

3. — (1993) (Ed.) : *Industrial Economy of India*, Oxford University Press.
4. Iyengar, N.S. (with Goel, P.) (Ed.) (1992) : *Bayesian Analysis in Statistics and Econometrics*, Springer-Varlag, New York.
5. Dasgupta, Atis (1992) : *The Fakir and Sannyasi Uprisings*, K.P. Bagchi & Co., Calcutta.

Statistical Quality Control & Operations Research Division

1. Narayana, V. (1992) : *Seven New QC Tools - Affinity Diagram*, Quality Circle.
2. — (1992) : *Management of Innovation Concepts and Tasks*, Concept Publishing Co., New Delhi.

Library, Documentation and Information Sciences Division

1. Gopinath, M.A. (Ed.) (1992) : *Energizing and Information Service*.
2. — (Ed.) (1992) : *Cognitive Paradigms in Knowledge Organisation*.
3. Seetharama, S. (1992) : *Information Processing and Retrieval*, Directorate of Correspondence Course and Continuing Education, Annamalai University.

Papers Published in Journals

Theoretical Statistics and Mathematics Division

Calcutta Unit

1. Bandyopadhyay, P. (1992) : The Mazur Intersection property for families of closed bounded convex sets in Banach spaces, *Colloquim Math.*, 63, 1, 45-46.
2. Barua, R. (1993) : Complexity of winning strategies for Δ_2^1 games, *Proc. Amer. Math. Soc.*, 117, 1, 227-233.
3. — (1992) : The Hausdorff-Kuratowski hierarchy of w-regular languages and a hierarchy of Muler automata, *Theoretical Computer Science*, 96, 2, 345-360.
4. — and Srivatsa, V.V. (1992) : Definable hereditary families in the projective hierarchy, *Fund. Math.*, 40, 183- 189.
5. Bhandari, S.K. (with Mukherjee, Rahul) (1992) : Two and multi-stage selection procedure for Weibul populations, *J. of statistical planning and Inference*.

6. Bhanja, J. and Ghosh, J.K. (1992) : Efficient estimation with many nuisance parameters (Part I), *Sankhya Ser. A*, 54, 1, 1-39.
7. — and — (1992) : Efficient estimation with many nuisance parameters (Part II), *Sankhya Ser. A*, 54, 2, 135-156.
8. — and — (1992) : Efficient estimation with many nuisance parameters (Part III) *Sankhya Ser. A*, 54, 3, 297-308.
9. Bose, Arup (with Boukai, Benzion) (1993) : Sequential estimation results for a two-parameter exponential family of distributions, *Annals of statistics*, 21, 1.
10. Chaudhuri, P. (1992) : Multivariate location estimation using extension of R-estimates through U-statistics type approach, *Annals of Statistics*, 20, 897-916.
11. — (with Mykland, P.) (1993) : National experiments : optimal design and inference based on likelihood, *Journal of the American Statistical Association*, 8, 538-546.
12. Das, A. and Dey, A. (1992) : Universal optimality and non-optimality of some row column designs, *J. Statist. Plan. Inf.* 31, 263-271.
13. — (with Shah, K.R.) (1992) : Binary Designs are not always the best, *Canadian J. Statist.*, 20, 347-351.
14. — (with Kageyama, S.) (1992) : On some series of efficiency balanced block and row-coloumn designs, *Sankhya B*, 54, 316-323.
15. — (with Kageyama, S.) (1992) : Robustness of BIB and Extended BIB Designs Against the Unavailability of Any number of observations in a Block, *Comput. Statist. Data Anal.*, 14, 343-358.
16. — (with Gupta, V.K. and Das, P.) (1992) : E-optimal Block Designs under Heteroscedastic Model, *Commun. Statist. : Theory Meth.*, 21, 165-1666.
17. Dasgupta, R. (1992) : Nonuniform speed of convergence to normality for some stationary m-dependent processes, *CSA Bulletin*, 42.
18. — (1993) : Cauchy equation on discrete domain and some characterisation theorem, *Theory of probability and its application*, 38.
19. — (1993) : Moment bounds for some stochastic processes, *Sankhya A*, 55.
20. — (1993) : On the distribution of squareness, *Sankhya A*, 55.
21. Dasgupta S., Goswami, A. and Rao, B.V. (1993) : On a characterization of uniform distributions, *J. of Multivariate Analysis*, 44, 1, 102-114.
22. Ghosh, J.K. (with Bhattacharya, Rabi) (1993) : A New Central Limit Theorem on U-statistics with Applications to Poisson R and Fields, *J. Multivariate Analysis*.
23. — (with Mukherjee, R.) (1993) : Frequent validity of Highest posterior Density Regions in the Multiparameter case, *Ann. Inst. Statist. Math.*
24. — (with Mukherjee, R.) (1993) : Bayesian and Frequentist Bartlett correction for Likelihood Ratio and conditional Likelihood Ratio Tests, *J. Roy. Statist. Soc., Ser. B*, 55, 867-875.

25. — (with Mukherjee, R.) (1993) : On priors that Match posterior and Frequentist Distribution Functions, *Canadian J. Statist.*
26. Mazumder, B.S. (with Das, S.K.) (1992) : Effect of boundary reaction on solute dispersion in pulsatile flow through a tube, *J. Fluid Mech.* 239-549.
27. — (with Bhowmik, N.G. and Soong, T.W.) (1993) : Turbulence in Rivers due to Navigation Traffic, *Jour. Hydr. Engng. ASCE.* 119, 5, 581-597.
28. Rao, B.L.S.Prakasa (1992) : On some inequalities of Chernoff-type Teoria Veroyat, *IEEE Primenen.* 37, 434-439.
29. — (1990) : Nonparametric density estimation for stochastic process from sampled data, *Publ. Inst. Statist. Univ. de Paris*, 35, 51-83. (Issued in February'93).
30. Saha Ray, R. (with Jacroux, Mike) (1992) : On the construction of robust run order of treatments, *Sankhya* 54, 3, 306-315.
31. Sinha, B.K. (with Mujherjee, R. and Shah K.R.) (1992) : E-optimal minimally connected block designs under mixed effect model, *Metrika*.
32. — (with Sinha, Bimal K. and Das, K.) (1993) : On properties of Grubb's estimators, *J. of quality Engng.*
33. Srivastava, S.M. and Sarbadhikari, H. (1993) : Random versions of Extension theorem of Dugundji type and fixed point-theorems, *Bollettino UMI*, 7-B, 1-12.
34. Tripathi, T.P. (with Khattree, R.) (1992) : Estimation of a parameter using Pitman-Nearness Criterion, *J. Plan. Inf. (JSPI)*, 32, 281-289.
35. — (with Singh, H.P.) (1992) : A class of unbiased product type estimators for the mean suitable for positive and negative correlation situations, *Comm. in Statist. Theory and Methods*, 21, 2, 507-518.
36. — (Chaub, Y.P.) (1992) : Improved estimation of a finite population mean based on paired observations, *Comm. in Statist. : Theory and Methods*, 21, 11, 3327-3333

Delhi Unit

1. Bapat, R.B. (with Prasad, K. Mangunatha) (1992) : A note on the Khatri-inverse, *Sankhya A* 54 (2), 291-295.
2. — (with Constantine, G.) (1992) : An enumerating function for spanning forests with colour restrictions, *Linear Algebra and its Applications*, 173, 231-237.
3. Bhatia, R. (1992) : On residual bounds for eigenvalues, *Indian J. of Pure and Applied Mathematics*, 23, 865-866.
4. — (with Elsner, L.) (1992) : Symmetries and variation of spectra, *Canadian J. of Mathematics*, 44, 1155-1166.
5. — and Bhattacharyay, T. (1993) : A generalisation of the Hoffman-Wielandt Theorem, *Linear Algebra and its Applications*, 179, 11-17.

6. — (with Davis, C.) (1993) : More matrix forms of the arithmetic-geometric mean inequality, *SIAM J. ON MATRIX ANAL.*, 14, 132-136.
7. — (With Elsner, L.) (1993) The q-binomial theorem and spectral symmetry, *Indagationes Math. N.S.*, 4, 11-16.
8. Bhattacharyay, C.G. (with Shah, K.R.) (1992) : Combined Estimate of a Location parameter, *Comm. in Statist. Theory and Methods*, 21, 1929-1934.
9. Bhattacharyay, T. (1992) : A note on the space charge problem, *IMA J. of Applied Math.*, 48, 117-124.
10. Dewan, I. and Rao, B.L.S. Prakasa (1992) : Analysis of Survival data with dependent competing risks, *Biometrical J.*, 34, 801-814.
11. Dey, Alok. (1993) : Robustness of block designs against missing data, *Statistica Sinica*, 3, 219-231.
12. — and Bhimsankaram, P. (with Balasubramanian, K.) (1992) : Diagonally range dominant matrices, *Linear Algebra Appl.*, 176, 45-60.
13. Parthasarathy, K.R. (1992) : A quantum stochastic approach to Ito's formula for Levy processes, *C.R. Acad. Sci., Paris* 215, 1, 1417-1420.
14. Roy, Rahul (1992) : Critical phenomena for a continuum model, *Acta Applicandae Mathematicae*, 26, 257-271.
15. — (1992) : Percolation of poisson sticks II, *Theory of Probability and its Applications*, 37, 203-205.
16. Hande, Sayaji (1993) : On Bayes and Empirical Bayes rules for selecting best multinomial event, *J. of Statist. Plann. and Inference.*, 35 (3), 367-382.

Bangalore Unit

1. Bagechi, Bhaskar (1992) : On quasi-symmetric designs, *Designs, Codes and Cryptography*, 2, 69-79.
2. — (1992) : A regular two-graph admitting the Hall-Janko-Wales group, *Sankhya*, 54, 35-45.
3. Delampady, Mohan (1992) : Bayesian robustness for elliptical distributions, *REBRAPE : Brazilian J. of Statist.*, 6, 2.
4. — (with Angers, Jean-Francois) (1992) : Hierarchical Bayesian curve fitting and smoothing, *Canadian J. of Statist.*, 20, 35-49.
5. Muthuramalingam, Pl. (1992) : Bound states for momentum and asymptotic completeness in $L_2(\mathbb{R}^n)$: II. Mourre's theory of local conjugacy for $n \geq 2$, *J. Fac. of science, Univ. of Tokyo*, 39, 185-205.
6. Pati, V. (1993) : The Heat Trace on Singular Algebraic Threefolds, *J. of Differential Geometry*, 37, 245-261.

7. Murthy, K. Rama (with Rajput, B.S., Ashbaugh, M. and Sundberg) (1992) : Remarks on the positivity of Densities of Stable Laws, *Prob. and Math. Statist.*, 13, 77-86.
8. — (1992) : Diffusions and the Neumann problem in the half space, *Sankhya Ser. A*, 54, 351-378.
9. Rao, T.S.S.R.K. (1992) : $D(K, X)$ as an M-ideal in $WC(K, X)$, *Proc. Indian. Acad. Sci. (Math. Sci)*, 102, 217-224.
10. Sunder, V.S. (with Thomsen, Klaus) (1992) : The distance between unitary orbits of self-adjoint operators, *Houston J. of Math.*, 18, 127-138.

Applied Statistics, Surveys and Computing Division

Biometry Research Unit

1. Basu, Tapas Kumar and Sarkar, Samir Kumar (1992) : Hepatoprotective activity of *Azadirachta indica* leaves on paracetamol induced hepatic damage in rats, *Indian J. Experimental Biology*, 30, 738-740.
2. ———— and ———— (1992) : Effects of extract of leaves of *vinca rosea* linn. on glucose utilization and glycogen deposition by isolated rat hemidiaphragm, *Indian J. of Physiology and Pharmacology*.
3. ———— and ———— (1992) : Hepatoprotective activity of *Ocimum sanctum* leaf extract against paracetamol induced damage in rats, *Indian J. of Pharmacology*, 24, 163-165.

Computer Science Unit

1. Chakraborti, S.R. (1992) : On optimum Invariant test of Independence of two sets of variates with Additional Information on Covariance Matrix, *Pakistan J. of Statist*, 8 (2), A, 63-71.
2. — and Chattopadhyay, A.K. (1992) : On testing homogeneity of variances of the correlated variables with incomplete data, *Calcutta Statist. Assoc. Bulletin*, 42, 165-166, 30-40.
3. Chaudhuri, Arijit (1992) : A note on estimating the variance of the regression estimator, *Biometrika*, 79, 217- 218.
4. — (1992) : Randomized response : Estimating mean square errors of linear estimators and finding optimal unbiased Strategies, *Metrika*, 39, 341-357.
5. — and Mitra, Joydeep (1992) : A note on two variance estimators for Rao-Hartleg-Cochran estimator, *Comm. in Statistics, Theory and Methods*, 21, 335-354.
6. Dewanji, A. (1992) : A note on Test for Competing risks with missing failure type, *Biometrika*, 79(4), 855-857.

7. Krishnan, T. (1992) : Imperfect supervision in statistical pattern recognition, *Advances in Modelling & Agencies*, A2, 47-58.
8. — and Reddy, B. Mohan (1992) : Principal components of finger ridge-counts : their Universality, *Annals of Human Biology*, 19, 153-164.
9. Mukhopadhyay, Parimal (with Bagchi, T.) (1992) : On comparing sampling strategies, *Jour. Ind. Soc. Agr. Stat.*, 46, 138-148.
10. Roy, B.K. and Dutta T.K. (1992) : Construction of strongly balanced uniform repeated measurements designs - a new approach, *Sankhya*, 54, 147-153.
11. Sengupta, Ashis (with Rachev, S.T.) (1992) : Geometric stable distributions and Laplace-Weibull mixtures, *Statistics and Decisions*, 10, 2.
12. Sengupta, D., Bhimasankaran, P., Roy, A. and Bhattacharya, A. (1992) : A post-script of "Regression Post-Mastem", *J. of the Indian Soc. of Agricultural Statistics*, 44(3), 286-291.

Physical and Earth Sciences Division

Chemistry Unit

1. Ghoshal, D.N. (with Das, T.) (1992) : Modification of CEC of some Indian Soil clays by allophanic contaminates, *Adv. Clay Sci.*, 34, 211-215.

Electronics Unit

1. Bandyopadhyay, P. and Hazra, K. (1992) : Equivalence of Stochastic, *Klauder and Geometric Quantization*.
2. — (with Goswami, G.) (1993) : Spin System, Gauge Theory and Renormalization Group Equation, *J. of Math. Physics.*, 34, 749.
3. Basu, B. (1993) : A Gauge Theoretical Formulation of a frustrated Ising System, *J. of Math. Physics.*, 34, 737.
4. — (1992) : Fractional Quantum Hall Effect and Crystallization, *Modern Physics Letters B*, 6, 1601.
5. Bhattacharyay, S. (with Das Ghosh, A.C.) (1992) : Are the proposed H - particles psion like in nature ? *Nuovo Cimento*, 15C(2), 239.
6. — (with Das Ghosh, A.C.) (1992) : On the Exotic cosmic events, *Nuovo Cimento*, 15C(2), 239.

7. Dandapat, B.S. (with Andersson, H.I. and Bech, K.H.) (1992) : Magnetohydrodynamic flow of a power law fluid over a stretching sheet, *Int. J. of Nonlinear Mechanics*, 27, 929.
8. — (with Andersson, H.I., Holmedal, B. and Gupta, A.S.) (1992) : Magnetohydrodynamic melting flow from a horizontal rotating disk.
9. Das, D.K., Chakraborty, S. and Bhattacharya, B.B. (1993) : Logical redundancies in combinational circuits, *J. of Electronic Testing, Theory and Application (JETTA)*, 4, 125-130.
10. Muhopadhyay, K. and Sinha, B.P. (1992) : Reliability analysis of networks using stochastic model, *Inf. Sci.*, 65, 3, 225-237.
11. — (1992) : Hamiltonian graphs with minimum number of edges for fault-tolerance topologies, *Inf. Processing Letters*, 44, 95-99.
12. Mandal, B.N. and Banerjee, S. (1992) : On forced capillary gravity waves at the interface between two superposed fluids due to a plane vertical wave maker, *Mechanics Research Commun.*, 19, 3, 167-172.
13. — (1992) : On waves due to rolling of a vertical plate, *Indian J. of Pure and Applied Math.*, 23, 5, 665-670.
14. — (1993) : Solution of a boundary value problem associated with diffraction of water waves by a submerged nearly vertical barrier, *Bulletin of Calcutta Mathematical Society*, 85, 3, 209-214.
15. — (1993) : Solution of a singular integral equation in a double interval arising in the theory of water waves, *Applied Math. Letters*, 6, 3, 81-84.
16. — (with Basu, U.) (1992) : On forced motion due to a vertical cylindrical wave maker in two superposed fluids, *Revue Roumanie des Sciences Techniques Mécanique Appliquée*, 37, 4, 397-400.
17. — (1993) : Waves due to a line source in the presence of small bottom deformation, *Int. J. of Engineering Science*, 31, 1, 71-75.
18. — (with Kar, S.K.) (1992) : Reflection of water waves by a nearly vertical wall, *Int. J. of Math. Education in Science and Technology*, 23, 5, 665-670.
19. — (with Bharathi V., Chakrabarti, A. and Banerjee, S.) (1993) : Solution of the problem of scattering of water waves by a nearly vertical plate, *J. Austral. Math. Soc. Ser. B*, 35.
20. — (with Chakrabarti, A.) (1992) : A note on the explicit solution to a class of Fredholm integral equations, *Bulletin of Calcutta Mathematical Society*, 84, 4, 419-425.
21. — (1993) : On the Green's function method for the Sommerfeld half-plane diffraction problem, *Bulletin of Calcutta Mathematical Society*, 85, 2, 145-152.
22. — and Mandal N. (1993) : Integral expansions related to Mehler Fok type transforms, *Applied Math. Letters*, 6, 17-20.

23. — (1993) : Integral representation of a function in terms of associated Legendre functions, *Bulletin Mathematique de la Society Mathematic de Roumanie*.
24. — (with Ghosh, A.K.) (1992) : A note on a preemptive priority queue, *Pure and Applied Mathematika Scien.*, 35, 1-2, 143-149.
25. Mazumder, H.P. (with Ghosh, S.C.) (1992) : Study of a homogeneous turbulent flow possessing helicity, *Acta Applicandae Mathematicae*, 26, 315.
26. — (with Chakraborty, A.K. and Das, J.) (1992) : On the estimation of acoustic scattering cross section from the energy and temperature spectra in the atmosphere.
27. — (with Podder, S.C. and Chanda, A.) (1992) : A note on the spectrum of vorticity in a homogeneous and isotropic turbulent flow, *Indian J. of Theo. Phys.*, 40, 1, 69.
28. — (with Anderson, H.I.) (1993) : Rapid distortion of homogeneous low Reynolds number turbulence by uniform shear and weak rotation, *European J. of Mechanics B/Fluids*, 12, 1, 31.
29. — (with Persen, L.N. and Ojann, H.) (1993) : The round thermal jet - undisturbed and in cross-flow, *Int. J. of Heat Mass Transfer*, 36, 6, 1589.
30. Roy, P. (with Tarroch, R.) (1992) : Supersymmetric Anyon Quantum Mechanics, *Physics Letters B*, 274, 59.
31. — (with Barut, A.O.) (1992) : The Embedding of Supersymmetry Group Theory in Physics (Ed. A. Frank), *AIP Proceedings* 266.
32. Roy, Sisir (with Borzeskowsky, H.II.) (1992) : Jordan-Fock Uncertainty Relation and Quantum General Theory of Reliability, *Found. Phys.*, 22, 1079.
33. — (with Kar, G. and Sinha, M.) (1993) : Non-zero Rest Mass of Photon, Maxwell Equation and Conformal Metric Fluctuation, *Int. J. of Theoretical Physics*.
34. Roy Choudhury, R.K. (with Sinha, A.) (1992) : Time dependent variational method for Sine-Gordon Quantum Field Theory.
35. — (with Panchanan, S. and Nag, N.) (1992) : Algebraic approach to a relativistic scalar potential, *Fizika B*, 1, 121.
36. — (Mazumdar, B.) (1992) : $O(N)$ Symmetric Finite Temperature θ^4 Theory in $2 + 1$ dimension, *Int. J. of Theo. Phy.*
37. Sinha, B.P (with Fleischer, R and Uhring, C) (1993) : A lower bound for the worst case of Bottom-Up heapsort, *Inf. and Computation*, 102, 2, 263-279.

Electronics and Communication Sciences Unit

1. Bhandari, D., Pal, N.R. and Dutta Majumder, D. (1992) : Fuzzy Divergence Probability Measure of Fuzzy Events and Image Thresholding, *Pattern Recognition Letters*, 13, 857-867.

2. Chakraborty, A.K., Majumder H.P. and Das J. (1992) : On the Estimation of Acoustic Scattering Cross-Section From the Energy and Temperature Spectra in The Atmosphere, *Bulgarian J. of Meteorol. Hydros.*, 3, 1-5.
3. Chanda, B. (1992) : Application of Binary Morphology to Separate Overlapped Objects, *Pattern Recognition Letters*, 13, 639-645.
4. Chaudhuri, B.B., De, A.K., Ganguli, A. and Das, J. (1992) : Automatic Recognition and Interpretation of Sodar Records, *Ind. J. of Radio & Space Physics*, 21 N4, 123-128.
5. —, Sarkar, N. and Kundu, P. (1993) : Detection and Gradation of Oriented Texture, *Pattern Recognition Letters*, 14, 2, 147-157.
6. —, and Kundu, P. (1993) : Optimum Circular Fit to Weighted Data in Multi-Dimensional Space, *Pattern Recognition Letters*, 14, 1-6.
7. Chaudhuri, B.(1992) : Concave Fuzzy Set : A Concept Complementary to the Convex Fuzzy Set, *PRL*, 13(2), 103-106.
8. Chaudhuri, D., Murthy, C.A. and Chaudhuri, B.B.(1992) : A Modified Metric to Compute Distance, *Pattern Recognition Letters*, 25 (7), 667-677.
9. ———, ——— and ——— (1992) : A Modified Metric to Compute Distance, *Pattern Recognition*, 25(7), 667-677, 1992.
10. ———, ——— and ——— (1992) : A New Split and Merge Clustering Techniques, *Pattern Recognition Letters*, 13, 6, 399-409.
11. Ghosh, A. and Pal, S.K. (1992) : Neural Network, Self- Organisation and Object Extraction, *Pattern Recognition Letters*, 11, 5, 387-397.
12. —, Pal, N.R. and Pal, S.K. (1992) : Object Background Classification Using Hopfield Type Neural Network, *Int. J. Patt. Recog. and Artificial Intell.*, 6, 5, 989-1008.
13. —, Pal, N.R. and Pal, S.K. (1993) : Self- Organization for Object Extraction Using a Multilayer Neural Network and Fuzziness Measures, *IEEE Trans. Fuzzy systems*, 1, 1, 54-68.
14. Mandal, D.P. Murthy, C.A. and Pal, S.K.(1992) : Determining the Shape of a Pattern Class from Sampled Points in R., *Int. J. General Systems*, 20, 4, 307-339.
15. —, — and — (1992) : Formulation of a Multivalued Recognition System, *IEEE Trans. Syst. Man and Cybers*, 22, 4, 607-620.
16. Murthy, C.A. and Pal, S.K. (1992) : Histogram Thresholding by Minimizing Gray Level Fuzziness, *Inf. Sc.*, 60, 1/2, 107-135.
17. —, — and — (1992) : Bounds for Membership Functions - A Correlation Based Approach, *Inf. Sc.*, 65, 143- 171.
18. Pal,(Pathak) A. (Pathak) and Pal, S.K. (1992) : Effect of Wrong Samples on the Convergence of Learning Processes-II : A Remedy, *Inf. Sc.*, 60, 1/2, 77-105.
19. Pal, N.R. and Pal, S.K. (1992) : Higher Order Fuzzy Entropy and Hybrid Entropy of a Set, *Inf. Sc.*, 61, 3, 211- 231.

20. — and Bhandari, D. (1992) : On Object-Background Classification, *Int. J. of Systems Sc.*, 23, 11, 1903-1920.
21. — (with Bezdek, J.C. and Hemasinha, R.) (1992) : Uncertainty Measure for Evidential Reasoning-I : A Review, *Int. J. Approximate Reasoning*, 7, 3/4, 165-178.
22. — (with Bezdek, J.C. and Hemasinha, R.) (1993) : Uncertainty Measure for Evidential Reasoning-II : A new Measure, *Int. J. Approximate Reasoning*, 8, 1, 1-16.
23. Pal, S.K. (1992) : Fuzziness, Image Information and Uncertainty Management in Pattern Recognition, *J. Sci. Indust. Research*, 51,71-98.
24. — and Mandal, D.P. (1992) : Linguistic Recognition System Based on Approximate Reasoning, *Infor. Sc.*, 61, 1/2, 135-161.
25. — and Ghosh A. (1992) : Image Segmentation Using Fuzzy Correlation, *Inf. Sc.*, 62, 3, 223-250.
26. — and Ghosh, A. (1992) : Fuzzy Geometry in Image Analysis, *Fuzzy Sets and Systems*, 48, 1, 23-40.
27. — (with Mitra, S.) (1992) : Multi-Layer Perceptron Fuzzy Sets and Classification, *IEEE Trans. Neural Networks*, 3, 683-397.
28. — (with Wang, L.) (1992) : Fuzzy Medial Axis Transformation (FMAT) : Practical Feasibility, *Fuzzy Sets and Systems*, 50, 15-34.
29. Parui, S.K., Sarkar, S. and Chaudhuri, B.B. (1992) : Computing the Shape of a Point Set in Digital Images, *Pattern Recognition Letters*, 14.
30. Raha, S. (with Ray, K.S.) (1992) : Analogy Between Approximate Reasoning and the Method of Interpolation, *Fuzzy Sets and Systems*, 51, 251-266.
31. Ray, B.K. and Ray, K.S. (1992) : Detection of Significant Points and Polygonal Approximation of Digitized Curves, *Pattern Recognition Letters*, 13, 443-452.
32. Saha, P.K., Chanda, B. and Dutta Majumder, D. (1993) : A Single Scan Boundary Removal Thinning Algorithm for 2D Binary Object, *Pattern Recognition Letters*, 14, 173-179.
33. Sarkar, N. and Chaudhuri, B.B. (1992) : An Efficient Approach to Estimate Fractal Dimension in Pictures, *Pattern Recognition*, 25, 9, 1035-1041.
34. Sengupta, P. and Chaudhuri, B.B. (1993) : Natural Language Processing in an Indian Language (Bengali) - I : Verb Phrase Analysis, *J. Inst. Electronics and Telcom. Engg.*, 10, 27-41.
35. Tripathy, S., De, A.K. and Das, J. (1992) : Computer Analysis of Atmospheric Plume Structures, *Ind. J. Radio & Space Physics.*, 21, N12, 321-328.

