

INDIAN STATISTICAL INSTITUTE

40. ——— (with Shortt, R. M.): Generalized Luzin sets with the Blackwell property. *Fundam. Math.*
41. Roy, A. K. (with Lims, A.): Some results on intersection properties of balls in Banach spaces. *Studia math.*
42. Sarbeddikari, H.: A one-one selection theorem. *Proc. AMS.*
43. Sastry, N. S. N.: Even order inverse planes, generalised quadrangles and oodes. *Geometriae Dedicata.*
44. Sinha, K. B. (with Parthasarathy, K. R.): Stochastic integral representation of bounded quantum martingales in Fock space. *J. Functional Analysis.*
45. ——— (with Parthasarathy, K. R.): Boson-fermion relations in several dimensions. *Pramana.*
46. Srivastava, S. M. (with Bhattacharya, Sreela): Selection theorems and invariance of borel point classes. *Proc. AMS.*
47. Swarup, G. A.: A remark on cable knots. *Bull. Lond. math. Soc.*
48. ——— (with McCullough, D. and Miller, A.): Uniqueness of cores of irreducible 3-manifolds. *J. Lond. math. Soc.*
49. Tripathi, T. P. (with Meiti, Pulakesh): Some further results on the estimators better than H-T estimator. *Niger. J. Math. Appl.*
50. ——— (with Ige, A. F.): Estimation of population mean using post-stratification and auxiliary information. *J. Math. Assn. Niger.*

Applied Statistics, Surveys and Computing

1. Chaudhuri, A.: Randomized response surveys of finite populations: a unified approach with quantitative data. *J. Stat. Plan Inf.*
2. ——— (with Adhikari, A.): On the efficiencies of unbiased regression and regression-type estimators in finite populations. *J. Indian Soc. Agric. Statist.*
3. Gupta, S. K.: Role of HDL and LDL in coronary heart disease. *Indian J. Cardiology.*
4. Majumder, P. P.: Effects of altitude, ethnicity—religion, spatial distance and occupation on adult anthropometric characters of Eastern Himalayan populations. *Am. J. phys. Anthropol.*
5. Mukhopadhyay, A. C. (with Bagchi, S.): Construction of balanced Youden Hyper rectangles (JSPI).
6. Sengupta, A.: On tests for the equicorrelation coefficient of a standard symmetric multivariate normal distribution. *Aust. J. Statist.*
7. ———: On tests under order restrictions in reduction of dimensionality. *Proc. Conf. Order Restricted Inference, Univ. of Iowa, USA.*

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8. ——— : Generalisations of Bartlett's and Hartley's tests of Homogeneity using overall variability. *Communs. Statist. Ser. A.*
9. ——— (with Gokhale, D. V.) : Optimal tests for the correlation coefficient in a symmetric multivariate normal population (*JSP1*).

Physical and Earth Sciences

Chemistry

1. Das, T. (with Ghosal, D. N.) : Humus types in West Bengal Soil-I. Brown Hill Soils. *Indian Agric.*
2. Ghosal, D. N. : Orientation of adsorbed organic molecules on crystal surfaces. *Proc. 5th Annual Convention. The Clay Minerals Society of India.*
3. ——— (with Bhattacharyya, S. K.) : Adsorption of ionic surfactants of Aluminosilicates. *Proc. Sixth International Symposium on Surfactants in Solution.*
4. ——— (with Bhattacharyya, S. K. and Das, T.) : Contribution of clay, silt and organic matter to cation exchange capacity of Eastern Himalayan and Sub-Himalayan Soils. *J. Indian Soc. Soil. Sc.*

Electronics

a. Digital Systems

1. Bhattacharya, B. B. (with Sinha, B. P., Ghose, S. and Srimani, P. K.) : A parallel algorithm to compute the shortest paths and diameter of a graph and its VLSI implementation. *IEEE Trans. Computers.*
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b. Theoretical Physics

1. Bandyopadhyay, P. (with Ghosh, Pradipt) : Extended Conformal Group, Supersymmetry and the Geometrical Properties of Handrons. *Prog. theor. Phys.*
2. ——— (with Ghosh, Pradipt) : Twister Geometry, Spinor Structure and Nature of Superspace. *J. math. Phys.*
3. ——— (with Hajra, K.) : Nonlinear O-model, Liouville Field Theory and Superstring. *Phys. Lett.*
4. ——— (with Hajra, K.) : Twister Geometry, Reflection Group and Polyakov String. *Ann. Phys.*
5. ——— (with Mahato, P.) : Topological Unvariant, Torsion and $N = 1$ Supergravity. *Communs. math. Phys.*
6. ——— (with Chatterjee, Paragmay and Bandyopadhyay, Asoke) : 'De Sitter Space, Torsion and $N = 1$ Supergravity. *Nuovo Cim. B.*

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7. ——— (with Chatterjee, Paragmay and Bandyopadhyay, Asoke) : SL (2,c) gauge theory, $N = 1$ supergravity and torsion. *General Relativity and Gravitation*.
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9. ——— (with Ghosh, Pradip and Bhattacharya, Brahmananda) : Stochastic Field Theory at Finite Temperature and Equilibrium Condition in Quantum Statistical Mechanics. *Ann. Phys.*
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11. Bhattacharyya, S. : Multiple production of hadrons at PP colliders—an overview, a critique and an alternative approach to the analysis of some crucial observations. Proc. National Seminar on Particle Physics and Cosmology, 1988, *Indian Phys. Ass.*
12. Roychoudhury, R. K. (with Bhattacharyya, Sikha) : Spatially Inhomogeneous Plasma with negative ions and modified KdV equation with z -dependent term. *Z. Naturf.*
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14. Roy Pinaki : Effective Lagrangian for a supersymmetric non-Abelian gauge theory. *Z. Phys. C*.

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2. Pal, S. K. (with Chakraborty, B.) : Fuzzy set theoretic measure for automatic feature evaluation, *IEEE Trans. Syst. Man and Cyberns.*
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2. ——— (with Chatterjee, S.) : *Tibiruchus romeri*, A new rauisuchid reptile from Late Triassic of India. *J. Paleont.*
3. Saha, D. : Polyphase deformation of the Precambrian rocks around Kherwara. Udaipur district, Rajasthan. *Q. J. Geol. min. met. Soc. India*.

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6. ——— (with others) : Genetic variation among Manipurians. *Hum. Hered.*
7. ——— (with Kamali, M. S. and Chakraborty, R.) : Ethnic diversity in hypothyroid triad among 12 Iranian populations. *Homo*.
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10. Mukherjee, B. N. : Human Placenta for population genetic study : special reference to Alkaline phosphatase isozymes in Indian populations. *Indian J. phys. Anthropol. Hum. Hered.*
11. ——— (with Singh, K. S., Walter, H., Lindenberg, P., Gilbert, K., Dannewetz, Angela, Malhotra, K. C., Banerjee, S., Roy, Monami and Dey, B.) : Genetic markers among Meiteis and Brahmins of Manipur, India. *Hum. Hered. Denmark*.

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13. ——— (with Reddy, A. P., Vijaykumar, M. and Malhotra, K. C.): PGM, subtype polymorphism in 14 endogamous Dravidian speaking populations of South India. *Am. J. phys. Anthrop.*
14. Pakrasi, Kanti (with Sil, S., Dasgupta, P. and Dasgupta, I.): Patterns of low birth weight in the Bengali newborns. *Indian J. phys. Anthrop. Hum. Genet.*

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1. Ghosh, M.: The anatomy of roots in young palms. *J. Indian Bot. Soc.*
2. ——— (with Johri, B. M. and Davis, T. A.): Frequency of stomata in leaves of young and adult palms. *Proc. Indian natn. Sci. Acad.*

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1. Guha Roy, S.: Developing model schedules for female proportions single in India. *Genus*, Rome.
2. Malakar, C. R.: On recent developments of marriage models and their applications to Indian nuptiality. *Genus*, Rome.

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2. Chakrabarty, S. R. (with Dutta, B.): A Note on measures of distance between income distributions. *J. econ. Theory.*

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3. Maiti, P. : India's imports during the last three decades : An econometric study. *Sankhya*, Ser. B.
4. Majumdar, Amita (with Coondoo, D.) : A system of demand equations based on price independent generalized linearity. *Int. Econ. Rev.*
5. ——— : Consumer expenditure pattern in India—a comparison of the almost ideal demand system and the linear expenditure system. *Sankhya*.
6. Pal, M. N. (with Saha, V.) : The effect of total location factor of energy use on the regional production technology and the localisation economy in India : 1976-78. Occasional Papers : The Economics of Energy, Dept. of Economics, *Rabindra Bharati University*, Calcutta.
7. Rao, Surekha (with Griffiths, W. E.) : A note on posterior approximation in a heteroscedastic model. *Econ. Lett.*
8. ——— (with Griffiths, W. E.) : A Monte Carlo evaluation of power of some tests for heteroscedasticity. *J. Econometrics*.

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1. Chander, Parkash : Surplus-sharing rules and incentives in planning procedures for public goods. *Rev. econ. stud.*
2. ——— : Cost-sharing rules and local games in planning procedures for public goods. *Universite Catholique De Louvain* (Belgium).
3. Chetty, V. K. (with Heckman, J. J.) : A dynamic model of Aggregate Output supply, factor demand and entry and exist for a competitive industry with heterogeneous plants. *J. Econometrics*.
4. ——— (with Jha, Shikha) : Microeconomic rationing and licensing. *J. Quantitative Econ.*
5. Gangopadhyay, S. : Choice of techniques, employment and poverty. *J. Quantitative Econ.*
6. ——— (with Sengupta, K.) : Small farmers, money lenders and trading activity. *Oxford econ. Pap.*
7. ——— (with Sengupta, K.) : Usury and collateral pricing—towards an alternative explanation. *Camb. J. Econ.*
8. ——— (with Gang, Ira) : Optimal policies in a dual economy with surplus labour and open unemployment. *Oxford econ. Pap.*
9. ——— (with Gang, Ira) : Output and employment—the trade-offs revisited. *J. Dev. Econ.*
10. Mukherjee, Partha : Sarvodaya after Gandhi contradiction and change. *J. Asian and African Stud.*
11. Ray, Debraj : Nonpaternalistic intergenerational altruism. *J. Econ. Theory*.

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12. ——— (with Dasgupta, P.): Inequality as a determinant of malnutrition and unemployment: Basic Theory. *Econ. J.*
13. ——— (with Dasgupta, P.): Inequality as a determinant of malnutrition and unemployment: Policy Options. *Econ. J.*
14. ——— (with Bernheim, D.): Properties of equilibrium programmes in an economy with inter-generational altruism. *Rev. econ. Stud.*
15. ——— (with Bernheim, D.): On Markov-consistent plans. *Rev. econ. Stud.*
16. Saluja, M. R.: Data Base of the unorganised industries. To be published as part of a book jointly by the Institute of Economic Growth and the World Bank.

Linguistics

1. Chondhry, Amitav: Sociocultural and psychological factors responsible for the evolution of Indianisms in English. *Indian J. Linguistics.*

Pre-Census Populations Studies

1. Bhattacharya, Durgaprasad (with DebRoy, Rama): Data Base of a Quantitative Socio-Economic History of India. *Proc. Indian hist. Rec. Commn.*
2. ——— (with DebRoy, Rama): Glimpses on land records of Bengal, 1750-1800. *Proc. Indian hist. Rec. Commn.*

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1. Basumallik, Tapan (with Pakrasi, K., Chowdhury, S. and Chakraborty, M.): The mentally retarded children of eastern India: a biosocial study. *Social Biol. U.S.A.*
2. Chatterji, S. (with Mukherjee, M.): Effectiveness of merit as promotion criterion. *Productivity*, New Delhi.
3. ——— (with Mukherjee, M.): Isolation of Profile pattern of successful individuals using cluster analysis and Q-technique. *Jap. J. Psychol.* Tokyo.
4. ——— (with Mukherjee, M. and Gupta, Runki): Assessment of intelligence level of hearing impaired children. *Indian J. appl. Psychol.* Madras.
5. Ghosh, Anjali: A study of intellectual maturity in a group of hearing-impaired children using two different non-verbal tests of intelligence. *ISPT. J. Res. Educational psychol. Measem.* Dehra Dun.

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1. Majumdar, S. K. (with Tewari, R. A. and Dhindaw, B. K.): A study based on statistical design of experiment of super plasticity in aluminium bronzes containing different levels of iron. *J. Indian Inst. Metals.*

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2. Ramamurthy, K. G. (with Parthasarathy, T.): Matroidal games. *Int. J. Game Theory*.
3. Rajendra Prasad, V.: Scheduling in hybrid fellowship. *Int. Conf. Modelling and Simulation*.

Library Documentation and Information Sciences

1. Devadason, F. J. (with Sholk, Saifulla and Subhan, V. A.): Facet analysis and searching bibliographic data bases. *Lucknow Librarian*.
2. Ravichandra Rao, I. K.: Design and Development of Library Automation: Functions file requirements and procedures. *Library Science with a Slant to Documentation*.

