The Annual General Meeting of the Medical Research Society was held on Friday, 10 December 1971, at the Hammersmith Hospital, London, W.12. The following symposium was held and Demonstrations and Communications presented.

**DEMONSTRATIONS**

1. **Metabolic changes in acute myocardial infarction**  
   M. Thomas, A. J. Drake and L. C. Becker (Cardiovascular Research Unit)

2. **His electrography in the diagnosis of cardiac dysrhythmias and in the assessment of the effects of drugs**  
   D. S. Reid, R. Wray and B. J. Maurer (Cardiovascular Research Unit)

3. **Procaine-amide blood levels in the management of ventricular dysrhythmias**  
   A. J. Drake, D. Je~v, B. J. Maurer, D. S. Reid and J. P. Shillingford (Cardiovascular Research Unit)

4. **A new method for electrocardiographic monitoring of dysrhythmias**  
   J. Tinker, P. Stinton, J. C. Vickers and S. P. Vahl (Cardiovascular Research Unit)

5. **Digital computer processing of ventricular and aortic pressure and aortic flow records**  
   C. J. Mills and I. T. Gabe (Cardiovascular Research Unit)

6. **Measurement of lung mechanics during exercise**  
   D. G. Leaver and N. B. Pride (Respiratory Unit)

7. **Progressive exercise tests for population surveys and clinical use**  
   S. Spiro, Elizabeth Juniper and R. H. T. Edwards (Respiratory Unit)

8. **Computer based techniques for studying the respiratory adaptation to exercise**  
   E. E. Davies, S. Spiro and R. H. T. Edwards (Respiratory Unit)

9. **Studies of force and fatigue during isometric contractions of the quadriceps muscle**  
   R. H. T. Edwards, D. K. Hill and M. McDonnell (Respiratory Unit and Department of Biophysics)

10. **A study of respiratory muscle power**  
    S. Freedman and D. J. C. Read (Respiratory Unit)

11. **Changes in light scattering associated with crossbridge movement in resting striated muscle**  
    F. W. Flitney (Department of Biophysics)

12. **Cholesterol metabolism in men and monkeys**  
    L. Simons, A. Magide and N. B. Myant (M.R.C. Lipid Metabolism Unit)

13. **Plastic isolator for patient care**  
    P. C. Trexler and A. S. D. Spiers (Royal Veterinary College and M.R.C. Leukaemia Unit)

14. **Intravascular transducer for continuous Po2 measurement**  
    H. Markovitch, J. W. Scopes, P. Rolfe and I. Keith (Department of Child Health)

15. **Echocardiography in heart disease**  
    G. Ziady and H. Madeira (Clinical Cardiology Unit)

16. **Electrocardiography of the Bundle of His**  
    H. Khan (Clinical Cardiology Unit)

17. **Investigation of muscle blood flow and capillary permeability in normal and diabetic subjects using 133 Xe and 75 Br**  
    Clara Lowy and R. N. Arnot (Endocrinology Unit and Medical Physics)

18. **Renal blood flow and microangiographic changes in mercury poisoning**  
    J. P. Lavender and T. Sherwood (Department of Radiology)

19. **67Gallium and 111Indium localization in malignant neoplasms**  
    M. V. Merrick and J. P. Lavender (Department of Radiology)

20. **The importance of enzyme induction in drug interactions**  
    A. Breckenridge, D. S. Davies and M. L. E. Orme (Department of Clinical Pharmacology)

21. **β adrenergic receptor blockade**  
    C. George and R. Briant (Department of Clinical Pharmacology)

22. **Sympathetic nerve activity**  
    J. G. Whitam (Department of Anaesthetics)

23. **Correlation between mass and unitary electrical activity in the cerebral cortex of experimental animals**  
    O. Holmes (Department of Anaesthetics)

24. **Complement in nephritis**  
    D. G. Williams, Jane Fallows, N. Amos and D. K. Peters (Renal Unit)

25. **The effect of fibrination on nephrotoxic nephritis in rabbits**  
    P. F. Naish, G. B. Penn, D. J. Evans and D. K. Peters (Renal Unit)
26. Evaluation of four different tests of pancreatic function concurrently
S. Nundy, D. Shirley, N. J. O’Higgins, J. S. M. Beales (Departments of Surgery and Radiology)

