

Editorially Speaking.....

A hundred years.....

THIS, the seventh year of publication of the *Bombay Technologist*, also marks the centenary of our University. Looking back, we can well be proud of its achievements and at the thought of its countless alumni that have filled with distinction various positions throughout the country and contributed significantly to the progress of our nation in diverse directions. With less than a quarter of this century to its share, the Department has pioneered education and research in advanced Chemical Engineering and Technology and has steadily grown to its present stature.

.....and Technology

This period and the experience of two world wars have caused an accelerated pace of progress throughout the world and the transition from earlier conditions to a technological way of thinking, production and organisation. Any one who has experienced the whole progress of technology in the last two decades will be struck by the fact that, while initially this development was accompanied by a uniform feeling of progress, there has arisen lately a pessimistic attitude in many quarters. Man is to-day caught in the wheel of technology, but belief in progress has silently turned into contemporary awareness of a cultural crisis. Technical skill has been used without a due sense of responsibility and exploited for manufacturing the means of mass destruction. Only recently has there been a realization that it should be harnessed only for socially productive purposes and thus made to subserve the happiness of man. To-day, all nations and all human beings of goodwill cherish the hope that the blessings to be bestowed by the controlled atomic reactor may drive out the potential horrors of the uncontrolled chain reactions in the bomb.

India's first atomic reactor at Trombay—a 1000 KW swimming pool type—went critical in August last year. Two other research reactors of other types are expected to go into operation by the end of 1958. These as well as other reactors that may be set up in future years are all to be devoted fully towards developing power for peaceful uses.

The engineer and the technologist are often said to develop and suffer a narrow vision on account of extreme specialization. Knowledge has been accumulating so fast that areas of science and technology are increasing rapidly like a tree which branches naturally as it grows. Specialization aiming at knowing more and more about less and less seems therefore inevitable. Leaders of education are therefore feeling it necessary to avoid the harmful aspect of compartmentalization by supplementing the training of the student with a liberal dose of general education in the humanities and social sciences.

The Five Year Plans.....

In the collective task of nation building in a welfare state, it is often the administrator and the politician who usually have the authority to take final decisions, even on matters they are not technically competent to deal with. It is therefore gratifying to note that the Engineering Personnel Committee of the Planning Commission has stressed on the need for technical and scientific personnel to be introduced at suitable levels in the general administrative machinery for holding positions where their experience will be of value.

During the First Five Year Plan, facilities for training of personnel in engineering and technology were systematically expanded by the Government. The Institute of Technology at Kharagpur as

well as quite a few new engineering colleges and polytechnics were established. In addition, existing institutions were aided and developed. The Second Five Year Plan envisages further increase in the number of institutions imparting technical training both for degree and diploma courses and in the strengthening of existing institutions and colleges. Notable among these developments is the offer of the U.S.S.R. in helping to set up an institution in Bombay where it is contemplated, specialised courses of training in silicate technology, paper technology, fuel technology and technology of fine organic chemicals will be available, besides the establishment of a department of processes and apparatus of chemical industry and chemical technology and a department of machinery, apparatus and automation in chemical industries. There are offers from West Germany and from the U.S. to set up two other technological institutions in the country. It should therefore be easy now to implement the plan to establish three more technological institutions on the Kharagpur model in the next five years. It has already been decided to locate the third institution in Kanpur while the fourth will probably be located somewhere in Madras State.

.....and Technical Personnel

The proposed expansion of technical education takes into account the needs of the country in its current developmental phase. Indeed, even a casual perusal of the Five Year Plans at once provides full scope for gainful employment to many chemists, engineers and technologists. It is therefore surprising and is a matter for serious concern that, according to the information available with the C.S.I.R. and as given recently by the Union Minister for Natural Resources and Scientific Research in the Rajya Sabha, as many as 1348 scientists and technologists are at present without any employment. Instances can be cited of highly qualified persons returning

abroad to the place or country of their advanced studies after a long and futile hunt for employment in India. It seems paradoxical to have therefore, both an acute shortage and a redundancy of technically trained personnel. Unless the priorities in training coincide with the developmental priorities, we will continue to have this frustrating experience of a surplus of trained men in some fields and a shortage in others. Every possible care has to be exercised in the dovetailing of technological education into our development plans. Any failure in the accurate and appropriate expansion of technical education may put the whole plan out of gear. If it is true that, in the First Plan period, Government was able to utilise only half the funds allocated for technical education, there is all the more reason for rational planning in the Second Five Year Plan Period.

Technological Education.....

There is criticism of late that there has been a deterioration in the standard of our new recruits to the technological and engineering professions. In this context, it is pertinent to discuss the language medium in which instruction is to be imparted. Ours is a country with many languages. Each of these great languages is not merely a vehicle of communication but also an expression of the creative attitude of the particular region towards the sum total of the national and cultural patterns which we have assimilated in common. The evolution of a common language that can document the intellectual creativeness of the nation has necessarily to be a slow process and in the meantime the requirements of science and technology in a changing world demands a common world languages for their transactions. Considerations such as these have resulted in a toning down in the initial outburst of enthusiasm for a change-over from English to Hindi or other regional languages as medium of instruction and the feeling is now apparently widespread that, at least in so

far as higher education is concerned, especially in the fields of science, medicine, engineering and technology, English should continue to be the medium for some years yet.

Perhaps the crucial issue of higher technological education is that of examinations taken at long intervals and looked upon as the sole test of merit. Unless such examinations are related closer to professional attainments than to bookish memorization, they are bound to be ineffective and can only constitute the burden and bugbear that they now are. Neither the contents nor the methods of teaching can be expected to improve much unless the overemphasis on written and external tests is removed. It is not suggested that examinations have no place as qualifying and selection tests. But they need to be more effectively and intelligently organised. They should take good account of the student's day-today

work as well as of his innate abilities and initiative. They should provide good scope for works practice. Industrial houses should also come forward accepting apprentices in their establishments.

.....and responsibility

The future technologist is the foundation and edifice of Industrial India's prosperity. If this foundation is defective, then the whole super structure becomes weak. On the other hand, he has enough scope and opportunity to develop his creative attitude and if he has imbibed the spirit of the dignity of labour, if he puts his shoulders to the wheel and if he looks to his employment as work and not merely as a job, he will enjoy the co-operation of his workmates and of his employer alike and will then contribute effectively to the gigantic task of nation building.