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Theoretical Statistics and Mathematics

1. Barua, Rana: Structure of hyperarithmetical sets of ambiguous Borel classes. *T.A.M.S.*
2. Bhaskara, K. H. (with Viswanath, K.): Calculus on Poisson manifolds.
3. Bhattacharya, C. G.: On the Cohen-Sackrowik estimators of a common mean. *Statistics*.
4. Bose, Arup: Expansions and one term Edgeworth correction by bootstrap in autorregressions. *Zeit. Wahr. verw. Gebiete*.
5. ———: Bootstrap in moving average models. *Ann. Statist.*
6. ———: Higher order approximations for autocovariances from linear processes with applications. *Math. Oper. Stat. Ser. Statistics*.
7. ——— (with Bhandari, S. K.): On selecting the most likely event. *J. Statist. Plan. Inf.*
8. ——— (with Bhandari, S. K.): On selecting the least likely event. *Comm. Statist. Theory Meth.*
9. Das Gupta, Somesh: Pattern Recognition when feature variables are subject to error. *Sankhyā*.
10. ———: Assessment of differential drug effect. *Biometrics*.
11. ——— (with Bhandari, S. K.): Lorenz domination and majorization. *Sankhyā*.
12. Indira, N. K. (with Menon, V. V.): Some limit theorems in urn models with indistinguishable balls.
13. Karandikar, B. (with Kulkarni, V. G.): Convergence of moments of Markov Chains. *J. appl. Probability*.
14. Maiti, Pulakroh (with Tripathi, T. P.): Estimation of finite population total using a posteriori information. *J. Statist. Plan. Inf.*

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15. Masumder, B. S. with Mukherjee, A.): Method of moments for dispersion of contaminant in oscillatory flows. *J. Fluid. Mech.*
16. Mitra, S. K. : On group inverses and the sharp order. *Linear Algebra Applic.*
17. Mukherjee, Rahul : On zero cells in log-linear models. *Sankhya*.
18. ——— (with Chandra, T. K.): Comparison between the locally most powerful unbiased and Rao's tests. *J. Multivariate Analysis.*
19. ——— (with Chaudhuri, A.): Randomized response techniques. *Statistica Neerlandica*.
20. ——— (with Saha, G. M. and Kagayama, S.): Bounds on the number of constraints for balanced arrays of strength t . *J. Statist. Plan. Inf.*
21. ——— (with Rao, T. J. and Vijayan, K.): Regression type estimators using multiple auxiliary information. *Aust. J. Statist.*
22. ——— (with Huda, S.): Optimal design for the estimation of variance components. *Biometrika*.
23. ——— (with Kagayama, S.): General balanced designs through reinforcement. *Sankhya*.
24. ——— (with Kagayama, S.): Classification of semi-regular group divisible designs with $\lambda_2 = \lambda_1 + 1$. *Discrete Math.*
25. ——— (with Kagayama, S.): Search for GD designs with small values of characteristic. *J. Jap. statist. Soc.*
26. ——— (with Jimbo, M. and Kagayama, S.): On cyclic semi-regular group divisible designs. *Osaka J. Math.*
27. ——— (with Sen, M.): Kronecker factorial designs for multiway elimination of heterogeneity. *Ann. Inst. statist. Math.*
28. ——— (with Chatterjee, K.): Trend free orthogonal main effect plans. *Jap. Un. Scientists Engrs.*
29. Nag, S. (with Earle, C.): Conformally natural reflections with applications to Teichmüller spaces. *Proc. Conf. Holomorphic functions and Moduli*, Berkeley, U.S.A.
30. Parthasarathy, K. R. (with Hudson, R. L.): Unification of Fermion and Boson stochastic calculus. *Commun. Math. Phys.*
31. ——— (with Ravindran, G. and Strein, S. van): Global univalence theorems and the Jacobian matrix.
32. ——— (with Ravindran, G.): Completely mixed games and global univalence in convex regions. *Math. O.R.*
33. Raha, A. B. : Dini's Theorem, Integral Representation and Pseudocompactness. *Trans. Am. math. Soc.*
34. ——— : S_p -like spaces are plenty. *Proc. Am. math. Soc.*

35. ——— (with Sarbadhikari, H.): Some covering properties and their relationship with closed projections. *J. Indian Nat. Sci. Acad.*, New Delhi.
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37. ———: A new heuristic approach to solve one-dimensional cutting problem. *Opsearch*.
38. Ramachandran, B.: On a class of simultaneous integral equations, and characteristic functions satisfying a functional equation. *Sankhyā*, A.
39. Rama Murthy, K. (with Rajput, B. S.): On the spectral representation of semi-stable and other infinitely divisible stochastic processes.
40. ——— (with Ranjput, B. S.): On sample path properties of semi-stable processes.
41. Ramasubramanian, S. (with Bhattacharya, Rabi): On the central limit theorem for diffusions with almost periodic coefficients.
42. Rao, T. J.: Transformation on the auxiliary variate for Midzuw-Sen sampling scheme. *J. Indian Soc. agric. Statist.*
43. ———: A new class of unbiased product estimators. *Aust. J. Statist.*
44. ——— (with Mukherjee, B. and Vijayan, K.): Regression type estimators using multiple auxiliary information. *Aust. J. Statist.*
45. ——— (with Amshin, G. N. and Chaubey, Y. P.): Efficiency of a new estimator in PPS sampling for multiple characteristics. *J.S.P.I.*
46. Rao, T. S. S. R. K. (with Harmand, P.): An intersection property of balls and its relations with M -ideals.
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48. Roy, A. K. (with Sundaresan, K.): Intersection properties of balls in tensor products of some Banach spaces.
49. Saha, G. M.: A note on a parametric relation of variance balanced block designs. *Calcutta Statist. Ass. Bull.*
50. ——— (with Das, A. D.): Incomplete block designs for asymmetrical parallel line assays. *Calcutta Statist. Ass. Bull.*
51. Saha Ray, Rita (with Mukhopadhyay, A. C.): Three-way elimination of heterogeneity with non-orthogonal incidence structure for every two directions. *Sankhyā*.
52. Sastry, N. S. N.: Codes associated with generalised polygons. *Geometrical Dedicata*.
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54. Sitaram, A. (with Price, J. F.): Functions and their Fourier transforms with supports of finite measure for certain locally compact groups.
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1. Arnab, R.: Variance estimation in multi-stage sampling. *Metrika*.
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3. ———: Effects of antidiabetic drugs (sulfonyl-urea group) at the protein and immunoglobulin levels a maturity onset diabetic people. *Indian J. med. Res.*
4. Chaudhuri, A.: Optimality of sampling strategies. *Handb. Statist.*, North Holland. Ed. C. R. Rao and P. R. Krishnaiah.
5. ——— (with Adhikari, A. K.): On replicated sampling with and without replacement. *IASPI*.
6. ——— (with Mukherjee, Rahul): Randomized response technique: a review. *Statistica Neerlandica*.
7. Gupta, B.: Testability consideration of two-dimensional cellular logic arrays. *J. Electr. Computer Engng.*
8. ———: On easily testable MOS RMC networks. *IEEE Trans. Design and Automation*.
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11. ——— (with Nandy, S. C.): Discriminant analysis with a stochastic supervisor. *Pattern recognition*.
12. Mukherjee, B. N.: Perception of drought in rural areas. *J. envir. Psychol.*
13. ——— (with Sarkar, S. K.): A multivariate study of distribution of zooplankton in space and time in Hooghly estuary, West Bengal, India.
14. Mukhopadhyay, A. C. (with Saha Roy, R.): Three way elimination of heterogeneity with non-orthogonal incidence structures for every two directions. *Sankhyā*.
15. Mukhopadhyay, P. (with Amatia, G. N.): Robustness of some sampling strategies under polynomial regression models.
16. ——— (with Amatia, G. N.): On the Robustness of some sampling strategies.
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19. Sengupta, A. : Out performance of a test under loss of information in a curved exponential family. *Scand. J. Statist.*
20. ——— : An optimal test for the parameter of the exponential distribution in the Type-I censoring case. *Ann. Inst. stat. Math.*

Physical and Earth Sciences

Chemistry

1. Das, T. (with Ghosal, D. N.) : Humus-types in West Bengal Soil-II lateritic and Ganga alluvial. *J. Indian Soc. Soil. Sc.*
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a. Theoretical Physics

1. Bandyopadhyay, P. : Stochastic mechanics, supersymmetry and the anisotropy of microlocal space-time. *Commun. math. Phys.*
2. ——— (with Basu, Banarsi) : Phase transition in a system of quantum oscillators, i.e. 1+1 Dimensions. *Physical Rev.*
3. ——— (with Hajra, K.) : Hyperon-Nucleon Potential from the view-point of the structure of Hadrons. *Prog. theor. Phys.*
4. ——— : Nucleon-Nucleon potential from the view-point of the structure of Hadrons. *Physical Rev.*
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9. Bhattacharyya, S. : Anomalous abundance of muons in photoproduced extensive air showers signal to a new constituent picture of hadrons ! *Europhysics Lett., Switzerland.*
10. ——— (with Pal, Prativa (IACS)) : The simple leaky box model for propagation of cosmic rays and the estimation of the \bar{P}/P ratio. *II Nuovo Cim. C.*

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11. Hajra, K. : $\Sigma^4 p$ potential on the basis of the structure of hadrons. *J. Mod. Phys.*
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1. Roy, Bina (with others) : A review of the Indian economy, 1984-85. Tech. Rep. No. ERU/10/85.

Statistical Quality Control and Operations Research

4. Banerjee, K. K. (with Majumdar, S. K.) : Study on improving the functional performance of 48 KSD ceiling fan.
2. Chakraborty, S. C. (with Mohan, S. R. and Rau, Y. R.) (Ed.) : Proceedings of Golden Jubilee Conference on Quality Control, Reliability and Operational Research.

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3. Chakraborty, T. K. : Goal programming formulation of the problem of determining single sampling attribute plans of given strength.
4. Gopalan, V. (with Rajagopal, A.) : Manual for programme on basic concepts of quality control and quality management and modern ideas in quality engineering.
5. Mukherjee, S. P. (with Nag, B.) : Optimum repair strategy for soaking pits in a steel plant.
6. Iyer, V. Narayana : Study on the control of weight and quality of Ayurvedic medicines.
7. Rajagopal, A. : Manual for programme on experimental designs and analysis in spinning mills.
8. Sapre, M. N. : Determination of optimum parameter and allowance design for capacitors.
9. SQC Unit, Bombay : Course manual on statistical quality control.
10. SQC Unit, Baroda : Special literature on compilation of statistical tables.
11. SQC Unit, Delhi : Manual on management of quality for hospital services.
12. ——— : Manual on statistical methods for hospital services.
13. ——— : Manual on quality management for senior executives.
14. ——— : Manual on statistical methods for quality and productivity.
15. ——— : Manual on quality ke sidhwanton ki roop rekha in Hindi.
16. SQC Unit, Pune : Course manual in Marathi for the in-plant training programmes for the shop-floor personnel of M/s. Bajaj Auto Ltd. (Produced in thirteen volumes).
17. ——— : Course manual for the in-plant training programmes for the engineers and shop-floor personnel of M/s. Ammunition Factory, Khadki (Produced in two volumes).
18. SQC Unit, Madras : Development of quality control procedure to replace with the destructive testing with non-destructive testing for hexagonal socket cap screws.
19. ——— : Development of acceptance criteria for baffle drilling in nuclear generators.
20. ——— : Quality circles—An experience.
21. ——— : Effect of chemical compositions of physical properties of steel for nuclear shells—A study on model building.
22. ——— : Grouping similar tests conducted on physical properties of mineral wool.
23. ——— : Development of QCP for tool and machine control baffle drilling in nuclear generators.

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24. ——— : Study in IPW joint failures.
25. ——— : Optimisation of tube expansion parameters.
26. ——— : Establishing relation between material and furnace thermo couple in double bogie Heat Treatment furnace.
27. ——— : Optimisation of resistance welding parameters.
28. ——— : Study to minimise rejection due to Scale.
29. ——— : A study on lead time variation.
30. ——— : Introduction of test procedure for high strength friction grip bolts.

6. Ph.D./D.Sc. Degrees

A. Ph.D./D.Sc. Degrees Awarded

The following is the list of Ph.D./D.Sc. degrees obtained by the Research Fellows and Research Associates.

Teaching and Training

1. Krishna Maddaly : "Some spectral properties of three-and four-body Schrodinger operators by the method of time-dependent scattering theory," degree awarded by the I.S.I.
Supervisor : Professor K. B. Sinha
2. Satya Gopal Mandal : "Some results about basic elements, cancellation and efficient generation of modules over Laurent polynomial rings," degree awarded by the I.S.I.
Supervisor : Professor Amit Roy
3. Rajendra Prasad Velaga : "On some deterministic and stochastic scheduling problems," degree awarded by the I.S.I.
Supervisor : Professor K. G. Ramamurthy
4. Kohinoor Hazra : "Some aspects of nucleon-nucleon and hyperon-nucleon interaction," degree awarded by the Calcutta University.
Supervisor : Professor P. Bandyopadhyay
5. Thakahari Das : "Distribution and chemistry of organic matter in soils of West Bengal," degree awarded by the Calcutta University.
Supervisor : Dr. D. N. Ghosal.

The following is the list of Ph.D./D.Sc. degrees obtained by the members of staff of the Institute.

Biological Sciences

Anthropometry and Human Genetics

6. P. Bharati : "A study on the relationship between socio-economic condition, nutrition and health in a mahishya population sample," degree awarded by the Calcutta University.
Supervisor : Professor A. Basu

Social Sciences

Linguistic Research

7. Alokannanda Mitter : "Type and distribution of speech sounds disorders in the Bengali language in children of Elementary School-going Age from 4-10 years." D.Sc. degree in Speech Pathology awarded by Belgrade University.

B. Theses Submitted for Ph.D./D.Sc. Degrees

The following is the list of Ph.D./D.Sc. Theses submitted by the Research Fellows and Research Associates.

Teaching and Training

1. Banarsi Basu : "Some aspects of harmonic oscillations in 1+1 dimensions, Ising model and phase transition phenomena." University of Calcutta.
Supervisor : Professor P. Bandyopadhyay
2. Barnana Roy : "Application of dynamical groups and scaling variational methods to perturbation problems of Quantum Mechanics." Jadavpur University.
Supervisor : Dr. R. K. Roychoudhury
3. Pinaki Roy : "Supersymmetry breaking in external fields and related problems", Jadavpur University.
Supervisor : Dr. R. K. Roychoudhury.
4. G. Ravindran : "Global Univalence and completely mixed games," I.S.I.
Supervisor : Professor T. Parthasarathy

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5. Malabika Sinha : "Some aspects of high energy cosmic ray air shower and Multi particle production Phenomena," University of Calcutta.
Supervisor : Professor P. Bandyopadhyay.
6. Smt. Sarwati Bandyopadhyay : "Dinodont reptiles from the Triassic Yarrapalli formation and their importance in Stratigraphy and Palaeontology," University of Calcutta.
Supervisor : Professor T. Roy Chowdhury
7. Bhabatosh Chanda : "On preprocessing techniques for image analysis," University of Calcutta.
Supervisor : Professor D. Dutta Majumder.

The following is the list of Ph.D./D.Sc. Theses submitted by the members of staff of the Institute.

Applied Statistics, Surveys and Computing

8. A. Basu : "On parallel processing systems," University of Calcutta.
Supervisor : Professor A. K. Chaudhuri
9. B. Gupta : "On the design of easily testable logic circuits for detection of stuck-at and bridging faults," University of Calcutta.
Supervisor : Professor A. K. Chaudhuri
10. S. K. Gupta : "Dietary influence on cholesterol metabolism" University of Calcutta.
Supervisor : Professor A. Mukherjee
11. P. Pal Chowdhury : "A study on the design of self diagnosable systems," University of Calcutta.
Supervisor : Professor A. K. Chaudhuri.

Social Sciences

Economic Analysis

12. M. H. Suryanarayana : "The problem of distribution in India's development: An empirical analysis," Indian Statistical Institute.
Supervisor : Professor N. S. Iyenger

Sociological Research

13. Atis Dasgupta : "The Fakir and Sannyasi Uprisings," University of Calcutta.
Supervisor : Professor Barun De

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Part II. Convocation, Visiting Scientists, Honours and Awards, Scientific
Tours and Assignments

7. TWENTIETH CONVOCATION

The Twentieth Convocation of the Indian Statistical Institute held on 10 December 1985, was presided over by Shri Subimal Dutta, President of the Institute. Shri P. N. Haksar, Chairman, Indian Statistical Institute welcomed the Guests. Professor T. W. Anderson, Stanford University, Stanford, U.S.A., delivered the Convocation Address, which was entitled "Some thoughts on Statistics." Dr. A. Mitra, Director of the Institute, presented the annual review of research, teaching and training.