27. Staged vagotomy and gastric secretion in the dog
S. Nundy (Department of Surgery)

28. Insulin-stimulated gastric secretion in two healthy men
D. J. Cowley and J. H. Baron (Department of Surgery)

29. Serum gastrin and gastric acid after insulin hypoglycaemia
D. J. Cowley and J. H. Baron (Department of Surgery)

30. Insulin-stimulated gastric secretion after incomplete vagotomy
D. J. Cowley and J. H. Baron (Department of Surgery)

31. The assessment of fast neutrons in cancer therapy
Mary Catterall, D. K. Bewley, S. B. Field and A. Rashid (M.R.C. Cyclotron Unit)

32. Alterations in plasma lipoproteins in relation to lecithin-cholesterol-acyl-transferase (LCAT) and post heparin lipolytic activity (PHLA) and to fatty acid patterns in patients with intestinal malabsorption
J. P. Miller, M. Press, J. Heath and G. R. Thompson (Gastroenterology Unit)

33. The effect of hormones on fasting triglyceride levels and kinetics in man
B. R. Tulloch, B. Lewis and T. Russell Fraser (Endocrinology Unit)

34. Cyclic AMP in human adipose tissue: in vivo and in vitro studies
B. R. Tulloch and N. Vydelingum (Endocrinology Unit)

35. The provision of space for artificial internal organs
L. Wosurnu and D. G. Melrose (Department of Surgery)

36. The conducting system of the bovine heart
H. H. Bentall and S. P. Alwork (Department of Surgery)

37. The prevention of deep vein thrombosis
N. H. Hills and J. S. Calnan (Department of Surgery)

38. Artificial finger joints
F. Nicolle and J. S. Calnan (Department of Surgery)

39. Thyroid lymphography
S. Nundy, J. S. M. Beales and Selwyn Taylor (Department of Surgery)

40. Quantitation of splenic function
J. Pettit (Department of Haematology)

41. Oxygen dissociation curves in anaemia
E. C. Gordon-Smith and A. A. Clarke (Department of Haematology)

42. Experimental hypertensive retinopathy
Eva Kohner, C. J. Bulpitt, D. Archer, C. T. Dollery, N. Ashton and A. Garner (Department of Clinical Pharmacology and Institute of Ophthalmology)

43. Organic acid metabolism in gastrointestinal disease
D. Gompertz (M.R.C. Intestinal Malabsorption Research Group, Gastroenterology Unit)

44. Bile salts, gall stones and kidney stones
D. Bell, E. Elias and R. H. Dowling (Gastroenterology Unit)

45. The use of radioisotope imaging devices for quantitative organ function studies
H. I. Glass, P. Vernon, E. D. Williams, R. N. Arnot, M. D. Short and P. Buranapong (Department of Medical Physics)

46. Biossay of $^3$H-vitamin D metabolites in the circulation of normal pigs and of pigs given phenobarbitone
J. Silver, J. Pennock, F. H. Doyle, G. Neale and G. R. Thompson (Departments of Medicine and Radiology)

SYMPOSIUM ON THE RED CELL

Organizer: T. A. J. Prankerd

A. MECHANICAL PROPERTIES OF THE ERYTHROCYTE AS DETERMINANTS OF RED CELL BIRTH AND DEATH

Robert J. Weed

University of Rochester School of Medicine and Dentistry, Rochester, New York

The remarkable deformability of normal mature circulating erythrocytes is a function of (1) their shape (ratio of surface area to volume), (2) the normal fluidity of the cell contents, and (3) the deformability (elasticity and low viscosity) of the membrane.

Immature erythroid marrow precursors are surprisingly rigid, requiring 30-500 mmHg negative pressure to draw them into a micropipette 3 μm in diameter. Mature red cells can pass through a 3 μm opening with pressures of 3-5 mmHg and they normally negotiate openings of 0.5-5.0 μm between splenic cords and sinuses. Pathologic erythrocytes may have decreased deformability (and survival) because of changes in shape, cell contents or membrane properties.

Thus, it is proposed that cellular deformability is a prime determinant of erythrocyte entry into and also removal from the circulation.