

Current Science

Vol. XXIII]

FEBRUARY 1954

[No. 2

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SIR SHANTI SWARUPA BHATNAGAR

SIR S. S. BHATNAGAR, Director, Scientific and Industrial Research, Government of India, whose sixtieth birthday on February 21 was celebrated by scientific and learned societies all over the country, occupies indeed a unique position in the field of Indian science. As Prime Minister Nehru observed on a recent occasion, the gigantic programme of building the National Laboratories would never have gone as far ahead as it has but for the drive and enthusiasm of Bhatnagar. It may be said that he has been in no small measure responsible for the status to which science in India has attained in recent years.

The record of his career both as a scientific investigator and later as organiser of large-scale scientific research is rather enviable. In 1919, he went to England and worked under Prof. F. G. Donnan. He also worked at the Sorbonne, Paris and the Kaiser Wilheem Institute, Berlin, for sometime. He returned to India as Professor of Chemistry at Banares Hindu University where in a short time he created an active school of physical chemistry. In 1924,

Bhatnagar was invited to join the Punjab University as University Professor of Physical Chemistry and Director, University Chemical Laboratories at Lahore. His sixteen years' stay there was characterised by intensive activities in the domain of research. In 1926, he switched over to magneto-chemistry, a field in which he and his pupils may be considered as pioneers. In collaboration with R. N. Mathur, he devised a magnetic interference balance which was manufactured by Adam Hilgers.

His scientific work has won him many honours. In 1943, the Society of Chemical Industry elected him an Honorary Fellow and later as Vice-President. The same year, he was elected a Fellow of the Royal Society. He is a past President of Indian Science Congress and the National Institute of Sciences of India.

It was only in the fitness of things that Bhatnagar was invited to function as Director of Scientific and Industrial Research when the war broke out. In spite of heavy administrative and advisory duties, Bhatnagar found time to take a personal interest in research work and

several processes of great importance were worked out by him and his staff. Included amongst these are anti-gas cloth and varnish, air-foam solution, vegetable oil blends as lubricants and fuels, unburstable containers, glass substitutes, dehydrated castor oil, plastics from Indian wastes and others.

Originally a war-time assignment, the activities of the organisation which he then set up have since been geared to the harnessing of science to the promotion of national welfare. The Government of India has now a Ministry of Natural Resources and Scientific Research, of which he is the Secretary. Amongst the new developments which have been initiated at his instance, in addition to the well-known instances of the National Laboratories, are the establishment of Indian Rare Earths Limited, to process monazite sands, intensification of the search for atomic minerals and sulphur-bearing ores.

The National Laboratories which may with every justice be regarded as the handy work of Bhatnagar represent a symbol of the kind of progress to be expected in a country which has already made valuable contributions in several branches of science. They can vie with the best of their compeers in any part of the world.

Bhatnagar has devoted considerable attention to the practical utilisation of the results of

scientific research, which have culminated in the establishment of a National Research Development Corporation.

Amongst other achievements, the following owe their initiation more or less to Bhatnagar's imagination and drive: the scheme of foreign scholarships for higher studies in technical subjects, exemption for expenditure on research from income-tax, Indian Standards Institution, Regional Polytechnics, to mention only a few.

A born administrator, he is always in close touch with every branch of activity under his care. Quick decisions and a tacit faith in his lieutenants are characteristics which have contributed considerably to the successful discharge by him of any assignment. The establishment of oil refineries in India is in a great measure the result of his persuasive influence and skill as a negotiator.

As Sir Robert Robinson has observed, it is indeed fortunate that India found at a critical time in her history an eminent scientist of clear vision, sound judgement in affairs and boundless energy in action. His high office has enabled him to realise wisely ambitious plans and today are to be seen the concrete results, a dream come true and one which lies especially closest to his heart.

Our heartiest felicitations to Sir S. S. Bhatnagar on this memorable occasion.

USE OF ATOMIC ENERGY FOR PEACEFUL PURPOSES

THE peaceful uses of atomic energy in developing electric power and the uses of atomic rays in medicine, agriculture and industry, are the subject of a 16-page feature in the December issue of the *UNESCO Courier*. The possibilities for the future development of countries that lack coal, for the use of atomic rays in the treatment of disease and of artificial radioactive materials in the improvement of food production, the maintenance of health and the efficiency of industry are so great that they are fully discussed in a series of articles intended primarily for the school teachers of the world and through them to the school children of the world.

The *Courier* gives a complete but simple story of the ABC of nuclear physics and includes the story of the natural rays from such materials as radium, cosmic rays, the uses of the great

cyclotron and the many scientific discoveries that have come from the use of artificial radioactive materials. There is also an article on the European Organization for Nuclear Research, through which 12 European nations will combine their resources to enable young European scientists to keep up with this new science.

As the editorial of the *Courier* states, "The frontiers of man's knowledge are now within the atom... The scientific facts and principles explained are truly an expansion of man's universe. As the great explorers mapped the earth, and the astronomers of to-day chart the sky, so the atomic scientist, delving into matter and energy, has discovered an unknown world that is a revelation for philosophers and a vast resource for future generations. No educated person can afford to ignore these facts."