The number of candidates awarded Ph.D., M.Tech., M.Stat., B.Stat. (Hons.) Degrees, Post-Graduate Diplomas in Applied Statistics, Associateship in Documentation and Information Science and Diplomas in Professional Examinations in Statistics is given below.

Number of candidates awarded degrees and diplomas

Degrees/Diplomas	Number of candidates
Doctor of Philosophy (Ph.D.)	3
Master of Technology in Computer Science (M.Tech.)	20
Master of Statistics (M.Stat.)	27
Bachelor of Statistics (Honours) (B.Stat. (Hons.))	19
Post-graduate Diplomas in Applied Statistics :	
(i) Statistical Quality Control and Operations Research, Calcutta	11
(ii) Statistical Quality Control and Operations Research, Delhi.	7
(iii) Statistical Quality Control and Operations Research, Bombay	4
(iv) Statistical Quality Control and Operations Research, Madras.	11
Associateship in Documentation and Information Science, Bangalore	35
Professional Examinations in Statistics :	
(i) Senior Diploma in Statistics	1
(ii) Junior Diploma in Statistics	1
Total :	133

Annual Review by Dr. A. Mitra, Director

Mr. President, Professor Anderson, Mr. Haksar, Distinguished Guests, Ladies and Gentlemen :

I have great pleasure in presenting to you a brief report on the activities of the Indian Statistical Institute during the past year.

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I hope you will permit me to depart from the traditional format of an annual review and allow me to emphasize the need for generous financial support from the Government of India. That this need is more than justified is borne out by the report of the Second ISI Review Committee.

You will recall that the Second ISI Review Committee, set up under the provisions of the ISI Act 1969 by the Government of India, submitted its report in 1983. Let me recapitulate for you the main findings of the Review Committee. The Committee unequivocally recognised the status of ISI as an advanced Institute of research and training with a world-wide reputation in statistics and related fields. Evaluating the quality of work in the core subjects of the Institute the Committee remarked that the publications during the period under review were impressive, that some of the papers were truly path-breaking and that by and large the research output was of a high quality. The Committee upheld the multidisciplinary nature of the Institute and endorsed the concept of Professor Mahalanobis that statistics was a key technology essential for the meaningful study of many areas of science. Among the major recommendations of the Review Committee to the Government, I wish to mention here the recommendation that this Institute should continue to be financed entirely by the Government and that the Institute should not be asked to change its academic character in order to reduce its reliance on the public exchequer. The committee noted the lack of office space and housing facilities, the less than satisfactory living conditions of the students and recommended that a comprehensive construction programme be undertaken with minimum delay. The committee also recommended that the main computer system at Calcutta be replaced immediately by a modern computer with direct data entry facilities. The Review Committee however noted that systematic involvement of the Institute with the wider problems involving the national development processes had diminished in the recent past.

The Governing Council of the Institute examined the Review Committee report and sent its views thereon to the Government in February 1985. The Council broadly agreed with the Review Committee that a reorganisation of the various scientific units of the Institute into larger, more viable, departments was necessary and adopted a scheme for such a reorganisation. The Council, while noting that the involvement of ISI with the larger socio-economic problems facing the country had diminished, felt that this was an inexorable consequence of the Government's implementation of the recommendations of the First Review Committee which led to the delinking of the Institute from the Perspective Planning Division of the Planning Commission and the separation of the National Sample Survey Organisation. Nonetheless, the Council was of the view that the imbalance which had appeared between the academic activities of the Institute and its work on important problems of national development and welfare needed to be removed. Towards this end, the Council made several recommendations, which, while ensuring that research of a truly fundamental nature can continue as before, will have the effect of focusing ISI's work on

the application of statistics to the general problem of the development process of the country with reference to perspective planning, model building, resource management etc. The views of the Government on the ISI's response to the report of the Review Committee are awaited.

Founded and developed by the genius of Professor P. C. Mahalanobis, the ISI is an organisation which was not built on any model existing either in this country or abroad. In the creation and development of the Institute, Professor Mahalanobis made a genuinely Indian contribution to modern science and gave this country one of its most precious assets. The association of this Institute with Pandit Jawaharlal Nehru brought it into the mainstream of the nation's economic development and the Institute played a useful part in helping the Government launch its programme on industrialisation. If we are to maintain the unique character of the ISI as an academic Institute dedicated to the application of statistics to the problems of planning of national development and social welfare, adequate financial support from the Government is absolutely essential. Any cuts in the Government's funding of the Institute would do incalculable harm to its growth, to the potential that it has for playing a larger role in the life of the nation, and to the creation of the scientific ambience and infrastructural facilities necessary for the attraction of the best Indian scientists to the Institute. There can be no half-measures in the pursuit of scientific research. In view of the report of the Review Committee and the very constructive proposals formulated by the Council of the Institute for its future development, a reduction in the grants to the Institute would be manifestly unjust and would result in seriously jeopardising the advancement of statistical science in this country. India holds a preeminent position in the world in the field of statistical science. In no small measure, this is due to the range and the depth of the contributions of this Institute to the subject. It would be a national tragedy if this position were lost for lack of adequate financing.

Let me turn now to a review of the activities of the Institute during the past year. I shall not go into the details of the continuing research and training activities of the Institute which are described elsewhere in the report.

As in past years, the Institute provided assistance to different agencies of the Government like the Planning Commission, Department of Environment, etc. A project on "Studies on Multi-sectoral Planning Models" sponsored by the Planning Commission was completed during the year. The Planning Commission has also entrusted the Institute with a project on "A Regional Model for Agriculture" and a project on "Monetary and Fiscal Policies in a Planning Model." Work on both these projects is proceeding apace. A major study sponsored by the International Labour Organisation (ILO) on "Relative Price of Food and the Rural Poor—the case in India" was completed. This study makes a comprehensive analysis of trends in level of living and in the incidence of absolute poverty in Rural India since the fifties *vis-à-vis* trends in relative price of food and other items. During the year the Institute

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submitted proposals for collaborative studies with ONGO relating to the problems of estimation of discovery cost and planning for optimal allocation of resources for exploration and exploitation of hydrocarbon. Besides, the Institute is actively engaged in a study aimed at ascertaining the level of awareness and knowledge among the residents of Calcutta regarding the causes and sources of air pollution. This study was commissioned by the Department of Environment, Government of India. We have also taken in hand, on behalf of the Government of West Bengal, a socio-economic survey on fishermen with primary objective of identifying problem areas so that suitable welfare schemes can be formulated for the upliftment of fishermen. Work is continuing on a project, commissioned by the Department of Environment, Government of India, entitled "Cultural ecology of husbanded plants in Western Maharashtra." The Institute has been recognised as a nodal agency for fifth generation computer systems research by the Department of Electronics, Government of India.

Several Conferences and workshops were held in the Institute during the year under review. The year began with a very well-attended international conference on Quantum Statistics and Foundational Problems of Quantum Mechanics. The conference was organized by the Institute to commemorate the sixtieth anniversary of Bose Statistics. The proceedings of the conference will appear soon in the *Hadronic Journal*. The Institute and the Social Science Research Council, New York cosponsored a workshop on "The Measurement of Rural Economic Change: Differences in Approach and Results of Village Studies and Large Scale Surveys." The workshop was held at ISI, Bangalore. The ISI in New Delhi played host to the Fifteenth General Conference of the Indian Association for Research in National Income and Wealth. This was organized under the joint auspices of this Institute and the National Institute of Public Finance. The 3rd Annual Conference of the Indian Society of Medical Statistics was held recently at the Institute in Calcutta. This conference was preceded by a workshop on Data Analysis relating to problems in the medical sciences. A five-day International Conference on Multivariate Analysis will commence in Calcutta from 18 December 1985. This will be followed in early January by an International Conference on Pattern Recognition and Digital Techniques.

At its Golden Jubilee in 1981, the Institute set up the Mahalanobis Memorial Series of Lectures, to be given by eminent statisticians, once every two years. The first series of lectures were delivered by Professor Samuel Karlin in 1983. The inaugural lecture in the second series was given on Monday, 9 December 1986 by Professor T. W. Anderson. The title of his talk was "Multivariate Components of Variance and Linear Structural Relations." Professor Anderson will continue the series through this week.

The past year brought academic distinctions to the faculty of the Institute. Professor D. Dutta Majumdar was elected Fellow of the Indian National Science

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Academy. Dr. R. L. Karandikar received the Young Scientists' award of the Indian National Science Academy. Dr. Rahul Mukherjee received the Young Scientists' Award of the Indian Science Congress Association.

During the year under review, the following three volumes of proceedings of conferences held during the Golden Jubilee Celebrations of the Institute were published : Quality Control, Reliability and Operations Research, Human Genetics, and Women, Work and Society.

The Institute started a Centre in Bangalore in 1978 to complement its activities at Calcutta and Delhi. I am happy to announce that construction of the academic block at Bangalore was completed and that the Institute moved to its new campus from its rented premises in May 1985. Efforts are being made to start courses leading to the Master of Statistics degree at Bangalore from the next academic year.

The International Statistical Education Centre (ISEC) which is run in collaboration with the International Statistical Institute is conducting its 39th term during the year. The Centre admitted 32 trainees from 17 countries in South and South East Asia, the Middle East, the Far East and the Commonwealth Countries of Africa during the year. In this connection I would like to mention that a long felt need of the Institute has been for a hostel with modern amenities for foreign students.

In conclusion may I take opportunity of recording my deep sense of gratitude to Mr. Subimal Dutt, President of the Institute and Mr. P. N. Haksar, Chairman of the Institute, for their counsel and guidance. I should like to convey my thanks to Professor S. B. Rao, our Dean of Studies, for organizing this function. My thanks are also due to Dr. Shibdas Bandyopadhyay for running the International Statistical Education Centre. Finally I wish to record my deep appreciation of the unstinted support and cooperation which I have received from all sections of workers in the Institute.

8. VISITING SCIENTISTS

A number of distinguished scientists from foreign countries participated in the research, training and other scientific activities of the Institute during the year. Some of them came for fairly long period to assist in the regular research and teaching programmes while other came for short periods on different assignments or for giving lectures and participated in seminars and held discussions with the members of the staff of the Institute.

The following are some of the scientists who paid visits, gave lectures and/or seminars and participated in conferences :—

1. Dr. Samar Mitra, Emory University, USA (14.6.85-1.7.85). Lecture : "Stability in the presence of migration."
2. Professor R. N. Bhattacharya, Indiana University, USA (12.6.85-30.7.85). Lecture : "Homogenization of elliptic operations with rapidly oscillating periodic or almost periodic coefficient—the probabilistic method."

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2. Professor C. R. Rao, University of Pittsburgh, Pittsburgh, USA (22.7.85, 16.12.85-31.1.86). Lectures: (i) "Data analysis and statistical thinking." (ii) "Geometric approach to generalized inverse of matrices."
4. Professor Martin Davis, Courant Institute of Mathematical Sciences, New York (22.7.85-27.7.85). Lectures: (i) "Coding algorithms by exponential diophantine equations." (ii) "A formal notion of program-based Test Data adequacy."
5. Professor Richard Pincus, Institute of Mathematics, GDR Academy of Sciences, West Germany (16.10.85-21.12.85) delivered a series of lectures.
6. Professor J. Stern, University of Caen, France (22.9.85-9.10.85). He visited ISI under the Indo-French Programme of Cooperation in Science and Technology and delivered a series of lectures entitled "An introduction to the forcing technique with applications to descriptive set theory and measure theory." He also gave seminar on "The measure problem."
7. Professor V. Mandrekar, Michigan State University, Michigan (28.9.85-14.12.85). Lectures: (i) "Stochastic integration with respect to Gaussian process." (ii) "Point process technique in analysis of censored data."
8. Professor S. Biswas, University of Delhi, Delhi (7.11.85). Lecture: "Demographic models".
9. Professor Ranajit Chakraborti, University of Texas, USA (2.12.85-9.12.85). Lecture: "Complex diseases in hybrid populations".
10. Professor Keh-Shin-Lii, University of California, USA (26.12.85). Lecture: "Non-Gaussians linear process: Identification and estimation".
11. Dr. (Ms.) Sudipta Sen Gupta, Jadavpur University, Calcutta (1.2.86). Lecture: "Antarctica—The continent of science".
12. Dr. Teris Kim Schery, California State University, USA (14.2.86). Lecture: "Communication disorders".
13. Dr. Nguyen Van Thu, Institute of Mathematics, Vietnam (10.1.86-15.5.86).
14. Dr. S. Huda, Dhaka University, Dhaka, Bangladesh (17.4.85-27.4.85). Lecture: "Minimax design for the difference between estimated responses".
15. Dr. R. N. Rathihalli, Shivaji University, Kolhapur (20.5.85-1.6.85).
16. Professor S. K. Sinha, University of Manitoba, Canada (30.5.85-9.8.85).
17. Professor Malay Ghosh, University of Florida, Florida, USA (22.7.85). Lecture: "Sequential shrinkage estimation".
18. Dr. D. Ramachandran, University of California, Illinois (31.7.85-25.7.85). Lecture: "On two notions of independence".
19. Professor P. K. Sen, University of North Carolina, Chapel Hill, USA (16.12.85-5.1.86).

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20. Dr. D. R. J. Chillingworth, Southampton University, USA (24.1.86). Lecture : "Dynamical system and bifurcation theory".
21. Dr. N. Mukhopadhyay, University of Connecticut, USA (14.1.86-16.1.86). Lectures : (i) "Some interesting tools in sequential estimation". (ii) "Fixed-size confidence regions for the mean vector of a multinormal population".
22. Professor T. Bromek, Polish Academy of Sciences, Poland (23.12.85). Lecture : "Equivalence of statistical spaces".
23. Professor K. B. Athreya, Iowa State University USA (13.12.85). Lecture : "Bootstrap of the mean in the infinite variance case".
24. Dr. Ravi T. Chari, Tufts University, USA (1.9.85-16.3.86). Lecture : "Non-linear Markov Processes".
25. Dr. R. L. Jensen, University of Arhus, Denmark (11.4.85-9.5.86). Lecture : "Exponential transformation models".
26. Dr. (Mrs.) Geetha Ramachandran, California State University, USA (26.7.85). Lecture : "Avidt sampling".
27. Professor H. Morimoto, Osaka City University, Osaka, Japan, (2.4.85-17.4.85).
28. Dr. S. Ramakrishnan, University of Miami, Coral Gables, USA (5.8.85-22.8.85). Lecture : "Good strategies for leavable gambling houses".
29. Dr. Y. P. Chaubey, Concordia University, Canada (since 30.7.86). Lecture : "Some investigations about the properties of the product estimator in finite population sampling".
30. Dr. D. Basu, Florida State University, USA (since January 1986). Lecture : "Study group in Bayesian statistics".
31. Dr. Prabir Barman, Rutgers University, USA (1.8.85-31.12.85). Lecture : "Asymptotic and model building".
32. Dr. B. M. Ghosh, All India Institute of Hygiene and Public Health, Calcutta (24.4.85). Seminar given : Analysis of the inpatient system in a State hospital.
33. Professor Subrata Chakrabarty, National Institute for Training in Industrial Engineering, Bombay (17.5.85-22.5.85). Seminars given : (i) Manufacturing system reliability, (ii) Transportation paradox.
34. Dr. N. Kittoo, Central Groundwater Board, Calcutta (26.6.85). Seminar given : Hydrogeology of river basins with special reference to West Bengal (a) Hard rock geology, (b) Geology of individual river basins.
35. Dr. S. P. Sinha Roy, Central Groundwater Board, Calcutta (26.6.85) : Seminar given : Hydrogeology of river basins with special reference to West Bengal (a) Hard rock geology, (b) Geology of individual river basins.
36. Professor Biswa Nath Dutta, Northern Illinois University, DeKalb, Illinois, USA (17.7.85). Seminar given : Parallel matrix computations with a special attention to linear algebra problems arising in control theory.