Geological Studies Unit

1. Bhattacharyay, S. (1992) : An Anorogenic Alkaline suite in Singhbhum Mobile belt in South Purulia, West Bengal, *Indian Minerals*, 47, 67-72.

2. — (with Sen, S.K. and Acharya, A.) (1992) : Structural Evidence supporting a Remnant Origin of Patochy Charnockites in the Chilka Lake Area India, *Geol. Mag.*, 130, 363-368.
3. Kutty, T.S. and Ghosh, P.S. (1992) : Rose C-A programme in "C" for producing High-quality Rose Diagrams, *Computers and Geo Sciences*, 18, 1195-1211.
4. Saha, D. (1992) : Contractional deformation of a faulted sedimentary prism, *Indian J. of Geo.*, 64, 365-376.
5. — (1992) : Geologic Constraints on Depth of Tectonic Mobility in a Proterozoic Intracratonic Basin, *Indian Minerals*, 46, 259-270.
6. Sarkar, S. and Chaudhuri, A. (1992) : Trace Fossils in Middle to Late Triassic Fluvial Red Beds, *Pranhita-Godavari Valley*, South India, *Ichnos*, 2, 7-19.
7. Sengupta, D.P. (1992) : *Metoposaurus Malerensis* Roy Chowdhury from Tiki Formation of Son - Mahanadi Valley, Central India, *Indian J. of Geo.* 64, 300-305.

Physics Unit

1. Das, P.K. and Sinha, K.B. (1992) : Quantum Flows with Infinite Degrees of Freedom and their Perturbations, QP-7, *World Scientific*.
2. Gangopadhyay, S. (with Datta, K.B.) (1992) : Coprime Matrix Fraction Description via Orthogonal Structure Theorem, *IEEE Transaction on Automatic Control*, AC-37, 10, 1517-1520.

Biological Sciences Division

Agricultural Sciences Unit

1. Banerjee, R.N. (1992) : Composition of Nests of Indian Mole Rat (*Bandicota bengalensis*), *Rodent News letter*, 16, 2, 9-10.
2. —, Adhikary, S. and Bagchi, D.K. (1992) : Effect of Different low Input Management practices on Long Duration Indigenous Paddy, *Indian Biologist*, XXIV, 2, 42-43.
3. Ghose, M. and Bagchi, D.K. (1992) : Stomatal size and Frequency in Leaves of Some Cultivars of *Brassica Campestris* and *Bassica Juncea*, *Indian Biologist*, XXIV, 2, 1-6.
4. Tapaswi, P.K., Maitra, N., Banerjee, R.N. and Bagchi, D.K. : (1992) : Intraspecific Interaction in Two Varieties of Wheat, *Indian Agriculturist*, 35, 3, 135-142.
5. —, Maitra, N., Bagchi, D.K., Banerjee, R.N., Adhikary, S. (with Sasmal, B.C.) (1992) : Interaction of Two Varieties of Wheat At Different Spacings Mediative by Diffusing Root Exudates - a Field Experimental Study, *Indian Biologist*, Vol.XXIV, 2, 31-41.

Anthropometry and Human Genetics Unit

1. Bharati, S., Mukherjee, D., Bharati, P. and Gupta, R. (1992) : Patterns of Growth in Height and Weight of Bengali Girls of Howrah District, West Bengal, India, *Man in India*, 72, 423-430.
2. Bhattacharya, S.K., Nayak, S., Dey, B., Pal, M. and Basu, A. (1993) : A Note on Prevalence of Intestinal Parasitosis in a Coastal Zone of West Bengal, *J. of Human Ecology*, 4, 23-27.
3. Dasgupta, P. (1992) : Age Changes in Chest and Calf Circumferences, Biceps and Suprailiac Skinfolds from 7.0 to 16.0 years : A Cross Sectional Growth Study Among the Bengali Boys, *Indian J. of Physical Anthropology and Human Genetics*, 8, 111-120.
4. Ghosh Dastider, M. and Gupta, R. (1993) : A Note on Selection Intensity Among the Muslims of a Calcutta Slum, *J. of Human Ecology*, 4 : 63-64.
5. Majumder, P.P. and Nath, S.K. (1992) : Statistical Analysis of Family Data On Complex Disorders in Man, *J. of Genetics*, 71, 89-103.
6. — (with Rao, D.C.) (1992) : Genetic Epidemiology and its Relevance to Physical Anthropology, *J. of the Indian Anthropological Society*, 51-62.
7. Nath, S.K., Majumder, P.P. and Sarkar, S. (1992) : Rh Segregation Distortion : An Artifact of Ascertainment Bias ? *American J. of Human Genetics*, 50, 1328-1332.
8. Reddy, B.M. (1992) : Inbreeding Effects on Productive Outcome, *Human Biology*, 64, 659-682.
9. — (With Reddy, P.C.) (1992) : Dermatoglyphic Affinities Among The Five Endogamous Groups of Andhra Pradesh with Contrasting Ethnohistorical Backgrounds, *Am. J. Hum. Biol.*, 4, 669-682.
10. —, Vasulu, T.S. and Malhotra, K.C. (1993) : Physical Anthropology as a Science : A commentary, *Current Science*, 64, 17-21.
11. Roy, S.K. and Bharati, P. (1992) : Nutritional Status of Hindu and Tribal Groups of Agricultural Workers and Their Families, *Indian J. Of Industrial Medicine*, 38, 123-127.
12. Roy, A.C., Das, M.K., Das, K., Roy, M., Dey, B., Banerjee, S. and Mukherjee, B.N. (with Saha, N. and Tay, J.S.H.) (1992) : Genetic Study of Five Population of Bihar, India, *Human Biology*, 64, 2, 175-186.

Biochemistry Unit

1. Bhattacharya, S.K., Nayak, S., Dey, B., Pal, M. and Basu, A. (1992) : A Note on prevalence of Intestinal Parasitosis in a Coastal zone of West Bengal, *J. Hum. Ecol.*, 4(1), 23-27.
2. Ganguli, B.B. (with Talukdar, G. and Sharma, A.) (1992) : Cytotoxicity of Tin on Human Peripheral Lymphocytes, *Vitro, Mutation research*, USA, 282, 61-67.
3. — (with Talukdar, G. and Sharma, A.) (1993) : Chromosomal and Sex Chromosomal disorders, *Cytobios*, Cambridge, 73, 95-103.

Embryology Unit

1. Chattopadhyay, J., Tapaawi, P.K. and Mukherjee, D. (1992) : Formation of Regular Dissipative Structure - A Bifurcation and Non-linear Analysis, *Bio-Systems*, 26, 211-222.
2. — and Tapaswi, P.K. (1992) : Morphogenetic Prepattern During Embryonic Development - A Non-linear Analysis, *Appl. Math. Letters*, 5, 5, 19-22.
3. — and — (1993) : Order and Disorder in Biological Systems Through Negative Cross-Diffusion of Mitotic Inhibitor - a Mathematical Model, *Math. Comp. Modelling*, 17, 1, 105-112.
4. Poddar Sarkar, M. and Brahmachary, R.L. (with Dey Sarkar, N. and Dutta, J.) (1992) : A Method of Synthesising The Aroma of Certain Varieties of Fragrant Indian Rice, *Int. Rice research News Letter*, 17, 5, 9.
5. Saha, A.K. and Tapaswi, P.K. (1992) : A Stochastic Reaction Diffusion Model of the Epigenetic System : Study of Localized Fluctuations, *Cybernetica*, XXXV, 3, 181-193.
6. Tapaswi, P.K., Mitra, N., Bagchi, D.K. and Banerjee, R.N. (1992) : Interaction of Two Varieties of Wheat - A Study of Intervarietal Interaction, *Indian Biologist*, XXIV, 2, 31- 41.
7. —, Mitra, N., Banerjee, R.N. and Bagchi, D.K. (1992) : Intraspecific Interaction in Two Varieties of Wheat, *Indian Agriculturist*, 35, 3, 135-142.

Leaf Protein Research Unit

1. Chanda, S. (1992) : Bacteriostatic Principle Produced By An Aeroisolate Strain of *Penicillium Motatum*, *Indian Botanical Reporter*, 10 (1+2), 53-55.
2. — (1992) : Growth of *Torula Utilis* in Deproteinised Leaf Juices From Two Aquatic Plants for SCP Production and BOD Reduction, *Geobios*, 19, 109-113.
3. Nag, A. and Matai, S. (1992) : Chemical Composition of Some Fodder Trees in And Around Calcutta, *Indian Veterinary J.*, 69, 411-414.

Social Sciences Division

Economic Research Unit

1. Bhattacharya, N., Coondoo, D., Guha Roy, S. and Malakar, C.R. (1992) : Objective Factors Underlying Conflicts and Tensions in Contemporary India, *Man and Development*, XIV, 4, 13-20.
2. Chakravarty, S. (1993) : Efficiency and Concentration, *J. of Productivity Analysis*, 3, 249-256.

3. Chattopadhyay, M. (1992) : Ashok Rudra's Contribution to Indian Agricultural Economics, *Economic and Political Weekly*, 27, 49-50, 5-12.
4. Pal, M.N. (with Mukhopadhyay, R.) (1992) : The Equi-Spaced Optimal Index Formulation and the Multivariate Spatial Index of Economic Development for India, *Indian J. of Regional Science*, 24, 2, 30-32.
5. Sarkar, Nityananda (1992) : A new Estimator Combining the Ridge Regression and the Restricted Least Squares Methods of Estimation, *Communications in Statistics - Theory and Methods*, 21, 1987-2000.
6. —, Maiti, Pradip and Coondoo, Dipankar (1992) : Denominationwise Imbalance Between Currency Requirements and Availability in India, *Findings of a Recent Survey, Arthavijnana*, 1, 34, 4, 388-398.

Economic Analysis Unit

1. Ganesh Kumar, A. (1992) : Falling Agricultural Investment and its Consequences, *Economic & Political Weekly*, XXVII, 42.

Planning Unit

1. Chander, Prakash (with Tulkens, Henry) (1992) : Theoretical Foundation of Negotiation and Cost Sharing in Transfrontier Pollution Problems, *European Economic Review*, 36.
2. — (with Wilde Lewis) (1992) : Corruption in Tax Administration, *J. of Public Economics*, 49.
3. — (with Tulkens, Henry) (1992) : Aspects Strategiques de Negotiations Internationales sur les Pollution Transfrontiers et du partage de couts de l'epuration, *Revue Economique*.
4. — (1993) : Dynamic Procedures and Incentives in Public Good Economies, *Econometrica*.
5. — (with Kundu, T.R.) (1992) : A class of Procedures for Fixing Prices in a Mixed Economy with Special Reference to Industrial Goods in India, *Int. J. of Development Planning Literature*.
6. Dasgupta, Dipankar (1992) : Using the Correct Economic Interpretation to Prove the Hawkins-Simon-Nikaido Theorem : One More Note, *J. of Macroeconomics*, 14, 4.
7. — (1992) : Viability and other Results for an Extended Input-Output System, *Keio Economic Studies*, XXIX, 1.
8. — (with Itaya, Jun-ichi) (1992) : Comparative Statics for the Private Provision of Public Goods in a Conjectural Variations Model with Heterogeneous Agents, *Public Finance/Finances Publiques*, 47, 1.

9. — (with Sinha, Tapen) (1992) : The Nonsubstitution Theorem with joint Production, *Revisita Internazionale di Scienze Economiche e Commercial/International Review of Economics and Business*, XXXIX, 8.
10. — (1993) : Hawkins-Simon no joken ni kan suru shosetsu no togo ni tsuite, *Shogaku Tokyu*, XLIII, 3 & 4 (in Japanese).
11. Dutta, Bhaskar (with Esteban, J.) (1992) : Social Welfare and Equality, *Social Choice and Welfare*, 9.
12. Goswami, Omkar (with Srivastava, A.) (1992) : Commercialization of Agriculture 1900-1940 : What do Supply Response Functions Say? *Indian Economic and Social History Review*.
13. — (with Gang, Ira.) (1992) : How is tied aid ? Soviet Economic Assistance to India 1961-1984, *Economic Systems*.
14. Jain, L.R. (with Tendulkar, S.D.) (1992) : Inter-temporal, Inter-fractile Group and Rural Urban Differential in the Cost of Living, Real Levels of Living, Inequality and Poverty for All-India : 1970-1971 to 1988-1989, *J. of the Indian School of Political Economy*, IV, 3.
15. Mookherjee, Dilip (1992) : Indian Economy at the Crossroads, Economic and Political Weekly, *Budget Issue*, 11-18.
16. — (with Reichelstein, Stefan) (1992) : Dominant Strategy Implementation of Bayesian Incentive Compatible Allocation Rules, *J. of Economic Theory*.
17. — (1992) : The Revelation Approach to Nash Implementation, *Economic Letters*, 39.
18. — (with Png, Ivan) (1992) : Monitoring Versus Investigation to Enforcement of Law, *American Economic Review*.
19. Mukherji, P.N. (1992) : Social Conflicts in India : Nation-Building or Nation-Destroying ? An Agenda For Urgent Research, *Man and Development*.
20. Ramaswami, Bharat, (1992) : Production Risk & Optimal Input Decisions, *American J. of Agricultural Economics*, 74, 4.
21. Saluja, M.R. and Sarma, Atul (1992) : State Input- Output Tables : Sources and Methods, *Margin*, 24, 3.
22. — (1992) : Fiscal Federalism in India, Case for A Fresh Review, *Man and Development*.
23. — (with Ratha, D.K.) (1992) : Price Subsidies and Irrigation Investment in India : Macro Implications, *Economics and Political Weekly*.

Linguistic Research Unit

1. Debnath, S. and Bandopadhyay, D.P. (1993) : Statistical interpretation of Style in text (in Bangla), *SAMATAT*, 93.

2. — and Choudhury, Amitava (1992) : Evidence of Vocabulary balance in Tagore's Galpaguccha, *OSMANIA PAPERS in Linguistics*, 18, 31-44.

Population Studies Unit

1. Malakar, C.R. (with Crock, N.R.) (1992) : Child mortality in new industrial localities and opportunities for change : A Survey in an Indian steel town, *Health Transition Review*, 2, 2.

Psychometric Research and Services Unit

1. Chatterji, S., Mukherjee, M. and Ghosh, A. (1992) : Identification of characteristics and Measuring Entrepreneurship Potentiality, *Productivity*, 33, 1, 56-61.
2. Dutta Roy, D. (1992) : Personality traits of Antarctica Expeditioners, *Psychological Studies*, 37, 2 & 3, 95-98.
3. — (with Chatterjee, A.) (1992) : Factor analysis of organizational health scale, *J. of Psychometry*, 5, 2, 19-26.
4. Mukherjee, M., Chatterji, S. and Gupta, R. (1992) : Effect of Prolonged Deprivation upon Intelligence level of school-going adolescents, *J. of Psychometry*, 5, 2, 1-9.

Sociological Research Unit

1. Dasgupta, Atis (1992) : A note on Somenath Hore's 'Tebhaga Diary' (in Bengali), *Nandan*.
2. — (with Chakrabarti, Subhas Ranjan) (1992) : The growth of Calcutta : A profile of Social dislocations in the early colonial period, *Social Scientist*, 20, 3-4, 35-48.
3. Ghosh, Bholu Nath (1992) : Field level research : Some of our experience, *Folklore*, Calcutta, 162-167.
4. Ghosh, Tajendra Nath (1992) : A note on the incidences of registry marriage and the impact of legislation in West Bengal, *Bulletin of the Cultural Research Institute*, West Bengal, 18, 3 & 4, 53-55.

Statistical Quality Control and Operations Research Division

1. Biswas, A.K. (with Rath, Subrata) (1992) : Control Chart for some Non-Normal Quality Characteristics, *N IQR*.
2. Chakraborty, T.K. (1992) : Single Sampling LTPDPlans as a Stochastic Programming Problems, *Sankhya*, 54, B, 240- 248.

3. — (1992) : Single Sampling Tot Tolerance Percent Defective Plans Based on Fuzzy Optimisation, *OPSEARCH*, 27, 11-20.
4. Goel, R. (1992) : The Weighted Majority Game, *Opsearch*, 29, 4.
5. Lakshmanan, P. (1992) : Delay in Implementation of ISO 9000 Quality System, *Quality Journal (QDC of EIA)*.
6. Mohan, S.R. and Nankana, A.N. (1992) : Systems, Standards and Quality Upgradation, *Standards India*, 12,
7. Mohan, S.R. and Nankana, A.N. (1992) : Lack of Quality and Social Loss, *Quality Quest*, 1, 1,
8. Mohan, S.R., Parthasarathy, T. and Sridhar, R. (1992) : N matrices and the class Q, *Lecture Notes in Economics and Mathematical Systems*, 389, Springer Verlag, Berlin.
9. Seth, Arvind (1992) : Voting Power and Component Importance, *Lecture Notes in Economics and Mathematical Systems*, 389, 189-204, Springer-Verlag, Berlin.
10. Seth, Arvind (with Das and Parmar) (1992) : An Approach for Prediction of Bead - Geometry and Shape Relationships of Hyperbaric Welding, *Indian Welding Journal*, 170-173.

Library, Documentation and Information Sciences Division

DRTC (Bangalore)

1. Gopinath, M.A. (1992) : Facet analysis and information retrieval, *DESIDOC BULLETIN*, 36-45.
2. — (1992) : Technical report on cognitive paradigms for knowledge organisation, *Int. Classification*, 30-35.
3. — (1992) : Humanising library and library service, *Lib. Sc.*, 30.
4. — (1992) : Library and Information Policies in perspective : Report of IFLA 58th Conference at Delhi, *Lib. Sc.*, 30, 265-66.
5. — (1992) : Ranganathan's approach to Knowledgebased information systems, *Ann. Lib. Sc. Doc.*
6. Palaniyandy, M.V. and Rao, Ravichandra I.K. (1992) : An automated Circulation system, *Lib. Sc.*, 29 (4), 183-212.
7. Rao, Ravichandra I.K. and Neelamegham, A. (1992) : From Librametry to Informetrics : An overview and Ranganathan's Contributions, *Lib.*, 42(3), 241-257.
8. Seetharama, S. (1992) : Role of Classification in Information Services Generation, *Lib. Sc.*, 29, 109-118.

Computer and Statistical Services Centre

1. Pal, Srimanta, (with Bhattacharya, P.) (1992) : Analysis of template matching thinning algorithms, *Pattern Recognition*, 25, 5, 497-505.
2. — (1992) : Search Performance of double-linked colesed hashing can not exceed 'Bucketing', *Inf. Sc.*, 65, 123-143.
3. — (1992) : A Survey of Computation of linear precedence functions for operator precedence grammar, *Advances in Modelling and Analysis (B)*, 24, 3, 1-13.
4. — (with Sadhukhan, S.) (1992) : An optimal route detection in a Constrained way-network using air distance heuristic, *Advances in modelling & Analysis (C)*, 38, 2, 47-63.
5. — (1993) : A simple Convex hull algorithm of a planar set of points of a polygon, *Advances in modelling & Analysis (B)*, 26, 4, 55-64.
6. — (1993) : An expert system for regional development using agricultural crop, *Measurement & Control(D)*, 6, 4, 5-18.

National Centre for Knowledge Based Computing

1. Lohar, G., Mukherjee, D.P. and Dutta Majumder, D. (1992) : On a Decomposition of 2-D Circular Convolution, *Pattern Recognition Letters*, 13, 701-706.
2. Mukherjee, D.P., Banerjee, D.K., Uma Shankar, B. and Dutta Majumder, D. (1993) : A Coal Micrograph Image Understanding System, *Pattern Recognition Letters*, 14, 2, 155-161.
3. —, Rout, M.R., Sharma, S.E. and Dutta Majumder, D. (1993) : A Knowledge Based Approach for Tube Leakage Detection in Thermal Power Plant, *SCIMA J. of System & Cybernetics in Mangement*, 21, 2-3, 113-117.
4. Roy, P.K., Banerjee, S. and Dutta Majumder, D. (1992) : Concepts of Classical Thermodynamics as Applied to the States of the Human Psyche, *SCIMA*, 21, 2-3, 95-102.
5. —, Banerjee, S. and Dutta Majumder, D. (1992) : A Study of the Transformation of the Human Psyche Through its Different States in Terms of Irreversible Thermodynamics, *SCIMA : Systems & Cybernetics*, 21, (2-3), 83-94.
6. —, Banerjee, S. and Dutta Majumder, D. (1992) : Non-equilibrium Psychodynamics, *SCIMA : Systems & Cybernetics*, 21, (2-3), 103-112.

Papers published in Conference Proceedings
Theoretical Statistics and Mathematics Division
Calcutta Unit

1. Bandopadhyay, P. (1990) : Exposed Points and Points of continuity in closed bounded convex sets, *Functional Analysis and Operator Theory, Proceedings*, Springer-Verlag Lecture Notes in Maths. 1511, 120-127.
2. Dasgupta, R. (1993) : Performance of B-adjustment factor in industrial design, *Proc. of the Indo-US-Japan conference on Quality through engineering design*.
3. Ghosh, J.K. (1992) : Some New Thoughts on the Bootstrap - *Proceedings of Order Statistics and Non-Parametrics - Theory and Applications*, (Ed. P.K. Sen and I.A. Salama), Elsevier.
4. — (1992) : The Horvitz - Thompson Estimate and Basu's Cricus Revisited, *Proc. of the Indo-US Workshop on Bayesian Methods*, (Ed. P.K. Goel, N.S. Iyengar), Springer-Verlag.
5. — (with Mukherjee, R.) (1992) : Non-informative prior, *Proceedings of the Fourth Valencia Conference on Bayesian Statistics* (Ed. J. Bernardo), O.U.P.
6. Raha, A.B. (1992) : An example of a regular space that is not completely regular, *Proceedings of the Indian Academy of Science (Mathematical Sciences)*, 102, 1, 49-51.
7. — (with Erdos P. Siminovits and Sos V.T.) (1992) : On totally super-compact graphs, *Sankhya Spl. Vol. 54*, pp.155-167, *Proc. of the R.C. Bose Memorial Conference on Combinatorial Mathematics and Applications*.
8. — (with Panda, B.S. and Mohanty, S.P.) (1992) : Chordal graphs with specified perfect elimination orderings, Second National Conference/Seminar on Theoretical Computer Science, Ed. B.P. Sinha, *Proceedings of the second National Conference/Seminar*, (Ed. B.P. Sinha) June 1992, ISI, 56-68.
9. Rao, A. Ramachandra and Rao, S. Bhaskara (1992) : Measuring reciprocity in weighted Social Networks, *Sankhya, Special Vol. No.54, Proc. of the R.C. Bose Memorial Conference on Combinatorial Mathematics and Applications*, 349-355.
10. Sikdar, K. (1992) : Generalized t-ary trees and their path lengths with application, *Sankhya, Special Volume 54*, pp. 443-459, *Proceedings of the R.C. Bose Memorial Conference on Combinatorial Mathematics and Applications*.
11. Sinha, B.K. (with Roy, D.) (1992) : A characterization of Probability Laws using Paired and Multiple Comparison Models, *Sarhan Felicitation Conference Proceedings*, Elsevier.

Bangalore Unit

1. Dalampady, Mohan (1992) : Discussion of BAD View of Weighted Distributions. *Proceedings of the Fourth Valencia International Meeting on Bayesian Statistics*, Oxford University Press, London.
2. Sunder, V.S. (1992) : From Hypergroups of Subfactors, Operator Algebras and Operator Theory, *Proceedings of the OATE2 Conference, Romania, 1989*, (Ed. by W. Arvesen et al.) Pitman Research Notes in Mathematics, 271, 198-216.

Applied Statistics, Surveys and Computing Division

Computer Science Unit

1. Sengupta, Ashis. (1992) : Optimal Tests in Some Applied Mixture Models with Non-Regularity Problems, Recent Developments in Probability and Statistics, *Proceedings of the Calcutta Symposium*.
2. (with Rachev, S.T.) (1992) : On Admissibility of Tests, *Proceedings of the VIII-ISPS Conference*, 1-20.

Physical and Earth Sciences Division

Electronics

1. Bandyopadhyay, P. (1992) : Quantization, Anomaly and Berry Phase, *Proceedings of the XIX International Colloquium on Group Theoretical Methods in Physics*, Salamanca, Spain.
2. Das, N., Mukhopadhyay, K. and Dattagupta, J. (1992) : A Versatile External Control Method for Benes Network, *Proc. of the Int. Conf. on Parallel Processing*, Chicago, 17-21.
3. Das, R.K., Mukhopadhyay, K. and Sinha, B.P. (1992) : Bridged and Twisted Hypercubes with Reduced Diameters, *Proc. of the Int. Conf. on Parallel Processing*, Chicago.
4. Das, R.K. and Mukhopadhyay, K. (1992) : On Some Properties of Bridged and Twisted Hypercubes, *Proc. of the Second National Seminar on Theoretical Computer Science*, 114-128.
5. Das, S. and Bhattacharya, B.B. (1992) : Via Minimization in Channel Routing by Layout Modification, *Proc. of the VLSI Design*, '93, Bombay, 109.
6. Mukhopadhyay, K. (1992) : On Finding a Maximal Subcube Embedded in a Residual Hypercube, *Proceedings of the Second National Seminar on Theoretical Computer Science*, 131.
7. Sur-Koley, S. and Bhattacharya, B.B. (1992) : Canonical Embedding of Rectangular Duals with Applications to VLSI Floor-Planning. *Proc. of the 29th ACM-IEEE Design Automation Conference*, California.
8. Roy Choudhury, R.K. and Chatterjee, P. (1992) : Ion- Acoustic Solution in an Intense Relativistic Electron Beam, *Proceedings of the ICNM/II*, Beijing, China.

