ROOM ACOUSTICS AND ULTRASONICS

DR. R. N. GHOSH, in his Presidential Address to the Physics Section of the 37th Indian Science Congress, held at Poona, referred to the important contributions made by Prof. Sir C. V. Raman to the field of sonics and ultrasonics. In this connection, he made particular mention of the theory of vibrations of bowed strings, impact of pianoforte hammer, the harmonic contents of tabala and the discovery of the laws of diffraction of ultrasonic waves. Further, he briefly discussed the mechanism of ultrasonic absorption by liquids and stressed the fact that in the liquid state the major portion of the absorption of ultrasonic energy, which is quantised, is due to its semi-crystalline structure.

The major portion of the address was devoted to Room Acoustics. Starting from the fundamental experimental investigations of Sabine, Dr. Ghosh traced several inadequacies of the geometrical theories. The wave approach, which takes into account the phenomenon of room resonances, was briefly outlined. He derived the expressions for the characteristic frequencies of rectangular room and wave damping coefficient and showed that the decay rate would be different for different modes of vibration, *viz.*, axial, tangential and oblique. He then discussed the case of a rectangular room with uniform distribution of absorbing material, driven at a known frequency by a source situated at a corner of the room and arrived at the expression for the average pressure at a point and compared it with Sabine's statistical result. He pointed out the difference, which consists in the value of absorption coefficient used. He added that the problem of non-uniform distribution of absorbing material in a rectangular room could be solved by (1) the method of successive approximations, (2) Fourier expansions, and (3) the application of Dirac's δ-function. In this connection he brought out the fact that a piece of absorbing material produces most effective absorption when located at a place where most of the wave functions have their maxima, which in the case of a rectangular room happens to be the corners and edges. Next he mentioned about the work of Morse and Bolt in connection with the application of Dirac's δ-function to the problem of ergodic motion and the Index of Randomness. The accurate methods of the measurement of Acoustic impedance were then described.

Finally, before concluding the address, Dr. Ghosh drew attention to the important aspect of design and manufacture of Acoustical Apparatus in India and mentioned about the lead given by Bhatt and his associates in this direction.

REWARDS FOR DISCOVERY OF URANIUM AND BERYL ORES

REWARDS for the discovery in India of deposits of Uranium ore and Beryl ore are to be granted by the Government of India. In the case of Uranium, the new deposits would have to be not less than 100 miles, and in the case of Beryl, 50 miles from any other deposits of these ores the existence of which is already known to the Indian Atomic Energy Commission. Government reserves the right to determine whether a particular discovery is the first from a particular location.

An award of up to Rs. 10,000 may be given if, in Government's opinion, a new deposit is capable of producing 100 tons of Uranium oxide in ore, assaying not less than 0·4% U_3O_8. A similar discovery capable of producing 100 tons of Beryl assaying not less than 12% BeO, or other Beryllium mineral in proportionate amount, may earn an award of up to Rs. 2,000.

Should new deposits of both ores, though not sufficient to be of economic importance in themselves, justify prospecting in the neighbourhood for further deposits, Government may grant funds for this purpose. Grants-in aid for mine development are available to applicants who produce and deliver not less than 20 tons of Uranium ore and 50 tons of Beryl ore from a concession or mining lease not previously worked for these ores.

In order to help prospectors, the Atomic Energy Commission will make without charge tests of samples submitted; and where necessary, further chemical and field tests for determination of ores.

Applications for rewards should be addressed to the Secretary, Atomic Energy Commission, Central Secretariat, North Block, New Delhi. Further details are available in the *Gazette of India* of April 15, 1950.

Officers or other employees of the Government of India, including employees of the Atomic Energy Commission, shall not be eligible for these rewards.