

J. F. Coales (University of Cambridge)—control systems; A. E. Douglas (National Research Council of Canada, Ottawa)—spectroscopy; C. Eaborn (University of Sussex)—organo-silicon compounds; I. M. Glynn (University of Cambridge)—cell membranes; J. Heslop-Harrison (University of Wisconsin)—control of sex in flowering plants; J. M. Hirst (Rothamsted Experimental Station)—control of plant diseases.

V. M. Ingram (Massachusetts Institute of Technology)—sickle-cell haemoglobin; J. C. Jaeger (Australian National University, Canberra)—rock mechanics; J. L. Jinks (University of Birmingham)—genetics of animal behaviour; B. D. Josephson (University of Cambridge)—the Josephson effect; O. A. Kerensky (Freeman, Fox and Partners, London)—design of bridges; L. F. La Cour (John Innes Institute, Norwich)—chromosome structure.

N. B. Marshall (British Museum (Natural History))—ichthyology; M. G. K. Menon (Tata Institute of Fundamental Research, Bombay)—K-mesons; R. Miledi (University College, London)—synaptic transmission; J. F. A. P. Miller (Walter and Eliza Hall Institute of Medical Research, Melbourne)—thymus and immunity; S. M. Partridge (Meat Research Institute, Bristol)—protein structure; J. S. Rowlinson (Imperial College, London)—thermodynamics of fluids.

A. E. Russell (British Aircraft Corporation, Bristol)—design of aircraft; F. G. Smith (University of Manchester)—magnetic field of the galaxy; R. W. Stewart (University of British Columbia, Vancouver)—boundary layers of ocean and atmosphere; J. B. Taylor (UKAEA's Culham Laboratory)—plasma physics; D. A. J. Tyrrell (MRC's Common Cold Unit, Salisbury)—the common cold; E. J. Underwood (University of Western Australia, Perth)—animal nutrition.

J. P. Wild (CSIRO, Sydney)—radio noise bursts from the Sun; C. G. Wynne (Imperial College, London)—optical instruments; V. C. Wynne-Edwards (University of Aberdeen)—ecology of birds.

KIDNEY PATIENTS

Demand for Machines and Organs

SOME two thousand five hundred kidney patients in England and Wales die each year because they cannot find places in renal dialysis units. In countries such as Sweden, most people who would benefit from dialysis receive it. Why not in Britain?

Haemodialysis was first introduced as a routine treatment for kidney failure about five years ago, and there are now more than five hundred patients on dialysis in hospitals and nearly four hundred receiving dialysis at home (see page 1184). The Department of Health and Social Security (DHSS) says the chief difficulty in increasing these numbers is the shortage of trained staff needed to man the hospital units. According to Dr A. J. Wing of St Thomas's Hospital, London, the difficulty with home dialysis is the time taken by local authorities in making the necessary structural alterations to the houses, as well as the time needed to train patients in the use of their own units.

The cost of the treatment is also an important factor. The DHSS estimates that with twice-weekly dialysis, it costs about £2,000 a year to maintain a patient on dialysis in hospital, and £1,500 at his home. The capital costs of the electrical monitoring and fractionating equipment for each machine are between £1,500 and

£2,000 and the widely used Kiil filters, in which the waste products are removed from the blood, cost about £400. Each filter has a life of about three years and in most hospitals is used by one patient only, so as to reduce the risks of transferring viral infections such as hepatitis. A safe but more expensive type of filter is a disposable parallel plate dialyser being marketed in Britain this month by the Swedish company Aga. Each filter costs £12 and is used for one dialysis only.

The existing dialysis centres were for the most part established by direct grants from the DHSS, but hospitals now have to find the money for maintaining and expanding their dialysis programmes from their block grants. In most hospitals, the emphasis at the moment seems to be on increasing the number of patients on home dialysis. Besides the psychological benefit, the advantages of home dialysis are its cheapness and the fact that patients can be dialysed more often. The DHSS seems to be cautiously encouraging the expansion of home dialysis programmes but unwilling to over-commit itself for fear that the increasing success of kidney transplantation as a form of treatment may in time make some of the expensive dialysis units redundant.

At present about 100 transplants are performed each year in Britain. A serious limitation is the number of donor kidneys available and this, according to Professor Shackman at Hammersmith Hospital, has arisen more from a lack of cooperation in the medical profession than reluctance on the part of the public to donate their kidneys. The other problem is to find the most suitable recipient for any kidney that does become available; a transplant is noticeably more successful the closer the tissue match between the donor and the recipient. Worldwide four-year survival rates, for example, are 94 per cent for live exchanges between matched siblings and 40 per cent between unmatched siblings; the latest two-year survival figures are 75 per cent using matched kidneys from unrelated dead donors, and 30 per cent with unmatched kidneys. Techniques for tissue typing have been steadily improving and now a total of twenty histocompatibility lymphocyte antigens have been identified and may be used for the purposes of matching. Kidneys are generally regarded as well matched if not more than two of these antigens differ between donor and recipient. Doctors at the London Hospital Transplant Immunology Centre estimate that a pool of 500 possible recipients is necessary to ensure that each donor kidney is well matched.

One way of organizing such a pool is for hospitals to cooperate in a computer network in which the tissue types and blood groups of all possible recipients are registered. Fourteen hospitals, mostly in London, are already involved in such a scheme and have a group of 120 patients waiting for transplants. In establishing such a system, another factor to be taken into account is the time needed to tissue-type and transport donor kidneys.

The question at the moment is whether there should be nation-wide cooperation along the lines of the London scheme, or whether, bearing in mind the problems of transport, a series of regional schemes would be preferable. The transplantation committee of the DHSS under the chairmanship of Sir Hedley Atkins, the former president of the Royal College of Surgeons, has been looking into this, and its recommendations are expected shortly.