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PRESIDENTIAL ADDRESS

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Gentlemen,

At the outset I thank the Association of Engineers for electing me the President of the Association for the year. I know my limitations and I feel diffident to fill this onerous post at this juncture to guide the destiny of the Association which is bound to play a very important part in the future planning of India. With the help and matured deliberation of the learned members of the Council and with the co-operation of members in general—I feel, however, I shall be able to maintain the tradition and further the cause of this Association and the people of India.

The World War No. II is over and we are on the threshold of great changes. There is expectancy in the air. People's mind has been made up. Political leaders of the country have realized that if India is to take her rightful place in the world and if she is to maintain peace in the East and Far East, the time for planning and action has come. It was refreshing to hear Pandit Jawaharlal in his convocation address in the University of National Council of Education, the part the Engineers, the Scientists and the Economists are going to play in re-creating India. He said—the lawyers and other parasites will have no place in the future pattern of India. About two years ago, Mr. R. G. Casey, the Ex-Governor of Bengal, asked me how is it in India, very few Engineers take part in politics. To which I replied there are two reasons—firstly, Indian Engineers are, as a rule, too poor to play at politics, secondly, Engineers, by training and nature are more fond of work than drawing room drives. Fortunately, as I have mentioned before, the mental attitude is changing fast—the engineers and scientists will have to work hand in hand to harness the natural resources, men and materials for the benefit of the people.

At present India is the poorest country in the world. Men, majority of them, are stricken with famine, ill-clad, ill-housed and are condemned to a living death in despair and in isolation. Disease and death are stalking merrily from Capecomorin to Himalayas and throughout this sub-continent medical relief is non-existent. Illiteracy and prejudices have taken deep root amongst the masses and little is noticed of the culture and ideals of this once glorious India. The first and the foremost object is to raise the standard of living of the people to banish famine once for all to eradicate preventible disease, to make life more pleasant and to extend equal opportunities to all. The petty squabbles for loaves and fishes will have to be set aside, the idea of exploiting the masses for the benefit of a favoured few will have to be abandoned and we have to think and act comprehensively in the terms of whole India and her teeming population.

To attain our objective we have to develop and harness our vast resources. We have to aim at high degree of efficiency in production. The development must be planned and balanced. We have to see that unrestricted

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exploitation in any particular field do not lead to exhaustion in land, minerals and other resources.

We must call to our aid the best brains of India to plan comprehensively and to act unitedly.

PROBLEMS

India's problem No. 1 is poverty. This scourge has to be successfully overcome and the solution does not lie in mere agricultural improvement. There must be industrial development, balanced and in harmony with the growth and improvement of agriculture. Majority of the people now depend upon agriculture, and unless a good bit of it is devoted to pursuits other than agriculture, India cannot be healthy and prosperous.

We have to start with the villages where engineers and scientists should find sufficient scope of their talent with a view to produce more food and to get the best out of nature for the benefit of man.

Villages need irrigation, drainage, water supply, improved method of cultivation, fertilisers, education, co-operative enterprise and cottage industry.

Next come the development of the urban areas and industry. The work here is of complex nature due to concentration of large masses in comparatively small areas. Town planning and public health measures must have the first priority to make life worth-living. Copious supply of pure water, effective means of disposal of solid and liquid filth, adequate roads, better housing, open spaces, parks, sufficient number of hospitals and free primary schools, zoning of industrial areas and industrial and technical schools near the industries are our objective.

THE SOLUTION

Irrigation and cheap power are the two basic factors which are necessary for the development of agriculture and industry. Nature has bestowed her favours—of rivers and rainfall with a capricious hand. While some areas are completely devoid of rainfall throughout the year there are others with heavy rainfalls. There are few areas where well distributed rainfalls throughout the year.

There are rivers which carry little or no water during the hot weather when water is needed most; but during the monsoon there is torrential flow with very high water level which causes breaches in embankments, floods large tracts of lands damages crops, demolishes habitations with consequent loss of human and cattle lives. In other words, the nature has though endowed us with the most essential elements, they are in wild state and require control and regulation to be utilised to the best advantage of mankind. This has been achieved in Russia, in America and other parts of the world and there is no reason why the same cannot or should not be done in India. With the control of flood and regulation of discharge of water to irrigate the land when required generation of hydraulic power is possible which is the cheapest. Production of hydraulic power would tend to conserve fuel resources of the country. Several such multi-purpose schemes are being considered at present, of which notable ones—that is taking shape in Bengal—are (1) Damodar valley scheme, (2) Moor Scheme—of the latter you will hear in details later in the evening. The Damodar catchment area is one of

the six most denuded areas in India with the result that during the monsoon the discharge of the river varies from 650,000 cusecs to as little as 10,000 cusecs. while in the dry season the discharge is known to have gone below 8 cusecs. Consequently the areas through which this river passes are liable to serious flood—while districts in Bengal which could by intelligent control of this river could be made fertile which at present remain unfertile and barren. It is proposed to set up a regional authority to develop Damodar valley on the lines of T. A. V. in America.