Electronics and Communication Sciences Unit

1. Basak, J. and Pal, S.K. (1993) : A self organising Model for Mixed Category Perception, *Proc. of the INSA - CSI Seminar on Pattern Recognition, Artificial Intelligence and Neural Networks*, Dehradun, India, 5-7.
2. Bhandari, D., Pal, S.K. and Kundu, M.K. (1993) : Image Enhancement Incorporating Fuzzy Fitness Function in Genetic Algorithm, *Proc. of the Second Int. Conf. on Fuzzy Systems*, San Francisco, U.S.A., 1408-1413.
3. Bhandari, D., Pal, N.R. and Dutta Majumder, D. (1992) : Fuzzy Divergence : A New Measure For Image Segmentation, *Proc. of the Second Int. Conf. on Fuzzy Logic and Neural Networks*, Iizuka, Japan, 645-648.
4. Chanda, B. and Dutta Majumder, D. (1993) : A Knowledge Based PCB Inspection System, *Proc. of the Ninth Int. Congress of Cybernetics and System*, New Delhi, India, 327-332.
5. Dan, T.K. and Datta, A.K. (1992) : Synthesis of Singing, *Proc. of the Inter. Workshop on Speech, Music and Allied Signal Processing*, Banaras Hindu University, Varanasi, M80 - M85.
6. Datta, A.K. (1992) : Do Ear Perceive Vowel Through Formants? *Proc. of the Inter. Speech, Music and Allied Signal Processing*, Banaras Hindu University, Varanasi, S37 to S42.
7. Ganguli, N.R. and Datta, A.K. (Mukherjee, B., Barbara, A.K. and Devi Meenakhi) (1992) : Acoustic Phonetics of Vowel Formants in Assamese Language, *Proc. of the Inter. Workshop on Speech, Music and Allied Signal processing*, Banaras Hindu University, Varanasi, S5 to S63.
8. Ghosh, A., Pal, N.R. and Pal, S.K. (1993) : On Robustness of Neural Network Based Object Extraction Systems Under Component Failure. *Proc. Seminar of the Patt. Recog. Artificial Intell. & neural Networks*, Deharadun, India, 25-26.
9. Majumder, S. and Datta, A.K. (1992) : Automatic Segmentation and Recognition of Vowels Using Shape Analysis, *Proc. of the Inter. Workshop on Speech, Music and Allied Signal Processing*, Banaras Hindu University, Varanasi, S45 to S56.
10. Mitra, S. and Pal, S.K. (1992) : Rule generation and inferencing with a layered fuzzy neural network, *Proc. of the Second Conf. on Fuzzy Logic and Neural Networks*, Iizuka, Japan, 641-644.
11. Pal, N.R. (with Bezdek, J.C. and Tsao, E.C. (1992): Improving convergence and performance of Kohonen's self-organizing scheme, *SPIE Proc. of the Science of Artificial Neural Networks*, Orlando, Vol. 1710, 500-509.
12. ——— (with ——— and ———) (1992) : Image segmentation using LVQ clustering networks, *Proc. of the North American Fuzzy Info. Process. Soc. (NAFIPS- 92)*, Mexico, 98-107.
13. ——— (with ———) (1992) : Average total uncertainty : a new measure and its properties, *Proc. of the Second Int. Conf. on Fuzzy Logic and Neural Networks*, Iizuka, Japan, 583-586.

14. ——— (with ———) (1993): Several new classes of measures of fuzziness, *Proc. of the IEEE Int. Conf. on Fuzzy Syst.*, 928-933.
15. Pal, S.K. Harish. P and Kundu, M.K. (1993) : Object extractions using neural networks, *Proc. of the INSA - CSI Seminar on Pattern Recognition, Artificial Intelligence and Neural Networks*, Dehradun, India, pp. 26-28.
16. Sarkar, N. and Chaudhuri B.B. (1992): An efficient approach to compute fractal dimension in texture image, *Proc. of the Eleventh IAPR Int. Conf. on Pattern Recognition. The Hague*, The Netherlands, 358-361.
17. Sengupta, P. and Chaudhuri, B.B. (1993) : A Lexical Representation System for Efficient Word Form Analysis and Lexical Projection in Inflectional Languages (with Bengali as a Case Study), (Ed. R.M.K. Sinha), *Proc. of the CPAL (Second Regional Conference on Computer Processing of Asian languages*, Kanpur, India), Tata McGraw Hill, New Delhi, 199- 208.
18. ——— and ——— (1993) : On Parsing a Class of Free Word-Ordered Languages, *Proc. of the Third Regional Workshop on Theoretical Computer Science*, Kharagpur, India, 202-210.

Geological Studies Unit

1. Chakraborty, T. and Chaudhuri, A. : Fluvial-aeolian interactions in a Proterozoic alluvial plain : example from the Mancheral Quartzite, Sullavai Group, Pranhita-Godavari Valley, India, *The Dynamics and Environmental Context of Aeolian Sedimentary Systems*, (Ed. Pye. K. Geol) 72, 127-141.
2. ———, Sarkar, S., and Chaudhuri, A : Depositional environment of Vindhyan and other purana basins : A reappraisal in the light of recent findings, *Proceedings of the "Group Discussion on the Vindhyan*, Jadavpur University, Calcutta, 20-21.
3. Sen, S.K. and Bhattacharya, S. : Some aspects of the Eastern Ghat granulite terrain of India, *Extended abstract*, 1 GCP 304, 14 (Adirondacks)

Social Sciences Division

Economic Researach Unit

1. Pal, M.N. (with Mukhopadhyay, R.) (1992) : The Equi-Spaced Optimal Index Formulation and the Multivariate Spatial Index of Economic Development for India, *Indian J. of Regional Science*, 24, 2, 30-32.

Economic Analysis Unit

1. Iyengar, N.S. (1992): Comments on Forecasting Growth Rates using Bayesian Shrinkage and other procedures by Arnold Zellner and Chansik Hong, *Proc. of the Conference on Bayesian Analysis in Statistics and Econometrics*, (Ed. Iyengar, N.S. and Goel, P.), Springer-Verlag, New York.

2. Iyengar, N.S., Joshi, S.N. and Gopalkrishna, M. (1992) : A Bayesian Approach to the Measurement of Poverty line, *Proc. of the Conference on Bayesian Analysis in Statistics and Econometrics*, (Ed. Iyengar, N.S. and Goel, P.), Springer-Verlag, Newyork, pp. 379-387.

Planning Unit

1. Dasgupta, Dipankar (1992) : Administered Prices and Deficit financing : A Macro View, *Proceedings of the Conference on Development Policy and Economic Theory*, Delhi, (Ed. K. Basu et.al), Oxford.
2. Dutta, Bhaskar (1992) : Measurement of Income Mobility : an Application to India, *Proceedings of the Conference on Development Policy and Economic Theory*, (Ed. K. Basu et. al.) Oxford.

Population Studies Unit

1. Bhattacharya, B.N. (with Mukherjee, S. and others) (1993) : Distribution of time of first birth in presence of Social customs regulating physical separation and coital frequency, *Proceedings of the Indian Science Congress*.
2. Deb Roy, R. (with Bhattacharjee, D.P.) (1992) : On records of right and its relevance to land reforms, *Proceedings of the Indian Historical Records Commission*, Vol. LVI.

Psychometric Research and Services Unit

1. Dutta Roy, D. (1993) : Computer simulation approach to develop teaching strategies for learning disabled children. *Proceedings of the National Workshop on learning problems of children*, New Delhi, NCERT, 522-532.
2. — (with Mallick, R.) (1993) : Anxiety and achievement in Mathematics, *Proceedings of the eightieth session of the Indian Science Congress*.

Computer and Statistical Services Centre

1. Bagchi, A. (1992) : Learning Object Models in Visual Semantic Networks, *Fourth Int. Conf. on Tools for Artificial Intelligence*, Arhington, Virginia, USA.
2. — (1992) : A Statistical Data Model with Hierarchy of Statistical Objects, *IEEE-ACE, Calcutta*, India, 57-60.
3. Pramanik, P. (1993) : A Communication Structure for Supporting Fault-Tolerant and Adaptive Wormhole Routing in a Binary N-Cube, *Proc. of the Euromicro Workshop on Distributed and Parallel Computing*, Gran Canaria, Spain, 418-425.

National Centre for Knowledge Based Computing

1. Banerjee, D.K., Deb, S. and Dutta Majumder, D. (1992) : TOMI : Try object with maximum information - a new approach to computer vision problems, *Proc. of the IEEE 2nd. Int. Conf. on Automation, Robotics and Computer Vision*, CV 228.1-22.8.6.
2. Chanda, B. and Dutta Majumder, D. (1993) : A Knowledge Based PCB Inspection System, *Recent Advances in Cybernetics and Systems*, (Ed. A. Ghoshal & P.N. Murthy), Tata Mc Graw Hill, New Delhi, 327-333.
3. Deb, S., Mukherjee D.P. and Dutta Majumder, D. (1993) : Building up of intelligent Robotic Sensor : A simple approach, *Proceedings of the Second Int., Symposium of Intelligent Robotics*, (Ed. by M. Vidyasagar), Bangalore, India, 167-174.
4. ———, ——— and ——— (1993) : Robospec : A transducer to differentiate plane from Angle for Robotic Application, *Recent Advances in Cybernetics and Systems*, (Ed. A. Ghoshal & P.N. Murthy), Tata Mc Graw Hill, New Delhi, 117-182.
5. ———, Uma Shankar, B. and Dutta Majumder, D. (1993) : Man-Machine Interface : a Vision Based Approach, *Recent Advances in Cybernetic and Systems*, (Ed. A. Ghoshal & P.N. Murthy), Tata Mc Graw Hill, New Delhi, 183-187.
6. Dutta, A.K., Das, J. and Dutta Majumder, D. (1992) : Studies of tropical boundary layer meteorology at Banaras, *Proc. of the DST Workshop on Preliminary scientific Results of MONTBLEX*, IISc. Bangalore, 103-110.
7. Dutta Majumder, D. (1993) : Mind - Body Problem and Artificial Consciousness for Computing Machines : A Cybernetic Approach, *Recent Advances in Cybernetics and systems*, (Ed. A. Ghoshal & P.N. Murthy), Tata Mc Graw Hill, New Delhi, 337-345.
8. Gupta, A. (with Weymouth, T.E. and Jain, R.) (1992) : Semantic queries in image databases, *Visual Database Systems II*, Ed. R.E. Knuth and D. Wegner, Netherlands, North Holland.
9. ——— and Bagchi, A. (1992) : Learning object models in visual semantic networks, *IEEE Int. Conf. Tools with Artificial Intelligence*.
10. ——— and ———. (1992) : VMDB : An object-oriented data model for a model-base of visual objects, *Proc. Int. Conf. CISMOT*, Bangalore, India, 93-110.
11. Mukherjee, D.P., Basak, J. and Dutta Majumder, D. (1992) : A Corner Detection Algorithm and its Parallel Implementation, *Proceedings of the Second Int. Conf. on Automation, Robotics and Computer Vision*, Singapore.
12. Sarkar, N. and Chaudhuri B.B. (1992) : An efficient approach to compute fractal dimension on texture image, *Proc. of the Eleventh IAPR Int. Conf. on Pattern Recognition*, The Hague, 358-361.

Papers Published in Books

Theoretical Statistics and Mathematics Division

Calcutta Unit

1. Chaudhuri, P. (1992) : Generalized regression quantiles : forming a useful toolkit for robust linear regression, *L-Statistical Analysis and Related Method* - Ed. : Y. Dodge.
2. Rao, B.L.S. Prakasa (1992) : On weighted least squares and some applications in Contributions to Stochastics, *K. Nagabhushanam Memorial Volume*, Wiley Eastern, New Delhi, 11-25 (Ed. C.R. Rao et al.).
3. Rao, B.L.S. Prakasa (1993) : 'Probability bounds, multivariate normal distribution and an integro-differential inequality for random vectors', *Stochastic Processes : A Festschrift in honour of Gopinath Kallianpur*, Springer-Verlag, New York, 275-284.
4. Rao, B.V. (with Bhattacharya, R.N.) (1993) : Random iterations of two Quadratic Maps, *Kallianpur Festschrift volume*, Springer-Verlag, 13-22.

Bangalore Unit

1. Ramasubramanian, S.(1992) : On the gauge for the third boundary value problems, in *Stochastic Processes, A festschrift in Honour of Gopinath Kallianpur*, (Ed. S. Cambanis, J.K. Ghosh, R.L. Karandikar and P.K. Sen), Springer-Verlag, 285-290.

Delhi Unit

1. Parthasarathy, K.R. and Mohari, A. (1992) : On a class of generalised Evans-Hudson flows related to classical Markov processes, *Quantum Probability and Related Topics VII*, (Ed. L. Accardi) World Scientific, 221-249.

Applied Statistics, Surveys and Computing Division

1. Bandyopadhyay, S. (1992) : Discrete Response Analysis in Population Control - An application of the Branching processes, Bio-Statistics, *Statistical Perspective in Health Care Research and Practice*, (Ed. BL Verma, G.D. Shukla and R.N. Srivastava), CBS Delhi, 111-16.
2. Chaudhuri, Arijit (1992) : Analysis of data with complex survey designs - A review, *Some aspects of recent trends in sample surveys*.
3. Mukherjee, Bishwa Nath (1993): Some Aspects of Social Science Survey Research Methodology, *Monograph on Teaching and Research in Development Economics*, Deptt. of Economics, Rabindra Bharati University, Calcutta.

Physical and Earth Sciences Division

Electronics and Communication Sciences Unit

1. Pal, S.K. (1992) : Fuzziness, image information and scene analysis : *An Introduction to Fuzzy Logic Applications in Intelligent Systems* (Ed. R.R. Yagar and L.A. Zadeh), : Kluwer Academic Publishers, 147-184.

Biological Sciences Division

Anthropometry and Human Genetics Unit

1. Basu, A. (1992) : Ethnic minorities in India : the problem of demographic and socio-cultural survival, *Science, Culture and Development*, L.K. Mahapatra Felicitation Volume, (Ed. N.K. Behura & K.C. Tripathy), Paragon Publishers, Bhubaneswar.

Biochemistry Unit

1. Ganguly, D.B. (1992) : Differential sensitivity of Peripheral blood lymphocytes to stannic chloride from patients with abnormal karyotypes, *Perspectives in Cytology and Genetics*, (Ed. G.K. Manna and S.C. Roy), 7, 1157-1165.

Social Sciences Division

Population Studies Unit

1. Guha Roy, S. and Malakar, C.R. (1993) : Population of West Bengal, *Introducing West Bengal*, Govt. of West Bengal.

Sociological Research Unit

1. Maiti, Asok. K. (1992) : Other Indians : A Review, *Tribal Transformation in India, Vol. III : Ethnopolitics and Identity Crisis*, (Ed. B. Chowdhury), Inter-India Publications, New Delhi, 55-86.
2. ——— (1992) : Observation of Land and Water-Resource Management in India, *Agrarian Policy Crisis in Asia : Our Lives*, (Ed. B. Chaudhury), Asian Cultural Forum on Development, Bangkok, 209-215.
3. ——— (1993) : Prospects of Agricultural Development in North East India, *Agricultural Development in North-East India : Constraints and prospects*, (Ed. K. Alam), Deep and Deep Publication, New Delhi, 39-51.

Library, Documentation and Information Sciences Division

DRTC (Bangalore)

1. Gopinath, M.A. (1993) : Object-modelling for information retrieval (Isaac (Dorothy) Raju (AAN) and Ramaiah (LS), Academic library management, *T.R. Publications*, 207-215.
2. Seetharam, S. (1993) : Evaluation of Indexing systems, *Indexing Systems and Services : course material, Course in Indexing.*

Computer and Statistical Services Centre

1. Pramanik, P. (1992) : A decomposition algorithm for deadlock-free communication in hypercubes, *Parallel Computing : Problem Methods & Applications*, (Ed. P. Messina & A. Murli), Elsevier, 543-551.

Books Accepted for Publication

Theoretical Statistics and Mathematics Division

1. Ghosh, J.K., Mitra, S.K., Parthasarathy, K.R. and Rao B.L.S. Prakasa (Ed.) : *Statistics and Probability : A Raghu Raj Bahadur Festschrift*, Wiley Eastern.

Biological Sciences Division

Anthropometry and Human Genetics Unit

1. Basu, A.M. and Basu A.K. (with Danda A.K.) (Ed.) : *Frontiers of Research in Anthropology*, Indian Anthropological Society, Calcutta.
2. Majumder, P.P. (Ed.) : *Modern Human Genetics : A Centennial Tribute to J.B.S. Haldane*, New York, Plenum Press.

Statistical Quality Control and Operations Research Division

1. Arthanari, T.S. (1993) : Design and Analysis of Circuits and Networks - The role of mathematical concepts Quality through Engineering Design, (Ed. Way Kuo) *ELSEVIER*.
2. Narayana, V. and Sreenivasan, N.S. : *Total Quality Management Concepts and Tools*, Wiley Eastern Ltd., New Delhi.
3. Ray Chaudhury, D. Dutta, T.K. (1993) : Optimization of flashlight performance of dry cells, Quality through Engineering Design, (Ed. Way Kuo), *ELSEVIER*.

National Centre for Knowledge Based Computing

1. Banerjee, D.K, Deb, S and Dutta Majumder, D (1993) : Object matching in complex scenes using ordered features, *Intelligent Robotics*, (Ed. M. Vidyasagar), Tata McGraw Hill, 221-226.
2. —, — and — (1993) : An Algorithm for Identifying Overlapping Objects with Arbitrary Rotation and Scaling, *Recent Advances in Cybernetics and Systems*, (Ed. A Ghoshal & P.N. Murthy), Tata MC Graw Hill, New Delhi, 163-168.
3. Chaudhuri, B.B. and Dutta Majumder, D. : *Two Tone Image and Processing and Recognition*, Willey Eastern.

Papers Accepted for Publication in Journals

Theoretical Statistics and Mathematics Division

Calcutta Unit

1. Bose, A. and Chaudhuri, P. : On the Dispersion of the Multivariate Median, *The Annals of the Inst. of Stat. Math.*
2. Bose, Arup and Dasgupta, Ratan : Speed of Convergence of the Least Squares Estimator in Autoregressive Models, *Journals of Statistical Planning and Inference*.
3. Chandra, T.K. and Bose, A. : Cesaro uniform Integrability and L_p -Convergence, *Sankhya*, Ser. A.
4. Chaudhuri, G. : Coefficient of Variation for the L-class of Life Distributions, *Communications in Statistics* :
5. Chaudhuri, P. and Sengupta, D. : Sign Tests in Multidimension : Inference Based on the Geometry of the Data Cloud, *Journal of the American Statistical Association*.
6. — and — : A Note on Robust Estimation of Location, *Statistics & Probability Letters*.
7. Das, A. : E-optimal Block and Row-column Designs with Unequal number of Replicates, *Sankhya B*.
8. Dasgupta, A. and Ghosh, J.K. : Unimodality and a New Method of Constructing Confidence Intervals, *Ann. Statist.*
9. Dasgupta, R. : Nonuniform Speed of Convergence to Normality while Sampling from Finite Population, *Sankhya A*.
10. Ghosh, J.K. (with Mukherjee, R.) : Adjusted Versus Conditional Likelihood : Power Properties and Bartlett Type Adjustment, *J. Roy. Statist. Soc. Ser. B*.
11. Mazumder, B. S. : Grain size Distribution in Suspension from Bed Materials, *Sedimentology*.

12. — (with Xia, R.) : Dispersion of Pollutants in an Asymmetric Flow through a Channel, *Int. Journ. Engng. Sci.*
13. — (with Bhowmik, N.G. & Soong, T.W.) : Distribution of Turbulent velocity Fluctuations in Natural Rivers, *Jour. Hydr. Res. IAHR.*
14. Mitra, M. (with Basu, S.K.) : On a Non-parametric Family of Life Distributions and its Dual, *Journal of Statistical Planning & Inference.*
15. Mukherjee, K.K. and Bhatia, R. : The Variation of Unitary Part of the Polar Decomposition, *M J. of Math. (Matrix Analysis).*
16. Rajeev, B. : On Asymptotics of a Class of 1-dimensional Diffusions : *Math. Proceedings of Cambridge Philosophical Society.*
17. Raha, A.B. (with Kundu Subiman) : Pseudocompactness Versus First Countability, *Questions and Answers in General Topology (JAPAN).*
18. — and — (with McCoy Robert A.) : Topologies Between Compact and Uniform Convergence on Function Spaces : II, *Real Analysis Exchange.*
19. Rao, A.R. and Bandyopadhyay, Suraj (with Chatterjee A.K.) : Relative Importance of Different Factors for Boundary of Reciprocity.
20. Saha, G.M. (with Mitra, R.K.) : Some Constructions of Balanced Incomplete Block Row-Column Designs, *Ars combinatoria.*
21. Sen, Arusharka : Uniform Strong Consistency Rates for Conditional U-statistics, *Sankhya Ser. A.*
22. Sengupta, D. : On the Decomposition of the Empirical Process with SRSWR Scheme into Sufficient and Ancillary Components, *C.S.A. Bulletin.*
23. Sinha B.K. (with Sengupta, S.) : Discovery of New Species - A finite Population Study, *Cal. Stat. Assoc. Bull.*
24. Srivastava, S.M. : Approximations and Approximate Selections of Upper Caratheodory Multifunctions, *Bollettino UMI.*
25. Tripathi, T.P. and Das, A.K. : Use of auxiliary Information in Estimating the Coefficient of Variation of a Finite Population, *Aligarh J. Stat.*

Delhi Unit

1. Bhattacharya, T. (with Leonetti, F.) : W2,2 Regularity for Weak Solutions of Elliptic systems with Nonstandard Growth, *J. Math. Anal. and Appl.*
2. Bhatia, R. : A Simple Proof of An Operator Inequality of Jovic and Kittaneh, *Journal of Operator Theory.*
3. — : Matrix Factorisations and Their Perturbations, *Linear Algebra and its Applications.*

4. ——— and Bhattacharya, T. : A Henrici Theorem for Joint Spectral of Commuting Matrices, *Proceedings of the American Mathematical Society*.
5. ——— and Mukherjee, K.K. : Variation of the Polar Part of a Matrix, *SIAM Journal on Matrix Analysis*.
6. Dey, Aloke : Some Orthogonal Arrays With Variable Symbols, *J. Comb. Inf. Systems Sc.* (Professor C.R. Rao Dedication Volume).
7. Dewan, I. : On Tests for Independence in the Presence of Competing Risks, *Sankhya Series A*.
8. Hande, Sayaji : A Note on Order Statistics From Non Identically Distributed Random Variables, *Sankhya*.
9. Karandikar, R.L. (with Bhatt, A.G.) : Invariant Measures and Evolution Equations for Markov processes characterized via Martingale Problems, *The Annals of Probability*.
10. ——— (with ———) : Weak Convergence to a Markov Process : The Martingale Approach, *Probability Theory and Related Fields*.
11. ——— (with Balkama A.A. and De Haan, L.) : The Maximum of n-Independent Processes, *Journal of Applied Probability*.
12. ——— (with ——— and ———) : The Maximum of n-Independent Processes, *Journal of Applied Probability*.
13. Parthasarathy, K.R. (with Hudson, R.L.) : Casimir Chaos in Boson ock Space, *J. Functional Analysis*.
14. ——— (with Sabatini, M.) : Some New Results on Global Asymptotic Stability, Jacobian conjecture, *Bull. Polish Acad. Sci.*
15. ———, Murthy, G.S.R. and Ravindran, G. : A Coperative Q-matrix which is not RO, *Math Programming*.
16. Parthasarathy, T., ——— and ——— : A Coperative Q-matrix which is not RO, *Mathematical Programming*.
17. ———, Mohan, S.R. and Sridhar, R. : LCP and Exact Order Matrices, *M.O.R.*

Bangalore Unit

1. Dagchi, Bhaskar : Optimality and Construction of some Rectangular Design.
2. ——— and Sastry, N.S.N. : Two Characterisations of Miqualian Inverse *Metrika* planes of even order, *Geometriae Dedicata*.
3. ——— (with Cheng, C.S.) : Some E-optimal Designs of Block Size Two, *Jour. Statist. Plan. Inf.*
4. Delampady, Mohan (with Irene Yee and James Zidek) : Hierarchical Bayesian Analysis of a Discrete Time Series of Poisson Counts, *Statistics and Computing*.

