XVII INTERNATIONAL CONGRESS OF MATHEMATICIANS

THE International Congress of Mathematicians is held once every four years. The XVII Congress met at the University of British Columbia, Vancouver. Canada, from August 21–29, 1974. The last Congress was held in Nice France in 1970. The Congress was attended by about 3000 mathematicians from all over the world. A few of its sessions were also held at the Universities of Victoria and Simon Fraser.

The Conference was inaugurated on August 21 by Lieut. Governor of British Columbia followed by addresses of the President and the Mayor of Vancouver at the Queen Elizabeth Theatre. This year only two gold medals were awarded—one to Enrico Bombieri of Pisa University, Italy, for number theory, and the other to David B. Mumford of Harvard University for Algebraic Geometry.

During the Conference seventeen expository addresses, 160 short communications and 750 Research papers were presented. About 50 Indians of whom 40 were already residents abroad presented their papers at the Congress. They included C. R. Rao, V. K. Patodi, V. S. Varadarajan, B. R. Seth, R. S. Mishra, H. R. Gupta, M. K. Singhal, P. Puri, M. N. L. Narasimhan, P. N. Kaloni, B. D. Agrawal, S. M. Sah, V. M. Soundalgekar.

The general lectures dealt with potential theory, Fourier analysis, partial differential equations, eigenvalues of the Laplacian and invariants of manifolds, tidal energy, quantum field theory, transversal theory, mathematical theory of economic equilibrium, theory of buildings, number theory and uniform approximation by holomorphic functions. The general lectures were given in the morning and the presentation of papers was done in a number of sections in the afternoon. Those dealing with mathematical physics and mechanics continued for five days. There was good interest shown in biomathematics, history and education. There were a number of sessions on topology, group theory, complex and real analysis, partial differential equations, logic and foundations and functional analysis.

The resurgence of the study of geometrical bodies inside a manifold was discussed by Dennis Sullivan. The qualitative study of dynamical systems produces inside one manifold interesting compact subsets, families of intertwined non-compact submanifolds, geometrically defined measures and currents, with homological interpretations and relationships. A. G. Vitushkin showed that recent advances in uniform approximations of holomorphic functions mainly consist in the improvement of integral representations, estimation of the solutions and the construction of concrete examples to correct hypotheses.

G. F. D. Duff dealt with the partial differential equations of the tidal motions which form a symmetric hyperbolic system in two space dimensions with a monotone non-linearity in a variable domain. C. Radhakrishna Rao gave a general survey of recent results on characterization problems and their applications to testing of hypothesis, estimation of parameters, inference on unobservable structural variables and specification problems. An account of Harish Chandra's work on harmonic analysis on real semisimple Lie group with special emphasis on the Plancherel formula was given by V. S. Varadarajan. He also discussed matrix coefficients and the theory of eigenfunction expansions, infinitesimal theory of representations and intertwining operators for irreducible representations. Masahisa Inoue gave new examples of surfaces with affine structures.

B. R. Seth showed that the transition region may be interpreted as : (*i*) an asymptotic subspace ; or (*ii*) a criticality or singularity of the differential manifold defining the medium ; or (*iii*) a change of group symmetry ; or (*iv*) a singular transformation matrix. It is found that transition fields are sub or super-harmonic and are characterised by spin, rotation or vorticity effects. M. N. L. Narasimhan and A. C. Eringen gave balance laws governing the flow of heat-conducting nematic liquid crystals. A generalized form of the Clausius-Duhem inequality gives the effects of heat conduction. Gilbert Strang proved that in the non-linear applications of the Finite Element Method the first step improves the error involved from $o(h)$ to $O(h^{3/2})$, h being the mesh-width.

R. Arthur Knoebel generalised Kleene's theorem on automata to universal algebra. R. Padmanabhan proved that any uniquely complemented lattice belonging to the class K is distributive.

Michael Doob showed that several classes of graphs are magic.

Hansraj Gupta dealt with a number of Magic partitions.

V. Krishnamurthy showed that the counting of T_0-topologies may be reduced to the counting of a special type of bichromatic trees.

Wolfgang Weil communicated the result that an arbitrary convex body in three dimensions of constant brightness and of constant width must be a ball.

B. R. SETH.