The river Damodar rises in the beds of Chotanagpur. Except for the solitary peak of Pareshnath—the level of the country is generally below 2,000 ft. The total length of the river from its sources to the point where it joins river Hooghly is 336 miles. Near Ranigunge where the river debouches into the plain the level of the country is only 300 ft. above sea level. In the hill catchment the slopes of the river in stretches are very steep. The surface soil consists of loose granular material of coal measures. The soil has very poor water absorbing capacity. Unrestricted exploitation of forests has resulted in removal of trees and vegetations. The rains that fall now finds into the stream and nullhas with the following consequences :—

(1) The rain water passes into the river at once increasing the intensity of the flood.

(2) There being no seepage into the soil the regeneration supply during the winter months is negligible.

(3) As the water rushes with high velocity the soil being loose, there is heavy erosion and large quantity of detritus is brought down into the river.

The havoc of 1943 caused by breach on the left embankment is fresh in our memory. Grand Trunk Road and E.I. Rly. Main and Chord Lines being washed away Calcutta was practically cut off from Upper India.

For the control of flood for irrigation and generation of electrical energy two dam sites—one on Damodar near Sonalapur and the other on Banakar near Maithon have been selected. These two dams which are proposed to be 150 ft. and 265 ft. high respectively will contain nearly 90% of the catchment of the river which is 7340 sq. miles. The total firm power available would be about 11,400 k.w. The river discharge will be normalised and even during the drought year—the dry weather discharge will not fall below 1000 cusecs.

Besides, there is proposal for a barrage about 14 mile down the Anderson weir. This will irrigate 4,75,000 areas on the left bank and 425,000 on the right bank. The total estimated cost of the scheme is Rs. 55 crores. Among other vital schemes for the improvement of irrigation-drainage and waterways of Central and North Bengal. The Ganges barrage Scheme, Teesta and Brahmaputra Schemes are under investigations. It is said, the Teesta Scheme will be sufficient to generate sufficient electrical energy for the growth and development of industries in North and Central Bengal.

I am aware, gentlemen, that you have all heard and read about these schemes—my only excuse for mentioning them to you is that these are so vital for the rebirth of Bengal that these can stand repetition over and over again. You should also go on telling your friends and thereby make it known to all that the ills from which we suffer can be cured by engineers and scientists.

Next to flood and power development comes better communication

facilities. This in our programme should include national highways, arterial roads, rural roads, railways, waterways and airways. No country can be prosperous unless there are facilities for easy transport of food and materials from the place where it is grown or manufactured to the consumers. Public Health Engineering water supply, drainage, housing and general sanitation for both rural and urban areas are essential for healthy mankind. Many of the diseases and ills from which we suffer are preventible and it is disgrace for any Government which does not provide those elementary amenities. "I am glad to inform you that Bengal Government has in its programme during the next financial year—a provision of Rs. 50 lakhs—for rural water supply and Rs. 20 lakhs for municipal water supply and drainage. This is too little but this is a move in the right direction.

There is another difficulty with which we are faced—that is want of technical staff. This is not our fault. There has been so little scope for engineers and subordinate staff in the past and their pay has been so little in comparison with other vocations of life and the idea that an engineer's profession is not quite so gentlemanly has been so prevalent that it has not attracted the best that India can offer. Besides, the number of schools and colleges for technical education are so few that these cannot deliver the required goods. To cope with the huge planned programme of development we require not thousands but hundreds of thousands of technically qualified men who have to be trained on short course basis like war technicians.

We all know that finance has been our greatest stumbling block. Whenever our nation-building scheme is put forward it is turned down on the ground of paucity of funds. The World War No. II has caused devastation, damages to human life and property—has brought world famine and many other evils in a scale hitherto unknown but it has done one great service. The war has opened our eyes that finance is the least part; what is wanted is national resources—in men and material and the WILL TO DO IT. India has sufficient natural resources both in men and material, if she only would make up her mind, the thing will be accomplished.

DUTY OF ASSOCIATION

It may arise in the minds of some that all the schemes and projects refer to developments which are beyond the capacity of any individual engineer and such developments can only be initiated and executed by the State. That is true. The Association of Engineers and other similar bodies have however a very responsible duty to perform and that is to train up young engineers by exchange of ideas and experiences by arranging visits to large constructional works and industries—by giving lectures and papers and above all by imbuing the members with broad outlook so that we can think comprehensively and act unitedly.