5. — (with Das Gupta, Anirban) : Gamma-Minimax Estimation in Multiparameter Problems, *Statistics and Decision*.
6. Mishra, G. (with Clark, D.N.) : Homogeneous Contractions and Unitary Representations of SU (1,1), *J. Operator Theory*.
7. Muthuramalingam, P.L. : Bound States for Momentum and Asymptotic Completeness in $L^2(\mathbb{R}^n)$: I. Trace Class Commutators for $n = 1$, *Rev. Roumaine Math. Pures. Appl.*
8. Padmawar, V.R. : Stratification, Midzuno-Sen Strategy and Nonnegative Umbiased Variance Estimation, *METRIKA*.
9. Pati, V., Sitaram, A. and Shashahani, M. : On the Spherical Mean-Value Operator on Compact Symmetric Spaces, *Pacific Journal of Math.*
10. —, Sunder, V.S. and Bhat, Rajaram : On some Convex Sets and their Extreme Points, *Mathematische Annalen*.
11. Ramasubramanian, S. : On the Gauge For the Neumann Problem in the Half Space, *Sankhya Ser. A*.
12. Rao, T.S.S.R.K. : Some Ramarks on the Schur Approximation Property, *Questiones Mathematicae*.
13. — : Spaces with the Namioka and Phelps Property have Trivial L-Structure, *Archiv. der. Mathematik*.
14. — : The Space of Compact Operators as an M-Ideal in its bidual, *Extracta Mathematicae*.
15. Sitaram, Alladi (with Willis, G.A.) : Lp-functions having the Mean Value Property on Certain Homogeneous Spaces, *Journal of the Australian Mathematical Society*.
16. Sunder, V.S. (with Krishnan, Uma) : On Principal Graphs and Weak Duality, *Math. Scand.*

Applied Statistics, Surveys and Computing Division

Biometry Research Unit

1. Basu, Tapas Kumar and Sarkar, Samir Kumar : Antiinflammatory and Acute Toxicity Study of Leaves of Vinca Roses Linn, *Indian Journal of Pharmacology*.
2. — and — : Effect of Ocimum Sanctum Leaf Extract on Glucose Utilization and Glycogen Deposition by Isolated Rat Hemidiaphragm, *Jornal of Institution of Chemists*

3. — and — : Acute Effect of *Azadirachta Indica* Leaves on Some Biochemical Constituents of Blood in Rats, *Journal of Ecobiology*.
4. — and — : Studies on Genetic Marker Isozyme on Starvation of *H. Fossils* due to Oxygen Depletion, *Journal of Ecobiology*.
5. — and — : Histopathological Changes Induced by Nonlethal Phosphamidon and Recovery in *Labeo Rohits* Fingerlings, *Environment and Ecology*.
6. Gupta, Sanjib : HLA Class II Antigens in Fibro Calcungol Pancreatic diabetes. *Ind. Jour. Physics and Allied Sc.*

Computer Science Unit

1. Chakravorti, S.R. and Chattopadhyay, A.K. : Efficiency of Prediction in Future Sample with Correlated Observations, *Pakistan J. of Statistics*.
2. Chaudhuri, Arijit : Randomized response : Estimating Mean Square Errors of Linear Estimators and Finding Optimal Unbiased Strategies, *Metrika*.
3. — and Mitra, Joydip : A Note on Two Variance Estimators for Raw-Hartley-Cochran Estimator, *Comm. Stat. Theo. Math.*
4. Dewanji, A. : A Weibull Model for the Estimation of Tamorigenic Potency, *Biometrics*.
5. — : Working Status and Anxiety Levels of Urban Educated Women in Calcutta, *International J. of Social Psychiatry*.
6. Krishnan, T. (with Achuthan, N.R.) : EM Algorithm For Segregation Analysis, *Biometrical Journal*. 34.
7. Mukherjee, Bishwa Nath : Toward A Rapprochement of Two Basic Paradigms of Educational Research, *Quality and Quantity*.
8. Mukhopadhyay, Parimal : Optimal Estimation of a Finite Population Total: A Review, *Sankhya*.
9. — : Optionality of Tests Related to Multivariate Exponential Distributions, *The Exponential Distribution : Theory, Methods and Applications*.
10. — and Bhattacharyya, S. : On Some Non-existence Theorems for Estimating a Finite population Variance, *Metron*.
11. — (with Bhuniya, S.) : On Efficient Estimation of Parameters of Force Bivariate Exponential Distributions Under a Type-I Censoring Scheme, *Technometrics*.
12. — (with Maitra, R.) : On the Admissibility and the Best Equivariant Nature of the MLE of the Mean Direction of a Circular normal distribution, *Ann. Inst. Statist. Math.*
13. — (with Pal, C.) : Optimal Invariant Test for the Mixing Proportion in Symmetric Wrapped Stable Mixtures, *Ann. Inst. Statist. Math.*

14. ——— (with Roy, S.) : On Families Admitting Cox's logistic Discrimination : Characterization and Estimation, *Biometrika*.
15. ——— (with Tracy, D.S.) : On Some Inferential Problems in Finite Population Sampling, *A review Jour. Appl. Stat. Sc.*

Physical and Earth Sciences Division

Chemistry Unit

1. Ghosal, D.N. : Cation Exchange capacity of soil clays before and after the removal of amorphous materials, *Indian Agriculturist*.
2. ——— : Selectivity coefficient and distribution constant in the exchange equilibris between soils and surfactants, *J. Ind. Soil Sci.*

Electronics Unit

1. Bandyopadhyay, P. (with Basu, B.) : Chiral Spin Liquid and Topological Aspects of Monopole Superconductivity, *Modern Physics letters B*.
2. Basu, B. (with Goswami, G.) : A Gauge Theoretical Formulation of Heisenberg Spin System and Super Symmetry, *Communications in Theoretical Physics*.
3. Bhattacharyya, S. (with Bhattacharya, D.P. and Pal, P.) : Muon Spectrum at Large Zenith Angles, *Nuovo Cimento C*.
4. Dandapat, B.S. (with Ray, P.C.) : On the Flow of a Thin Liquid Film Over a Cold/Hot Rotating Disk, *International Journal of Nonlinear Mechanics*.
5. ——— (with Ray, P.C.) : Flow of thin Liquid Film on a Rotating Disk in the Presence of a Transverse Magnetic Field, *Quarterly Journal of Mechanics and Applied Mathematics*.
6. Das, D.K., Chakrabarty, S.K. and Bhattacharya, B.B. : Irredundant Binate Realizations of Unate Functions, *International Journal of Electronics*.
7. Das, N. : Hierarchical Classification of Permutation Classes, *IEEE Transactions on Computers*.
8. ———, Bhattacharya B.B. and Dattagupta, J. : Isomorphism of Conflict Graphs in Multistage Interconnection Networks and its Application to Optimal Routing, *IEEE Trans. on Computers*.
9. Das, R.K. (with Sinha, B.P.) : Optimal Communication Algorithms in Double-Loop Networks, *IEEE Trans. on Parallel and Distributed Systems*.

10. ———, Mukhopadhyay, K. and Sinha, B.P. : A New Family of Bridged and Twisted Hypercubes, *Transactions on Computers*.
11. De, M. and Sinha, B.P. : Fast Parallel Algorithm for Ternary Multiplication Using Multivalued I2L Technology, *IEEE Transaction on Computers*.
12. Ghose S., Sinha, B.P. and Dattagupta, J. : An Extensible Fault-Tolerant Networks, *Computers and Electrical Engineering*.
13. Haldar, K. : Effect of Body Force on the Pulsating Blood Flow in Arteries, *Archives of Mechanics*.
14. ——— : Effect of a Magnetic Field on Blood Flow Through an Indented Tube in the Presence of Erythrocytes, *Indian National Science Academy*.
15. Mandal, B.N. and Banerjee, Sudeshna : Surface Water Waves Due to Rolling Oscillations of a Nearly Vertical Plate, *Revue Roumaine des Sciences Techniques Mécanique Appliquée*.
16. ——— and Dolai, D.P. : On Forced Motion in Water Due to a Nearly Cylindrical Wave-Maker, *International Journal of Mathematics Education in Science and Technology*.
17. ——— and ——— : On Forced Motion in Water Due to a Nearly Vertical Wave-Maker, *Mechanics Research Communications*.
18. ——— and ——— : Scattering of Water Waves by a Submerged Nearly Circular Cylinder, *Journal of Australian Mathematical Society, Series B (Applied Mathematics)*.
19. ——— and Mandal, Nanigopal : Expansion of a Class of Functions into an Integral Involving associated Legendre functions, *International Journal of Mathematics and Mathematical Sciences*.
20. ——— and ——— : A Note on Dual Integral Equations Involving Inverse Associated Weber-Orr Transforms, *International Journal of Mathematics and Mathematical Sciences*.
21. ——— (with Chaujdar, S.) : On Inventory Models For A Linear Trend in Demand, *International Journal on Management and Systems*.
22. Mazumdar, H.P. (with Ghosh, S.C.) : Acceleration Correlation in a Homogeneous Turbulent Flow Possessing, *Mellicity Physica Scripta*.
23. ——— (with Islam, N.) : A Note on the Spectrum of Turbulence in the Gas-Solid Flow, *Indian J. of Technology*.
24. ——— (with Chakraborty, C.R. and Bhattacharya, S. : Determination of Skewness Factor in a Self Preserving Turbulent Flow, *River Behaviour and Control, River Research Institute, Govt. of West Bengal*.
25. Roy, P. : Magnetic point like vortex and Parasupersymmetry, *Physics Letters B*.
26. ——— (with Barut, A.O.) : Dynamical Groups and Supersymmetry, *International Journal of Modern Physics A*.

27. — : (with Roy, B. and Barut, A.O.) : On the dynamical group of a system of two anyons with coulombinteraction, *Physics Letters A*.
28. Sengupta, S., Mukhopadhyay, K., Bhattacharya, B.B. and Sinha, B.P. : Geometric Classification of Triangulations and their Enumeration in a Convex Polygon, *Computer and Mathematics with Applications*.

Electronics and Communication Sciences Unit

1. Basak, J., Murthy, C.A., Chaudhury, S. and Dutta Majumder, D. : A connectionist model for category perception : theory and implementation, *IEEE Tr. on Neural Networks*.
2. Basak, J., Chaudhury, S., Pal, S.K. and Dutta Majumder, D. : Matching of Structural Shape Descriptions with Hopfield Net, *International J. of Patt. Recog. and Artificial Intelligence*.
3. Bhandari, D. and Pal, N.R. : Some new information measures for fuzzy sets, *Information Sciences*.
4. Chanda, A., De, A.K., Bedanga, P. and Das, J. : Taylor's Microscale Study of the Temperature Field of the Convective Boundary Layer Using Sodar Data.
5. Chaudhuri, B.B., Sarkar N. and Kundu, P. : An improved fractal geometry based texture segmentation technique, *Proc. IEEE, Part E*.
6. De, A.K., Tripathi and Das, J. : On Fine Structure of Dot Echoes As Observed by Acoustic Sounder, *Int. J. of Remote Sensing*.
7. Ghosh, A., Pal, N.R. and Pal, S.K. : Neural Computing : An Introduction and Some Applications, *J. Inst. Electron. Telecom. Engg.*
8. Pal, N.R. (with Bezdek, J.C. and Hemasinha, R.) : Iterates of Fuzzy Circulant Matrices, *Fuzzy sets and Systems*.
9. Kundu, P.K. and Chaudhuri, B.B. : Fuzzy Feature Based Texture Classification, *Pattern Recognition Letters*.
10. Mandal, D.P., Murthy, C.A. and Pal, S.K. : Theoretical Performance of a Multivalued Recognition System, *IEEE Trans. on Systems Man and Cybernetics*.
11. Mitra, S. and Pal, S.K. : A Fusion of Fuzzy Sets and Layered Neural Networks at the Input, Output and Neuronal Levels, *Indian J. of Pure and Applied Mathematics*.
12. Pal, N.R., Pal, P. and Basu, A.K. : A New Shape Representation Scheme and its Application to Shape Discrimination Using a Neural Network, *Pattern Recognition*.
13. Pal, N.R., Bhandari, D. : Image Thresholding : Some New Techniques, *Signal Processing*.
14. — and Pal, S.K. : A Review on Image Segmentation, *Pattern Recognition*.
15. Pal, N.R. (with Bezdek J.C. and Tsao, E.C.) : Generalized Clustering Networks and Kohonen's Self-Organizing Scheme, *IEEE Trans. Neural Nets*.

16. Pal, S.K. : Uncertainty Management in Space Station Autonomous Research : Pattern Recognition Perspective, *Information Sciences*.
17. — (with Wang, L.) : Fuzzy Medial Axis Transformation (FMAT) : Image Representation, Skeleton Extraction and Uncertainty Management in Computer Vision. *Sadhana*.
18. — and Mitra, S. : Fuzzy versions of Kohonen's net and MLP based classification : Performance evaluation for certain non-convex decision regions, *Information Sciences*.
19. —, Bhandari, D. and Kundu, M.K. : Genetic algorithms for optimal image enhancement, *Pattern Recognition Letter*.
20. Mitra, S. and Pal, S.K. : Self-Organizing Neural Network as a Fuzzy Classifier, *IEEE Trans. Syst., Man and Cybern.*
21. Tripathy, S., De, A.K. and Das, J. : A Computer Algorithm of Noise Removal in Acoustic Radar Ecograms, *Ind. J. of Radio & Space Physics*.
22. Saha, P.K. and Chaudhuri, B.B. : Detection of 3D Simple Points for Topology Preserving Transformations with Applications to thinning, *IEEE Trans. on Pattern Analysis and Machine Intelligence*.
23. Saha, P.K., Chaudhuri, B.B., Chanda, B. and Dutta Majumder, D. : Topology Preservation in 3D Digital Space, *Pattern Recognition*.
24. Sengupta, P. and Chaudhuri, B.B. : A Morpho-Syntactic Analysis based lexical subsystem, *International Journal of Pattern Recognition and Artificial Intelligence*.

Geological Studies Unit

1. Bhattacharya, S. : Quartz Fabric in a Ductile Shear Zone, Purulia, W.B., *Indian Journal of Earth Sciences*.
2. —, Sarkar, S.S., and Acharya, A. : Thermodynamic Calibrations Based on a Single Internally Consistent Data Set, *Indian Journal of Geology*.
3. —, Sen, S.K. and Acharya, A. : The Structural Setting of the Chilka Lake Granulite-Migmatite-Anorthosite Suite with Emphasis time Relation of Charnockites, *Precamb. Res.*
4. Dasgupta, K. : Some Contribution to the Stratigraphy of the Yerrapalli Formation, Pranhita-Godavari Valley, Decan, India. *Journal of Geological Society of India*.
5. Rudra, D.K. and Maulik, P.K. : Lower Jurassic Kota Limestone of India. In: Gierlowski-Kordesch, E., Kelts, K. (Ed.) *Global Geological Record of Lake Basins. Cambridge University Press, Cambridge*.
6. Sengupta, S. : Coticules in the Delhi Metasediments Near Kharwa, Ajmer dt., Rajasthan, *Indian Journal of Geology*.

Physics Unit

1. Das, P.K. : A Note on the Cohomology of Quantum flows. QP-8, *World Scientific*.
2. Mukherjee, Soma : Electrical Studies of Skin-a Review, *Ind. J. Phy and All Sc.*

Biological Sciences Division

Anthropometry and Human Genetics Unit

1. Das, K., Roy, M., Das, M.K., Sahu, P.N., Bhattacharya, S.K., Malhotra, K.C. and Mukherjee, B.N. (with Walter, H.) : Study of Enzyme Polymorphism and Haemoglobin Patterns Amongst Sixteen Tribal Population of Central India (Orissa, Madhya Pradesh and Maharashtra), *Japanese Journal of Human Genetics*.
2. Majumder, P.P. (with Nordlund, J.J., Nath, S.K.) : Pattern of Aggregation of Vitiligo in Families, *Archives of Dermatology*.
3. Majumder, P.P., Naik, S., Bhattacharya, S.K., Ghosh, K.K., Pal, S. and Mukherjee, B.N. : An Epidemiological Study of Blood Pressure and Lipid Levels Among Marwaris of Calcutta, *American Journal of Human Biology*.
4. Mukhopadhyay, B., Bhattacharya, S.K. and Basu, A. : Prevalence of Intestinal Parasitic Infestations Among the Lepchas of Kalipong Region : Religious Subgroup Comparison, *Journal of the Indian Anthropological Society*.
5. Mukhopadhyay, S., Dewanji, A. and Majumder, P.O. : Working Status and Anxiety Levels of Urban Educated Women in Calcutta (India), *International Journal of Social Psychiatry*.
6. Reddy, B.M. and Malhotra, K.C. (with Chopra, V.P.) : Trends of Inbreeding and Marriage Distance Among the Fisherfolk of Kolleru Lake, India : An Intra Population Study, *Journal of the Indian Anthropological Society*.

Biochemistry Unit

1. Basu, J. and Duttagupta, C. (with Ahn, C., Palan, P.R. and Romney, S.L.) : Alteration of Erythrocyte Glutathione Metabolism Associated with Cervical Dysplasias and in situ Cercinoma, *J. Cancer Common*.
2. Ganguly, B.B. : Cell Division, Chromosomal Aberration and Micronuclei Formation in Human Peripheral Lymphocytes : Effects of Stannic Chloride on Donor's Age, *Biological Trace Element Research*.

Embryology Unit

1. Chattopadhyay, J. and Tapaawi, P.K. : Global Stability Results on SIRS Epidemiological Models with Nonlinear Incidence Rates, *Math. Comp. Modelling*.

2. Chattopadhyay, J. and Tapaswi, P.K. : Normal and Tumour Tissue Growth., *Cybernetica*.
3. Ghosh, A.K. and Tapaswi, P.K. : An SIRS Epidemiological Model with Immunity Caused by Low Level of Infection, *Cybernetica*.
4. Mukhopadhyay, B.B., Tapaswi, P.K., Chatterjee, A. and Mukherjee, B. : A Mathematical Model for the Occurrences of Japanese Encephalitis. *Mathematical and Computer Modelling*.
5. Mukhopadhyay, B.B. and Tapaswi, P.K. : An SIRS Epidemic Model of Japanese Encephalitis, *Int. J. Math. and Mathematical Sciences*.
6. Tapaswi, P.K. and Chattopadhyay, J. : Turing Structures During Embryogenesis, *Bio-Systems*.
7. Saha, A.K. and Tapaswi, P.K. : Bifurcating Pattern Formation During Cellular Differentiation and Morphogenesis, *Cybernetica*.

Leaf Protein Unit

1. Chanda, S. (with Chakrabarti, S.) : Biotransformation of a Liquid Vegetable Waste into Single Cell Protein, *Journal of Industrial Microbiology*.
2. Chanda, S. (with Das, S., Bhaduri, S.K. and Sardar, D.) : Chemical Evaluation of Some Tropical Tree Leaf Fibres : A Social Forest Resource, *Bioresource technology*.
3. Dewanji, A. : Amino Acid Composition of Leaf Proteins Extracted From Some Aquatic Weeds, *Journal of Agricultural & Food Chemistry*.
4. Dewanji, A., Matai, S., Si, L.K., Barik, S. and Nag, A. : Chemical Composition of Two Semi-Aquatic Plants for Food use, *Plant Foods for Human Nutrition*.

Social Sciences Division

Economic Research Unit

1. Chattopadhyay, M., Neogi, C. and Maiti, S. : Growth and Instability in Crop Production in Eastern India, *The Asian Economic Review*.

Planning Unit

1. Dasgupta, Dipankar with Meenakshi : Choice Under Disequilibrium : A Diagrammatic Approach, *Journal of Quantitative Economics*.
2. Dutta, Bhaskar (with Barbera, S.) : Protective Behaviour in Matching Models, *Games and Economic Behaviour*.

3. ——— and Sen, Arunava : Bayesian Implementation : The Necessity of Infinite Mechanisms, *Journal of Economic Theory*.
4. ——— and ——— : Implementing Generalised Condorcet Social Choice Functions via Backward Induction, *Social Choice and Welfare*.
5. ——— (with Vohra, R.) : A Characterization of Egalitarian Equivalence, *Economic Theory*.
6. Jain L.R. (with Tendulkar) : An Analysis of Inter-State and Inter-Commodity Group Rural and Urban Consumer Price Indices in India, 1983 to 1988-89, *Journal of the Indian School of Political Economy*.
7. Ramaswami Bharat : Supply Response to Agricultural Insurance : Risk Reduction and Moral Hazard Effects, *American Journal of Agricultural Economics*.

Population Studies Unit

1. Deb Roy, R. : Science Education in Bengal in the 19th Century, *Bulletin of the Asiatic Society*.

Psychometric Research Unit

1. Dutta Roy, D. (with Chatterjee, A.) : Organizational Health & Life Satisfaction : A Path-analytic Model. *Managerial Psychology*.
2. ———, Mukherjee, M. (with Chatterjee, A.) : Application of Correspondence Analysis in Understanding Organizational Awareness Pattern, *Journal of Psychometry*.
3. Ghosh, A. : Entrepreneurship Attributes as Related to Certain Psychological and Background variables, *Psychological Studies*.
4. Gupta, R., Mukherjee, M. (with Chatterjee, S.) : A Comparative Study of the Factors Affecting Academic Achievement Among Four Groups of Adolescents, *Journal of Psychological Researches, Madras*.
5. Mukherjee, M. : Computer Application of Psychological Tests, *Indian Educational Review/Journal of Indian Education*.
6. ——— (with Chatterjee, S. and Roy, S.) : Management of Testing System, *Indian Educational Review/Journal of Indian Education*.
7. ——— (with Chatterjee, S. and Roy, S.) : A Comparative Study of the Interest Pattern of Students and Teachers in Missionary and Non-Missionary Schools, *Psychological Research*.

Sociological Research Unit

1. Bhattacharjee, Debashis and Chakrabarti, P. : Rural Development : Views and Vision - An Experience From a Purulia Village, *Man and Life*.

2. Chakrabarti, Subhendu : Concept and Method of Ascertaining Assets Among Rural Households, *Indian Economic Review*.
3. Chakrabarti, P. (with Som, D.K. and Chandra, S.) : Are the Old Obsolete - An Exploratory Study in Rural Giridih, Bihar, *Man in India*.
4. Chattopadhyay, K. : Social Ecology and Societal Development, *Man and Life*.
5. Chatterjee, A.K., Rao, A.R. and Bandyopadhyay, S. : Relative Importance of Different Factors for Boundary of Reciprocity : An Illustration. *CONNECTION*.
6. Chattopadhyay, Molly : Attempt to Assess Organisational Efficiency in State-run Hospital, *Journal of Policy Modelling*, Holland.
7. ——— : Bio-social Factors Responsible for Adopting Sex Profession, *Social Biology*.
8. ——— : Nurses and Their Trade-Unions : An Enquiry Into the Role of Trade-Unions as Socializer of Work-Ethics in India, *International Sociology*.
9. Ghosh, Bhola Nath : Social Outlook of the Aspirants For Rural Leadership : A Case Study in a Gram Panchayat, *Journal of the Indian Anthropological Society*.
10. ——— : A Review of the Theories of Diffusion : Some Empirical Observation on Agricultural Activities in Rural Areas, *Journal of the Indian Anthropological Society*.
11. ——— : Some of our Experiences in Field Level Research. *Man and Life*.
12. Ghosh, Tejendra Nath : The Impact of Legislation : An Experiences from Calcutta, *Bulletin of the Socio-Economic Research Institute*.

Statistical Quality Control and Operations Research Division

1. Anand, K.N. : TQM Implementation Through Policy Management - An Indian Experience, *Quality Progress*.
2. ——— : Cross Level Team for Speedy Elimination of Shop Floor Defects, *Quality Progress*.
3. ——— : Improving Paraffin Wax Yield Through Process Optimization - An Experimental Approach, *Quality Engineering*.
4. Majumder, S.K. : Study on Identifying optimum Boring Conditions for Horizontal Boring Machines, *Journal of Production Engg.*
5. ——— : Study on Reducing the Process Variabilities of Reverse Gear of a Passenger Car, *Journal of Production Engg.*
6. Mohan, S.R. and Parthasarathy, T.(with Sridhan R.) : The Linear Complementarity Problems with Exact Order Matrices, *Mathematics of Operations Research*.

7. Murthy, G.S.R. : A Note on Sufficient Conditions for Q_0 and $Q_0 \times P_0$ matrices, *Math Programming*.
8. Rajendra Prasad, V. : A Generalized Time-cost Trade off Transportation Problem, *Journal of Operations Research Society*.
9. Ravindran, G. (with Julg, A.P. and Tija, S.H.) : Games of Coordination, *Game Theory and Applications*.
10. Ravindran, G. (with Szajowsky) : Non-zero Sum Games with Priority As Dynkin's Games, *Mat. Japonica*.
11. Ravindran, G. (with Murthy, G.S.R. and Parthasarathy, T.) : A Copositive Matrix which is not R_0 , *Math. Programming*.

Computer and Statistical Services Centre

1. Pal, Srimanta : Some Practical Experience on Design and Implementation of a Cartographic Database Related to Borders and Boundries, *Advances in Modelling & Analysis*.
2. ——— (with Bhattacharya, P.) : A Shape Preserving One Pass Thinning Algorithm and its Behavioural Analysis, *Advances in Modelling & Analysis*.
3. ——— (with Pal, R.) : A Mathematical Model for the Effect of Water Pollutants on the Growth Pattern of Pollen, *Biometrical Journal*.

National Centre for Knowledge Based Computing

1. Banerjee, D.K. with Parui, S.K. and Dutta Majumder, D. : A shape metric for 3D objects. *Indian Journal of Pure and Applied Mathematics*.
2. Dey, A.K., Chakraborty, A.K., Das, J. and Dutta Majumder, D. : Atmospheric Water Vapor Model in Tropical Environment, *Int. J. of Remote Sensing*.
3. Chaudhuri, B.B. and Kundu, P.K. : Fuzzy Feature-Based Texture Classification, *Pattern Recognition Letters*.
4. Mukherjee, D.P., Banerjee, D.K., Uma Shankar, B. and Dutta Majumder, D. : Coal Petrography - A Pattern Recognition Approach, *Int. Journal of Coal Geology*.
5. Pal, Amita : Some Applications of GGA for Automatic Learning of Class Parameters in Presence of Wrong Samples, *Information Sciences*.

6. Pal, Amita and Dutta Majumder, D. : Approaches to Supervised Learning for Pattern Recognition, *Indian Journal of Pure and Applied Mathematics*.
7. Saha, P.K. and Chaudhuri, B.B. : Detection of 3D Simple Points for Topology Preserving Transformations with Applications to thinning, *IEEE Trans. on Pattern Analysis and Machine Intelligence*.
8. ——— : Natural Language Processing In an Indian Language (Bengali) - I : Verb Phrase analysis, *J. Inst. Electronics and Telecom. Engg.*

Papers Accepted for Publication in Conference Proceedings

Theoretical Statistics and Mathematics Division

1. Das, A. : E- and MV-optimal Orthogonal Block Designs. Recent Development in Probability and Statistics, *Proceedings of the 1st International Triennial Calcutta Symposium on Probability and Statistics*, Springer-Verlag.
2. Dasgupta, R. and Ghosh, J.K. : Optimal Assembly Problems of Rotar Blades : a Heuristic Approach, *Proc. of the 2nd Asian Congress on Quality and Reliability*.
3. Dasgupta, S. and Bhandari, S.K. : Unlinking Theorem for Symmetric Convex Functions, *Proc. of the International Symp. on Multiv. Analysis*, Hong Kong.
4. Ghoshal, S., Ghosh, J.K. and Samanta, Tapas : Stability and Convergence of Posterior Distributions in Non-regular cases, *Proceedings of the Purdue Symposium, Statistical decision theory and related Topics*, Academic Press.
5. Mitra, M. (with Basu, S.K. and Roy, D.) : Interrelationships Between Various Notions of Non-monotonic Ageing, *Proceedings of the Calcutta Triennial International Symposium on Probability & Statistics*, Narosa.
6. Rao, B.L.S. Prakasa : Nonparametric Approach to Time Series Analysis, *Proceedings of the Hyderabad Conference on Statistical Inference for Stochastic processes*, Wiley Eastern, New Delhi
7. Rao, S.B., Panda, B.S. and Mohanti, S.P. : A Linear Time Algorithm for Finding Hamiltonian Cycle in Proper Interval Graphs, *Proc. of the Third National Seminar on Theoretical Computer Science IIT, Kharagpur*.
8. ——— (with Koh, K.M. and Vijayan, K.) : Self-complementary Graphs - A Survey, *International Conference in Combinatorics*, China.
9. Sarma, Y.R. (with Jammalamadaka, S.R.) : Circular Regression, *Proc. of the Third Pacific area Statistical Conference*, Tokyo, North-Holland.
10. Tripathi, T.P. : Estimation of domain parameters using partial stratification and inverse sampling, *Proceedings of the First International Triennial Calcutta Symposium on Probability and Statistics*.