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27. Richard J. Brook and Dr. Judith A. Brook, Massey University, New Zealand (27.1.86). Seminars given: (i) Quasi experimental designs and statistical analysis in program evaluation, (ii) Concepts and models of programme evaluation, (iii) Use of non-parametric statistics in the evaluation of a management training programme, (iv) Measuring agreement between observers.
28. Professor Y. V. Reddy, Director of Artificial Intelligence Laboratory of West Virginia University, U.S.A. (22.1.86). Lecture: "Unified approach to AI programming". He visited as an UNDP expert.
29. Professor C. A. Herot, University of Adelaide (19.1.86-21.1.86). He took part in discussions on various topics of mathematical physics.
40. Professor M. Hoffmeister, Professor at Institut für Mechanik der Adw der D.D.R., Berlin (22.1.86-29.1.86). Lectures: (i) "Local symmetry approach in turbulent flow" (ii) "Experimental fluid mechanics".
41. Professor L. N. Person, Professor at Institute of Applied Mechanics, University of Trondheim, Norway (20.2.86-3.3.86). Lecture: "Empirical theory of turbulence". His visit was arranged under the cultural exchange programme between Norway and India.
42. Professor M. J. Moravcsik, University of Oregon, USA (30.3.85-5.4.86). He took part in various discussions with the members of the Electronics Unit. He also gave several lectures on Nuclear Interaction and related problems in the Institute as well as in other Institutes of Calcutta.
43. Dr. R. Sanjeevi, Scientist and Head, Biophysics Department of the Central Leather Research Institute (CLRI), Madras (16.1.86-23.1.86). Held discussions on "Scanning electron micrograms of skin and leather morphology".
44. Dr. Z. Wojtkowiak, University of Barcelona (3.7.85-10.7.85). Seminars given: (i) Some remarks on maps between classifying spaces (ii) The finiteness obstruction of the homotopy mixing of two spaces.
45. Professor S. T. Ali, Concordia University, Canada (25.7.85-29.7.85). Seminars given: (i) Harmonic analysis on phase space (ii) Stochastic quantum mechanics.
46. Dr. V. Ramaswamy, Bell Communication System, USA (5.8.85-14.8.85). Seminars given: (i) Application of queuing theory to communication network (ii) Efficient set of algorithms for multiserver queue.
47. Dr. Y. Teraoka, Homeji Institute of Technology, Japan, (9.8.85-2.11.85). Seminar given: (i) Bounded insurance contracts as a quasi-game.
48. Professor David Siegmund, Department of Statistics, Stanford University, USA (11.11.85-16.11.85). Seminars given: (i) Confidence sets for a change point (ii) Boundary crossing probabilities.
49. Professor G. Saporta, Department of Mathématiques et Informatique, Conservatoire National des Arts et Métiers, Paris (8.12.85-12.12.85). Seminar given: Correspondence analysis for categorical stochastic process.

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50. Mr. D. C. Altman, Medical Research Council, U.K. (9.12.85-15.12.85). Seminars given : (i) Comparability of randomised groups, (ii) Age-related reference ranges, (iii) Cox's model analysis of clinical trials on primary biliary cirrhosis.
51. Professor H. Kunita, Faculty of Engineering, Kyushu University, Department of Applied Science, Hakozaki, Fukuoka, Japan (19.12.85-28.12.85).
52. Professor Haruo Yanai, Department of Behavioural Science, Faculty of Letters, University Chiba, Japan during November-December, 1985. He visited ISI under the exchange programme of INSA-Japan Society for the Promotion of Science. Seminars given: (i) Generalized inverses of partitioned matrices, (ii) Partial correspondence analysis.
53. Professor E. J. Williams, Statistical Consultancy and Research, Geelong, Victoria, Australia (16.1.86-22.1.86). Seminar given : Application of martingale methods in conflict models.
54. Professor L. Danzer, University of Dortmund, Federal Republic of Germany (4.3.86-7.3.86). Seminar given : On the densest packings of equal balls in Euclidean spaces.
55. Professor Chandler Davis, University of Toronto, Canada (8.3.86-7.5.86). Seminars given : (i) Norm preserving dilations of matrices, (ii) A fractal object; the dragon curve.
56. Dr. S. Yadava, TIFR is visiting the ISI Delhi Centre for a period of one year w.a.f. 17 March, 1986.
57. Professor G. Kallianpur, University of North Carolina, Chapel Hill, U.S.A. (27.5.85-1.6.85).
58. Professor V. Soehadri, McGill University, Montreal, Canada (10.8.85).
59. Dr. R. V. Ramamoorthi, Michigan State University, East Lansing, U.S.A. (18.7.86 and 12.10.85-30.10.85).
60. Professor John F. Price, University of New South Wales, Sydney, Australia (18.7.85-30.7.85).
61. Dr. H. N. Nagaraja, Ohio State University, Columbus Ohio (14.8.85).
62. Professor J. Sethuraman, Florida State University, Tallahassee, U.S.A. (26.12.85).
63. Professor Ramesh Gangolli, University of Washington, Seattle, U.S.A. (29.1.86).
64. Dr. Ravi Chary, Tufts University, Boston (18.2.86-25.4.86).
65. Shri T. S. Rajagopalan, Scientist-in-Charge, Indian National Scientific Documentation Centre, New Delhi (16.4.85). Lecture : "Development of INSDOC".
66. Ms. R. Sugra Begum, Polytechnic for Women, Bangalore (12.8.85). Lecture : "Ranganathan's contributions to modern library and information services".
67. Mr. B. S. Ramananda, Deputy General Manager, Technical Information Systems, HMT Ltd., Bangalore (12.8.85). Lecture : "Ranganathan's contributions to modern library and information services".

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68. Dr. Edward W. Poloman, Vice Rector, United Nations University, Japan (13.8.86). He participated at a panel discussion on "Research and training programmes in library and information sciences".
69. Professor Dr. (Ma.) Ines Wesley Tanakovic, Information Centre for Medical Sciences, Belgrade (13.8.86). She participated at a panel discussion on "Research and training programmes in library and information sciences".
70. Professor Charles Taylor, Topic Leader, Information Transfer and Technology, ICSU, Paris (20.8.86). Special lecture: "Lecture demonstration method of teaching".
71. Professor Christopher Turner, Brighton Polytechnic, Brighton, U.K. (1.10.86). Special lecture: "Computer-based library management".
72. Professor D. J. Fockett, Former Goldsmith's Librarian and Director of Libraries, University of London, London (29.10.86). Seminar: "Impact of information technology on library and information services".
73. Dr. Michael Shepherd, School of Computer Science Technical University of Nova Scotia, Canada (7.1.86). Seminar: "Fifth generation computers and its impact on library and information services".
74. Mrs. Tuula H. Laakso-virta, Department of Library and Information Science, University of Tampere, Finland (22.1.86). Seminar: "Scientific method".
75. Shri N. K. Gopalakrishnan, Director, Energy Documentation Centre, Tata Energy Research Institute, Bombay (6.2.86). Lecture: "Management of information analysis centre".
76. Professor Sukhamoy Chakraborty, Chairman, Economic Advisory Committee, Yogana Bhavan, New Delhi (29.10.85-1.11.85) held discussions with the staff members of the Economic Research Unit.
77. Professor P. R. Brahmananda, University of Bombay, Department of Economics (10.5.86). Lecture: "Controlling the new inflation".
78. Professor Nanak C. Kakwani, Senior Fellow, W.I.D.E.R., Helsinki, Finland (6.7.86).
79. Professor Pranab K. Bardhan, University of California, Berkeley, USA (7.8.86).
80. Professor T. N. Srinivasan, Yale University, New Haven, Connecticut, USA (7.8.86).
81. Professor S. Kannappan, Michigan State University, USA (7.8.86).
82. Dr. David L. Stanton, Social Science Research Council, New York, USA (7.8.86).
83. Professor Arjun Appadurai, University of Pennsylvania, USA (7.8.86).
84. Dr. Gladys Sumitra, Director (Perspective Planning), Karnataka Government, Bangalore (9.9.86). Held discussions with Professor N. S. Iyengar on problems of Karnataka's Plan.
85. Dr. Rameah C. Kumar, University of Waterloo, Canada (23.12.86).

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86. Professor M. G. Kanbur, University of South Pacific, Suva, Fiji Islands (1.2.86-22.2.86). Gave seminar : An overview of the economics of the South Pacific Islands : Fiji Experience.
87. Dr. B. Ramakrishna Reddy, Reader, Department of Linguistics, Osmania University, Hyderabad (2.2.86-4.2.86).
88. Professor Kazuhiko Machida, Assistant Professor, Department of Indo-Pakistani Studies, Tokyo University of Foreign Studies, Tokyo, Japan (30.2.86).
89. Professor Y. B. Damle, Emeritus Professor and President, Indian Sociological Society (1.4.86-6.4.86) delivered lecture in the Institute.
90. Professor Donald Von Eschen, Chairperson, Department of Sociology, McGill University, Montreal, Canada (November-December, 1985).
91. Professor Alex Comfort, Adjunct Professor, NPI/UCLA, USA, Former Chief MRC Group on Ageing, University College, London (17.2.86-22.2.86). Lecture : "The study of ageing".
92. Dr. T. Ramchandrab, Reader, Department of Anthropology, S. V. University, Tirupati (21.6.85-22.7.85).
93. Dr. (Miss) Daniela Sivakova, Department of Anthropology, Comenius University, Bratislava, Czechoslovakia (8.12.85-10.12.85). Lecture : "Genetic differentiation of Gypsy community in Slovakia".
94. Dr. K. Vireeswara Rao, Assistant Director, National Institute of Nutrition, Hyderabad (20.12.85). Lecture : "Growth and nutritional status of Indian children".
95. Dr. N. Datta Banik, Deputy Director General, Indian Council of Medical Research, New Delhi (13.11.85). Lecture : "Growth and development of Indian children from birth to maturity and factors modifying growth process".

9. HONOURS, AWARDS AND SCIENTIFIC ASSIGNMENTS

Dr. R. Karandikar (Stat-Math) was awarded INSA medal for Young Scientists 1985 by Indian National Science Academy.

Dr. B. L. S. Prakasa Rao (Stat-Math) was elected as National Lecturer for the year 1985-86 by the University Grants Commission.

Dr. B. N. Mukherjee (Applied Statistics, Surveys and Computing) continued to serve as a (a) member of the Scientific Advisory Committee of the Institute for Research in Medical Statistics, ICMR, New Delhi (b) member of the Task Force, ICMR and (c) member of ERIC, NCERT.

Shri Anirban Basu (Applied Statistics, Surveys and Computing) was made a member of the Executive Committee of West Bengal State Centre of the Institution of Engineers (India) to represent computer engineering division for 1985-86.

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Shri Bidyut Gupta (Applied Statistics, Surveys and Computing) has been selected as the Vice-Chairman for the International Test Conference organized by IEEE Computer Society to be held at Philadelphia, U.S.A.

Professor D. Dutta Majumder (Electronics and Communication Sciences) was elected as a Fellow of Indian National Science Academy in the year 1985. He was appointed member of the editorial board of the International Journal Pattern Recognition Letters published by North Holland. He was also elected as member of the Governing Body of International Association and Pattern Recognition (IAPR), and International Fuzzy Systems Association (IFSA).

Professor D. Dutta Majumder, A. K. Dutta, N. B. Ganguli, Bijan Mukherjee (Electronics and Communication Sciences) and Dipali Nag Chowdhury and B. M. Banerjee (Sangeet Research Academy of Calcutta) received C. V. Raman Award for their contribution to Acoustical Study of Hindustani Raga Sangeet by Acoustical Society of India (best paper in five years : 1981-1986).

Dr. S. K. Pal and Professor D. Dutta Majumder's (Electronics and Communication Sciences) book entitled, "Fuzzy Mathematical Approach to Pattern Recognition" published by John Wiley and Sons (Halstead Press Book), N.Y., 1986, has been awarded 1st prize in 7th World Book Fair.

Professor A. Sen (Electronics), on lien from the Institute, is continuing as a Director (Technical) of the West Bengal Electronics Industry Development Corporation.

Professor P. Bandyopadhyay (Electronics) has been nominated founder member of the "Society for Scientific Values," a forum established at New Delhi to formulate the guidelines to stop any kind of unethical and dishonest activity in science such as plagiarization, false claims and undue authorship of papers and in general to improve the scientific environment.

Professor S. L. Jain (Geology) chaired a technical session on Vertebrate Paleontology at the Sixth Gondwana Symposium held at the Ohio State University, Columbus, on 20 August, 1985, at the invitation of the Convener of the Symposium. Professor Jain conducted the first meeting of the Working Group of Vertebrate Paleontology, under IUGS, as its Chairman, on 21 August, 1985, during the session of the Sixth Gondwana Symposium. He has been appointed member of the International Geological Correlation Programme Project (No. 245) on 'Non-marine Cretaceous Correlations' under IUGS and UNESCO. He also delivered the Third Abaninath Memorial Lecture at the invitation of the Geological, Mining and Metallurgical Society of India in the Geology Department, Calcutta University, on 6 December, 1985.

Dr. D. Saha (Geology) was elected Assistant Editor, Quarterly Journal of the Geological, Mining and Metallurgical Society of India. He was also elected Fellow of the Geological Society, London.

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Professor Amitabha Basu (Anthropometry and Human Genetics) chaired a session and delivered the valedictory address in the Seminar on Population Structure among Tribes, held at the Tribal Research Centre, Tamil University, Udhagamandalam, 11-18 December, 1986.

Dr. K. C. Malhotra (Anthropometry and Human Genetics) has been elected a Fellow of the Indian Academy of Science from 1 January 1986. He has been elected Vice-President, International Dermatoglyphic Association and Vice-President of Indian Anthropological Society (1986). Dr. Malhotra has been nominated to the editorial board of International Journal of Anthropology. He has been nominated as a member on the committee on "Fodder and Grass Development", National Wasteland Board, Government of India. He has been nominated as a member on the Panel of experts, Museum of Man, Bhopal, Government of India.

