One out of every 10,000 persons in Europe suffers from an endstage renal disease. Only during the last ten years has kidney transplantation been an alternative to haemodialysis.

The first kidney transplantation was performed in 1954, in Boston, between two identical twins. In The Netherlands the first transplantation with a cadaver donor kidney was in 1967 in Leyden.

A complication of the transplantation of an unrelated kidney is the rejection of the transplant by the immunological system of the patient himself. Although much is still unknown, some factors have been shown to play an important role in the prolongation of the survival time of the kidney. These are the blood and tissue types of the donor and recipients, the presensitisation of the recipient by pregnancy, blood-transfusions and former transplantations. Sometimes this sensitisation can be shown in the blood of the patient to be directed against a specific tissue type.

In 1967 Eurotransplant was founded. Dialyses, transplantation and tissue typing centres in Austria, Belgium, Germany, The Netherlands and a part of Switzerland co-operate in this organisation to exchange cadaver donor kidneys. Patients, suitable for renal transplantation, are registered with ET (Eurotransplant). When a donor kidney becomes available, the pool of patients is searched and the best-matched patients are selected for transplantation. The pool is necessary because the chance of finding a complete match between random donor and recipient tissue types is much less than 1 per thousand.

After transplantation donor and recipient data are stored on magnetic tape. By means of half-yearly questionnaires the doctors in charge are asked about the functioning of the kidneys and if the patients are still alive. This information enables ET to do retrospective analyses, based on the method of actuarial survival curves, about the influence of various factors on the graft survival. The results are used to evaluate possible changes in treatment and selection criteria.

To facilitate all these activities ET makes use of two different computer con-
figurations, namely:
- a dual configuration based on PDP 11/45 computers of the University Hospital in Leyden
- a configuration based on an IBM 370/158 computer of the Leyden University Computer Centre.

The registration and selection of kidney patients is implemented on the PDP 11/45's. These computers have extensive online database facilities and provide a round-the-clock service, seven days a week. Also, besides terminals and displays, a link to the public telex network is supported. The IBM 370/158 is used to register the transplantations done under auspices of EHT, and to run the analyses of the graft survival.