

harmonic forces and crystal lattices which are imperfect or which are disturbed appreciably by thermal agitation. These may be minimised by working under appropriate conditions, and the most decisive results are naturally those obtained with crystals most nearly approaching ideality and held at a sufficiently low temperature. Various methods of investigation are available, viz., the spectra of light-scattering, luminescence and absorption in crystals and a vast array of experimental evidence gathered during the last two decades by these and other methods of exact spectroscopic research is on record, to which the interested reader may be referred.

Of special interest are the recent investigations of Dr. R. S. Krishnan (*Nature*, 159, 1947, p. 60) on the scattering of light in diamond observed under high resolving powers which give a direct objective demonstration of the monochromatic character of the atomic vibrations in that crystal and simultaneously furnish an experimental refutation of the ideas underlying the older theories. Analogous studies with various other crystals, viz., rock-salt,

ammonium chloride, ammonium bromide, corundum, topaz, etc., have also been carried out by Dr. R. S. Krishnan and the results obtained by him are particularly significant in view of the fact that they have been carried out under critical experimental conditions, viz., using the highest possible spectroscopic resolving powers and also working with the crystals held at a series of temperatures down to that of liquid air. The detailed results of these investigations will shortly be published as a 'Symposium on the Vibration Spectra of Crystal Lattices' by the Indian Academy of Sciences, which will also include a complete review and theoretical discussion of the entire body of spectroscopic evidence available up to date from the most exact investigations on the behaviour of crystals made by investigators in various countries. It emerges unequivocally from these studies that the theories which suggest that the atomic vibrations in crystal lattices give a continuous spectrum are in clear contradiction with the experimental facts and are therefore wholly unsustainable.

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THE laying of the foundation-stone of the Shri Ram Institute for Industrial Research constitutes a landmark in the development of Industrial Research in this country. In the inspiring words of Sir Shri Ram, the founder himself, "Our industries have so far been very much unmindful of the needs for industrial research. Expenditure on industrial research which our industries and the Government have so far done is negligible compared to what has been done in other industrially advanced countries, with the result that these countries have made great progress both in technique and organisation of industries and our country has lagged behind. Thus the establishment, all over the country, of a number of industrial research institutes with roots deep in applied and fundamental research is imperative. The inspiring example of the contribution of the Mellon Institute of Industrial Research at Pittsburgh in the United States of America should be the guiding star for all our efforts." The same idea has been further emphasised by Sir Maurice Gwyer who prefaces the prospectus of the Institute with a Foreword, writes, "The imperative need for research on the scientific side into the fundamental problems of industry is now generally recognised. The Universities and Technological Institutes have their own functions. The Universities, apart from the instructions which

they provide, are or should be, concerned with the problems of what is sometimes called pure science; the Technological Institutes with the broad general principles of technology, which are themselves based on the researches of pure science. An industrial Research Institute is concerned rather with the application of the principles of pure science and of technology to the problems of industry as they arise. Many of these problems do not admit of solution without further research into the fundamental principles both of pure science and of technology; and hence the scope of an Industrial Research Institute is at once both broader and narrower than that of Universities and Institutes of Technology. No industry can at the present day afford to neglect scientific research into its own problems; nor can it in any country be content to rely upon research work done elsewhere."

India is on the threshold of a great industrial revolution; post-war plans on ambitious and gigantic scale but in harmony with the great potentialities of this country, have been drawn up. The men and the means of accomplishing the tasks facing the country have got to be provided. Sir Shri Ram Institute, which owes its inception to the patriotic munificence and the far-seeing vision of Lalaji is expected to play its part in a planned and rationalised industrial development of India.