Professor S. K. Roy (Botany) continued to serve as Member of the (f) Adaptive Research Council in Agriculture, Government of West Bengal; (ii) Undergraduate Board of Studies in Botany of the University of Calcutta; (iii) Advisory Board of the Indian Society for Research on Haematology and Blood Transfusion.

Dr. S. Matai (Leaf Protein) has been elected as the Joint Secretary of the International Society for Green Vegetation Research for 1986-1990. He has been elected as the 1st Vice-President for the Indian Society of Agricultural Biochemists for 1986 and 1987.

Dr. D. K. Bagchi (Leaf Protein) has been elected as the Secretary of the Indian Chapter for the SGVR. Dr. Bagchi has also been elected as the Executive Member of the Indian Society of Agricultural Biochemists.

Sm. Anjana Banerjee (Leaf Protein) won the first prize for the best poster paper entitled "The Nutritive potential of the winged pod" presented in the Sixth Indian Convention of the Food Scientists and Technologists, 13-15 March 1986, Bombay.

Dr. C. R. Malakar (Demography) was nominated Assistant Editor of the Journal 'Asian Forum for Development and Population', Trivandrum, India.

Dr. D. K. Bose (Economic Research) continued to be the member of the following committees : (i) National Income Advisory Committee, CSO, Government of India, (ii) Indian National Committee for World Energy, (iii) Expert Committee on Irrigation, Government of West Bengal, and (iv) West Bengal State Electricity Board. Dr. Bose was nominated Vice-Chairman of the State Planning Board, Government of West Bengal. Dr. Bose submitted a paper on 'Survey of Literature on Energy Economics' for the second Survey of Research in Economics commissioned by the Indian Council for Social Science Research.

Dr. N. Bhattacharya (Economic Research) continued to serve in the following capacities : (i) ISI's nominee on the Standing Committee of Central and State Statisticians' Conference, and (ii) ISI's nominee on the Governing Council of NSS Organisation, Government of India. He also served as member/chairman of several

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working groups set up by the Governing Council of the NSSO. He also served as member of the Steering Committee of a study project entitled 'Highway Design study—Part B. Pavement Performance Study' undertaken by the Central Road Research Institute, New Delhi.

Dr. K. O. Majumdar (Economic Research) served as a member of the following committees : (i) Advisory Group of the Seventh Plan Modelling set up by the Planning Commission, Government of India, (ii) National Board on Higher Mathematics set up by the Department of Atomic Energy, Government of India, and (iii) Working Group on Seventh and Perspective Plan set up by the Government of Assam.

Dr. L. S. Bhat (Planning, Delhi) was awarded National Lecture Assignment by the University Grants Commission for visits to different Universities for lectures and discussions on research themes of interest in geography and planning.

Dr. Partha Mukherjee (Planning, Delhi) was elected Treasurer, Indian National Organization Committee of the World Congress of Sociology, to be held in New Delhi, August, 1986.

Dr. Parkash Chander (Planning, Delhi) served as member of the Programme Committee for the World Congress of the Econometric Society held in August, 1985, at M.I.T. He has been appointed member of the Advisory Board, Journal of Economic Surveys to be published by Tieto Ltd., beginning 1987, University of Edinburgh and also member of the Editorial Board, International Journal of Development Planning Literature.

Professor B. S. Minhas was re-nominated Chairman of the Governing Council of the National Sample Survey Organization, Government of India, for another five-year term.

Dr. K. Saradamoni (Planning, Delhi) continued to be a member of the Executive Committee of Indian Association for Women's Studies; Treasurer and Member of the Editorial Committee of LAWS, New Delhi. She also continued to be Vice-President of the Society for the Study of Regional Disparities.

Dr. V. K. Chetty (Planning, Delhi) was elected Associate Editor, Journal of Business and Economic Statistics. Dr. Chetty served as (i) Member of the Panel of Economists, invited by the Union Finance Minister for Pre-budget Discussion and long Term Fiscal Policy, (ii) Member, Expert Group on Long Term Model for Industry Sector constituted by the Planning Commission, Government of India, (iii) Member, Standing Committee for Institutional Finance for the Sugar Industry, constituted by the Reserve Bank of India. Dr. V. K. Chetty presented a paper on "Growth, Equity and Economic Policies" under the chairmanship of the Union Minister of Finance in the Finance Ministry.

Dr. Atul Sarma (Planning, Delhi) served as (i) Member, Assam State Planning Board, constituted by the Government of Assam, (ii) Member, Manipur State Planning Board, constituted by the Government of Manipur, (iii) Member, Working Group

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to study the financial policy issues for sustained growth with reasonable price stability constituted by the Planning Commission, Government of India.

Professor N. S. Iyengar (Economic Analysis, Bangalore) participated in the Karnataka Economic Association's First Annual Conference, 18 October 1986, Mysore, and was honoured with award and citation for his outstanding contributions.

Shri M. H. Suryanaraya (Economic Analysis, Bangalore) on long leave, joined as Consultant in the Bureau of Industrial Costs and Prices, New Delhi, on 21 February, 1986.

Shri Durgaprasad Bhattacharya (Pre-Census Population Studies) continued to serve as (i) Member, Indian Historical Records Commission, (ii) Honorary Director of the Research Project : Sociological Writings in Bengali, 1818-1947, sponsored by the Indian Council of Social Science Research, (iii) Honorary Director of the Research Project : Bengali Writings on Science and Technology, 1800-1950, sponsored by the Indian National Science Academy, (iv) Secretary, Socio-Economic Research Institute, Calcutta, and (v) Co-ordinator, Symposium on Historical Demography of the Indian Association for the Study of Population.

Shri Rama Deb Roy (Pre-Census Population Studies) continued to serve as the Joint Secretary, Socio-Economic Research Institute, Calcutta, and as Secretary, Silver Jubilee Celebration Committee, Socio-Economic Research Institute, Calcutta. She also served as Honorary Co-Director of the Research Project : Bengali Writings on Science and Technology, sponsored by the Indian National Science Academy.

Shri S. K. Biswas (Sociological Research) served as (i) Chairperson, 4th Session of the National Seminar on Population, Family and Culture, Bhubaneswar, Orissa, and (ii) Member, Advisory Board, Council for Tribal and Rural Development (CTRD), Bhubaneswar, Orissa. He continued to serve as (i) Member, Board of Post-Graduate Studies in Anthropology, Calcutta University, (ii) Member, Board of Under-Graduate Studies in Anthropology, Calcutta University, and (iii) Member, Board of Editors, Journal of the Indian Anthropological Society, Calcutta. He also continued to serve as Sectional Editor, Viswa-Kosh, Saksharata Samiti (Eradication of illiteracy), Calcutta.

Dr. S. Bandyopadhyay (Sociological Research) served as Member, Post-Graduate Board of Studies in Sociology, Kalyani University and was invited to be Research Associate of an all-India Project on "Cooperatives and Rural Development in India", undertaken by Department of Sociology, University of Delhi and Department of Anthropology, McGill University, sponsored by the International Development Research Centre, Ottawa, Canada.

Shri K. Chottopadhyay (Sociological Research) served as Member, Board of Directors, Seva-Bharati, Kargari, Midnapore.

Dr. S. Seetharama (DRTC, Bangalore) rendered advisory service to the Tata Energy Documentation and Information Centre, Bombay in relation to (a) Project

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proposal for Maharashtra Energy Development Agency, (b) Indexing of energy data base, and (c) draft plan entitled 'Tata Energy Documentation Centre : A developmental plan 1988-1990'. He also rendered advisory service to the National Tuberculosis Institute, Bangalore, in regard to space planning for their library.

Dr. Jogesh Mishra (Central Library) was renominated as member of the Advisory Council of Indian National Scientific Documentation Centre, New Delhi, by the Director-General, CSIR, New Delhi. He was nominated as Expert-Member of the Subject Panel of Experts in the field of Library and Information Science of University Grants Commission by the Chairman, UGC. He continued to be a member of the Committee on norms for staff in libraries of University and Colleges at UGC, New Delhi.

10. SCIENTIFIC TOURS AND ASSIGNMENT ABROAD

Professor Somesh Das Gupta (Stat-Math) visited the School of Statistics, University of Minnesota, Minnesota, USA, from January 1 to March 31, 1986 for research and teaching.

Dr. Amiya Mukherjee (Stat-Math) visited Singapore to attend the Singapore Topology Conference held from 10 to 15 June, 1985. He read a paper at the conference and after the conference gave talks in seminars arranged by the National University of Singapore.

Dr. Rahul Mukherjee (Stat-Math) visited Japan under the exchange programme between Indian National Science Association and Japanese Society for Promotion of Science from 18 September, 1985 to 22 March, 1986. During this period he visited the Dept. of Mathematics, Hiroshima University, Kyoto University, Osaka City University and Chiba University as Visiting Professor. During this period he jointly worked with various Japanese scientists and delivered many lectures.

Dr. Subhashis Nag (Stat-Math) visited University of California, Berkeley, U.S.A. from 4 March to 17 April 1986. During his period of his stay he was engaged in research at Mathematical Sciences Research Institute with Professor C. J. Earle regarding applications of the Donby-Earle method for extending homomorphisms of the circle of homomorphisms of the disc. He also attended workshops on 'Holomorphic functions and Moduli' and 'Strings and Riemann Surfaces.' On his way back he gave a lecture at the University of Hong Kong.

Dr. R. Bhatia (Stat-Math) visited Research Institute for Applied Electricity, Hokkaido University, Japan, for two months, 20 October-19 December, 1985. The visit was partly sponsored by the INSA-JSPS Exchange Program. Work on matrix inequalities was done in collaboration with Professor T. Ando during this visit. In addition lectures were delivered at Keio University, Chiba University and the Institute of Statistical Mathematics in Tokyo. He also attended the Operator Theory Conference, Kyoto, Japan, 4-7 December, 1986 and gave an invited talk on Perturba-

tion Inequalities. On the return journey one lecture was delivered at the University of Hong Kong on their invitation.

Dr. B. Karandikar (Stat-Math) attended the Bernoulli Society Conference of Stochastic Processes and Applications, Nagoya, Japan 2-6 June, 1985. Dr. Karandikar visited the Institute for Mathematics and Applications, Minneapolis, Minnesota, USA to take part in their special program on Stochastic differential equations and their applications, 13 October, to 13 December, 1985 and also attended the Workshop on Stochastic Differential equations during the period at the Institute for Mathematics and Applications.

Dr. T. Parthasarathy (Stat-Math) visited the Department of Mathematics, Catholic University at Louvain-La-Neuve, Belgium, November 7-December 7, 1985 and collaborated with Professor J. F. Mertens. He also visited the Department of Mathematics, Catholic University at Nijmegen, Netherlands and served as a co-referee to Driessen's Ph.D. thesis.

Dr. K. R. Parthasarathy (Stat-Math) attended: (i) Symposium on Stochastic Differential Equations, University of Warwick, England 1 May-15 June, 1985. (ii) Conference on Stochastic Processes and their Applications, Bernoulli Society, Nagoya, Japan, 2-6 July, 1985 and delivered one hour invited address on Quantum Stochastic Calculus.

Dr. Parthasarathy visited the Institute for Advanced Study on Quantum Probability, Katholike Universiteit Leuven, Belgium, 9-28 September, 1985.

Dr. B. L. S. Prakasa Rao (Stat-Math) visited University of Western Ontario, London, Canada, May 11, 1985 to June, 7, 1985 and also attended Symposia on Statistics and Festschrift in honor of Professor V. M. Joshi 70th Birthday held during May 27-31, 1985. Dr. Prakasa Rao visited the University of Gießen and University of Köln and delivered lectures on "Least squares and non-linear regression" and "Characterisation of probability measures by linear forms," March 4-7, 1985.

Dr. G. A. Swarup (Stat-Math) visited I.H.E.S., Bures-sur-Yvette, France from October 25 to December 25, 1985.

Dr. K. B. Sinha (Stat-Math) visited Department of Mathematics, University of Texas at Austin, USA as a Visiting Professor from April to June 10, 1985. Dr. Sinha gave seminars at Department of Mathematics at Universities of Toronto, Rochester N.Y. and at University of New Mexico. He delivered an invited talk at the Western Union Conference on Math. Physics at California Institute of Technology, Pasadena, California, U.S.A.

Dr. A. Satharam (Stat-Math) visited the Department of Mathematics, University of New South Wales, Sydney, Australia during 5.2.86 to 5.4.86 as a Visiting Research Fellow and worked with Professor John F. Price, on Fourier Analysis.

Dr. J. Roy (Applied Statistics, Surveys and Computing) continued on an assignment at the Statistical Institute for Asia and Pacific, Tokyo, Japan.

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Dr. Arijit Chaudhuri (Applied Statistics, Surveys and Computing) visited the Technical University of Delft, Netherlands during 25.6.85 to 18.8.85.

Dr. A. Sengupta (Applied Statistics, Surveys and Computing) visited Iowa State University, USA, during September 1985 and delivered lectures on "Multi-parameter locally optimal tests with applications". He also visited the Ohio State University, Ohio, USA, during September 1985 and delivered lectures "On some problems in statistical inference." He taught a statistics course in University of Wisconsin, Madison, U.S.A., during May-September, 1985.

Shri Tares Maitra (Applied Statistics, Surveys and Computing) visited Rangoon to lecture in a training course on Man Power Planning organised by ILO for Govt. officials, Burma, during 10-17 May, 1985. He also made a number of tours to Kathmandu and Bangkok as a Consultant to the National Planning Commission, Nepal, on behalf of Asian Regional Team for employment—I.L.O.

Shri C. H. Sastry (Applied Statistics, Surveys and Computing) visited the Software Demonstration and Training Centre of the Statistical Institute for Asia and Pacific, Tokyo, Japan, under an UN Fellowship from 29 May to 30 June, 1985.

Dr. P. Bhimasankaram (Applied Statistics, Surveys and Computing) went to U.S.A. as a Visiting Professor in the Division of Biostatistics, Washington University, St. Louis during October-November, 1985. He delivered lectures entitled (i) "Inference in linear models under incorrect design and dispersion matrices" at University of California, Santa Barbara, U.S.A. (ii) "Generalized inverses and applications" at the University of Miami, Miami, U.S.A. (iii) "Characterisation of g -inverse and their ordering properties" at San Diego State University, San Diego. He also visited Canada as a Visiting Scientist in the Department of Mathematics and Statistics, Carleton University, Ottawa during November-December, 1985.

Shri S. Bhattacharyya (Electronics) attended the International Europhysics Conference on High Energy Physics held in Bari, Italy from 18-24 July, 1985 and presented a paper. He was inducted as one of the two Scientific Secretaries of two plenary sessions [SO₃ and SO₄].

Dr. Bargeb Bikram Bhattacharyya (Electronics) took up an assignment as a Visiting Professor with the University of Nebraska, Lincoln, U.S.A. with effect from 4 June, 1985.

Shri Sisir Kumar Roy (Electronics) took up an assignment as a Fellow with the Laboratoire de Physique Theorique, Institut de Henri Poincare, Paris, France with effect from 15 January, 1986.

