

tool making industry: carbides of tungsten and oxides of aluminium are used to manufacture cutting tools. Oilless bearings are made by powder metallurgy. Powder metallurgy has a bright future.

6. Economy in Use of Engineering Materials, by **Sri R. N. Mukherjee**, C.M.P.O.

The conventional ideas about thickness of wall or diameter of reinforcing rod or

section of a joist need review and re-orientation on the basis of latest knowledge about the properties of materials.

Sri S. N. BANDOPADHYAY, former Chief Engineer, Construction Board was in the chair. In winding up the discussions, he very lucidly projected the distinctive aspects of various papers and hoped that knowledge of materials, derived from the hard labour of scientists and engineers, should be applied in practice.

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Seminar Session S-3

WELCOME ADDRESS

By **Sri U. P. Mullick**,

President, India Society of Engineers.

It is a great pleasure to welcome you all to this afternoon session (S-3) on "Engineering Equipment", and I hope this distinguished gathering of engineers & technologists, with the help of your deep technical knowledge and experiences will make a success of the session.

The object of this Seminar and this Session is to locate, identify and understand the requirements of engineering materials and tools we require to implement the very large outlay we now envisage for the development of Greater Calcutta under the Fourth Plan and probably under several succeeding plans. In

this endeavour we must not forget that the main purpose of the development & renewal programme is the improvement of the living conditions of the great many of our people living in the concentrated area of greater Calcutta as well as in the hinterlands.

Our first endeavour and objective in preparation of development programmes and choosing of equipment materials should therefore be primarily directed to ameliorating the lot of the marginal strugglers in this part of the world. A great deal of misery has been for years and years piling up at the base of our social life, which carried

things to an explosive point, mostly amongst the restive youth, and the downtrodden. We are now seeing its expression in their great life of Calcutta, which has always been the barometer of our countries mood and thinking and expression of life and programme.

Our planners endeavour should therefore be directed to such efforts as would both in the short term and long term attempt to quickly bring about conditions in our life and physical well-being as would make the weaker section of our society. The downtrodden, the marginal strugglers, more comfortable, more happy, more economically at ease, as would make available to them more abundantly than ever before food, shelter, clothes, and culture of our society, and a larger share of the wealth of the world.

Our planners have to tackle the physical and economical and cultural development at the same time. The material equipment we choose shall therefore have to be appropriate to these needs. We must not look at the material equipments solely in terms of wood, steel & refractory clay. Our equipments of development are to be picked up out of our human resources as well from out of material tools. No amount of material tools will be of any-great benefit to development unless we can get together enthused bands of workers. Workers who have dedication, workers who have a sense of belonging to the projects in implementations, persons who have imagination, capability and understanding of the accruing benefits.

CHIEF GUEST'S ADDRESS

by **Shri P. C. Bose,**

Former Executive Director, Calcutta Metropolitan Water & Sanitation Authority.

It is very gratifying to note that this seminar which has been sponsored by the Association of Engineers, considered, Equipment and Materials which would be necessary for the development of Calcutta Metropolitan District in particular, and also be, in general, necessary for all engineering projects.

Urbanisation has been proceeding in Calcutta area very rapidly for quite sometime, say 30 years or so. India is the heritage of

urbanisation. Before 1924, it was thought that people of Babylon, Egypt and Messopotemia gave the idea of urbanisation. It was only in 1924, during the time of Sir John Moore, late Rakhai Das Bandopadhyay, after excavation of Mohenjodaro and Harappa, found out and proved to the world that urbanisation in India was even older than that of Egypt, Babylon and Messopotemia. It is a pity of execution of what we are thinking of