Applied Statistics, Surveys and Computing Division

1. Bandyopadhyay, S. : On some problems of Imperfect Frames in Large Scale Sample Surveys. *Proceedings of the Large Scale Sample Surveys in India, (Ed. A. Dewanji & A.K. Adhikari).*
2. Basu, Tapas Kumar and Sarkar, Samir Kumar : Observations of chemically induced and X- irradiated 'stress' inflicted on laboratory animals, *Proceedings of the 9th Hungarian Conference on Biomedical Engineering (Budapest).*
3. Dewanji, Anup : Analysis of competing risks data with missing failure type using partial likelihood approach. *Proc. of the Workshop on Reliability and Survival Analysis, Pune.*
4. Dewanji, Anup : Estimation of the no. of Bugs in Software Reliability, *Proc. of the Indian Sc. Congress, Goa, 1993.*
5. Mukherjee, Bishwanath (with Maiti, S.S.) : Maximum Likelihood Estimation of Partially Structured Covariance Matrices, *Proceedings of the Calcutta Triennial Symposium on Probability & Statistics, University of Calcutta.*
6. Sengupta, Debasis (with Jammalamadaka, S.R.) : Statistical Inference from Discrete Life History Data, *Calcutta University Golden Jubilee Conference.*
7. ——— : On Relative Aging of Life Distribution, *Proc. of the Workshop on Reliability and Survival Analysis, Pune.*
8. ——— (with Deshpande, J.V.) : Inference on Relative Aging of Life Distributions, *Calcutta University Golden Jubilee Conference.*

Physical and Earth Sciences Division

Electronics Unit

1. Mukhopadhyay, K. and Sinha, B.P. : On multi-layered non-blocking networks, *Proc. of the Third National Seminar on Theoretical Computer Science, I.I.T., Kharagpur.*
2. Nandy, S.C., Mukhopadhyay, K. and Bhattacharya, B.B. : On a new class of firing problems, *IEEE Transactions on Computer.*

Electronics and Communication Sciences Unit

1. Basak, J., Murthy, C.A., Chaudhury, S. and Dutta Majumder, D. : A Connectionist/Network for Simultaneous Perception of Multicategories, *11th Int. Conf. on Pattern Recognition, The Hague.*

2. Murthy, C.A., Chatterjee, N., Uma Shankar, B. and Dutta Majumder, D. : IRS Image Segmentation : Minimum Distance Classifier Approach, *11th Int. Conf. on Pattern Recognition*, The Hague.

Biological Sciences Division

Anthropometry and Human Genetics Unit

1. Basu, A. and Gupta, R., (with Ferrell, R.E., Elston, R.C., Roberts, D.F. & Mukherjee, D.P.) : Panel discussion on Genes, Environment and Disease, *Modern Human Genetics : A Centennial Tribute to J.B.S. Haldane*, Plenum Press, New York, (Ed. P. Majumder).
2. Majumder, P.P. : Segregation Analysis in the Understanding of Complex Disorders : Some Recent Developments, *Modern Human Genetics : A Centennial Tribute to J.B.S. Haldane*, New York, Plenum Press.
3. ——— (with Mukherjee, B.N.) : Genetica Diversity and Affinities Among Indian Populations : An overview, *Modern Human Genetics : A Centennial Tribute to J.B.S. Haldane*, New York, Plenum Press.

Biochemistry Unit

1. Ganguly, B.B. : Baseline information and induced cytogenetic damage in human lymphocytes in vitro, *Proc. of the Haldane Centenary International Conference on Human Genetics*.
2. ——— and Duttagupta, C. : Heavy metal toxicity in Mouse bone marrow cells, *Proc. of the International Symposium on Environmental Mutagens and Human Health and XVIII Annual Conference of Environmental Mutagen Society of India*.

Leaf Protein Unit

1. Chanda, S. and Das, S. : Chemical Assessment of Tree Leaf Fibres : A Wealth in National Perspectives, *Proceedings on the National Seminar on tree biology of Himalayan and tropical species*.
2. Das, S. and Chanda, S. : Bioconversion of Tree Leaf Fibre Residue into Edible Protein, *Proceedings on the National Seminar on tree biology of Himalayan & tropican species*.
3. Das, S. and Chanda, S. : Bioregeneration of Protein From Tree Leaf Fibre Residue : A Social Forest Resource, *Proceedings of the International Conference on Biotechnology in Agriculture & Forestry*.
4. Nag, A. and Matai, S. : Biochemical Composition of Fibrous Residue From Tree Leaves, *Proceedings of the International Conference on Biotechnology in Agriculture & Forestry*.

Social Sciences Division

Economic Research Unit

1. Bhattacharya, N. : Contribution of Professor Mahalanobis to Large Scale Sample Surveys, Econometrics and Economic Planning, *Proceedings of the Statistics Section of the 80th Session of the Indian Science Congress, Goa, January, 1993.*

Population Studies Unit

1. Bhattacharya, B.N. (with Manna, B. and others) : Risk factors of incidence of diarrhoea among under-five children in rural West Bengal, *Proceedings of the Tenth Annual Convention of Indian Society for Medical Statistics, 1992.*
2. Bhattacharya, B.N. (with Singh, K.K. and others) : A probability model for open birth interval in equilibrium, *Proceedings of the Tenth Annual Convention of Indian Society for Medical Statistics, 1992.*
3. Bhattacharya, B.N. (with Singh, K.K. and others) : A study on time of first birth and its components, *Proceedings of the Tenth Annual Convention of Indian Society for Medical Statistics, 1992.*
4. Deb Roy, R. : A Note on the records of microregional statistical surveys in India, 1800-1850 and their archival preservation, *Proceedings of the Conference on Archival Sources and Demographic Research.*
5. Guha Roy, S. : Morbidity related epidemiological determinants in Indian aged, *Proceedings of the Indo-UK Workshop on Public Health Implications of Aging in India, New Delhi, 1993.*
6. Majumder, P.K., Bhattacharya, B.N. and others : On utilisation of maternal and child health service in rural Jammu, *Proceedings of the Tenth Annual Convention of Indian Society for Medical Statistics, 1992.*

Sociological Research Unit

1. Dasgupta, Atis : The Fakir and Sannyasi Uprisings and the Bengal Famine of 1769-70, *Proceedings of the Historical Seminar on 18th Century in Indian History, Visva-Bharati, Shantiniketan.*
2. Ghosh, Bhola Nath : Some experience of diffusion - Adoption in rural societies, *Proceedings of the Anthropology and Archaeology Section of the 80th Session of the Indian Science Congress, Goa.*
3. Maiti, Asok K. : Observation of land and water resource management in India, *Proceedings of the Centre of Science and Environment, New Delhi.*

Papers Accepted for Publication in Books

Theoretical Statistics and Mathematics Division

Calcutta Unit

1. Rao, D.L.S. Prakasa : Bernstein-type Inequality for Associated Sequences, *A Raghu Raj Bahadur Festschrift*.

Delhi Unit

1. Parthasarathy, K.R. (with Mohari, A.) : A Quantum Probabilistic Analogue of Feller's Condition for the Existence of Unitary Markovian Cocycles in Fock Space, Statistics and Probability : *A Raghu Raj Bahadur Festschrift*.

Physical and Earth Sciences Division

Electronics and Communication Sciences Unit

1. Mandal, D.P. and Murthy, C.A. : Computing the Multivalued Shape of a Pattern Class, Fuzzy Reasoning in Information Decision and Control, Boston : Kluwer Academic Publishers. (Ed. S.G. Tzafestas and A.N. Venetsanopoulos).
2. Mitra, S. and Pal, S.K. : Neuro Fuzzy Expert Systems : Overview with a Case Study, Fuzzy Reasoning in Information Decision and Control Systems, Boston : Kluwer Academic Publishers. (Ed. S.G. Tzafestas and A.N. Venetsanopoulos).
3. Pal, N.R. (with Bezdek, J.C.) : Measures of Fuzziness : A Review and Several New Classes, *Fuzzy sets, Neural nets and Soft computing*, (Ed. R.R. Yagar and L.A. Zadeh).
4. Pal, S.K. (with Ghosh, A.) : Neuro-Fuzzy Image Processing : Relevance and Feasibility, *Neural and Fuzzy Systems : The Emerging Science of Intelligence and Computing*, SPIE Press. (Ed. S. Mitra, W. Kraske and M.M. Gupta)
5. Ray, K.S. : Analysis, Design, Implementation and Critical Appreciation of Fuzzy Logic Controller, Fuzzy reasoning in Information, Decision and Control Systems, Kluwer academic publishers.

Biological Sciences Division

Anthropometry and Human Genetics Unit

1. Basu, A. : Migration, population subdivision and merger : Biological and sociocultural correlates, *Usha Deka Felicitation Volume*, (Ed. N.K. Behura & K.C. Tripathy).

Leaf Protein Unit

1. Chanda, S. : Fungal digestion of leaf protein wastes from two aquatic plants for single cell protein production and BOD reduction, *Inland Water Resources : India*.
2. Dewanji, A. : Utilisation aspects of some aquatic plants, *Inland Water Resources : India*.

Social Sciences Division

Economic Research Unit

1. Chakravarty, Satya R. : Oligopolies and Aggregate Market Power, *Mathematical Modelling in Economics*, Springer Verlag, New York, (Ed. W.E. Diewert et.al).
2. ——— (with Chattopadhyay, N.) : An Ethical Index of Deprivation, *Research on Economic Inequality*. JAI Press, Connecticut, (Ed. D.J. Slottje).
3. ——— (with Eichhorn) : Measurement of Income Inequality : Observed Versus True Data, *Models and Measurement of Welfare and Inequality*, Springer-Verlag, New York, (Ed. W. Eichhorn).
4. ——— (with Silber) : Employment Segregation Indices : An Axiomatic Characterization, *Models and Measurement of Welfare and Inequality*, Springer-Verlag, New York, (Ed. W. Eichhorn).

Planning Unit

1. Chander, Parkash : Cost-sharing Local Games in Dynamic Processes for Public Goods, *Theoretical Issues in Development Economics*, (Ed. B. Dutta, et.al).
2. ——— (with Tulkens) : Strategically Stable Cost Sharing in an Economic Ecological Negotiation Process, *Transnational Environmental Problems : An Economic Perspective*, *Proceedings of Task Force 3 of the European Science Foundation Programme on Environment, Science and Society*, Kluwer, Boston (Ed. K.G. Maler).
3. Dasgupta, Dipankar : Macroeconomics of Price Controls, *Theoretical Issues in Development Economics*, *Oxford University Press*, (Ed. B. Dutta, et.al).

Linguistic Research Unit

1. Bandyopadhyay, D. : Valency of Bangla Verbs. *Monograph Series ILS*.

Papers read at Conference, Seminar, Symposia and Workshop

Theoretical Statistics and Mathematics Division

Calcutta Unit

1. Bose, Arup and Sengupta, Debapriya : Asymptotic Properties of Estimators in Non-linear Regression and Generalised Regression Models, *Fifth Purdue Symposium on Statistical Decision Theory and Related Topics*, Purdue University, June 14-19, 1992 (Invited talk).
2. Chaudhuri, P. and Bhattacharyya, G. : Distance Based Linear Discrimination : An Overall View, *Seventh International Conference on Multivariate Analysis*, New Delhi, December 18-23, 1992.
3. Chaudhuri, P. : Generalized Regression Quantiles : Forming a Useful Toolkit for Robust Linear Regression, *Second International Conference on Statistical Analysis Based on L1-Norm and Related Methods*, Neuchatel, Switzerland, August, 1992.
4. Dasgupta, R. : Sharper Moment Bounds for Martingales, *Multivariate Conference, PCM Centenary celebration*, Jan. 1, 1993, New Delhi.
5. Dasgupta, S. : The Papers of Mahalanobis on D2, *PCM Birth Centenary International Conference on Multivariate Analysis*, New Delhi, December, 1992.
6. Ghosh, J.K. : Statistical Decision Theory and Related Topics, *Fourth International Conference, Purdue, USA*.
7. — : A Decision Rule for Dimension in the Context of MANOVA, *International Symposium on Multivariate Analysis in Memory of P.C. Mahalanobis*, ISI, New Delhi, December, 1992.
8. Mazumder, B.S. : Grain Size Distribution in Suspension from Bed Materials and Flow Parameters, *37th Congress of Indian Society of Theoretical and Applied Mechanics*, G.B. Pant University of Agri. & Technology, Pantnagar, January 14-17, 1993.
9. Mitra, M. (with Basu, S.K.) : On the BFR Family of Life Distribution, *Conference on Reliability Theory*, University of Poona, Pune, May 4-8, 1992.
10. Rajeev, B. : Asymptotics of a Class of 1-Dimensional Diffusions, *Mahalanobis Birth Centenary Conference*, ISI, Delhi, Dec. 18-23, 1992.
11. Rao, A.R. : Reciprocity in Social Networks, National Seminar on *Graph Theory and Its Applications*, Department of Mathematics, Annamalai University, 5-7 January 1993.
12. Rao, B.L.S.P. : Nonparametric Approach to Time Series Analysis, *Statistical Inference for Stochastic Processes*, University of Hyderabad, March 30-31, 1992.
13. — : Optimal Asymptotic Tests for Composite Hypotheses for Continuous Time Stochastic Processes, *80th Indian Science Congress*, Goa, January 1993.

14. Rao, S.B. : Theory of Degree Sequences of Graphs with Given properties, *5th International Conference on Combinatorial Mathematics and Computing*, Univ. of Western Australia, 7-11 July 1992, Nedlands (Invited address).
15. Rao, T.J. : On Certain Problems of Sampling Designs and Estimation for Multiple Characteristic, *International Symposium on Multivariate Analysis as a part of Mahalanobis Birth Centenary Celebrations*, ISI, Delhi, December 18-21, 1992.
16. Sengupta, D. : A Large Sample Theory for Optimal Parameter Design Under Cost Constraints, *Indo-US-Japan Conference on Quality through Engineering Design*, Bangalore, Jan.12-14, 1993.
17. Sinha, B.K. : Invited talk, *Int'l Conference on Optimization in Statistics*, Aligarh Univ. Dec.14-17, 1992.
18. — : Discovery of New Species in Finite Population Study, *Multivariate Conference at ISI*, Delhi, Dec. 18-22, 1992 (invited talk).
19. — An Application of Bivariate Exponential Models and Related Inference, *Int. Conference on Multivariate Environmental Statistics*, Penn. State Univ, May 5-9, 1992.
20. Tripathi, T.P. (with Chaube, Y.P.) : Use of Multivariate Information For Near-Optimum Probabilities of Selection in Varying Probability Sampling, *Indian Science Congress Session*, Goa, Jaunary, 1993.

Delhi Unit

1. Bapat, R.B. : Inequalities for the q-permanent, *Second meeting of International Linear Algebra Society*, Lisbon, Portugal, August 3-7, 1992.
2. — : Generalized Inverses with Proportional Minors, *Workshop on Generalized Inverses*, ISI Delhi, December 11-16, 1992.
3. Dewan I. : Nonparametric Test For the Two Sample Problem With Two Independent Competing Risks, *Seventh International Conference on Multivariate Analysis*, Delhi University, December 18-23, 1992.
4. Sayaji, Hande : Selection Population Close to Control : Non Parametric Approach, *International Conference on Multivariate Analysis*, Delhi University, December 18-23, 1992.
5. Roy, Rahul : On questions of Hartigan in Cluster Analysis, *Seventh International Conference on Multivariate Analysis*, Delhi University, December 18-23, 1992.

Applied Statistics, Surveys and Computing Division

Computer Science Unit

1. Adhikari, Arun : On the performance of the nearest proportional to size Sampling Design, *80th Session of Indian Sc. Congress, Goa, 1993.*

Physical and Earth Sciences Division

Chemistry Unit

1. Ghosal, D.N. : Micronutrient Deficiency in North Bengal Soils As related to Rainfall & Soil Texture - A Possible Method of Amelioration, *National Symposium on Soil Resource Vis-A-Vis sustainable Land Use*, National Bureau of Soil Survey & Land use Planning, Calcutta, March 12-13, 1993.

Electronics Unit

1. Bandyopadhyay, P. : Quantization, Anomaly and Berry Phase, *XIX International Colloquium on group Theoretical Methods in physics*, Salamanca, Spain, June-July, 1992.
2. — : Stellar Evolution and Neutrino Emission, *Workshop on Astrophysics and Cosmology*, North Bengal University, November, 1992.
3. — : Solar Neutrino Problem, *Workshop on Astrophysics and Cosmology*, North Bengal University, November, 1992.
4. — : Gravity Without the Metric, *Symposium on Differential Geometry, Cosmology and Relativity*, Calcutta University, December, 1992.
5. Roychowdhury, R.K. : Dirac Equation in $1 + 1$ Dimensional Curved Space - Time, *Symposium on Differential Geometry, Cosmology and Relativity*, Calcutta University, December, 1992.
6. Sur-Kolay, S. and Bhattacharya, B.B. : Canonical Embedding of Rectangular Duals with Applications to VLSI Floor Planning, *IEEE/ACM Design Automation Conference*, Anaheim, CA, June, 1992.

Electronics and Communication Science Unit

1. Bhandari, D., Pal, R.N. and Dutta Majumder, D. : Fuzzy Divergence : a New Measure for Image Segmentation, *Proc. Int. Conf. on Fuzzy Logic and Neural Networks*, Lizuka, Japan, 1992.
2. Chanda, A., Das, J. (with Bedajna) : On the Distribution of Taylor's Microscale of the Temperature Field as Measured By a Sound Radar, *Workshop on MONT BLEX*, Pune, 26-27 March, 1993.
3. — (with De, A.K. and Tripathi, S.K.) : On the Estimation and Distribution of Plume Vertical Velocity from Sodar Data, *Workshop on MONT BLEX*, Pune, 26-27 March, 1993.

4. Ganguli, N.R. and Datta, A.K. : Speech and Music Research at Indian Statistical Institute - A Brief Report, *Tutorial workshop on speech Technology*, Department of Computer Science and Technology, IIT, Madras, December 6-11, 1992.
5. Ganguli, N.R. : Acoustical and Perceptual Study on Fricatives, *National Symposium on Acoustics (WSA - 92)*, IIT, Madras, 12-14 Dec. 1992.
6. Ganguli, N.R. : Formant Frequency in Context of Nasal/Non-nasal Vowel, *National Symposium on Acoustics (NSA-92)*, IIT, Madras, December 12-14, 1992.
7. Ghosh, A., Pal, N.R. and Pal, S.K. : On Robustness of Neural Network Based Object Extraction Systems Under Component Failure, *Seminar on Patt. Recog. Artificial Intell. & Neural Network*, Dehradun, India, 1993.
8. Pal, N.R. (with Bezdek, J.C.) : Average Total Uncertainty : A New Measure and Its Properties, *Second Int. Conf. on Fuzzy Logic and Neural Networks*, (Iizuka, Japan), 1992.
9. Pal, S.K. : Prospect of Neuro-Fuzzy Image Processing, *National conference on fuzzy Mathematics and Information Processing*, Shantiniketan, Viswa Bharati, February, 1993 (Invited Paper).
10. Mandal, D.P. : Multivalued Shape of a Pattern Class, *National conference on fuzzy Mathematics and Information Processing*, Shantiniketan, Viswa Bharati, February, 1993.

Biological Sciences Division

Anthropometry & Human Genetics Unit

1. Basu, A. : The Structure of Human Populations : Search for a Unifying Concept, *National Seminar on Anthropology and Community*, Dibrugarh University, Dibrugarh, November 1992. (Special lecture)
2. Mukhopadhyay, S. : Women and Work : Its Impact on Health, *National Workshop on Women's Health*, Child in Need Institute (CINI), Calcutta, April 1993. (Invited talk)

Biochemistry Unit

1. Chowdhury, E. : A Study on Rheumatoid Arthritis with Reference to Albumin and Globulin Fraction, *80th session of Indian Science Congress*, Goa, January 3, 1993.
2. Ganguli, B.B. : Screening of Cytogenetic Damage in MIC - Exposed Populations at Bhopal, India, *19th Annual Conference of Indian Association for Radiation Protection*, Bhabha Atomic Research Centre, Bombay, March 3-5, 1992.

3. — : Baseline Information and Induced Cytogenetic Damage In Human Populations, *Haldane Centenary International Conference on Human Genetics*, Indian Statistical Institute, Calcutta, December, 15-19, 1992.
4. Nayak, S.: Some Biochemical Constituents of Blood And milk yield of Lactating Goat on Grazing Management System, *80th session of Indian Science Congress*, Goa, January 3, 1993.

Leaf Protein Unit

1. Das, S. and Chanda, S. : Bioregeneration of Protein from Tree Leaf Fibre Residue : A Social Forest Resource, *International Conference on Biotechnology in Agriculture & Forestry*, Delhi, February 15-18, 1993.
2. Dewanji, A. and Matai, S.: Chemical Composition of Leaf Protein Prepared from Aquatic Weeds, *Eightieth Session of the Indian Science Congress*, Jan, 3-8, 1993, Goa.
3. Nag, A. and Matai, S.: Biochemical Composition of Fibrous Residue from Tree Leaves, *International Conference on Biotechnology in Agriculture & Forestry*, Delhi, February, 15-18, 1993.

Social Sciences Division

Planning Unit

1. Chander, Parkash : Optimal tax Enforcement, *Annual Conference on Economic Theory and Related Mathematical Methods*, I.S.I., Delhi, February, 1993.
2. Goswami, Omkar : Enforcement with a Hierarchy of Corrupt Auditors, *Econometric Society Meetings*, Bombay, December, 1992.
3. — : Industrial Sickness in India : Determinants and Institutional Responses, *Symposium on Strategies for Economic Reform*, School of International Studies, JNU, New Delhi, January, 1993.
4. — : Corporate Restructuring : The Criteria for Rehabilitating Ailing firms, *Centre for Studies in Social Sciences*, Calcutta, February 1993.
5. — : How Bad Financial Sector Practices Exacerbate Corporate Sickness : India 1970-1990, *Industrial Development Bank of India*, Bombay, March 1993.
6. — : Issues in Restructuring Sick Industrial Firms, *Ministry of Finance*, March, 1993.
7. Mookherjee, Dilip : Aspirations, Adaptive Learning and Cooperation in Repeated Games, *Tenth World Congress of the International Economic Association*, Moscow, August, 1992.

8. — : The Current Economic Reforms Strategy : Some observations, *Conference on Strategies for Economic Reform*, School of International Studies, JNU, New Delhi, January 1993.
9. Mukherjee, P.N. : Market, *Movement and Marginal Strata*, Institute of Orientalogy, Russian Academy of Sciences, September 29, 1992.
10. — : Indian State in Crisis : Nationalism and Nation-Building, *International Workshop on Social Movements*, State and Democracy, I.S.I., Delhi Centre, October 4-8, 1992.
11. Ramaswami, Bharat : Public Intervention and Private Speculation : The Competition for Supplies in the Indian Wheat Market, *India and South East Asia Meetings of the Econometric Society*, December 19-21, 1992.
12. Sarma, Atul (with Vasudevan, et. al.) (1992) : Gold Mobilisation as an Instrument of External Debt Adjustment, *Development Research Group, Department of Economic Analysis and Policy*, Reserve Bank of India.
13. Sen, Arunava : Strategy of Social Choice Functions on Product Domains with Un-conditional Preference, *Second Social Choice Theory Conference*, Caen, France, June 1992.

Psychometric Research Unit

1. Banerjee, S.N. : Assessment of Minimum Learning in Primary Education, *Department of Applied Psychology*, Calcutta University, Calcutta, February 26, 1993.
2. Dutta Roy, D. : Awareness of External Environment, Environmental Satisfaction and Mental Health, *Department of Humanities and Social Sciences*, Indian Institute of Technology, New Delhi, December 22, 1992.
3. — : Personality Patterns of Antarctica Expeditioners, *80th Indian Science Congress*, Goa, January 7, 1993.
4. — : Environmental Awareness, *Environmental Satisfaction and General Health of Employees*, IIT, Madras, February 9, 1993.
5. — : Computer Simulation Approach to Develop Teaching Strategies for Learning Disabled Children, Annamalai University, Madras, February 5, 1993.
6. — : Psychology Assessment of Mental Abilities, National Institute of Mentally Handicapped, Calcutta, March 29, 1993.
7. Ghosh, Anjali : Entrepreneurship Attributes as Related to Certain Psychological and Background Variables, *80th Session of Indian Science Congress*, January 3-8, 1993.
8. Gupta, Rumki : Consequences of Social and Economical Deprivation on Academic Achievement, Department of Psychology, Calcutta University, September 18, 1992.
9. — : Socio Economic Correlates of Intelligence Among Adolescents, *80th Session of Indian Science Congress*, Goa, January 3-8, 1993.

10. Mukherjee, M. : Psychological Evaluation of Mentally Related Children, NIMH, Calcutta, March 29-31, 1993.

Sociological Research Unit

1. Ghosh, Dhola Nath : Some Experience of Diffusion-Adoption in Rural Societies, *Anthropology and Archaeology Section of 80th Session of Indian Science Congress*, Goa, 2 to 8 January, 1993.
2. Maiti, Asok K. : Problem of Tackling Pollution : Is Development the Culprit ? *Role of mathematics on national development with special reference to energy generation and environment pollution*, Calcutta Mathematical Society, 11 September, 1992.
3. — : Challenges of Imbalances and Development of North Eastern India, *Problems of prospects of balanced development in North East India and the role of NEC*, North East India Council of Social Science research, Shillong, 26-28 July, 1992.
4. — : Participatory Development Process : An Attitude of a Technique, *Problems and prospects of community development*, North Bengal University, 21-22 August, 1992.

Statistical Quality Control and Operations Research Division

1. Acharya, U.H. : Optimization of Brake Pad Composition, *Conference on Quality through Engineering Design*, Bangalore, January 11-14, 1993.
2. — : Process Capability Improvement in Link Boring, *Conference on Quality through Engineering Design*, Bangalore, January 11-14, 1993.
3. — : Optimization of process parameters, *Conference on Quality through Engineering Design*, Bangalore, January 11-14, 1993.
4. Arthanari, T.S. : A Decision support system for silo sizing and mixing to improve outgoing quality of fertilizer at IFORS 93, *XIII World Conference on Operations Research*, Lisbon, Portugal.
5. Chaudhuri, A.K. : Off Line Control : Indian Experiences, *Ninth International Conference of Israel Society of Q.A.* Nov., 1992.
6. — : Integrated Strategy for TQM, *Third National Convention for NIQR* Feb., 1993.
7. Iyer, V.N. : SQC Applications in Indian Industries- History, Growth and Current Status, *NIQR National Convention*.
8. Lakshmanan, P. : Increased Passenger Satisfaction Through Improved Quality of Coaches, *Annual Seminar of ICF Engineers*, October 17, 1992.

9. Lakshmikanthan, P.R. : Motivational programme for sustaining QC Circles Momentum - an Indian experience, *Internet Convention QC Circles*, Bangalore, 1993.
10. — : Auditing of Quality System for ISO 9000, *Seminar on ISO 9000*, IIT, Madras, October 30, 1992.
11. — : ISO 9000 Quality System, *Annual Seminar on Quality management*, Sri Venkataswara Engineering College February 18, 1993.
12. Mohan, S.R. and Nankana, A.N. : A Practical Approach to Experimentation, *Conference on Quality through Engineering Design*, Bangkok, January 11-14, 1993.
13. Rajendra Prasad, V.: Reduction of Variation in Electrode Socket Size, *Conference on Quality through Engineering Design*, Bangalore, January 11-14, 1993.
14. Roy Chaudhuri, A. : To Establish Process Parameters for Stretched Acrylic Drilling, *Third National Convention of NIQR*, February, 1993.
15. Sett. R. (with Roy, Sanjit) : Optimisation of Process Parameters at Digestion in a Paper Mill, *Conference on Quality Through Engineering Design*, Bangalore, 1993.