Dr. H. P. Mazumdar (Electronics) visited the Institute of Hydraulics, University of Rome, Italy during April-August, 1985. He conducted a course in Homogeneous turbulence and performed measurements in the water tunnel with Laser Doppler Anemometer at the University of Rome.

Professor D. Dutta Majumder (Electronics and Communication Sciences) attended the (i) 4th Scandinavian Conference on Image Analysis, The Norwegian

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Institute of Technology, Trondheim, Norway, June 17-30, 1985. (ii) International Fuzzy Systems Association (IFSA) Congress organised under the auspices of International Fuzzy Systems Association and was held in Spain at the University of Palma de Mallorca from 1-6 July 1985. Professor Dutta Majumder delivered an invited lecture on the second day of the conference, viz. July 2, 1985. The title of his lecture was 'Fuzzy mathematical Approach in Pattern Recognition and Image Processing.'

Professor S. L. Jain (Geology) left Calcutta on study tour on 16 August, 1985 and returned on 23 September, 1985. During this period he participated in the Sixth Gondwana Symposium at the Ohio State University, Columbus (USA), from 18-23 August, 1985 at the invitation of Symposium Organisers and presented a paper at the Conference. Professor Jain visited Museum of Northern Arizona, Flagstaff, Arizona (USA), during 25 August to 8 September, 1985 as guest of the Museum. He participated in field work and held discussions on aspects of Triassic vertebrates with Dr. E. H. Colbert and Dr. M. Morales. He delivered a lecture on fossil vertebrates from Godavari valley in the Museum on 28 August, 1985. He also visited American Museum of Natural History, New York, during 8-14 September, 1985 in connection with research work on fossil turtles and delivered a lecture in the Department of Vertebrate Paleontology of the Museum on 12 September. During 16-21 September, 1985 Professor Jain visited British Museum (Natural History), London in connection with continuing research work on fossil fishes from India. The museum made available for study to Professor Jain collection from India, Germany and Britain.

Dr. A. B. Gupta (Physics) attended the Vth International Symposium on Bioengineering and the skin at San Francisco, USA during August 29 to September 2, 1985 and presented two papers. He also attended a course on 'Physical properties of skin' conducted by the International Society of Bioengineering and the Skin at San Francisco, prior to the Symposium. Dr. Gupta participated, on invitation, in the 33rd International Seminar on Hansen's Disease at the United States National Hansen's Disease Centre at Carville, Louisiana, USA, during September 8-15, 1985. He gave an invited talk on 'Thermocense: A device for quantitative evaluation of thermal sensory loss in Hanseniasis' developed by the Physics Unit in collaboration with Lt. Col. M. A. Tutakno of Military Hospital, Pune. During his stay at Carville, Dr. Gupta visited the Biophysics Dept. of the Centre and appraised himself of the semi-quantitative technique of measuring sensory loss (touch sensation) by nylon filament of different diameters. Dr. Gupta left Calcutta on August 20, 1985 and returned on October 5, 1985. On his way home, he visited the Institute of Dermatology in London.

Professor Amitabha Basu (Anthropometry and Human Genetics) participated in the XIII International Congress of Nutrition, Brighton, U.K., 18-23 August, 1985 and presented a paper. Professor Basu visited the Department of Biological Anthropology, Oxford University, U.K. during 27-29 August, 1985 for discussion on several matters of common interest.

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Professor Amitabha Basu participated in the XI School of Biological Anthropology, Zagreb, Yugoslavia, 2-5 September, 1985 and presented a poster paper.

Professor K. C. Malhotra (Anthropometry and Human Genetics) participated in the (i) International Workshop on "Dermatoglyphic nomenclature and methodology, held at Xanthi, Greece from 11-25th August, 1985. He chaired a session and presented 2 papers. (ii) International symposium on "The Health and Disease of population in transition, sponsored by Wennergren Foundation, held at Santa Fe, USA from October 19-27, 1985 and presented a paper. (iii) International symposium on Periparturient communities: an overlooked adaptation, Washington, D. C., December 3-8, 1985.

Professor K. C. Malhotra was invited as a Visiting Professor (i) Division of Biostatistics, Washington Medical School, St. Louis, USA from 28 October to 26th November, 1985, (ii) at Center for Demography and Population Genetics, Texas University, Houston, USA from 27th November, 1985 to 3rd January, 1986. He delivered invited lectures in USA at Pittsburg University, Meharry Medical College, Nashville, Eureka College during 3rd January to 13th January, 1986. He was also invited by three Universities in W. Germany, Hamburg, Bremen and Hannover where he delivered lectures and held discussions in respect of collaborative research in progress.

Mrs. Susmita Mukhopadhyay (SRF, Anthropometry and Human Genetics) participated in the XIII International Congress of Nutrition, Brighton, U.K., 18-23 August, 1985 and presented a paper. She also visited the Department of Biological Anthropology, Oxford University, U.K. during 27-29 August, 1985 for discussion on several matters of common interest.

Dr. Ranjan Gupta (Anthropometry and Human Genetics) participated in International Training Programme on Health, Family Planning and Community Development organised by the Asian Centre for Population and Community Development, Bangkok, Thailand, 17 November-1 December, 1985.

Professor R. L. Brahmachary (Embryology) visited Laboratoire Arago, France in February-April, 1985 and February-April, 1986. He also visited the Scientific Film Institute in Göttingen and delivered two lectures with films on embryonic development in the *Loligo* and on pheromones of tigers in April, 1985.

Dr. P. K. Tapaswi (Embryology) attended the Fifth International Conference on Mathematical Modelling at the University of California, Berkeley, U.S.A. during 29-31 July, 1985 as a speaker. He presented a paper in the conference and took part in several academic discussions and seminars. Dr. Tapaswi also visited the Division of Biostatistics, Washington University School of Medicine, St. Louis, U.S.A. as Visiting Scientist during 1 August-8 August, 1985. He delivered two lectures there on Biomathematics and Stochastic Processes in Biology besides other academic

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activities. Dr. Taparwi then went to the Waterloo University, Department of Civil Engineering, Waterloo, Canada and worked there as a Visiting Assistant Professor for one month (August 8—September 7, 1985). During his stay there he took part in several academic activities including lectures, seminars, group discussions and collaborative research.

Dr. S. Matai (Leaf Protein) delivered a plenary lecture (invited) on 'Use of leaf protein as the human food' in the IInd International Conference on Leaf Protein Research jointly sponsored by the Faculty of Agriculture, Nagoya University, Japan and the SGVR held on 23-24 August, 1985 in Nagoya, Japan. Dr. Matai chaired the session for 'Free communications' which was only session besides plenary sessions. Dr. Matai also attended XVth International Grassland Congress co-sponsored by the Science Council of Japan and the Japanese Society of Grassland Science held on 25-31 August, 1985 in Kyoto, Japan. Dr. Matai presented a scientific paper on 'Crops and conditions for maximum production of leaf proteins in West Bengal.' He chaired a technical session as Chairman under section 9 of the seminar. Dr. Matai left India for Japan on 21.8.85 to attend these conferences till 31.8.85 and to visit Okayama University (1.9.85 to 3.9.85) and National Institute of Animal Industry (4.9.85 to 7.9.85) and came back on 11.9.85.

Shri S. Guha Roy (Demography Research) participated in the International Population Conference, Florence, 5-12 June, 1985. He also attended 7th General Assembly of the Committee for International Cooperation in National Research in Demography (CIRED) at the same venue.

Dr. Bhaskar Dutta (Economic Research) attended 5th World Congress of the Econometric Society at M.I.T., Cambridge, Massachusetts, U.S.A., during 17-24 August, 1985 and presented a paper.

Dr. K. Surekha Rao (Economic Research) attended 5th World Congress of the Econometric Society at M.I.T., Cambridge, Massachusetts, U.S.A., during 17-24 August, 1985 and presented a paper.

Dr. S. R. Chakrabarty (Economic Research) visited the University of British Columbia, Canada, as an Assistant Professor during September 1984 to July 1985.

Dr. Atul Sarma (Planning, Delhi) worked as a consultant to the FAO of the UN during May 15-August 15, 1985 on the project on Resource Flows to Agriculture.

Dr. K. Saradamoni (Planning, Delhi) attended the Non-governmental organizations (NGO) Forum and the UN End of the Women's Decade Conference at Nairobi, Kenya July 16-18, 1985. (a) Participatory research: Methodology and dissemination at women's studies International Workshop, July 12, 1985, (b) Trends in research and studies on women in development at the workshop organised by UN International Research and Training Institute for Advancement of Woman

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(INSTRAW) July 15, 1985, (c) Organized a workshop on Women and Household in the name of Indian Statistical Institute where a summary report of the conference held in January 1985 on the same theme was discussed and distributed, July 18, 1985, (d) Spoke about the study Women and rice cultivation methodology to UNICEFF staff at Addis Abbaba, July 30, 1985.

Dr. Debraj Ray (Planning, Delhi) attended a Seminar at Warwick University during May-June, 1985.

Professor Parkash Chandor (Planning, Delhi) was Visiting Professor (i) Université Catholique de Louvain, Fall 1985. (ii) International Institute for Applied Systems Analysis, Vienna, September 2-7, 1985. Presented a paper entitled "On Material balances in Soviet type economies." (iii) Universitat Autònoma de Barcelona, Barcelona, September 7-14 and November 26-27, 1985. Presented a paper entitled "Cost-sharing rules and local games in planning procedures for public goods." (iv) Université des sciences, Toulouse (France), September 14-19, 1985.

Professor Chandor attended the 5th World Econometric Congress, M.I.T., Cambridge, Massachusetts, U.S.A., during 17-24 August, 1985 and presented a paper.

Professor L. S. Bhat (Planning, Delhi) participated in the Workshop on Rural Energy organised by the Tata Energy Research Institute, New Delhi and the International Centre for Integrated Mountains Development at Kathmandu (Nepal) during January 20-21, 1986.

Dr. S. Gangopadhyay (Planning, Delhi) visited Cornell University, USA, Duke University, USA, State University of New York at Stony Brook, USA and CORE Université Catholique de Louvain in Belgium and gave seminars. Dr. Gangopadhyay attended the 5th World Econometric Congress, M.I.T., Cambridge, Massachusetts, U.S.A., during 17-24 August, 1985 and presented a paper.

Professor N. S. Iyengar (Economic Analysis, Bangalore) visited the Department of Economics, University of Warwick, from May 30 to June 27, 1985 and participated in the faculty seminars. He also gave a guest lecture on 4 June, 1985 entitled, "A large sample test for the Lorenz ratio." During his stay in England, he visited the Department of Economics, University of Cambridge and the London School of Economics on June 18 and June 22-26, 1985 respectively.

Smt. Mallika Gopalakrishna (SRF, Economic Analysis, Bangalore) visited the Development Economics Research Centre, University of Warwick, from August 12 to September 11, 1985.

Shri Durgaprasad Bhattacharya (Pro-Census Population Studies) attended the 20th General Conference of the International Union for the Scientific Study of Population (IUSSP) at Florence, Italy, from 6-12 June, 1985 as a member of the Indian delegation sponsored by the Indian Association for the Study of Population (IASP) supported by the Union Ministry of Health and Family Planning, Government of India. He contributed a paper on historical demography solicited by the Committee

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on Historical Demography and was an invited speaker in the Session on Religion and Population where he also presented a paper on Religion and Population in India contributed by Rama Deb Roy.

Shri C. A. Setty (SQC Unit, Bangalore) during his tour abroad visited U.S.A. and West Germany during May-June, 1986. During his stay in the U.S.A. Shri Setty participated in the 39th Congress of American Society for Quality Control held at Baltimore on 6-8 May, 1986 and in four-day course on Quality Management organised by Juran Institute Inc. during 13-16 May, 1986 at Chicago. He also attended one-day Seminar on Upper Management and Quality at Chicago organised by Juran Institute Inc. and two-day Mohunk Conference on Quality and Productivity Research organised by Bell Labs at New Paltz, N. Y., during 17 May, 1986 and 23-24 May, 1986 respectively. Shri Setty also visited the professional bodies viz. ASQC and IAQC in the USA and German Society for Quality Control, Frankfurt and various other organisations in the USA and W. Germany during his stay abroad in the above period.

Dr. S. R. Mohan (SQC Unit, Delhi) joined the Institute back on 9 September, 1986 after completion of his visiting fellowship at Chicago University, U.S.A.

Shri R. J. Pandey, Shri D. T. Ghosh and Shri S. Sengupta (SQC & OR, Calcutta) participated in 1st International Conference on Quality Control of Asia-Pacific Quality Control Organisation (APQC) at Beijing, China, 20-25 October, 1986 and presented the following scientific papers :

- (a) Quality assurance through three-decision plan—A review by R. J. Pandey
- (b) Median gauge chart—A procedure for control by gauging by D. T. Ghosh
- (c) Goal programming—An aid to quality control by S. Sengupta.

Shri R. J. Pandey was invited to attend Core Council Meeting of APQC on 24 October, 1986 presided over by Mr. J. M. Harrington, Honorary Chairman APQC and Shri D. T. Ghosh was Chairman for one of the technical sessions. They also visited a Textile Mill in Beijing and held a detailed discussion with the Director and other executives regarding Quality Control System and inspected the various departments of the Mill on 23 October, 1986. Subsequently, the Indian Statistical Institute has become Founder Member of Asia Pacific Quality Control Organisation (APQCO).

Dr. G. Bhattacharyya (DRTC) was invited by UNESCO to participate in the Regional Conference on Curriculum Development in Information Studies, held at the Asian Institute of Technology, Bangkok, Thailand. He left India on 16 September, 1986 and returned on 24 September, 1986.

Dr. F. J. Devadason (DRTC) attended the (i) 9th Annual Meeting of the German Classification Society held at the University of Karlsruhe, Karlsruhe, West Germany and presented a paper on "Computer generation of different types of subject index entries based on deep structure of subject indexing languages." He left India on 22 June, 1986 and returned on 10 July, 1986, (ii) Second International Conference

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on the Application of Microcomputers in Information, Documentation and Libraries, held at Baden-Baden, West Germany and presented his paper on Microcomputer based man-power planning model for libraries. He left India on 14 March, 1986 and returned on 24 March, 1986.

11. SCIENTIFIC ASSIGNMENTS IN INDIA

Shri Arup Bose (Stat-Math) attended the UGC sponsored National Seminar on Probability, Inference and Sample Surveys at School of Mathematical Sciences, Sambalpur University from 21 to 28 December, 1985. He attended the seminar as an invited speaker and gave a talk. He also attended the 73rd Indian Science Congress at University of Delhi from 3 to 8 January, 1986 as an invited speaker and gave a talk.

Dr. Pulakesh Maity (Stat-Math) visited Dehradun, Head quarter of ONGC Units, as a member of the team of ONGC-IRI collaborative research project during the period 18 August to 29 August, 1985. The purpose of the visit was to meet different people of ONGC at different levels to have an understanding of the oil-gas technology so that suitable models can be developed for (a) estimating exploration/discovery cost, (b) exploitation/production/development cost, and (c) optimizing model for exploration and exploitation.

