all of us if our universities have to devote them-selves consciously to the pursuit of knowledge and help us in the solution of our problems. I would also like to remind you that the progress in the field of higher education and research, of science and technology presupposes a broad base of primary, secondary and adult education. The new 20 point programme enunciated by our Prime Minister on the auspicious occasion of Samkranti day or 14th January 1982, incorporates, as its major planks, spread of universal elementary education for the age-group 6-14, with special emphasis on girls, and involvement of students and voluntary agencies in the programmes for removal of adult illiteracy. It is expected that the Directive Principle in Article 45 of the Constitution for free and compulsory education for all children in the age-group 6-14, would be fulfilled by 1990. We also expect to cover the entire illiterate population of the age-group 15-35 by 1990. The success of a programme of this magnitude depends on the cooperation of educational institutions, teachers and students. I have no doubt that universities in India including your university will rise to the call of the Nation and involve themselves fully in these vital programmes.

In the end, I would like to congratulate my friends who have received their degrees today. You have, ahead of you, a challenging time and plenty of opportunities to render useful service to the community which has contributed a great deal for your higher education.

May I remind you again of the inspiring words of Chatrapati Shahu Maharaj in which he related the spread of education with emergence of statesmen and warriors, and may I add, eminent scientists and technologists of world repute? Let me say this : Go forth in the outside world of work; it is waiting for conquest.

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