

Inaugural address

DR ATMA RAM

Director-General, Scientific and Industrial Research



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I AM exceedingly happy to be present at today's Symposium on 'Recent developments in non-ferrous metals' technology'. I would like to take the opportunity to extend a hearty welcome to the distinguished delegates from abroad and from India who have travelled far and wide to be with us and take part in this important symposium. I first visited Jamshedpur in 1938 and that too, to take part in a Symposium organised by the Indian Ceramic Society. I have been here quite a number of times.

Each time I come I remember with reverence Jamshedji Tata, the great founder of this famous steel city.

Sir Jehangir has been very closely associated with the CSIR right from its very establishment—Chairman of the Metals Committee, member of the Board of Scientific and Industrial Research and the governing body and of many other committees. He has been Chairman of the Executive Council of the National Metallurgical Laboratory for more than a decade. This Laboratory has grown to its present stature under his personal care and concern. In fact there will be few who have as much insight into the problems of the Indian metal industry as a whole. CSIR has benefited immensely by his wise counsel in so many ways. We are deeply indebted to him.

Dr Banerjee has been directing the activities of the Laboratory for more than two years and has had to deal with a number of complex problems. He has faced the problems with courage and the fact of his having been at the Laboratory for many years must have stood him well.



Mr R. M. Krishnan, Scientist, National Metallurgical Laboratory, Organiser of the Symposium, addressing the audience on the inaugural day

The need to apply science and technology to economic development is well accepted, but the question, particularly before the developing countries, is how to accelerate this. A major requisite for the promotion of science and technology in any country is the acquisition of scientific knowledge and the competence to use it. Knowledge is essential for progress, but knowledge alone cannot bring prosperity. It is competence to put knowledge to use for production and essential services that is necessary for promoting economic prosperity and well being. There is however not much awareness of the mechanism by which science affects economic growth. There is an understandable impatience to achieve results, there is good deal of misunderstanding and unfortunately even recrimination at times between scientists and industrialists. It is therefore essential that scientists and industrialists appreciate each other's role in economic development. Research is not a magic wand which can be waved to produce riches automatically.

It is essential that industry be fully aware of the importance of research and development as a tool for

increasing and diversifying productivity and of the way it operates. When industry establishes research and development facilities within, horizontal transfer of technology from research institutions in the country becomes easier. Most industrial concerns in India are too small to maintain research department of their own but some of the larger ones have shown initiation in this direction. Tisco's research and control laboratory was one of the first established by industry in this country more than thirty years ago.

One of the important problems in India is to achieve technological competence, to adapt technologies generated in sophisticated context to our conditions. I consider technological competence as a prerequisite to the goal of self-reliance. One of the tasks of research laboratories is to assist in expeditions and efficient development of natural resources to provide the material needs of the people. To achieve this research programme, laboratories have to be geared to needs. It should not be expected that the results following out of the laboratories will be used all at once.

Dr Atma Ram, Director-General, Council of Scientific and Industrial Research, inaugurating the Symposium





A section of the audience during the Symposium

Some CSIR Laboratories, one of them in NML, have gained valuable knowledge in regard to the processing and beneficiation of raw materials, which they have been providing to the needy organisation. This activity has been truly commendable. Adaptation work to apply known knowledge to Indian conditions has also been carried out on a substantial scale. The development of know-how for new products and processes has to undergo a whole sequence of operations from bench research to large scale operation in the production plant. Research work, basic and applied, is followed by pilot plant and development work; engineering, fabrication of plants, erection; production operations, sales, etc. The research laboratories can only deal with the first one or two links of the chain. In the whole sequence of process and product development, subsequent aspects such as engineering, design, fabrications and erection of the plant, production, management and modern marketing techniques, which are very important to ensure that a research idea becomes fruitful, are mainly the respon-

sibility of industry. These need institutional and organisational support. The CSIR has pioneered organising objective basic research in several fields. The laboratories have established pilot plant studies on several items. There have been some failures, but they have provided valuable lessons both to the laboratories and to the industry.

The non-ferrous industry in India has gone through the vicissitudes of two successive emergencies through which our country has passed. These events have cast their shadow on the general growth pattern of non-ferrous metals industry in India. By and large she is still dependent on large quantities of imports.

During the last decade there have been phenomenal developments in the techniques for locating and prospecting minerals. Sensitive instruments based on gravity and electromagnetic measurements have been extensively employed in this task and air borne surveys are soon going to become a common practice. Indian scientists are making great efforts in this direction and have achieved good results.

The NML has not confined itself only to laboratory scale experiments and pilot plant studies. It is also assisting industry. It has taken the responsibility of assisting in setting up a 500 tons/day plant for treatment of low grade fluorspar of Baroda on the basis of the investigations it carried out.

I understand the Symposium will also discuss subjects related to the planning and development of non-ferrous metals' technology. Non-ferrous metals occupy a key position in industrialisation. Some countries are poor in non-ferrous resources, and import substitution and efficient utilisation is a subject very much in prominence.

Considered from the resources point of view and the wide variety of uses, some non-ferrous metals, particularly aluminium and magnesium, have already become exceedingly important. Titanium is another non-ferrous metal which is assuming very great importance. We are fortunate in having fairly good resources of raw materials for these metals. World trend is indicative of the increasing role of non-ferrous metals for the scientist, the field is becoming even more fascinating and will no doubt be rewarding. I have no doubt that this Symposium will throw up new ideas and articulate interaction of views which will stimulate further research.