Library, Documentation and Information Sciences Division

DRTC (Bangalore)

1. Gopinath, M.A. : Energising Library and Information Service, *DRTC Refresher Seminar*, May, 1992.
2. — : Relational Frameworks for Information retrieval : Ranganathan's Model, *Ranganathan Centenary Seminar*, University of Madras, Madras, August 10, 1992.
3. — : Reference Service-in-Action, *DRTC Workshop on Library and Information Management*, Aug. 7-9, 1992.
4. — : Creativity and Knowledge Organisation : A cognitive I nteraction : ISKO. *Conference on cognitive paradigms*, Knowledge organisation, Aug., 1992.
5. — : Across the frontiers : Citation of foreign periodicals by Indian Library Scientist, *IFLA General Conference*, New Delhi, September, 1992.
6. — : Public Relations in Library and Information Centre, *DRTC Seminar on Public Relations in Library Management*, September 29, 1992.
7. — : Ranganathan's concept of Live Library Systems and Services, *Annual Conference of the Young Librarians Association*, November 19, 1992.
8. — : Information Retrieval : A Confluence of Techniques, Models and Tools, *15th IASLIC Seminar*, Annamalai University, Chidambaram, December 26-28, 1992. (Keynote Address)

9. — : Ontological Models in Information Retrieval, *IASLIC Seminar*, Chidambaram, December 26-28, 1992.
10. — : Democracy for Books, Information and People, *Public Library Seminar on Ranganathan's Contributions*, Bangalore, February 28, 1993.
11. — : Development of Information Systems - critical issues, *Institutional Seminar on Information Systems*, Centre for Airborne Systems, DRDO Complex, Bangalore, February 13, 1993.
12. — : Future perspectives of information professionals, *Seminar on Information Science*, Vikram Sarabhai Space Centre, Thumba, February 24-25, 1993.
13. — : Perspectives in Training of Documentalists, *Kerala University Seminar on Lib. Sc.*, February 24, 1993.
14. — : Basic Issues in Thesaurus Construction in Information Retrieval, *Desidoc Seminar*, New Delhi, March 5, 1993.
15. — : Information Marketing : A mechanism for energising library and Information Services, *DRTC Workshop on Energising Library and Information services*, Bangalore, May 20-22, 1992.
16. — : Cognitive Approach in Information Consolidation, *Second International ISKO Conference*, Madras, May 26- 28, 1992.
17. — : Evaluation Measures in Information Retrieval Systems, *XV National Seminar of IASLIC*, Chidambaram, December 26-29, 1993.
18. — : Modernisation of College Libraries, *Seminar on Modernisation of College Libraries*, Deptt. of Library and Information Science, Karnatak University, Dharwad, March 17, 1993. (Key note address).
19. Rao, I.K. Ravichandra : Information Society : Challenges and Issues, *Second Consultation Meeting of Experts of Members countries of South and South-East Asian Region for Networking of Specialised Information system and Cultural Heritage*, New Delhi, February 22-28, 1993.
20. — : Information Retrieval Models and Techniques, *XV National Seminar*, Annamalai University, Annamalaiagar, Chidambaram, TN, December 26-29, 1993.
21. — : Bibliometric Approach for Evaluation of Library Colleageion - A case study, *DRTC Workshop on Library and Information Management*, Bangalore, August 7-9, 1992.

Computer and Statistical Services Centre

1. Roy, D. and Chakraborty, S.R. : Short Term Forecasting of Macro-Economic Aggregates in India, *IARNIW Seminar*, 1992-93.

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

8. VISITING SCIENTISTS

A number of distinguished scientists from abroad and India participated in the research, training and other scientific activities of the Institute during the year. Some of them came to the Institute on invitation and spent fairly long periods in the Institute to assist in the regular research and teaching programmes, while others came for short periods and gave lectures and seminars. Most of them were available for consultation by the faculty members of the Institute.

1. Balakrishnan, P., Centre for Development Studies, Trivandrum, January, 1993, Planning (Delhi) Unit.
2. Banerji, Sanjay, Jadavpur University, August-September, 1992, Planning (Delhi) Unit.
3. Bray, W.J., Executive Director, Find Your Feet, London, February-March, 1993, Leaf Protein Research Unit.
4. Bhattacharya, Debashis, Department of Electrical Engg., Yale University, USA, October - December, 1992.
5. Bhattacharya, S.K., Physical Research Laboratory, Ahmedabad, March, 1993, Geological Studies Unit.
6. Carlsson, Hans, University of Gothenburg, Sweden, February, 1993, Planning (Delhi) Unit.
7. Chaubey, Y.P., Concordia University, March 10-12, 1993, Stat.-Math. (Delhi) Unit.
8. Dacunha-Castelle, D., University of Paris, October, 22 November, 4, 1992, Stat.-Math. (Delhi) Unit.
9. Das, Sanghamitra, Indiana University, September, 1992-March, 1993, Planning (Delhi) Unit.
10. Das, Satya P., Indiana University, September, 1992-March, 1993, Planning (Delhi) Unit.
11. Das, Subhodev, University of California, Riverside, 20 January, 1993, Electronics and Communication Sciences Unit.
12. De, Shankar, University of Gothenburg, Sweden, February, 1993, Planning (Delhi) Unit.
13. Dey, S.K., Eastern Illinois University, USA, November, 1992 to January, 1993, Electronics Unit.
14. Dubey, Pradeep, State University of New York, February-March, 1993, Planning (Delhi) Unit.
15. Dutta, Prajit, Columbia University, USA, August, 1992, Planning (Delhi) Unit.
16. Elsner, Ludwig, University of Bielefeld, 10 January-20 February, 1992, Stat.-Math. (Delhi) Unit.

17. Fagnola, F., University of Trento, 21 January-24 February, 1993, Stat.-Math. (Delhi) Unit.
18. Fazekas, Istvan, Kossuth University, Hungary.
19. Flint, M.E.S., ODG-Consultant, 16 February to 6 March, 1993, Biochemistry Unit.
20. Gadgil, Madhav, Indian Institute of Science, Bangalore, October, 1992 and February, 1993, Anthropometry and Human Genetics Unit.
21. Hall, Sarah, South Asia Co-ordinator, Find Your Feet, London, July to October, 1992 and February, 1993, Leaf Protein Research Unit.
22. Idzik, Adam, Institute of Computer Science, Warsaw, Poland, 20 February to 3 March, 1993, Statistical Quality Control Unit.
23. Jain, Anil, Michigan State University, USA, September 27, 1992, Electronics and Communication Sciences Unit.
24. Jennings, Mary, ODG-Consultant, U.K., January, 18-19, 1993, Biochemistry Unit.
25. Jones, V.F.R., University of California, December to January, 1993, Stat.-Math. (Delhi) Unit and Stat.-Math. (Bangalore) Unit.
26. Kallianpur, G., University of North Carolina, 1 December to 25 January, 1993, Stat.-Math. (Delhi) Unit and Stat.-Math. (Bangalore) Unit.
27. Komatsu, Osaka City University, 24 December to 31 January, 1993, Stat.-Math. (Delhi) Unit.
28. Lindsay, J.M., University of Nottingham, 14 December, 1992 to 13 January, 1993, Stat.-Math. (Delhi) Unit.
29. Mishra, Ajit, Delhi School of Economics, June to August, 1992, Planning (Delhi) Unit.
30. Mukherjee, Kampan, Indian School of Mines, Dhanbad, 1st week of June, 1992, Electronics and Communication Sciences Unit.
31. Mukherjee, Ramkrishna, Indian Council of Social Science Research, New Delhi, 16 October, 1992, Sociological Research Unit.
32. Nair, M. Gopal, Curtin University of Technology, January, 1993, Stat.-Math. (Bangalore) Unit.
33. Nute, Peter, Washington University, June, 1992, Anthropometry and Human Genetics Unit.
34. Pisier, G., University Paris VI, January 1993, Stat.-Math. (Bangalore) Unit.
35. Puntanen, Simo, University of Tampere, January 1993, Stat.-Math. (Bangalore) Unit.
36. Prasad, Phoolan, Indian Institute of Science, Bangalore, 18 to 29 April, 1992, Electronics Unit.
37. Ramakrishnan, S., University of Florida, 21 February to 19 March, 1993, Stat.-Math. (Delhi) Unit.

38. Rao, M. Bhaskar, North Dakota State University, January, 1993, Stat.-Math. (Bangalore) Unit.
39. Sane, S.S., Mathematics Department, University of Bombay, Bombay, April-June, 1992, Stat.-Math. (Bangalore) Unit.
40. Schreiber, M., University of New South Wales, 4-12 January, 1993, Stat.-Math. (Delhi) Unit.
41. Schreiber, B.M., Wayne State University, USA, January, 1993, Stat.-Math. (Bangalore) Unit and Stat.-Math. (Delhi) Unit.
42. Sen, Pali, University of North Florida, USA, June, 1992, Applied Statistics, Surveys and Computing Division.
43. Sengupta, Kunal, University of California, USA, July-August, 1992, Planning (Delhi) Unit.
44. Singh, Nirvikar, University of California, Santa Cruz, USA, December, 1992, Planning (Delhi) Unit.
45. Singh, N., Member, TAC, October, 1992, Leaf Protein Research Unit.
46. Sochar, Berry, Rutgers University, January, 1993, Planning (Delhi) Unit.
47. Stayan George, McGill University, Canada, January, 1993, Stat.-Math. (Delhi) Unit.
48. Stocking Michael, Dean, School of Development Studies, University of East Anglia, U.K., April, 1992, Agricultural Science Unit.
49. Tulkens, Henry, CORE, Belgium, September, 1992, Planning (Delhi) Unit.
50. Vinberg, E.B., Moscow State University, February, 1993, Stat.-Math. (Bangalore) Unit.
51. Warren, Anne, La Trobe University, Australia, 26 October to 17 September, 1992, Geological Studies Unit.
52. Wu, C.F.J., University of Waterloo, 25 to 30 December, 1992, Stat.-Math. (Delhi) Unit.
53. Wolfendale, W., The Astronomer Royal, U.K., 22 to 24 January, 1993, Electronics Unit.
54. Yasdi, R., Hochschule, Bremerhaven, Germany, 19 November, 1992, Electronics and Communication Sciences Unit.

B. HONOURS, AWARDS AND SPECIAL ASSIGNMENTS

Bose, Arup (Stat.-Math.) was appointed as Co-editor of *Sankhyā* Series A.

Chaudhuri, P. (Stat.-Math.) was appointed as Co-editor of *Sankhyā*, Series A as well as Series B.

Dasgupta, S. (Stat.-Math.) was appointed as Member, Board of Editors, *Sankhyā*.

Ghosh, J.K. (Stat.-Math.) (i) took over as the President of the International Statistical Institute for the term 1993-1995, (ii) chaired sessions at Indo-U.S.-Japan Workshop on Quality Through Design held in Bangalore.

Mukherjee, K.K. (Stat.-Math.) was invited to give a talk at a Colloquium in honour of S. Eilenberg at the N. Copernicus University, Poland.

Rao, B.L.S. Prakasa (Stat.-Math.) delivered the Platinum Jubilee lecture in the Section on Statistics at the 80th Session of Indian Science Congress, Goa.

Rao, S.D. (Stat.-Math.) worked as Regional Coordinator, Indian National Mathematical Olympiad - 1993 of the National Board for Higher Mathematics, DAE and ISI.

Rao, T.J. (Stat.-Math.) was appointed as Co-editor and Managing Editor of *Sankhyā*, Series B.

Roy, A.K. (Stat.-Math.) was invited to become a member of the National Board for Higher Mathematics for a second term.

Sinha, B.K. (Stat.-Math.) worked as Statistical Consultant to the Tiger Project, Govt. of India.

Bhatia, R. (Stat.-Math.) (i) was elected Fellow of Indian Academy of Sciences, (ii) gave invited talk at the International Linear Algebra Society Conference held at Lisbon, Portugal, August 1992, (iii) gave the Platinum Jubilee Lecture in the Mathematics Section of the Indian Science Congress at Panaji, Goa in January 1993, (iv) served as an Associate Editor, Linear Algebra and its Applications, (v) Member, Advisory Board, Indian Journal of Pure and Applied Mathematics, (vi) Managing Editor of the series Texts and Readings in Mathematics published by Hindustan Book Agency, New Delhi.

Karandikar, R.L. (Stat.-Math.) took over as Managing Editor of *Sankhyā* A.

Parthasarathy, K.R. (Stat.-Math.) served as a (i) Member, National Board for Higher Mathematics, (ii) Member, Executive Council and Board, Institute of Mathematical Sciences, Madras, (iii) Member, National Committee for Mathematics, IMU, (iv) Editor, *Sankhyā*.

Mukherjee, Bishwa Nath (Applied Statistics, Surveys and Computing) acted as (i) Member of the Task Force on Behavioural Research in Contraception Technology, Indian Council of Medical Research, New Delhi, (ii) Consulting Editor of Psychometrika and British Journal of Mathematical and Statistical Psychology, (iii) Member of the Editorial Board for Fifth Survey of Educational Research in India sponsored by NCERT, New Delhi.

Bandyopadhyay, P. (Electronics Unit) has been acting as the Editor-in-Chief of 'Communications in Theoretical Physics'. He is also acting as the Secretary of an organization named 'Centre for Advanced Study in Science and Philosophy.'

Chanda, Bhabatosh (ECSU) : Received Diamond Jubilee Fellowship of the National Academy of Science, India.

Chaudhuri, B.B. (ECSU) : Received the Homi Bhabha Fellowship in June, 1992 given by

Homi Bhabha Fellowship Council.

Kundu, M.K. (ECSU) has been elected a Fellow of the Institution of Electronics and Telecommunication Engineers (IETE), India.

Pal, N.R. (ECSU) has been appointed as an Associate Editor of two journals (i) International Journal of Approximate Reasoning, North-Holland, and (ii) IEEE Trans. on Fuzzy Systems, IEEE.

Pal, S.K. (ECSU) has been (i) elected a Fellow of Institution of Electrical and Electronics Engineers (IEEE), New York, USA, (ii) appointed as an Associate Editor of Far-East Journal of Mathematical Sciences, (iii) appointed as a member of the Executive Advisory Editorial Board of two Journals : IEEE Trans. Fuzzy Systems and Int. Journal on Approximate Reasoning, (iv) appointed as a member of the Board of Editorial Reviewers of two journals : Int. Journal of Applied Intelligence and IEEE Computer Magazine.

Sarkar, Nirupam (ECSU) : Received the Young Scientist Award at the Science Congress held at Goa (Panaji) on 3-8 Jan. 1993.

Malhotra, K.C. (Anthropometry and Human Genetics Unit) elected Fellow of the Indian National Science Academy, New Delhi. He was invited as a National Resource person to join FAO/UNESCO Project "Forestry and Culture in Asia" and served as a short term consultant to the World Bank on M.P. Forestry project. He was also appointed as a member of (i) Advisory Committee, Bombay Natural History Society, (ii) Editorial Board of journals, Collegium Anthropologicum, Yugoslavia and Indian Anthropologist, New Delhi, (iii) Scientific Advisory Committee, Regional Medical Research Centre for Tribals, Jabalpur, (iv) Advisory Committee, Centre for Eco-development, NEHU, Shillong.

Balakrishnan, Pulapre (Economic Analysis Unit) continued to act as Member of the RI Working Group on Financial Companies.

Dasgupta, Dipankar (Planning Unit) acted as a Member, Board of the School of Social Science, JNU.

Goswami, Omkar (Planning Unit) acted as the Chairman, Committee on Industrial Sickness and Corporate Restructuring, Ministry of Finance, Government of India, April 1993.

Mukherji, P.N. (Planning Unit) acted as a Member of (i) Standing Committee on Publications Grant, ICSSR, (ii) Technical Advisory Committee, Institute of Applied Manpower Research, (iii) Editorial Advisory Committee of the ICSSR Journal of Abstracts and Reviews for Sociology. He also served as ICSSR representative on the Governing Board of Gandhian Institute of Studies, Varanasi.

Sarma, Atul (Planning Unit) was appointed Economic Adviser, Tenth Finance Commission, Ministry of Finance, Government of India, since November, 1992.

Guha Roy, S. (Population Studies Unit) was nominated as a member of the Academic Council of the International Institute for Population Sciences, Bombay, in 1992.

Malakar, C.R. (Population Studies Unit) was nominated as a member of the founding Advisory Committee of the Institute for the Study of Population, Agriculture and Rural Change, University of Kalyani, in 1993.

10. SCIENTIFIC TOURS AND ASSIGNMENT ABROAD

Bose, Arup (Stat.-Math.) was invited and gave a talk and also chaired one of the sessions at the Fifth Purdue Symposium, June 14-19, 1992, Purdue University, USA. He also visited the Department of Statistics, University of Maryland, Baltimore County, during June 20-July 2, 1992 and gave a talk on 'Sequential estimation in a two-parameter family'. He was a Visiting Associate Professor at Indiana University at Indianapolis, Department of Math., during August 1992-May 1993. He also made a short visit to University of Connecticut (October, 1992) and gave a talk on 'Sequential estimation in a two-parameter family'.

Chaudhuri, P. (Stat.-Math.) visited the University of Illinois at Urbana-Champaign, University of Illinois at Chicago, University of Chicago, University of California at Berkeley, University of California at Davis, University of Waterloo, Canada, and was an Assistant Professor at Statistics Department, University of Wisconsin - Madison, during August 1992-May 1993.

Das, A. (Stat.-Math.) visited University of Waterloo, Canada, for one month for research collaboration with Professor K.R. Shaha.

Dasgupta, R. (Stat.-Math.) visited UNB, Fredericton, Canada and University of Toronto, Canada, during May 28-August 7, 1992.

Ghosh, J.K. (Stat.-Math.) gave an invited talk at Rutgers University. He was invited to University of Toronto, University of Missouri, University of British Columbia and University of Kentucky. He also attended an Executive Committee meeting of the International Statistical Institute at Voorburg (April, 1992) and Florence (December, 1992) and was a Visiting Professor at Purdue University from June - December, 1992.

Rao, B.V. (Stat.-Math.) visited Indiana University, Bloomington as Visiting Professor for two academic years ending May 31, 1992 and lectured in UC Santa Barbara in June, 1992.

Rao, S.B. (Stat.-Math.) visited University of Western Australia, Nedlands, from 5 July - 28 August 1992 and delivered an invited address and twenty lectures on Combinatorics including a colloquium at Mathematics Department. He also visited National University, Singapore, on 3 July, 1992 and again from 29 August - 5 September, 1992 and delivered two colloquia.

Sen., Arusharka (Stat.-Math.) was invited for a post-doctoral visit to the Institute of Mathematics, Justus-Leibig University, Gissen, Germany.

Sinha, B.K. (Stat.-Math.) visited University of Maryland, Baltimore County, USA, during April-May, 1992 for teaching, research and consultancy.

Bapat, R.B. (Stat.-Math.) visited Tilburg University for a week and gave a Seminar.

Bhatia, R. (Stat.-Math.) visited University of Bielefeld and Heidelberg University in Germany in July, 1992; also visited Portugal in August to attend the Conference of the International Linear Algebra Society.

Karandikar, R.L. (Stat.-Math.) visited University of North Carolina, Chapel Hill, USA from 1 April 1992-31 July 1992.

Parthasarathy, K.R. (Stat.-Math) visited Department of Mathematics, University of Nottingham, from 15 May - 15 July, 1992 where he gave a course of lectures. He also participated in the Conference on Quantum Probability during 23 March - 31 March 1993 and delivered a talk on survey on Quantum Markov Flows and Boundary Theory.

Roy, Rahul (Stat.-Math.) visited Australian National University, Canberra during 1 June - 6 July, 1992 and was an invited speaker at the XI Australian Statistical Society Conference, Perth.

Pati, V. (Stat.-Math.) was an invited speaker at 'Isfahan Workshop on Arithmetic and Geometry' held at Isfahan, Iran in May, 1992 and gave a series of lectures on 'Riemann Surfaces' and a Colloquium talk on 'Intersection Cohomology' at Iranian Atomic Energy Agency, May, 1992. He was invited as a speaker to International Workshop on Arithmetic Algebraic Geometry, at International Centre for Theoretical Physics, Trieste, Italy, 31 August-11 September, 1992 and gave lectures on 'Riemann Surfaces' and Elliptic Complexes and Elliptic Operators'.

Joshi, Srikanth (Stat.-Math.) continued as a visiting scientist with Bilkent University, Ankara, Turkey, since September 1992.

Delampady, Mohan (Stat.-Math.) visited the Department of Mathematics and Statistics, University of Montreal and the Department of Mathematics and Computer Science, University of Quebec, Montreal during 6 May - 6 July 1992. He gave a colloquium talk, 'Data smoothing with smoothness priors' at the Department of Mathematics and Statistics, University of Montreal in June; 1992; also attended the Purdue International Symposium of Statistical Decision Theory and Bayesian Analysis in June 1992 and chaired the session on 'Hierarchical Bayesian Methods' in the same conference.

Rao, K.P.S.B. (Stat.-Math) attended the 'Quinto Convegno di analisi Reale e Teoria della Misura' held in Capri, Italy during 7-11 September, 1992; chaired a session on mathematical economics and presented a talk entitled 'Recent Development in Finitely Additive Measures'. He also visited University of Perugia and University of Udine and gave lectures.

Sastry, N.S.N. (Stat.-Math.) visited the Department of Mathematics, University of Western Australia, Nedlands, Western Australia from 7 July to 11 September, 1992. He gave a colloquium talk at the University of Western Australia on 28 August, 1992; also gave a series of lectures at the University of Western Australia.

Mukhopadhyay, Parimal (Applied Statistics, Surveys and Computing) visited the University of Western Australia, Departments of Mathematics and Economics during 16 April-14 June, 1992.

Sengupta, Ashis (Applied Statistics, Surveys and Computing) was a Visiting Associate Professor at the University of California-Santa Barbara, USA during April-June 1992. He visited and gave an invited Seminar at the University of California Riverside, USA in May 1992; also acted as a research consultant at Bowling Green State University, Ohio, USA in July, 1992.

Bandyopadhyay, P. (Electronics) visited Salamanca, Spain to attend the XXI International Colloquium on Theoretical Methods in Physics during 29 June - 9 July, 1992.

Dandapat, S. (Electronics) worked as a Visiting Professor at the Department of Applied Mechanics, Norwegian Institute of Technology, Trondheim, Norway, during the period 20 August - 30 November 1992 and delivered lectures there. He was invited to deliver a talk at the Institute of Mechanics, University of Oslo, Oslo, Norway. He also visited during 1 December - 11 January 1993 different Universities and Institutions in USA and Canada and delivered invited talks.

Mazumdar, H.P. (Electronics) visited Trieste, Italy to attend a conference on 'Global change environmental consideration for energy system Development' in May, 1992.

Roy, P. (Electronics) visited International Centre for Theoretical Physics, Trieste, Italy during October-November, 1992.

Roy, S. (Electronics) visited Department of Physics, University of Rome; participated in Ettore Majorana School on Astroparticle Physics and Cosmic Ray at Erice, and visited Department of Physics, University of Bologna, Italy during the period 8 June - 9 July 1992.

Sur-Koley, Susmita (Electronics) visited University of Nebraska-Lincoln, USA during April 1992 - October 1992 on a post-doctoral programme and gave lectures on (i) 'Graph Algorithms in VLSI Layout Design' at Tufts University, U.S.A. in March, 1992, (ii) Canonical Embedding of Rectangular Duals with Applications to VLSI Floorplanning' at Iowa State University, Ames, U.S.A. in April, 1992.

Bagchi, D.K. (Agricultural Sciences) visited University of East Anglia, U.K. and Institute of Development Studies, Sussex, U.K. during 21 February to 7 March, 1993.

Malhotra, K.C. (Anthropometry and Human Genetics) participated in the Earth Summit meet at Rio from 6-14 June and visited Department of Biology, Boston University during 15-16 June 1992; also participated in the meeting on Greening of Economies, Harvard University, 16-21 June, 1992 and chaired a session on Forestry section and participated in a joint FAO/UNESCO meeting on Forestry and Cultures in Asia, Bangkok, during 23-27 June, 1992. He also visited on invitation University of Marburg in connection with management of forests in Germany during 18-24 October, 1992. He delivered invited lectures at the Universities of Omaha, Penn State, Pittsburg, Nashville (medical college), Birmingham and Tempe, USA during 25 October - 13 November 1992. He participated as a National resource person in the Workshop on Human Genome Diversity project, Penn. State during 21-31 October, 1992 also delivered invited lectures.

Chaudhury, Amitav (Linguistic Research) visited Paris from 9 April 1992 to 14 April 1992 to attend an International Workshop on Literacy organised by the International Group for the study of Language Standardisation and the Vernacularisation of Literacy of which he is a member. He also attended an International Conference cum Workshop on 'Sustaining Local Literacies: People, Language and Power' at the University of Reading, U.K. from 18-20 March, 1993 and visited the York University during 21-31 March 1993.

Chander, Prakash (Planning) was a Visiting Professor at the University of Bielefeld during May-June, 1992. He participated in a Workshop at the University de-Alicante, June, 1992.

Dasgupta, Dipankar (Planning) was a Visiting Professor at the Otaru University of Commerce, Otaru, Japan during September 1990 - August 1992.

Dutta, Bhaskar (Planning) was a Visiting Professor at the Institute de Analysis Economico, Barcelona, Spain during April-June, 1992. He also spent January-March 1993 at Hitotsubashi University, Tokyo, Japan.

Mookherjee, Dilip (Planning) visited the Haas School of Business, University of California, Berkeley, the University of Illinois at Urbana Champaign and the Northwestern University as a Visiting Professor in October, 1992.

Ramaswami, Bharat (Planning Unit) visited Department of Economics, Swedish University of Agricultural Sciences, Uppsala, Sweden during May-July, 1992 as a Visiting Professor.

Sarma, Atul (Planning) visited Department of Economics, McMaster University, Hamilton, Canada during October-November, 1992 as Visiting Professor. He also gave lectures on "Restructured Europe and India's Liberalized Policy Regime: Implications for Indian

Exports to EC, and Seminar at the IDPAD (with P.K. Mehta) on "Restructured Europe and India in a Global Perspective" during December 7-10, 1992.

Sen, Arunava (Planning) visited and gave a seminar at the University of California, Davis, USA, June 1992.

Ghosh, Anjali (Psychometric Research and Services) participated in the Third International Conference on work and organizational values at Karlovy-Vary, Czechoslovakia from 11-14, 1992. She also attended (i) the joint meeting of the European Association of Experimental Social Psychology & Society for Experimental Social Psychology at Leuven, Belgium from 15-18 July 1992. (ii) the 25th International Congress of Psychology at Brussels, Belgium, from 19-24 July, 1992. (iii) the advanced Training Seminar on 'Coping with Adverse Conditions' at Tilburg University, the Netherlands from 25 July to 2 August, 1992, and presented papers.