Professor J. K. Ghosh (Stat-Math) visited Panjab University, Chandigarh from 19 to 21 March, 1986 and delivered seven lectures including a popular INSA lecture.

Dr. B. S. Majumder (Stat-Math) attended the 2nd International Workshop on Alluvial River Problems held in the Deptt. of Civil Engineering, University of Roorkee, from October 24 to 26, 1985 and visited the Hydraulic Flume Laboratory there. During January 17-23, 1986, Dr. Majumder along with Professors J. K. Ghosh and Supriya Sengupta of IIT, Kharagpur went to conduct some field work in Umi river at Giridih, Bihar.

Dr. Amiya Mukherjee (Stat-Math) attended 'Advanced level instructional colloquium on applicable dynamical systems' held at Jadavpur University, Calcutta from January 12-26, 1986 under the sponsorship of DSA Programme (under UGC) in collaboration with ICTP, Trieste, Italy and with support from NBHM. He gave an invited talk on "Structural stability of Anosov diffeomorphisms."

Dr. Subhasis Nag (Stat-Math) attended "Advanced level instructional colloquium on applicable dynamical systems" held at Jadavpur University, Calcutta from January 12-26, 1986. He gave three invited 1 hour lectures and served on organising meeting.

Dr. T. J. Rao (Stat-Math) attended the UGC sponsored National Seminar on Probability, Inference and Sample Surveys at School of Mathematical Sciences, Sambalpur University from 21-26 December, 1985 as an invited participant and presented a paper. He also attended the 73rd Indian Science Congress at University of Delhi from 2-8 January, 1986 as an invited speaker and presented a paper.

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Dr. S. K. Mitra (Stat-Math) attended a Seminar on Statistical methodology and its applications, Banaras Hindu University, 19-21 September, 1985.

Professor B. L. S. Prakasa Rao (Stat-Math) visited Karnatak University, Dharwar, Punjab University, Chandigarh and Shivaji University, Kolhapur under the program of National Lectures of UGC during January-February, 1986.

Dr. S. Ramasubramanian (Stat-Math) gave an invited talk in the Statistics Section of the 73rd Session of the Indian Science Congress Association, 3-8 January, 1986. The title of the talk was "Central limit theorem for diffusions with almost periodic coefficients." He also participated in the Workshop on Random Walks organised by the School of Physics, TIFR, Bombay during 14-15 March, 1986 and gave an invited talk on "Asymptotics of diffusions."

Dr. K. B. Sinha (Stat-Math) attended National U.G.C. Seminar on Stochastic processes, Sambalpur University, Orissa, 21-26 December, 1985.

Dr. A. C. Mukhopadhyay (Applied Statistics, Surveys and Computing) visited University of Indore during 16 February to 3 March, 1986 as a Visiting Professor under UGC scheme.

Dr. B. N. Mukherjee (Applied Statistics, Surveys and Computing) delivered a special lecture at the NCERT, New Delhi on Computerized methods of multivariate statistical analysis on 5th April, 1985. He also delivered a special lecture at the National Workshop on the Management of Thermal Power Stations held at New Delhi, during 20-22 November, 1985.

Shri P. Pal Chowdhury (Applied Statistics, Surveys and Computing) delivered a series of lectures on 'Computer Architecture' in New Delhi, ISI Centre for a course during 22nd March to 4th April, 1986.

Dr. P. S. S. N. V. P. Rao (Applied Statistics, Surveys and Computing) participated in Summer Workshop on Recent Developments in Design of Experiments held at Bangalore, during May-June, 1985 conducted by Division of Theoretical Statistics and Mathematics, ISI.

Dr. K. S. Vijayan (Applied Statistics, Surveys and Computing) delivered lecture on transitivity in graphs at Mehta Research Institute, Allahabad, April 1985.

Shri R. K. Naha (Applied Statistics, Surveys and Computing) participated in UJAI meeting held at Bangalore on 26 and 27 September, 1985. He delivered special lectures on Computer at CSO, Calcutta.

Professor P. Bandyopadhyay (Electronics) gave an invited talk on "the Stochastic interpretation of quantum mechanics" at the National Symposium on the occasion of the Centenary of Niels Bohr at the Physical Research Laboratory, Ahmedabad during the period 7th October-8th October, 1985. He also gave a colloquium lecture on "the interplay between discrete and continuous symmetry in physics" in Mathematical Physics Surge. Professor Bandyopadhyay gave an invited talk on "Super-symmetry in quantum mechanics" at the National Conference

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on the occasion of the 60th Anniversary of Quantum Mechanics at Vigna Biharati, Santiniketan on 29 November-1st December, 1985. Professor Bandyopadhyay also gave a talk on "Twistor geometry, complex manifold and supergravity" at Gauhati at the invitation of the Assam Science Society on 11th February, 1986.

Shri S. Bhattacharyya (Electronics) attended a National Workshop, on invitation, on "Fixed target physics" in February, 1986 held in the Jadavpur University Campus and joined the "National seminar on particle physics and cosmology" held in the Indian Association for the Cultivation of Science, Jadavpur, Calcutta-32, in March 10-13, 1986.

Professor A. Ghosh (Electronics) gave an invited talk "On plane two-dimensional flame front treated as a surface of discontinuity" at the Conference on Thermal Systems, Banaras Hindu University, March, 1986.

Professor D. Dutta Majumder (Electronics and Communication Sciences) (i) participated in the IETE Symposium on Navigational Electronics, 6-7 June, 1985, Calcutta, and presented an invited paper. (ii) participated in an International Conference on Informatics 1985 and presented an invited paper. (iii) attended a conference on Distributed Computer Control and Monitoring Systems (DCMS) organised by IEEE, 7-8 November 1985, Delhi at Hotel Hyatt Regency, New Delhi and delivered an invited lecture.

Dr. B. Chanda (Electronics and Communication Sciences) participated in the IETE Symposium on Navigational Electronics, 6-7 June, 1985, Calcutta and submitted a paper.

Shri B. B. Chandhuri (Electronics and Communication Sciences) participated in the IETE Symposium on Navigational Electronics, 6-7 June, 1985, Calcutta and submitted a paper.

Dr. S. K. Parul (Electronics and Communication Sciences) participated in an International Conference on Informatics, 1985.

Shri S. E. Sarma (Electronics and Communication Sciences) participated in an International Conference on Informatics, 1985.

Dr. S. K. Pal (Electronics and Communication Sciences) attended a conference on Distributed Computer Control and Monitoring Systems (DCMS) organised by IEEE, 7-8 November, 1985, Delhi at Hotel Hyatt Regency, New Delhi and submitted a paper.

Shri A. K. De (Electronics and Communication Sciences) attended a conference on Distributed Computer Control and Monitoring Systems (DCMS) organised by IEEE, 7-8 November, 1985, Delhi at Hotel Hyatt Regency, New Delhi and submitted a paper.

Professor S. L. Jain (Geology) participated in the Colloquium on Gondwana Stratigraphy held at the Geological Survey of India under the auspices of IUGS, during 1-2 May, 1985, as a delegate from I.S.I. He participated in the discussions

on 'Stratigraphic classification of the Mesozoic Gondwana rocks.' Professor Jain delivered an invited lecture on dinosaurs at Banaras Hindu University, Varanasi, on 11 April, 1986 and visited Panjab University, Chandigarh, for research discussions on 15 April, 1986. He visited areas in Kheda District, Gujarat, in connection with his study of Late Cretaceous dinosaur skeletal and egg shell material. During his stay he delivered two invited lectures at the Physical Research Laboratory, Ahmedabad, on 'Early history of dinosaurs' and 'The last phase of dinosaur history' on 28 and 29 November, 1985. Professor Jain also visited Pune during 22-25 December, 1985 and upon invitation delivered a lecture on dinosaurs at Poona University (Doonan College, Postgraduate and Research Institute) and on Fossil Vertebrates from Godavari Valley at Maharashtra Association for the Cultivation of Science, Pune, on 24 December, 1985.

Shri T. S. Kuttý (Geology) participated in the "Data analysis workshop on medical sciences" organized by the Indian Statistical Institute, Calcutta, 11-23 November, 1985. He also participated in the "Workshop on the logistic difficulties in organising field-training programmes" organised by the Geological, Mining and Metallurgical Society of India at Calcutta held on 24 March, 1986.

Dr. T. Roy Chowdhury (Geology) participated as one of the Coordinators in the Colloquium on Gondwana Stratigraphy held at the Geological Survey of India, 1-2 May, 1986. He also participated in the "Workshop on the logistic difficulties in organising field-training programmes" organised by the Geological, Mining and Metallurgical Society of India at Calcutta held on 24 March, 1986.

Dr. A. B. Gupta (Physics) attended on invitation the District Medical Conference at Bhagalpur on April 7, 1986 sponsored by the Indian Medical Association, Bhagalpur Branch and delivered the invited talk "Bioengineering and General Medicine." He also attended the XIVth National Conference of IADV & L at the Jabalpur Medical College, Jabalpur, during January 25-28, 1986 sponsored by the Indian Association of Dermatologists, Venereologists and Leprologists and presented two papers on investigative dermatology and also actively participated in the Special Seminar and the Workshop conducted as a part of the Conference. On invitation from the Director, Central Leather Research Institute, Madras, Dr. Gupta visited CLRI during December 8-12, 1985 and gave two invited lectures on (i) Fibrous structure of skin and its relation to mechanical properties and (ii) Bio-engineering Research at ISI, Calcutta. He also had a number of group discussions with the Biophysics and Biochemistry groups of the above Institute.

Professor K. C. Malhotra (Anthropometry and Human Genetics) participated in the meeting of Fodder development, National Wasteland Development Board, 20th September, 1985 at Delhi. Professor Malhotra was invited in a UGC visiting Professor to Shivaji University, Kolhapur from 15 February to 2nd March, 1986, where he delivered a series of 17 (seventeen) lectures in the Dept. of Zoology and

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Sociology. He attended the advisory board meeting of Development alternatives, held at Delhi 10-13 February, 1986.

Professor Amitabha Basu (Anthropometry and Human Genetics) participated in the IASP Symposium on Tribal Demography and Development, North Eastern Hill University, Shillong, 27-29 May, 1985 and presented a paper. He participated in the Seminar on Population Structure Among Tribes, Tribal Research Centre, Tamil University, Udhagamandalam, 11-13 December, 1985 and delivered a special lecture.

Dr. Ranjan Gupta (Anthropometry and Human Genetics) participated in the Seminar on Population Structure Among Tribes, Tribal Research Centre, Tamil University, Udhagamandalam, 11-13 December, 1985 and presented a paper.

Professor S. K. Roy (Botany) participated as invited speaker in (i) the First National Symposium on rice genetics at Hyderabad during April 16-18, 1985, (ii) the Symposium on Crop Damages and Control organised by the Indian Society of Agricultural Statistics at Punjabrao University, Akola, in its 39th Annual Conference held from December 27 to 29, 1985, (iii) the National Seminar on Plant Science Research held at Visva-Bharati University, Santiniketan from February 17 to 19, 1986.

Sm. Anjana Banerjee (Leaf Protein) attended the Sixth Indian Convention of Food Scientists and Technologists, Bombay, 13-15 March, 1986 and presented a paper.

Dr. Sunanda Chanda (Leaf Protein) attended the Sixth Indian Convention of Food Scientists and Technologists, Bombay, 13-15 March, 1986 and presented a paper.

Shri B. N. Sarkar (Demography) attended the National Seminar on Population, Family and Culture organised by the National Organisation for Family and Population Welfare, Bhubaneswar, 21-23 May, 1985.

Shri B. K. Mukhopadhyay (Demography) attended the Seminar on the occasion of Silver Jubilee Celebration of the Socio-Economic Research Institute, Calcutta, 12-13 April, 1985 and also participated in the Tenth Annual Conference of IASP, Bangalore, 20-23 May, 1985 and presented a paper.

Smt. Pranati Dutta (Demography) participated in the Tenth Annual Conference of IASP, Bangalore, 20-23 May, 1985 and presented a paper.

Shri C. R. Das (Demography) participated in the Tenth Annual Conference of IASP, Bangalore, 20-23 May, 1985 and presented a paper.

Shri S. Guha Roy (Demography) participated in the Tenth Annual Conference of IASP, Bangalore, 20-23 May, 1985 and presented a paper.

Dr. C. R. Malakar (Demography) participated in the : (i) Tenth Annual Conference of IASP, Bangalore, 20-23 May, 1985. He served as a rapporteur of one of the sessions and presented a paper; (ii) Experts' meeting of the University Grants

Commission for assessing candidates for Junior Research Fellowship in Demography and Population Studies, New Delhi; 8-10 July, 1986; (iii) International Conference on Families in the face of urbanisation, New Delhi, 2-5 December, 1985 and presented a paper; (iv) Meeting of the Experts' Group set up by the Registrar General, India in connection with the examination of reducing the time lag in estimation of birth, death and infant mortality rates from the SRS, New Delhi, 6 February, 1986 and (v) Workshop of the Task Force set up by CMDA for preparing a perspective plan for Calcutta, 15 February, 1986.

Dr. M. N. Pal (Economic Research) acted as Chairman in the Session of the 18th Regional Science Seminar held at I.I.T., Kharagpur, during May 9-11, 1986 and presented a paper. He also acted as organiser of the International Conference : Advanced Studies Institute on Regional sciences and planning for developing countries sponsored jointly by Indian Statistical Institute, Calcutta and Indian Institute of Technology, Kharagpur during December 30, 1986 to January 1986 and presented a paper as "Workshop leader" at the Conference.

Dr. N. Bhattacharya (Economic Research) participated in an International Workshop on 'The measurement of rural economic change : Differences in approach and results of village studies and large-scale surveys' organised by the Social Science Research Council, New York, at Bangalore, August 5-8 and contributed a paper. Dr. Bhattacharya taught in the Summer Course on 'Application of statistics in biology' during 1-15 June, 1985 organised by the Applied Statistics, Surveys and Computing Division, ISI, Calcutta. Dr. Bhattacharya also addressed a seminar on "Time trends in level of living in rural India in the light of NSS data" at Kalyani University, Dept. of Statistics on 20 September, 1985.

Dr. P. Maiti (Economic Research) addressed a seminar entitled "The Price of food and the rural poverty in India—a Theoretical model and some empirical exercises" at the Department of Economics, University of Calcutta, on 29 August, 1985.

Dr. D. K. Bose (Economic Research) participated in a seminar on 'Rural electrification in Eastern Region' at Calcutta on April 8-9, 1985 and presented a paper. He also participated in a Workshop on 'Energy technology education' organised by Jadavpur University, Calcutta, and addressed a Seminar on 'Importance of study of socio-economy in energy and education' on 21 August, 1985. He also participated in a seminar on India-China joint Workshop for rural energy held during 21-23 December, 1985 at Dakshin Jagaddal.

