Parkinsonians may also benefit from another new drug, amantadine, an antiviral agent for A2 influenza. During the Asian flu epidemic, amantadine was distributed quite widely, and was taken as a preventive by a 58 year old woman who happened also to have Parkinson's disease. While taking the drug she experienced a remarkable remission in her symptoms of rigidity, tremor and akinesia. These promptly returned when she finished her course of treatment. In subsequent clinical research (R. S. Schwab *et al.*, *J. Amer. Med. Assoc.*, **208**, 1168; 1969) two-thirds of a group of 163 Parkinsonians benefited from amantadine. The optimum dose is 200 mg/day, much lower than that for L-dopa, and the two drugs can be used in conjunction.

TRANSPLANTATION

Matching Kidneys

from our Social Medicine Correspondent

ALTHOUGH the immunological barrier is still regarded as an important impediment to successful organ transplantation, there seems little doubt that, for kidney grafts at least, the prognosis is improved where donor and recipient are closely matched with respect to lymphocyte antigen determined by the HL-A locus. Tissue typing data for potential transplant recipients from eight teaching hospitals in the London area are now being centralized at the London Hospital so that a well matched recipient can rapidly be found by computer for every kidney that becomes available. The progress of the cooperative venture is described in the current *Lancet* (ii, 389; 1969) by H. Festenstein *et al.*

Computer analysis of the frequency of thirteen HL-A specificities in 180 renal patients and healthy volunteers in the London region have shown that a pool greater than 120 is required to enable close matching (one or less differences between donor and recipient) of all available kidneys. Tissues were typed at the eight hospitals by means of a standard microcytotoxicity test using lymphocytes from peripheral blood, lymph nodes, spleen or thoracic duct lymph and lymphocytotoxic-type sera from several overseas sources. Results of the tests sent to the London Hospital were fed into Elliott 803 computers. One programme, a matching and probability-analysis programme, provided results which were used to calculate the size of an optimum recipient pool. A second programme was written to facilitate the rapid selection of the best matched recipients for any donor. All relevant recipient information was stored on five-track data tapes which were brought up to date each week.

Festenstein reports that with a pool of twelve potential recipients an identical match will probably not be obtained for any one recipient using a single London donor. On a statistical basis with a pool of 120 there would be at least two recipients with less than two mismatches for any London donor, and using these criteria it would be possible to use every available kidney. To be sure of having one identical match a pool of more than 240 would be required—a figure close to the total number of patients on chronic haemodialysis in the greater London area.

Actual results obtained while the cooperative venture was being developed are promising. For thirty-two transplants carried out at the Royal Free and London Hospitals between September 1968 and June 1969 the degree of mismatching between donor and recipient was reduced from 3·9 specificities when the pool was four or less to 1·8 when it was between fifty and sixty; two of the matches were identical.

Sixty-three dialysis patients are awaiting transplantation. To obtain good matching in each case a pool of 240 would be required. Pools of this size could be built up, says Festenstein, by further increasing the number of cooperating centres, first of all on a regional basis, developing into a national or European network. The chief advantages of such a network would be to enable close matching of patients with uncommon HL-A grouping or preformed cytotoxic antibodies.

COMPUTERS

Putting Diseases on the Map

MEDICAL geography could soon benefit considerably from computer graphics according to Professor G. Melvyn Howe of the University of Strathclyde's Geography Department. Medical geography is concerned with variations in the incidence of disease in different areas and the link with possible causes connected with elements of the physical, biological and sociocultural environment. As such it is a topic in which maps should be valuable, but they are often of little use because of the time taken for such lengthy and repetitive processes as the calculation and statistical testing of attack rates, fatality rates, standardized mortality ratios and other disease indices. And it takes a long time to represent these indices in cartographic form. Computer graphics—the construction of maps and diagrams using the electronic computer—could have considerable potential in medical geography. They may, by the speed, efficiency and reliability of processing and mapping medical data, lead to a more effective use of maps.

A common method of describing the geographical distribution of morbidity and mortality is to calculate standardized ratios for appropriate mapping units for which data are available—for example, administrative subdivisions. The ratios are standardized for differences in age between the populations of the mapping units, but not for differences in area of unit, nor for density and spread of the population within units. The procedure involves (1) calculation of probability factors for the morbidity or mortality under study in selected age groups for the total population; (2) for each mapping unit, multiplying the unit population in each age group by the respective age-specific probability for the total population (1); (3) summing the products in (2) to arrive at the number of cases or deaths that would be expected in the unit if the mean rate for all units applied; (4) expressing this expected number as a percentage of the actual number of cases or deaths reported, to produce the standardized ratio. A ratio of 100 is equivalent to the mean frequency for the total population, and ratios higher or lower indicate a percentage deviation.

Standardized mortality can readily be calculated by a computer using a simple transformation program. The computer can also be programmed to break up the