Bhattacharjee, Debashish; Chakrabarti, Subhendu and Ghosh, Bhola Nath (Sociological Research) visited University of East Anglia, Norwich, England during 28 March to 6 June 1993 to attend a short course on Monitoring Evaluation and Project Analysis organised by Overseas Development Group (ODG), University of East Anglia, Norwich, England.

Handa, S.S. (Statistical Quality Control and Operations Research) visited Sweden to attend a top management seminar on Quality Management during 1-18 June. He also gave lectures at the Universities of Michigan, Ann Arbor, Penn State University and at Bell Communications and Bell laboratory on the Indian experiences with Quality Improvement programmes.

Pal, B.K. (Statistical Quality Control and Operations Research) visited Thai Rayon, Bangkok at their invitation during October and December for promoting applications of SQC and OR methods. He also attended triennial meeting of the International Academy for Quality at Manila during October, 1992.

Prasad, Rajendra V. (Statistical Quality Control and Operations Research) visited University of Michigan and University of Windsor, Canada during May to 4 July, 1992.

Dutta, Amitava (Computer and Statistical Services Centre) visited GSF-Institute for Strahlenschutz, Munich during 24 November 1991 to 1 December 1992 and worked on a project.

Banerjee, D.K. (National Centre for Knowledge Based Computing) attended Cimpa summer school on Robotics at Nice, France during June-July, 1992.

Chaudhuri, B.B. (National Centre for Knowledge Based Computing) went on a UNDP/DOE sponsored study tour to Rotherooki R and D Lab, Finland, EEA poole and University College, London, U.K.; Dalsa Inc. & University of Waterloo, Canada; Innovation Lab, Michigan State University and MIT, USA during 26 September - 12 October, 1992. In connection with the Indo-German Scientific Cooperation he performed another study tour to GSF Institute of Radiation Projection and Technical University, Munich, Germany, during 3 November to 27 November, 1992.

Deb, S. (National Centre for Knowledge Based Computing) attended the 2nd International Conference on Automation, Robotics and Computer Vision, Singapore, during September, 1992.

11. SCIENTIFIC ASSIGNMENTS IN INDIA

Dasgupta, S. (Stat-Math) gave a course of lectures on Unimodal functions at Department of Statistics, Calcutta University, sponsored by U.G.C.

Rao, A.R. (Stat-Math) gave a series of lectures in the UGC sponsored refresher course on Discrete Mathematics and Applications organised by the P.G. Deptt. of Mathematics, Sambalpur University, during 16-18 January 1993.

Rao, B.L.S.P. (Stat-Math) acted as Chairman, Mathematics and Statistics Research Committee, CSIR (1991-93). He also acted as Editor of Publications, Indian National Science Academy (1991-93).

Rao, S.B. (Stat-Math) delivered two series of 6 lectures each on Graph Theory and Algorithms in Winter School (UGC sponsored) at Sambalpur University, Sambalpur in January and March, 1993.

Rao, T.J. (Stat-Math) gave three lectures at National Remote Sensing Agency, Hyderabad in June, 1992, three lectures at University of Rajasthan, Jaipur in October 1992. He also acted as consultant to Government of India on Wild Elephant Count in Arunachal Pradesh in February, 1993.

Rajeev B. (Stat-Math) lectured in the workshop on 'Probabilistic Methods in PDE', at ISEC Bangalore in June 1992.

Roy, A.K. (Stat-Math) participated and lectured in the Winter School on Probability and Analysis held at Sambalpur University, Orissa.

Sikdar, K. (Stat-Math) gave a series of lectures on 'A short course in Design and Analysis of Algorithms' in UGC sponsored course in Discrete Math. & Computing, at Sambalpur University, Dept. of Maths., January 1993.

Parthasarathy, K.R. (Stat-Math) gave a seminar at the Institute of Mathematical Sciences, Madras on 8.1.93 on CASIMIR CHAOS and gave the Ramakant Majumdar Endowment Lectures on Mathematical Foundations of Quantum Mechanics during 15-16 February, 1993, at the Department of Mathematics, University of Bombay.

Delampady, Mohan (Stat-Math) gave an invited talk on 'Smoothing a discrete time series' in the Mahalanobis Conference on Multivariate Statistical Methods, New Delhi on December, 1992.

Mishra, G. (Stat-Math) delivered a series of seven lectures on 'Hilbert Models' at a refresher course for lecturers at Sambalpur University in November, 1992.

Padmawar, V.R. (Stat-Math) gave an invited talk on 'A note on comparison of estimation strategies in survey sampling of continuous population' in the Mahalanobis Conference on Multivariate Statistical Methods in New Delhi in December, 1992.

Pati, V. (Stat-Math) gave (i) Invited lecture on 'Galois Theory' at the annual meeting of Orissa Math. Society at Salipur College, (ii) Four lectures on 'Riemann Surface' at Mehta Research Institute, Allahabad in July, 92. He also gave a talk on 'Topology of 4 manifolds' at Utkal University and set of 4 lectures on the same topic at TIFR Centre, Bangalore besides a special talk on 'Topology of 4-manifolds' at Mehta Institute.

Sastry, N.S.N. (Stat-Math) visited University of Bombay from 8 February to 5 March, and gave a series of 8 lectures on 'Finite simple groups of Chevalley type'. He also gave a colloquium talk at IIT, Bombay on 'Root group geometries for a finite simple groups of Lie

type'.

Sitaram, Alladi (Stat-Math) gave a series of lectures at the Instructional Conference on SL (2, 1R) organised by NBHM at TIFR, Bombay during June, 1992. He also gave lectures on the work of Harish Chandra on Spherical Functions during October 7-12, 1992. Also gave a lecture on "The legacy of Harish Chandra" at the Kanpur Mathematical Society on 10.10.92.

Sunder, V.S. (Stat-Math) gave a series of seven lectures on 'Knot Theory' at a Refresher Course for lecturers. He attended an International Conference (as a member of the organising committee) and a mini workshop at ISI, Delhi in December, 1992 where he gave lectures on "The Grothendieck Inequality" and "Principal graphs of subfactors" respectively.

Bandyopadhyay, S. (Applied Statistics and Computing) acted as a resource person in the workshop on "Improved Written Communication" held at Indira Gandhi Krishi Vidyalyaya, Raipur, November 1992.

Bhattacharya, B.B. (Electronics) has been working as the Tutorial Chair of the VLSI, 94 Conference to be held at Calcutta during January 5-8, 1994.

Dandapat, B.S. (Electronics) delivered a seminar talk at Department of Physics, IIT, Kanpur on 24 February 1993.

Mandal, B.N. (Electronics) acted as a member of the University Grants Commission in Mathematical Sciences. He also acted as a member of the Ph.D. Committee in Applied Mathematics, Calcutta University and as a Secretary of the Calcutta Mathematical Society.

Sinha, B.P. (Electronics) (i) worked as a member of the Programme Committee of 3rd National Seminar on Theoretical Computer Science, 1993 held at IIT, Kharagpur, (ii) has been working as the Publicity Chair and also as a member of the Programme Committee of the VLSI, 1994 conference to be held at Calcutta during 5-8 January, 1994.

Pal, S.K. (Electronics and Communication Sciences) delivered lectures at Calcutta University (Department of Computer Science) and delivered a talk at Saha Institute of Nuclear Physics, Calcutta (Colloquium Series) in September 1992 and February 1993, respectively. He also chaired a session and delivered an invited talk at the Third National Conference on Fuzzy Mathematics and Information Systems, Viswa-Bharati University, Shantiniketan, India, February, 1993.

Chakraborty, T. and Chaudhuri, A.K. (Geological Studies) delivered lectures at the Refresher's Course in Geology for college teachers organised by U.G.C. at Jadavpur University in April, 1992.

Rudra, D.K. (Geological Studies) has been made a member of the National Organising Committee of the 9th International Gondwana Symposium to be held on January, 1994.

Bagchi, D.K. (Agricultural Sciences) attended and chaired a session on "Agronomic Potential of Jute" in the annual workshop on jute, held at J.A.R.I., Bangalore during 27-28 March, 1993.

Malhotra, K.C. (Anthropometry and Human Genetics) participated in the training of Forest Officials, Chandrapur, 14-17 July, organised by Forest Department, Maharashtra Government and participated in a seminar on Forests as a economic resource, Madras, 3-5 December, 1992. He delivered an invited lectures on Dermatoglyphics and Primate Evolution at Bombay Natural History Society on 21 August, 1992 and also delivered a talk on Human Evolution in India at Palari Hill Conservation Council in May, 1992. He was invited as a resource person by Euroconsults, Andhra Pradesh Forestry Project, 13-20 September, 1992.

He participated either as a member or chairman in several meetings/workshops sponsored by DST, New Delhi.

Chanda, S. (Leaf Protein Research) visited Biochemical Engineering Research Centre, IIT, New Delhi, during November, 1992.

Bhattacharya, N. (Economic Research) spoke on the "Contributions of Professor Mahalanobis to large scale sample surveys, Econometrics and Economic Planning" at the statistics section of the 80th session of the Indian Science Congress, Goa in the programme for commemoration of the birth centenary of Professor P.C. Mahalanobis held on 5 January, 1993. He delivered an invited lectures on "Survey Sampling : Professor Mahalanobis Revisited", at the first Burdwan Symposium on Application of Statistics and Quantitative Techniques, 5-6 February, 1993 organised by the Department of Statistics, Burdwan University. He gave a series of 7 lectures on "Poverty, Inequality and Unemployment" at the Department of Statistics, Calcutta University under the UGC COSIST programme, in February-March, 1993. He also delivered a Foundation lecture on "Rural Poverty in India" at the Department of Economics, Rabindra Bharati University on 26 March, 1993.

Chattopadhyay, Kunal (Economic Research) attended the 6th Annual Conference of Indian Society for Community Education held at Chandrapur, Maharashtra, during September 11-13, 1992 and presented a paper entitled "A note on an evaluative empirical exercise of total literacy campaign".

Pal, M.N. (Economic Research) acted as the Chairman of the Index Formulation Committee on Indian Foreign Trade Statistics, formed by the Ministry of Commerce, Government of India.

Sarkar, N. (Economic Research) gave a series of lectures on statistics at the UGC sponsored refresher course in economics at the Jadavpur University during 16 February to 7 March, 1993.

Goswami, Omkar (Planning Unit) delivered lectures on "Aspects of Industrial Sickness in India" at NIPFP, New Delhi, in April, 1992.

Mukherji, P.N. (Planning) delivered lectures on (i) "State, Ethnicity and Nation-Building" and (ii) "Nation-Building in India" at Academic Staff College, J.N.U., 30 November and 4 April, 1992. He also delivered lecture on "Caste and Class in India" at Joshi-Adhikari Institute of Social Studies, New Delhi on 4 April, 1992.

Choudhury, Amitava and Mitter, Alokanda (Linguistic Research) were invited by the National Institute for the Hearing Handicapped, Calcutta to deliver lectures to the third batch of students of the B.Ed. course for teachers of Hearing Handicapped children during the academic year 1992-93.

Chakrabarti, Prafulla (Sociological Research) delivered UGC lecture on "Ageing and Social Change" at University of Kalyani, Nadia, West Bengal, on 16 December, 1992.

Chattopadhyay, K. (Sociological Research) delivered UGC lecture on "Social and Societal Development" at University of Kalyani, Nadia, West Bengal, on 16 December, 1992.

Dasgupta, Atis (Sociological Research) delivered UGC lectures on (i) "Religious Syncretism in Bengal" at University of Kalyani, Nadia, West Bengal, on 18 December, 1992 and (ii) "Conflict and Convergence : the religious tradition of Bengal", University of Calcutta, Calcutta, on 28-31 March, 1993.

Ghosh, Bhola Nath (Sociological Research) delivered a lecture on "Some experiences

of diffusion-adoption in rural societies" at the 80th Session of the Indian Science Congress (Anthropology and Archaeology Section) University of Goa, Goa, during January, 3-8, 1993.

Maiti, Asok K. (Sociological Research) delivered lectures on (i) "Role of Mathematics in National development with special reference to energy generation and environment pollution" at Calcutta Mathematical Society, Calcutta on 11 September, 1992, (ii) "Problems and prospects of balanced development in North East India and the role of NEC" at North East Indian Council of Social Science Research, Shillong during 26-28 July, 1992, (iii) "Problems and prospects of community development" at North Bengal University, Siliguri during 21-22 August, 1992.

Gopinath, M.A. (DRTC (Bangalore)) gave lectures on (i) Personnel and Financial Management at Sri Krisnadevaraya University, Anantapur, during 29 April - 1 May, 1992, (ii) Motivation and Personnel Management and Financial Management at Shivaji University, Kolhapur during 3-5 June, 1992, (iii) Planning of Libraries and Information Centres, Academic Staff College, Karnataka University, Dharwad during 8-9 July, 1992, (iv) Diffusion of Information; Use of Information on Economics of Information and Graphical Network Techniques PERT/CPM at Marathwada University, Aurangabad, during 22-24 February, 1993, (v) Information Analysis and Consolidation services SIPT School of Library sciences, SNDT University, Bombay, on 26 February, 1993. He also conducted a Workshop on Information Consolidation sponsored by IASLIC and NISSAT at Department of Library and Information Sciences, University of Burdwan, during 22-27 June, 1992.

12. BIRTH CENTENARY CELEBRATIONS OF PRASANTA CHANDRA MAHALANOBIS

The Birth Centenary of Prasanta Chandra Mahalanobis, founder of the Institute, falls on 29 June 1993. It is an event of unique significance in the history of ISI. A yearlong programme has been drawn up covering a variety of activities during 1992-93 and 1993-94 to celebrate the birth centenary of P.C. Mahalanobis. An International Advisory Committee has been set up to guide the celebration programmes. Shri P.V. Narasimha Rao, Prime Minister of India, has kindly consented to be the Patron-in-Chief. Shri Pranab Mukherjee, Minister for Commerce, Govt. of India and Vice-Chairman, Planning Commission, Shri Jyoti Basu, Chief Minister, West Bengal, Shri Sukh Ram, Minister of State for Communication, Govt. of India and Shri C. Gomango, Minister of State for Planning, Govt. of India, have also kindly agreed to be the Patrons. Special grants to the Institute have been given by the Govt. of India to undertake the various programmes.

A day-long programme at ISI, Calcutta, was held on 29 June 1992 to mark the beginning of the Centenary year. Professor M.G.K. Menon, President of ISI, presided over a meeting held in the Auditorium in the morning. Professor Menon, Shri P.N. Haksar, Chairman, ISI and several other speakers paid glowing tributes to the memory of Prasanta Chandra Mahalanobis.

An Exhibition, highlighting the life and achievements of Professor Mahalanobis, was organised on this occasion.

Professor Yash Pal delivered a lecture in the afternoon in which he stressed the need for maintaining self-reliance and social diversity in India.

Workshops/Conferences organised on the occasion of Birth Centenary Celebrations of Mahalanobis

International Workshop on Social Movements, State and Democracy, 4-8 October 1992.

The Sociology Group of the Planning Unit, ISI, Delhi Centre, in collaboration with the DSA Group on Politics of Developing Countries, Department of Political Science, University of Delhi and the Akut Research Collective, Department of Political Science, University of Uppsala organised the workshop at the Delhi Centre of ISI.

The Workshop was inaugurated by Dr. K.R. Narayanan, Vice-President of India, and presided over by Professor M.G.K. Menon, President of ISI. Shri P.N. Haksar, Chairman, ISI, welcomed the delegates. Professor Upendra Baxi, Vice-Chancellor, Delhi University, Professor B.L.S. Prakasa Rao, Director, ISI, and Professor Lars Rudebeck, University of Uppsala, also delivered addresses at the inaugural session.

Academicians from various Universities and institutions from India, Indonesia, Nigeria, U.K., and Sweden took part in the workshop. The proceedings of the workshop will be published soon.

Workshop on Generalised Inverses, 11-16 December, 1992

A Workshop on Generalised Inverses was organised at the Delhi Centre, ISI. Fifty delegates from India and abroad participated in the workshop. It is being planned to bring

out a special section in the Journal 'Linear Algebra and Its Applications' devoted to papers presented at the workshop.

The Seventh International Conference on Multivariate Analysis, 18-23 December 1992

The Seventh International Conference on Multivariate Analysis was organised at the University of Delhi as a part of the Mahalanobis Centenary Celebrations. In the inaugural session, Professor M.G.K. Menon, Shri P.N. Haksar, Professor C.R. Rao, Professor G. Kallianpur and Professor B.L.S. Prakasa Rao recalled the contributions of Professor Mahalanobis. About 100 statisticians and mathematicians from India, USA, Canada, Germany and New Zealand participated in the Conference.

Indo-US-Japan Conference on Quality through Engineering Design, 12-14 January 1993

The Indian Statistical Institute hosted an International Conference entitled "Quality Through Engineering Design — Indo-US-Japan Conference" at Bangalore. A Pre-Conference Tutorial and a Workshop was also held during 10-11 January 1993.

The Pre-Conference Tutorial and the Workshop was inaugurated by Professor C.R. Rao. One hundred and twenty engineers and scientists from India and abroad participated.

The Conference was inaugurated by Professor C.R. Rao and the inaugural function was chaired by Dr. Peter L. Heydemann, Counselor, Scientific and Technological Affairs, Embassy of the United States of America. At the Inaugural function, Dr. Geneichi Taguchi recalled his associations with Professor Mahalanobis.

The Conference was attended by about 230 participants including 30 from abroad.

State of the art methodology was discussed by eminent personalities in the field including Geneichi Taguchi, Jeff Wu, Vijayan N. Nair, C.R. Rao, Raghu N. Kacker, Y. Washio, Y. Tsuda, William Q. Meeker, Way Kuo and Bovas Abraham.

The valedictory function was presided over by Professor J.K. Ghosh.

The Proceedings of the Conference entitled "Quality Through Engineering Design" has been published by Elsevier.

The Conference highlighted the different types of methodology developed in Japan and US and recommended the following :

1. There should be a collaborative research between Indian Statistical Institute and Organisations like NIST and other Universities at US and Bell Laboratories, for the development of new methodologies on practical problems.
2. Collaborative arrangements between India and US should be made for arranging seminars, talks, workshops etc.
3. There should be greater collaboration between industries and the Indian Statistical Institute to promote applications of modern techniques for the improvement of Product and Process Design and towards Quality improvement.
4. Educational Institutions should include Quality as a compulsory subject in any branch of Engineering and Technology.

Further Plans

It was decided to purchase a part of Amrapali and to set-up an archive-cum-museum on the life and contribution of Professor Mahalanobis there. Busts and plaques of Professor Mahalanobis will be installed in the headquarters and in the various centres of the Institute. A documentary film on Professor Mahalanobis will also be made by an eminent film maker.

A biography of Professor Mahalanobis has been nearly completed by Professor A. Rudra with support from the ICSSR and ISI which will be published.

Several other Conferences have also been planned to be held in 1993-94. These include Conferences on Pattern Recognition and Image Processing and Digital Signal Processing Environmental Problems : Issues, Statistical Models and Methods; Symposium on Social Transformation, Different Dimensions; Symposium on Sample Surveys, Theory and Methods A Lecture series on Frontiers of Anthropology has also been planned.

Part III. Administration and Office Bearers

13. GENERAL ADMINISTRATION

Administrative Services Division

The Administrative Services Division caters to the various needs of scientific workers of the Institute and provides necessary infrastructural facilities to enable them to carry out their research and academic activities. The Division has different Units in Calcutta as mentioned below.

Personnel Unit : The Personnel Unit deals with all service matters like appointments, promotions, transfers, disciplinary action, retirement etc., in respect of all the workers of the Institute and maintains all the necessary service records. The Retirement Benefit Cell attached to the Unit deals with the admissibility and arranges payment of retirement benefit of workers like pension, death-cum-retirement gratuity etc.

Accounts Section : The Accounts Section along with Provident Fund Unit keeps the accounts of all financial transactions made by the Institute and is responsible for final closure of accounts and preparation of Income and Expenditure account and Balance sheet at the end of each financial year. The Provident Fund Unit maintains the account of provident fund of all individual workers of the Institute and deals with PF loan and withdrawals and final payments of PF balance.

Estate Office : The Institute has quite a big area of land and several buildings situated within its campus. The Estate Office looks after all the estates and properties of the Institute and also maintains regular conservancy services.

Engineering & Electrical Maintenance Unit : The Institute has several buildings, sheds and staff quarters in its various campuses. These Units look after the regular day to day maintenance and ensures supply of electricity and water in the buildings. These units also take up new constructions.

Medical Welfare and Reimbursement Units : The Medical Reimbursement Unit is entrusted with the checking of all medical claims submitted by the workers as per CSMA Rules and arranges payment thereof. The Medical Welfare Unit maintains a small dispensary with facilities of consulting general physicians and specialists for the campus residents and also for the workers residing nearby, and ensures free medicine supply. At present there are three regular doctors and several part-time specialist doctors attached to the Medical Welfare Unit.

Transport Unit : The Unit is responsible for the running of Institute vehicles and regular maintenance thereof. The Institute has two buses for transporting its workers coming from distant parts of the city. It has also an ambulance to transport the ailing workers to the Govt. Hospitals for emergency treatment on recommendation of the doctors attached to Medical Welfare Unit.

Central Stores Unit : This Unit is responsible for procuring all the stationery and stores articles including furniture and materials required for day to day maintenance of building, water supply and electricity supply etc. A small Tailoring Unit is attached to it.

Binding Unit : The Institute has a large Library. Books and journals are required to be bound regularly which is done by the Binding Unit. Further, the Binding Unit undertakes binding jobs as required by the various scientific and administrative units of the Institute.

Security Unit : As mentioned earlier, the Institute has a vast campus and several buildings

and sheds. Maintenance of security of these buildings is of utmost importance. The Security Unit looks after the entire security of the Institute's property.

Director's Office and CAO's Office : These two offices maintain various important and confidential records, arrange to issue various circulars and administrative orders and cater to the needs of Director and the Chief Administrative Officer respectively on all matters. These units also keep liaison with other scientific and administrative units in the headquarters and also with the outlying centres and branches of the Institute.

Central Office : The Central Office is in charge of receipts and despatch/ distribution of all correspondence, circulars/office orders etc., of the Institute. Arrangements for maintenance and services of all typewriters and duplicators of the Institute are centrally made by this unit.

Public Relations Unit : The Unit takes care all public relations activities on behalf of the Institute. The Unit arranged successful "Media-Coverage" of (i) the function held on 29 June, 1992 in connection with the 99th Birth Anniversary of late Professor P.C. Mahalanobis, (ii) the 27th Convocation of the Institute and (iii) the Annual Convocation of International Statistical Education Centre (ISEC). Elaborate Media-Coverage on the inaugural function of the Institute's collaborative project on "Free Cytological Mass Cancer Screening for the Poor" and the DOE-UNDP project on "Knowledge Based Computing/Fifth Generation Computer System" was also done by the Unit. The Unit issued a number of "press-Release" during the year. It also organised a "City-Tour" for the trainees of International Statistical Education Centre (ISEC) and another for the participants of the Novikov's conjecture conference. A "Institute Visit" was also conducted by the Unit for the delegation from the General Statistical Office, Government of Vietnam and another for the participants of the Intensive course of the Institute. The Unit played a key role in the production of a documentary film on the late Professor P.C. Mahalanobis by Doordarshan Kendra, Calcutta. All India Radio, Calcutta also broadcast a feature type programme on the activities of the Institute and an exclusive interview with Dean of Studies (under GUIDE programme) in 1992 with the active cooperation and assistance from this Unit. Another important function of the Unit is to prepare and publish Annual Report of the Institute each year and to distribute it the same to various Universities in India and abroad.

Council Section : The Institute is a registered society and there are quite a large number of Ordinary and Life members interested in the objectives and activities of the Institute. The Council section maintains the liaison with the members and keeps them posted with all current information, arranges despatch of *Sankhyā*, the journal of Statistics published by the Institute. The Council section also arranges the holding of various meetings of the General Body and also of the Council and Finance Committee of the Institute. This section is attached to CAO's office.

Publication and Printing Unit : The Unit was formed in August 1991 when the Statistical Publishing Society was formally taken over by the Institute. The Unit is now engaged in printing of all materials, including *Sankhyā*, as required by the Institute. The Unit also accepts work from outside agencies on a selective basis.

Apart from the Units mentioned above, there are some small cells like Budget Cell, Import Cell, Travel Cell and HBA Cell to take care of the specific needs of the Institute.

The Administrative Services Division also looks after the running of hostels for students, research scholars and ISEC trainees and also the running of Canteen for the workers and students of the Institute. It also maintains the Guest House to accommodate scientists and

academicians, both from inside and outside the country, who visit the Institute for various academic pursuits. The Division has two main Centres located at Delhi and Bangalore. The other outlying Units numbering eight are controlled directly by the headquarter at Calcutta. The Administrative Services Division takes the responsibility for all new construction activity of the Institute at its headquarter and also at outlying centres/branches. A brief report on the construction activity in the current year is indicated is given later.

The activities of the Administrative Services in the two Centres, namely Delhi and Bangalore, and in other outlying branches of the Institute are more or less the same but in a much smaller scale. Depending on the needs of the branches/centres the number of Units have been truncated and merged into fewer Units.

Staff of the Institute

The need of supporting staff for various scientific divisions as also for general administration has increased tremendously with the increase in research activity of the Institute. Increase of staff strength is also needed as a result of new construction activities like Senior Students' Hostel, Composite Library Building etc. at the headquarter and also academic blocks at Bangalore and Hyderabad. The Institute had to observe a complete ban, for a long time on recruitment of administrative staff as per Govt. directive which has resulted in reduction of staff strength on account of retirement on superannuation, death etc. Although the Govt. has already finalised the pay structure for the existing employees of the Institute, it has still not cleared the pay scales which will be applicable to the new entrants in various administrative positions. With the depletion of staff strength and ban on recruitment, it has become increasingly difficult for the Administrative Services Division to maintain security, conservancy, and other services. The Govt. has recently agreed to allow the Institute to recruit some staff in essential categories which will help the Institute to tide over the ongoing problem to some extent.

The following senior members of the staff worked in the posts indicated against their names during the year.