Dr. Bhaskar Dutta (Economic Research) addressed seminars on (i) 'Migration and welfare' at the Centre for Economic Studies and Planning, Jawaharlal Nehru University, Delhi, on 5 November, 1985 and (ii) 'Migration and welfare' on 8 November, 1985 at the Delhi School of Economics, Delhi.

Dr. K. C. Majumdar (Economic Research) delivered four lectures on 'Micro economic analysis and models' at the Summer Institute of Marathwada University, Aurangabad, during 5-9 July, 1986. He also addressed two seminars on 'A multi-

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sectoral Model for Poverty focussed planning' and on 'Estimation of distribution of sectoral wage earnings from rudimentary information' at the Bangalore Centre of the Institute during April, 1985.

Professor N. S. Iyengar (Economic Analysis) participated in (i) Workshop on 'Strategies for the Seventh Plan', organised by the Indian Statistical Institute, Delhi Centre, New Delhi. Delivered lecture on 'Income inequalities' during 15-16 April, 1985, (ii) Training Course in Research methodology in economics, Bangalore, organised by the Institute for Social and Economic Change, Bangalore and the Indian Council for Social Science Research, New Delhi. Dr. Iyengar was a Resource Person for the Session on : Measures of poverty and inequality on 16 April, 1985, (iii) Refresher Course in Economics, Mysore, organised by University Grants Commission, New Delhi, and Department of Postgraduate Studies and Research in Economics, University of Mysore. Delivered lecture on 'Levels of living in rural India' during 17-20 October, 1985, (iv) The Indian Econometric Society's Regional Conference, Tirupati, organised by the Department of Economics, Sri Venkateswara University during 25-28 October, 1985 and presented a paper, (v) Seminar on 'Teaching of economics in south Indian universities—Need for new orientation,' organised by the Department of Economics, University of Calicut on the occasion of Dr. John Matthai's Centenary Celebrations, Trichur. Delivered lecture on "Methodology in social science research" during 2-3 November, 1985, (vi) The Indian Econometric Society, Kerala Chapter Inauguration, Trichur. Presided over the function on 3 November, 1985, (vii) Workshop for Young social scientists in research methodology, Mysore, organised by the University Grants Commission, New Delhi, and Department of Postgraduate Studies and Research in Economics, University of Mysore. Delivered lecture on "Wage disparities" during 21-30 March, 1986.

Professor N. S. Iyengar also visited various institutions and addressed students and delivered lectures, as shown below :

(i) Indian Institute of Technology, Madras, Department of Humanities and Social Sciences, Madras, 28 May, 1985. Lecture on : Measurement of poverty in India. (ii) University of Hyderabad, School of Social Sciences, Hyderabad, September 11, 1985 and September 12, 1985. Lectures on : (a) On tests of significance based on Gini ratio. (b) Does it make sense to collect panel data for developing countries ? (iii) Mangalore University, Department of Statistics and Department of Economics, Mangalore, 10-12 January, 1986. Lectures on : (a) Decomposition of inequalities, (b) Extreme mean disparity index. (iv) Central Statistical Organisation, New Delhi, January 24, 1986. Lecture on : 'On the use of extreme mean disparity ratio in economic analysis.' (v) Indian Institute of Science, Department of Industrial Management, Bangalore, February 7, 1986. Lecture on : "A generalized multicollinearity index for regression analysis." (vi) University of Bombay, Department of Economics, Bombay, February 17, 1986. Lecture on : 'Problem of multicollinearity.' (vii) University of Hyderabad, Hyderabad, August 22, 1986. Lecture on 'Micro-macro surveys.'

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Shri M. H. Suryanarayana (Economic Analysis) participated in the Regional Conference of the Indian Econometric Conference at Tirupati, 25-26 October, 1985.

Dr. L. S. Bhat (Planning, Delhi) on invitation, gave lectures in regional planning and related themes in geography at the following places : (i) North-east Hill University, Shillong, National Lectures during April 15-17, 1985, (ii) Indian Council of Medical Research, Statistics, New Delhi—6 lectures on regional aspects of Nutrition Health and Diseases—towards preparation of spatial models, April 24-26, 1985, (iii) Indian Institute of Public Administration, New Delhi—Two lectures on Regional development policy and growth poles and growth centres, October 24 and December 10, 1985, (iv) University of Poona, Pune—Invited lecture on Environment and development to the participants of the International Workshop on Statistical Ecology during February 17-18, 1986, (v) Osmania University, Hyderabad, Centre for Area Studies—Three lectures on Regional Planning to the participants of U.G.C. sponsored Workshop on urban and regional planning, January 30-February 1, 1986.

He also participated at the following Conferences : (i) 7th Indian Geography Congress of the National Association of Geography, India at the Banaras Hindu University, Varanasi during December 26-28, 1985, (ii) International Conference on Regional Planning jointly organised by the I.I.T., Kharagpur and the I.S.I. during December 30, 1985—January 2, 1986, (iii) Regional symposium on South Asian urban experience organised by the School of International Studies, J.N.U., during February 20-22, 1986, (iv) National Seminar on Indian Agriculture, To-day and Tomorrow organised by the Aligarh Muslim University, during 2-4 March, 1986 and a paper was presented for discussion.

Dr. V. K. Chetty (Planning, Delhi) participated as rapporteur and discussant in the Indo-French seminar on the Role and management of public sector held in Delhi during January 27-30, 1986.

Dr. Partha Mukherjee (Planning, Delhi) gave a series of 3 lectures at the Lal Bahadur Shastri National Academy of Administration, Mussoorie, during November 18-21, 1985 and presented a paper.

Dr. Debraj Roy (Planning, Delhi) attended the Regional symposium on South Asian Urban experience organised by the School of International Studies, J. N. U., during February 20-22, 1986.

Dr. K. Saradmoni, (Planning, Delhi) attended the seminars and conferences on : (i) womens' NGO consultation to review womens' decade, April 3-4, 1985, AIWC, New Delhi, (ii) Socialisation, education and women, April 8-11, 1985, Nehru Memorial Museum and Library, New Delhi, (iii) Perspective and organisation of womens' study units in Indian universities, April 20, 23, 1985, Viswa Yuvak Kendra, (iv) International Conference on Families in the face of urbanisation, December 2-6, 1985, New Delhi (Represented INSTRAW), (v) X-th Binnial Conference of Indian Federation of Women Lawyers, New Delhi, January 2-4, 1986,

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(vi) National seminar on education for women's equality, November 2-5, 1985, New Delhi, (vii) Higher education and scheduled caste yatra in India, March 28-29, 1986, ICSSR, New Delhi, (viii) As a member of the Executive Committee Dr. K. Saradamoni organised the Annual Conference of the Society for the Study of Regional Disparities, March 8-9, 1986 at CFTRI, Mysore, (ix) Gave a seminar "Nairobi conference"—A report at ISI, Delhi.

Dr. Atul Sarma (Planning, Delhi) participated as rapporteur and discussant in the Indo-French Seminar on the Role and management of public sector held in Delhi during January 27-30, 1986.

Shri K. Sengupta (Planning, Delhi) gave a series of lectures on "Uncertainty in economics" to the students of J.N.U.

Dr. (Mrs.) Bina Roy (National Income) attended the 16th General Conference of the Indian Association for Research in National Income and Wealth held in New Delhi from 4-6 November, 1985 and presented two papers.

Shri Biswanath Ray (National Income) attended a Workshop on "Environmental awareness and protection from industrial pollution hazards" sponsored by Habitat Centre: Centre for Human Settlements, India, which was held at the Birla Industrial and Technological Museum, Calcutta, on June 4, 1985. He also attended a seminar on "The state of Indian economy" sponsored by the Indian School of Social Sciences which was held at Youth Centre, Calcutta, October 4-6, 1985 and participated in the Sixth Annual Conference by the Bangiya Arthaniti Parishad at Ramkrishna Mission Vidyamandir, Belur, February 16-17, 1986.

Smt. Madhabi Indu (Linguistics) attended a Symposium on Integrated approach at the Inauguration of the Eastern Regional Centre of the Ali Yavar Jung Institute for the Hearing Handicapped, Calcutta, 15.6.85.

Dr. Alokananda Mitter and Smt. Madhabi Indu (Linguistics) attended a special meeting to finalise arrangements for a Junior Educators' Course at the Ali Yavar Jung Institute for the hearing handicapped, Calcutta, 25.6.85.

Shri Durgaprasad Bhattacharya (Pre-Census Population Studies) attended the Silver Jubilee Seminar of the Socio-Economic Research Institute organised in collaboration with the Indian Statistical Institute, Calcutta University and Bidhan Chandra Krishi Viswa Vidyalaya on April 12, 1985 at Calcutta University. He worked as a co-ordinator of the symposium on Historical demography organised by the Indian Association for the Study of Population (IASP) at Bangalore on May 24, 1985 and presented the key paper. He also attended the 49th Session of the Indian Historical Records Commission at Suraj Kund, Haryana on 29-30 June, 1985 and contributed a paper on data base of a quantitative socio-economic history of India at the academic session and another paper on revenue history of Bengal at the symposium jointly with Rama Deb Roy.

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Sm. Rama Deb Roy (Pre-Census Population Studies) attended the Silver Jubilee Seminar of the Socio-Economic Research Institute organised in collaboration with the Indian Statistical Institute, Calcutta University and Bidhan Chandra Kriahi Vidyalyaya on April 12, 1985 at Calcutta University and contributed a paper on the Population History of Calcutta. She also attended the 49th Session of the Indian Historical Records Commission at Suraj Kund, Haryana on 29-30 June, 1985 and contributed two papers jointly with Durgaprasad Bhattacharya.

Shri Kunal Chattopadhyay (Pro-Census Population Studies) attended the Silver Jubilee Seminar of the Socio-Economic Research Institute on Population, Urbanisation and Environment on 12-14 April, 1985. Shri Chattopadhyay attended the seminar on Calcutta, Yesterday, Today and Tomorrow at Calcutta University organised by the Centre for Urban Economic Studies on 12 May, 1985. He also attended the workshop on Environmental Awareness and Protection from Industrial Population Hazards on 4th June, 1985 at Birla Industrial and Technological Museum organised by Centre for Human Settlement and contributed a paper.

Shri S. K. Biswas (Sociology) attended the seminars on (i) Electricity for rural development, sponsored by Rural Electrification Corporation, New Delhi, in Calcutta, during 8-9 April, 1985, (ii) Population, Urbanisation and Environment, Socio-Economic Research Institute, Calcutta, Darbhanga Hall, during 12-14 April, 1985, (iii) National seminar on Population, Family and Culture, National Organisation for Family and Population Welfare, Bhubaneswar, during 21-23 May, 1985, (iv) Special lecture, Baseline survey—Need and method, Sahu Bikash Kendra, Srma Bhawan, Dist.—Nadia, on 31 June, 1985, (v) Workshop on Tribal Development Programme (Bihar and Pacheria), Research Centre International, Hazaribagh, Bihar, on 18 December, 1985, (vi) Talk on : Gerontology : Subject matter to practice, Giridih College, Bihar on 10 March, 1986, (vii) Preservation of archaeological sites in West Bengal, Government of West Bengal, Nandan, Calcutta, on 20 March, 1986.

Dr. P. Chakrabarti (Sociology) attended the seminar on History seminar, Raghunathpur College, Raghunathpur, Purulia during 1-3 December, 1985.

Dr. S. Bandyopadhyay (Sociology) attended : (i) Workshop on Co-operative enterprises and rural development in India, organised by Department of Sociology, University of Delhi, Department of Anthropology, McGill University and sponsored by International Development Research Centre, Ottawa, Canada, held in Delhi during 26-31 December, 1985, (ii) Delivered lectures in the U.G.C. sponsored two-week workshop on Economic development as a subject for teaching and research at Department of Economics, Rabindra Bharati University, Calcutta, during 25 March to 9 April, 1985, (iii) Seminar on Electricity for rural development, An action plan for West Bengal, organised by Rural Electrification Corporation Ltd., held in Calcutta during 8-9 April, 1985.

Shri K. Chattopadhyay (Sociology) attended the : (i) History Seminar at Raghunathpur College, Raghunathpur, Purulia during 1-3 December, 1985, (ii) Semi-

nar on "Tribal welfare" organised by Tribal Welfare Institute, Calcutta, at Jadavpur University.

Dr. S. Chatterji and Dr. M. Mukherjee (Psychometry) delivered lecture on "Evaluation techniques" at the Seminar of Teachers at Kondriya Vidyalaya, Salt Lake on 17 May, 1985.

Shri S. N. Banerjee (Psychometry) attended the National Psychoanalytical Congress, organised by Indian Psychoanalytical Society at the Saha Institute of Nuclear Physics, Calcutta, during 6-7 April, 1985.

Smt. A. Ghosh (Psychometry) attended at the 73rd Session of the Indian Science Congress at Delhi in January, 1986 and presented a paper entitled "Relationship between managerial skill and motivation to manage."

Shri Sudhindra Kumar Roy (Central Library) attended the Seminar on Library automation and information retrieval held at the Indian Institute of Sciences, Bangalore during 7-9 October, 1985.

Shri J. Verghese (Central Library) attended ILA-NAL Workshop on Reprography at Bangalore during April 17-20, 1985 and presented two papers.

Dr. G. Bhattacharya (DRTC) attended the (i) Seminar on Librarianship held on 31 July, 1985 at the Department of Library and Information Science, Jadavpur University, Calcutta and presented a paper. (ii) Seminar on Library automation and information retrieval : Challenges and opportunities, held during 7-9 October, 1985 at IISc, Bangalore organised by the Institute of Information Studies, Madras and presented a paper. (iii) Seminar on Subject indexing held on 28 October, 1985 at the Department of Library and Information Science, Madurai Kamaraj University and presented a paper. (iv) Seminar on Subject indexing languages held on 21 November, 1985 at Indian National Scientific Documentation Centre, New Delhi and presented a paper. (v) UNESCO International seminar on Thesaurus construction held on 10 January, 1986 at the Indian National Scientific Documentation Centre, New Delhi and presented a paper. (vi) Seminar on Subject indexing languages held on 12 February, 1986 at the Department of Library and Information Science, Jadavpur University, Calcutta. Dr. G. Bhattacharya presented a paper on New trends in the development of subject indexing languages. (vii) Seminar on User study and user education held on 24 March, 1986 at the Central Leather Research Institute, Madras and delivered the keynote address.

Dr. F. J. Devadason (DRTC) attended the (i) Seminar discussion on computer based bibliographic information processing held on 18 April, 1985 at NISSAT, Department of Scientific and Industrial Research, New Delhi and presented a paper. (ii) Seminar on Library automation and information retrieval : Challenges and opportunities, held during 7-9 October, 1985 at IISc., Bangalore organised by the Institute of Information Studies, Madras. (iii) International conference on Ranganathan's philosophy : Assessment, impact and relevance, held during 11-14 November, 1985 at New Delhi and presented a paper. (iv) Second regional con-