

In this issue

S. K. Mitra – A pioneer in radio communications in India

In the twenties many daring young men commenced broadcasting radio programmes to the Indian public. Unfortunately, many of these attempts had to close down when the colonial government started the Indian Broadcasting Service. Sisir Kumar Mitra was one such Ham (amateur radio operator) and later, as the Khaira Professor at the Calcutta University, he actually transmitted evening programmes which were heard in Calcutta and many parts of Bengal. When the government was seriously considering starting a state radio service, S. K. Mitra, with foresight, initiated graduate and postgraduate teaching programmes in wireless communication in the university. It is common knowledge that students trained in his department (and probably those from the Indian Institute of Science, Bangalore) formed the core of engineering talent which helped All India Radio to spread its wings and become a nationwide system. Mitra also started serious research in this field. After independence, his department was transformed into the Institute of Radio Physics and Electronics and continued to produce (along with many other flourishing institutions) competent communication scientists and engineers. No wonder that for all the services he rendered he was acknowledged to be 'The Father of Wireless Communication in India'. We reproduce in this issue (page 1150) an article on S. K. Mitra and his achievements, as also two of his research articles (pages 1157 and 1158).

Mitra was elected to the Fellowship

of the Royal Society (London) in 1958. Even today this election is considered by most Indians as the ultimate mark of scientific recognition. He died in 1963 and the biographical sketch, by J. A. Ratcliffe, unfortunately contains a left-handed compliment: 'Mitra's reputation in international circles relies in writing of a book rather than on his original contributions to physics.' One need not be too disturbed by this. By now it is common knowledge that the election of an Indian to the Royal Society could be for various reasons – for extraordinary original contributions to the subject, or for the help rendered in growing a subject in India or outside, or for improving the public relationship between India and UK. One word about the remarkable book *The Upper Atmosphere* S. K. Mitra wrote. I quote: 'Publications on this subject were spread widely over the world's scientific journals and it was a most valuable contribution to survey them and presents the results in a connected review in one single volume.'

While reading many of Mitra's papers I found two or three gems.

C. V. Raman while describing his early work on optics used to mention, with some nostalgia, that when he became the Palit Professor at the Calcutta University he had three extremely bright student collaborators: Sudhansukumar (S. K.) Bannerjee (who did remarkable work on optics and acoustics); T. K. Chinmayanandan (who died young but was noted for his work on what is called the Rayleigh-Chinmayanandan fringes); Susir Kumar (S. K.) Mitra. I did not know till I read the obituary note in the Royal Society that this

Mitra was the same as our 'radio/wireless scientist'. Raman seems to have evolved ideas on a simple theory of diffraction based on the concept of Young's edge waves, radiating corners and poles in about 1914 or 1915 when he delivered a lecture on this theme. He published a brief note in the *Physical Review* and gave it as a problem to his doctoral students S. K. Bannerjee and S. K. Mitra, both of whom advanced the subject much. One of the excellent papers by S. K. Mitra (*Philos. Mag.*, 1919, 38, 289) shows his innate skill as a researcher – in theoretical as well as in experimental fields. I have some difficulty sometimes in distinguishing science that is current and that which is old; for science like fashions reappears with a gusto. The theory of diffraction on which C. V. Raman and his collaborators (S. K. Bannerjee, S. K. Mitra, K. S. Krishnan, Y. V. Kathavate and G. N. Ramachandran and even the present writer) worked from 1914 to the early forties was rediscovered almost a quarter of a century later. It is now known by a brand new name, the 'Geometrical theory of diffraction' and is considered to be one of the most popular topics in optics.

Being partial towards optics, I consider the paper of S. K. Mitra and another one mentioned above he published in the *Proceedings of the Indian Association for the Cultivation of Science* in 1920 as amongst his best original contributions to physics. It is interesting that the latter paper had its title even the words 'As new geometric theory of diffraction...'

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