

MATHEMATICS

INCREASING USE IN PHYSICAL THEORY

Dr. B. S. Madhava Rao, in his presidential address, to the Section of Mathematics, said:

"The ever increasing use of the deepest and the most abstract parts of mathematics has been a remarkable feature of modern physical theory. Mathematics of the present day abounds with notions like abstract sets, abstract spaces, abstract algebra, abstract analysis and so forth, and equally so in the highest departments of modern physics like relativity and quantum theory, it appears that the abstract point of view is likely to yield the most fruitful results. It is also true that the more varied and more subtle contributions from mathematics are in proportion to the wider range of physical fact acquired as a result of more and more accurate experimental research."

"This intimate relationship is nowhere brought out more clearly than in the theory of elementary particles of nature. In the early stages of this theory when free particles were in the centre of interest, the use of modern algebra, specially the group theory scored notable successes by a proper fusion of Einstein's special theory of relativity, and Bohr's quantum theory. As examples of these successes could be mentioned, the idea of neutrinos theoretically conceived by Pauli, the notion of anti-particles like *positive electrons* and *negative protons* which followed from the abstract mathematical theory developed by Dirac, and the introduction of *mesons* on theoretical considerations by Yukawa. In all these cases, confirmation by direct experiments came many years later"

"With the growth of modern techniques of high energy physics, and the refinement of experimental methods, a host of new elementary particles have been discovered which take part in a considerable number of transformations among themselves; and these interactions between different kinds of elementary particles are of great current interest. It looks as if experiments have stolen a march over theory. In fact, some of these very recent discoveries have necessitated, as clearly indicated by Lee and Yang, a re-examination of the older theoretical arguments, and attempts are now being made to apply still more abstract methods of algebra, group theory and topology to explain the new experimental facts."

"Referring to the abstract postulational methods of mathematics, Bertrand Russell defined it as the subject in which we never know what we are talking about, nor whether what we are saying is true. That there should be an intimate fusion between such a discipline, and a great natural science like physics, at their highest levels is one of the most remarkable features of modern science."

"It is perhaps true that no country, which does not encourage the development of abstract mathematics in its purest form, is likely to make striking contributions to any applied science."

MATHEMATICS IN INDIA

RUSSIAN TRIBUTE

MADRAS, Jan. 11

Prof. S. M. Nikolsky, Russian mathematician, today paid glowing tributes to the "high level" of mathematical attainments in India and said that an "army of mathematicians especially from younger scientists is fast growing up in this country."

The young, athletic-built Deputy Director of the Steklov Institute of mathematics named after Steklov, "the greatest Russian mathematician", said Ramanujam, the mathematics prodigy, was "known and respected" in Russia.

Prof. Nikolsky whose forte is pure mathematics stated that for years mathematicians in India had been working seriously and productively on the Theory of Complex Variables.

In an interview to *The Indian Express*, he paid handsome compliments to the way in which the discussions in the Mathematics Section of the Science Congress were held and made special mention of the "very good report" presented by the President of the section, Mr. B. S. Madhava Rao. "We know that mathematics in India is of very high level and that is why it is very interesting to participate in this Congress."

In Russia, Indian mathematical journals were read with interest along with "other big mathematical journals."

Prof. V. P. Peshkov, Russian Physicist, acted during the interview as the interpreter for Prof. Nikolsky although both of them frequently consulted their Russian-English dictionary.