1. Professor B.L.S. Prakasa Rao, FNA, Director
2. Dr. S.C. Bagchi, Dean of Studies
3. Professor Bhaskar Dutta, Head, Delhi Centre
4. Professor M.A. Gopinath, In-charge (Admn. & Accounts), Bangalore Centre
5. Shri P.K. Bandyopadhyay, Chief Administrative Officer

New Appointments

List of workers (Scientific/Technical/Administrative) who joined the Institute during the year :

1. Shri Jayanto Basak, Programmer (20.4.92)
2. Dr. C. A. Murthy, Lecturer (1.4.92)

3. Shri Surajit Pal, Technical Officer Gr.III (24.4.92)
4. Shri Sanjit Roy, Technical Officer Gr.III (30.4.92)
5. Dr. Samarendra Bhattacharya, Lecturer (24.6.92)
6. Dr. Tilak Bhattacharya, Lecturer (1.6.92)
7. Dr. Isha (Bagai) Dewan, Lecturer (15.6.92)
8. Dr. Mihir Kanti Rakshit, Professor (20.7.92)
9. Dr. Anjana Dewanji, Lecturer (13.10.92)
10. Dr. Subir Kr. Bhandari, Lecturer (14.11.92)
11. Dr. Ashis Kr. Das, Lecturer (11.11.92)
12. Dr. G. Ravindran, Lecturer (30.11.92)
13. Smt. Nandini Roy, Technical Officer, Gr.III (2.12.92)
14. Smt. Rina Chakraborty, Technical Officer, Gr.III (10.12.92)
15. Shri Prasun Das, Technical Officer Gr.III (2.12.92)
16. Shri J. Rajesh, Technical Officer Gr.III (14.12.92)

Retirements/Resignations

List of workers (Scientific/Technical/Administrative) who retired or resigned from the service of the Institute during the year :

1. Shri Samir Kr. Mushib, Assistant Librarian (30.4.92)
2. Shri Chitto Ranjan Das, Research Assistant (31.5.92)
3. Dr. Debraj Ray, Professor (31.7.92)
4. Shri Supriya Gupta, Senior Civil Engineer (31.8.92)
5. Dr. Suraj Bandyopadhyay, Associate Professor (31.8.92)
6. Shri C.A. Setty, Sr. Technical Officer (30.9.92)
7. Shri Salil Kr. Chaudhury, Technical Officer Gr.I (30.9.92)
8. Shri Shovan Lal Kundu, Computer Engineer (1.9.92)
9. Dr. B. Ramachandran, Professor (31.10.92)
10. Dr. Ambarish Ghosh, Professor (31.10.92)
11. Shri B.K. Sengupta, Computer Systems Engineer Gr.I (31.12.92)
12. Dr. Purna Chandra Das Chaudhury, Associate Professor (31.3.93)

13. Dr.(Mrs.) Alokanda Mitter, Associate Professor (31.3.93)

Numbers of workers in various groups as on 31st March 1993 :

(i) Scientific and Technical Group	-	524
(ii) Non-scientific Group	-	1128
Total :		<u>1652</u>

Budget and Finance

For the year 1992-93, the Institute's budget was estimated to be Rs.1212.35 lakhs and Rs.789.06 lakhs towards Non-Plan and Plan respectively. The Govt. after considering the report of the Section 8(1) Committee approved a sum of Rs.1167.55 lakhs (including internal receipts) and Rs.384.00 lakhs respectively for Non-Plan and Plan expenditures. At the Revised Estimate stage, the Institute sought for a grant of Rs.1448.33 lakhs and Rs.488.00 lakhs respectively in Non-Plan and Plan Estimates. The Govt. after considering the additional increase at RE stage approved a sum of Rs.1324.00 lakhs including Rs.37.00 lakhs released as reimbursement of excess expenditure of previous years. The Plan RE allocation was fixed at Rs.402.00 lakhs. The Institute after maintaining tight budgetary control was able to contain its expenditure within the budget allocation sanctioned by the Govt. The Audited Annual Accounts of the Institute for the year 1992-93 have been furnished in part IV of this report.

Land and Construction

The following major activities were undertaken by the Institute during 1992-93.

Calcutta

New Guest House

The work of the New Guest house in respect of civil, sanitary and electrical works are in progress. The expenditure incurred up to 4th R/A bill is about Rs.36.0 lakhs against work order value of Rs. 73,20,655.00.

Restoration of R.T.S. Building

(a) During the progress of above work it was felt that some additional work would be involved to make the building safe. After demolition of the roof and beam, the building was found to be lacking in respect of structural system. After incorporating necessary modifications the Revised estimates submitted by the consultant came to Rs. 27.27 lakh against the original work order value of Rs. 14.28 lakhs. The total work is expected to be completed within next two months.

(b) Tender for the electrical installation work of R.T.S. building was finalised but the actual work could not be started during the year. Tendered amount for this job was Rs.2,64,213.00.

Group 'D' quarter at Deluxe Garden

Work pertaining to pile foundation work for 'D' type quarters has been completed during the financial year and the total value of the work came to Rs.7,08,886.18 against the tender value of Rs.7,10,363.00.

Separate estimate had been prepared for construction of super structure by the consultant M/S. Ghosh Bose & Associates for an amount of Rs.21,02,000.00. The actual construction work will commence in the next financial year.

Deep tubewell at 205 B.T. Road

Installation of deep tubewell at 205 B.T. Road had been completed during the end of financial year. Tender value of the aforesaid work was Rs.3,74,099.60. The expenditure actually incurred was Rs.3,47,302.76.

Face lifting work of all buildings on the occasion of the birth centenary of Prof. P.C. Mahalanobis

Face lifting work in different buildings have been undertaken during the current financial year. The amount of expenditure and the progress of work are indicated below separately

Name of the building	Tendered amount	Gross bill value
1. Composite Library Bldg.	Rs. 5,46,279.75	Rs.4,53,461.85
2. Building No. 1 at 205 B.T. Road.	Rs. 93,019.50	Rs.1,58,576.35
3. Building No. 2	Rs. 2,84,105.00	Rs.1,89,783.41
4. Building No. 3	Rs. 97,367.03	Rs. 98,239.90
5. Building No. 4	Rs. 49,865.00	Rs. 57,665.20
6. Building No. 5	Rs. 32,858.40	Work in progress
7. Building No. 6	Rs. 32,858.40	Work in progress
8. Amrapali Bldg.	Rs. 83,257.33	Rs.1,48,871.65
9. Men's Hostel at 206 B.T. Road	Rs. 47,643.75	Rs. 42,560.70

Delhi

The Centre did not take up any major construction work during the financial year. Construction of boundary walls, stores shed and waterproofing of the Library and Canteen buildings were taken up. The drainage and street lighting system were also taken up. The total cost was within Rs.5.00 lakhs.

Bangalore

The Centre completed the preliminary work of appointment of Architects, drawing and designing of the additional floors, and selection of contractor after inviting tenders for the construction work. Necessary amounts of cement and steel to start the work have also been procured. The work is expected to start in full swing from the beginning of the next financial year.

Society Type Activities

Membership : April 1992-March 1993

During the period 126 Persons were elected as ordinary members of the Institute and 28 ordinary members became life members.

The membership position as on 31st March 1993 is as follows:

Ordinary Members	-	898
Life Members	-	349
Institutional Members	-	14
		<u>1261</u>

Finance Committee Meeting : Two meetings of the Finance Committee were held during the year on 4 September 1992 and 15 January 1993. In the meeting of 4 September 1992, the Committee recommended the RE 1992-93 and BE 1993-94 (Plan & Non-Plan) to the Council. The Committee in its meeting on 15 January 1993 considered and recommended the Annual Report including the Audited Statement of Accounts for the year 1991-92.

Council Meeting : Seven meetings of the Council of the Institute were held during the year on 4 May 1992, 30 June 1992, 7 September 1992, 11 September 1992, 1 October 1992, 16 January 1993 and 11 March 1993 and various important decisions on both Administrative and Academic matters were taken. In the meeting of 7 September 1992, the Council approved the RE for 1992-93 and BE for 1993-94 in respect of both Plan and Non-Plan Estimates. The Annual Report including the Statement of Audited Accounts for the year 1991-92 were placed in the Council meeting of 16 January 1993 and approved. In the same meeting, the Council completed the formation of various committees of the Institute.

During the year under report, the Council of the Institute was reconstituted with effect from 18 September 1992 for a term of two years. A list containing the names of the President of the Institute, Chairman and Members of the Council of the Institute and also lists of members of different committees constituted by the Council are given in this report.

Annual General Meeting : Two Annual General Meetings were held on 14 September 1992 and 19 January 1993. In the meeting of 19 January 1993, the Annual Report alongwith the Audited Statement of Accounts for the year 1991-92 were considered and adopted by the General Body after some amendments.

14. LIST OF MEMBERS OF THE ACADEMIC COUNCIL
AND OF DIFFERENT COMMITTEES OF THE INSTITUTE
AS ON 31 MARCH 1993.

List of Members of the Academic Council of the Institute

1. B.L.S. Prakasa Rao, Director, Chairman
2. S.C. Bagchi, Dean of Studies, Convener.

Theoretical Statistics and Mathematics Division

3. Somesh Das Gupta, 4. A.K. Roy, 5. T.J. Rao, 6. S.B. Rao, 7. B.V. Rao, 8. Bikash Sinha, 9. A.R. Rao, 10. G.M. Saha, 11. J.K. Ghosh, 12. S.M. Kansal, 13. K.R. Parthasarathy, 14. T. Parthasarathy, 15. K.B. Sinha, 16. R.L. Karandikar, 17. R. Bhatia, 18. Aloke De, 19. A. Sitaram, 20. K.P.S.B. Rao, 21. V.S. Sunder, 22. T.S.S.R.K. Rao, 23. S. Thangavadu, 24. T.V. Hanurav.

Applied Statistics, Surveys and Computing Division

25. Ajay Kr. Adhikari, 26. Arijit Chaudhury, 27. B.N. Mukherjee, 28. Sunil K. Pal, 29. T. Krishnan, 30. Shibdas Bandyopadhyay, 31. A.C. Mukhopadhyay, 32. Tares Maitra, 33. P.S.S.N.V.P. Rao,

Computer and Statistical Services Centre (CSSC)

34. S.C. Kundu, 35. Aditya Bagchi, 36. Subhas Nandy

Physical and Earth Sciences Division

37. P. Bandyopadhyay, 38. Rajkumar Roychowdhury, 39. B.N. Mandal, 40. M.K. Chakrabarti, 41. B.P. Sinha, 42. Ashish Sen, 43. Malay Kr. Kundu, 44. Subrata Bhat-tacharya, 45. Ashoke Dutta, 46. J. Das, 47. B. B. Chaudhuri, 48. Sankar. K. Pal 49. T. Roychowdhuri, 50. A.K. Chaudhuri, 51. A. B. Gupta, 52. D.N. Ghosal.

Biological Sciences Division

53. A. Basu, 54. K.C. Malhotra, 55. S. Matai, 56. P.P. Majumder, 57. Bibha Karmakar.

Social Sciences Division

58. N. Bhattacharyya, 59. Robin Mukherjee, 60. M.N. Pal, 61. D. Coondoo, 62. Pradip Maiti, 63. Mihir Kr. Rakshit, 64. Prasanta Kr. Majumder, 65. Amita Majumder, 66. Biswanath Dhattacharya, 67. C.R. Malakar, 68. S. Guha Roy, 69. M. Mukherjee, 70. Parkash Chander, 71. D. Dasgupta, 72. Atul Sharma, 73. P.N. Mukherjee, 74. Bhaskar Dutta, 75. Dilip Mukherjee, 76. Debraj Roy, 77. N.S. Iyenger, 78. N.S.S. Narayana, 79. S. Seetharama, 80. Sanjit Bose.

Statistical Quality Control and Operations Research Division

81. R.J. Pandey, 82. T.K. Chakrabarti, 83. S.P. Mukherjee, 84. S. Sengupta, 85. Anup Majumder, 86. A.N. Nankana, 87. S.R. Mohan, 88. Sadhan Chakraborty, 89. M.R. Saluja, 90. Arvind Seth, 91. B.K. Pal, 92. K.N. Anand, 93. A.K. Chaudhuri, 94. Somnath Ray,

95. V. Narayana, 96. Y.R. Rau, 97. N.T.V. Ranga Rao, 98. J. Venkatappaiah, 99. A.L.N. Murthy, 100. S.M. Sundara Raju, 101. C.Y. Krishnamurthy, 102. T.S. Arthanari, 103. P. Lakshmanan, 104. V. Gopalan.

Library Documentation and Information Sciences Division

105. J. Mishra, 106. M.A. Gopinath, 107. I.K. Ravichandra Rao.

Member-Secretary, ISEC

108. A.B. Raha.

Head, SQC T & P Unit

109. T.K. Chakraborty.

Secretary, Examination Committee

110. P. Bhimasankaram.

List of Members of Different Committees of the Institute

(A) Finance Committee

(1) Director (Ex-officio Chairman), (2) Shri A.K. Adhikari, (3) Dr. D.K. Bose, (4) Shri Dilip Sengupta, (5) Dr. N. Bhattacharya, (6) Dr. P.K. Bose, (7) Dr. P.N. Roy, (8) Shri P.K. Chatterjee, (9) Dr. Robin Mukherjee, (10) Shri Swapan Seal, (11) Dr. T. Krishnan, (12) Dr. S.B. Rao, (13) Chief Administrative Officer, (14) Head, Delhi Centre or his nominee, (15) In-Charge, Bangalore Centre, (16) Govt. Representative (Dept. of Statistics), (17) Govt. Representative (Ministry of Finance), (18) Head, SQC & OR Division, (19) Shri S.S. Panja (Non-Member Secretary).

(B) Journal Committee

Editors: *Sankhyā A and B*

Dr. B.L.S. Prakasa Rao, Dr. C.R. Rao, Dr. G. Kallianpur, Dr. K.R. Parthasarathy, Dr. S. Dasgupta.

Co-Editors: *Sankhyā A*

Dr. Arup Bose, Dr. Bimal Kumar Sinha, Dr. Mohan Delampadi, Dr. Probal Chaudhuri, Dr. R.L. Karandikar.

Co-Editors: *Sankhyā B*

Dr. Bikas Kumar Sinha, Dr. Dipankar Coondoo, Dr. Probal Chaudhuri, Dr. S.R. Mohan, Dr. T.J. Rao.

Advisory Members

Prof. Arijit Chaudhuri, Prof. Aman Ullah, Prof. D. Basu, Prof. D. Dasgupta, Prof. G. Jogesh Babu, Prof. J.K. Ghosh, Prof. J. Roy, Prof. J. Sethuraman, Prof. Malay Ghosh, Prof. M.N. Pal, Prof. N. Bhattacharyya, Prof. R.R. Bahadur, Prof. S.K. Chatterjee, Prof. S.K. Mitra, Prof. S.S. Shrikhande, Prof. S.R.S. Varadhan.

Managing Editors

Prof. R.L. Karandikar (*Sankhyā A*); Prof. T.J. Rao (*Sankhyā B*)

(C) Examination Committee

1. Prof. S.K. Chatterjee (Chairman), 2. Prof. A.C. Mukhopadhyay, 3. Prof. B.B. Chaudhuri, 4. Prof. Bikas Kr. Sinha, 5. Dean of Studies, 6. Prof. D. Coondoo, 7. Prof. K.C. Malhotra, 8. Dr. S. Dasgupta, 9. Dr. S. Guha Roy, 10. Dr. Y.R.K. Sarma, 11. Officer-in-Charge, Training Division, CSO, 12. Dr. P. Bhimasankaram (Secretary-Convenor).

(D) Works Advisory Committees

(a) Baranagar : Calcutta

1. Dr. P.K. Bose (Chairman), 2. Dr. Aditya Bagchi, 3. Prof. Ashok Dutta, 4. Dr. Bhabani P. Sinha, 5. Chief Administrative Officer, 6. Dr. S.R. Chakraborty, 7. Dr. S.B. Rao, 8. Shri Sanjay Sinha, 9. Shri Swapan Seal, 10. Shri Tares Maitra, 11. Outside Expert, to be co-opted by the Chairman of the Committee, 12. Outside Architect, to be co-opted by the Chairman of the Committee, 13. Shri A. Mukherjee (Convenor).

(b) Delhi

1. Shri S.C. Bose Mullick (Chairman), 2. Shri B. Majumder, 3. Shri C.D. Gupta, 4. Chief Administrative Officer, 5. Prof. Dipankar Dasgupta, 6. Head, Delhi Centre, 7. Shri Om Prakash, 8. Shri S.S. Handa, 9. Dr. S.C. Kochar, 10. Prof. T. Parthasarathy, 11. Shri D.N. Sabharwal (Convenor).

(c) Bangalore

1. Mr. T.R. Satish Chandran (Chairman), 2. In-Charge, Academic and Administration, 3. Head, DRTC, 4. Head, Stat-Math Unit, 5. Head, Economic Analysis Unit, 6. Executive-in-Charge, SQC & OR Unit, 7. Mr. C.R. Ramesh, 8. Chief Administrative Officer, 9. Shri L.R.K. Prasad (Non-Member Secretary).

(d) Madras

1. Dr. P.K. Bose (Chairman), 2. and 3. Outside Experts to be co-opted by the Committee, 4. Shri C.R. Prasad, 5. Chief Administrative Officer, 6. Shri C.Y. Krishnamurthy (Convenor).

(e) Hyderabad

1. Professor T. Navneeth Rao (Chairman), 2. Shri T.L. Shankar, 3. Dr. T.V. Hanurav, 4. Chief Administrative Officer, 5. Shri V. Narayana (Convenor).

(E) Ph.D./D.Sc. Committee

1. Director (Chairman), 2. Prof. A.K. Roy, 3. Prof. A. Sitaram, 4. Prof. B.V. Rao, 5. Prof. Bhaskar Dutta, 6. Dr. D. Dutta Majumder, 7. Dean of Studies, 8. Prof. J. Roy, 9. Prof. J.K. Ghosh, 10. Prof. K.R. Parthasarathy, 11. Prof. N. Bhattacharyya, 12. Prof. S. Dasgupta, 13. Dr. A.R. Rao (Convenor).

(F) Technical Advisory Committees of different Divisions

I. Theoretical Statistics and Mathematics Division

1. Dr. B.L.S. Prakasa Rao, Director (Chairman), 2. Professor M.G. Nadkarni, Centre

for Advanced Study in Mathematics, University of Bombay, Vidyanageri Marg, Vidyanageri, Bombay-400098, 3. Professor S.K. Basu, Indian Institute of Management, Diamond Harbour Road, Joka, South 24 Parganas, 4. Professor B.K. Kale, Department of Statistics, University of Poona, Pune-411007, 5. Professor S.R. Adke, Department of Statistics, University of Poona, Pune-411007, 6. Professor M.S. Raghunathan, School of Mathematics, T.I.F.R., Colaba, Bombay-400005, 7. Professor S. Sridharan, School of Mathematics, T.I.F.R., Colaba, Bombay-400005, 8. Professor S.G. Dani, School of Mathematics, T.I.F.R., Colaba, Bombay-400005, 9. Dr. Alladi Sitaram, Professor-in-Charge (Convener).

II. Applied Statistics, Surveys & Computing Division

1. Dr. B.L.S. Prakasa Rao, Director (Chairman), 2. Professor S.R. Adke, Professor of Statistics, Pune University, Pune-411007, 3. Professor S.P. Mukherjee, Centenary Professor, Department of Statistics, Calcutta University, 35, Ballygunge Circular Road, Calcutta-700019, 4. Dr. S. Radhakrishnan, Director, Institute for Research in Medical Statistics (ICMR), Sathymurthi Road, Chetput, Madras-600031, 5. Dr. N. Vijayaditya, Director, National Informatics Centre, Electronics Commission, E-Wing, Pushpa Bhavan, Madangir Road, New Delhi-110062, 6. Professor C.K. Mustafi, Professor of Statistics, Indian Institute of Management, Diamond Harbour Road, Joka, Calcutta-700027, 7. Dr. S.N. Ray, Director-General, Central Statistical Organisation & Ex-officio Additional Secretary, Department of Statistics, Government of India, Sardar Patel Bhavan, Parliament Street, New Delhi-110001, 8. Professor J.J. Ghosh, Department of Biochemistry, University College of Science & Technology, 35, Ballygunge Circular Road, Calcutta-700019, 9. Dr. S.R. Chakraborty, Professor-in-Charge (Convener).

III. Physical and Earth Sciences Division

1. Dr. B.L.S. Prakasa Rao, Director (Chairman), 2. Professor B.L. Deekshatulu, Director, National Remote Sensing Agency, Balanagar, Hyderabad-500037, 3. Professor B.R. Nag, Institute of Radio Physics and Electronics, Calcutta University, 92, Acharya Prafulla Chandra Road, Calcutta, 4. Professor Somnath Biswas, Department of Computer Science and Engineering, Indian Institute of Technology, Kanpur-208106, 5. Professor Mohit Kr. Roy, Department of Computer Science and Engineering, Jadavpur University, Calcutta-700032, 6. Professor Prem Kumar, Department of Mathematics, Indian Institute of Technology, New Delhi-110016, 7. Professor P. Neyogi, Department of Mathematics, Indian Institute of Technology, Kharagpur-721302, 8. Professor A.N. Mitra, Department of Physics, Delhi University, Delhi-7, 9. Professor Brahmananda Das Gupta, Theoretical Nuclear Physics Division, Saha Institute of Nuclear Physics, Salt Lake, Calcutta, 10. Professor A.K. Saha, Department of Geology, Presidency College, Calcutta, 11. Professor S.N. Sen, Department of Geology, Calcutta University, 35, Ballygunge Circular Road, Calcutta, 12. Professor Mahadeb Adhikari, Acharya Prafulla Chandra Roy Professor of Agricultural Chemistry, College of Agriculture, Calcutta University, Calcutta, 13. Dr. Dhiraj Kumar Rudra, Professor-in-Charge (Convener).

IV. Biological Sciences Division

1. Dr. B.L.S. Prakasa Rao, Director (Chairman), 2. Professor H. Sharat Chandra, Director, Centre for Cellular and Molecular Biology, Hyderabad-500007, 3. Professor J.J. Ghosh, Department of Biochemistry, University of Calcutta, 35, Ballygunge Circular Road, Calcutta-700019, 4. Professor Anil Kumar Gupta, Head, Agricultural Management, Indian

Institute of Management, Vastrapur, Ahmedabad, 5. Professor T.M. Das, Dean of Faculty (Retd.), Agriculture Department, University College of Science, 24A, Circular Garden Reach Road, Calcutta-700023, 6. Professor D.P. Mukherjee, Department of Anthropology, University of Calcutta, Ballygunge Circular Road, Ballygunge Science College, Calcutta- 700019, 7. Professor B.M. Das, Department of Anthropology, University of Gauhati, Gauhati-781014, 8. Dr. Prem Narain, Director, Indian Agricultural Research Statistics Institute, Library Avenue, New Delhi-110012, 9. Dr. Kamala Krishnaswamy, Deputy Director, National Institute of Nutrition, Hyderabad, Andhra Pradesh, 10. Dr. A.B. Roy, Professor, Department of Mathematics, Jadavpur University, Calcutta-700032, 11. Professor J.C. Misra, Department of Mathematics, Indian Institute of Technology, Kharagpur-721902, 12. Dr. Narendra Singh, Retd. Scientist, C.F.T.R.I., Sajana, 164, Brindavan Extension, 1 Stage, Mysore-570020, 13. Professor Sivatosh Mookherjee, School of Life Sciences, Jawaharlal Nehru University, New Mehrauli Road, New Delhi, 14. Dr. (Ms.) Chandralekha Duttgupta, Professor-in-Charge (Convener).

V. Social Sciences Division

1. Dr. B.L.S. Prakasa Rao, Director (Chairman), 2. Professor Ramprasad Sengupta, Centre for Economic Studies and Planning, Jawaharlal Nehru University, New Mehrauli Road, New Delhi-110067, 3. Professor Dhireswari Bhattacharya (Former Head, Department of Economics, Calcutta University), Shribnath Shastri Housing Society, Gariahat Road, Calcutta-700029, 4. Professor Ranjit Sau, Indian Institute of Management, Diamond Harbour Road, Joka, Post Box No.16757, Alipore Post Office, Calcutta-700027, 5. Professor B. Ramakrishna Reddy, Dean of Studies, School of Language Development, Telugu University (Telugu Bhavanam), Hyderabad-500007, 6. Dr. B.P. Mahapatra, Dy. Registrar General, Language Division, 234/4, A.J.C. Bose Road, Nizam Palace, 17th floor, Calcutta- 700020, 7. Professor Ashish Bose, Jawaharlal Nehru Fellow (1990- 92), 1-1777, Chitta Ranjan Park, New Delhi-110019, 8. Professor K.B. Pathak, Officiating Director, International Institute for Population Sciences (IIPS), Govandi Station Road, Deonar, Bombay-400088, 9. Professor Amitava Chatterjee, 35, Biswambhar Banerjee Lane, Konnagore, Hooghly, 10. Professor Purnima Mathur, Department of HSS, Indian Institute of Technology, Delhi, 11. Professor Surajit C. Sinha, Co-ordinator, Paribrajak Mandali, Udyachal Shyambati, Santiniketan-731235, 12. Professor Barun De, Professor of History, Centre for Studies in Social Sciences, 10, Lake Terrace, Calcutta-700029, 13. Dr. Dipankar Coondoo, Professor-in-Charge (Convener).

VI. Statistical Quality Control and Operations Research Division

1. Dr. B.L.S. Prakasa Rao, Director (Chairman), 2. Shri K.P. Mathur, General Manager, Corporate Quality Assurance, Bharat Heavy Electricals Ltd., 306, Vikram Tower, Rajendra Place, New Delhi, 3. Dr. N.K. Jaiswal, Institute for System Studies and Analysis, Metcalfe House, New Delhi, 4. Shri K.R. Parameshwar, Former Director General, BIS 8138, Sector B, Pocket 11, Nelson Mandela Road, Vasant Kunj, New Delhi-110037, 5. Dr. Subir Chowdhury, 50/11, Gorcha Road, Calcutta, 6. Dr. S.P. Mukherjee, Centenary Professor, Department of Statistics, Calcutta University, 35, Ballygunge Circular Road, Calcutta, 7. Dr. D.K. Gupta, Chairman & Managing Director, Hindustan Cables Ltd., 9, Lala Lajpat Rai Sarani, Calcutta-700020, 8. Professor S.C. Chakraborty, Head, SQC & OR Division (Convener).

VII. Library Documentation and Information Sciences Division

1. Dr. B.L.S. Prakasa Rao, Director (Chairman), 2. Dr. V.A. Kamath, 'Mincendia',

1/9, 2nd floor, Off Mahakali Caves Road, Andheri (E), Bombay-400093, 3. Dr. Sarjugji Sahay, Director, Institute of Library Science, Bhagalpur University, Bhagalpur-7, 4. Dr. Pulin Barua, Professor & Head, Department of Library and Information Science, Golapbag, Burdwan University, Burdwan., 5. Sm. Kalpana Dasgupta, Librarian, National Library, Belvedere, Calcutta-700027, 6. Dr. P.K. Mahapatra, Head of the Department of Library and Information Science, University of Calcutta, College Street, Calcutta-700073, 7. Dr. J. Misra, Chief Librarian (Convener).