

antigenic type has a survival advantage. Years ago, therefore, influenza viruses were passaged in eggs in the presence of antiserum or in mice which had been immunized against the same virus. Certainly new serotypes were recovered, but they did not correspond to the new serotypes which occurred in the general population.

Fazekas de St. Groth has devoted many years to the study of the haemagglutinin antigens of the influenza virus and has pointed out that, as these viruses evolve, the new strains are able to evoke antibody not only against themselves but also against their predecessors, whereas the preceding viruses (necessarily in view of current theories) do not evoke antibody against the viruses that follow them. He calls the first viruses of a series "junior" and the last "senior."<sup>2</sup> He has advised the Pasteur workers and collaborated with them, and they have together employed improved techniques of passage and selection, using carefully prepared and selected antibodies. They believe they have now produced the "senior" strain of the series starting with the Hong Kong strain, and have made an experimental vaccine with it which is antigenic in man. They have shown that it evokes antibody against the A/England/42/72 strain, and they believe that it will prevent influenza against all the future members of this series. At the end of the series we shall presumably start a new series, and they are not claiming that their strain will protect against this. Though Fazekas de St. Groth believes in the existence of "bridging" strains between these series, most workers believe there is a much more radical break, possibly due to recombination between human and animal strains.

Two important practical questions arise. Have the workers at the Pasteur Institute successfully anticipated natural evolution? And, if they have done so, was it a lucky chance or is it a success that they will be able to reproduce at will? It would be helpful to know in this connexion whether the techniques of selection they are using always give the same final mutant when starting with a given strain. It is therefore important that the antigenic composition of this interesting strain should be checked in other influenza virus reference laboratories and that it is compared with the new influenza viruses as they emerge over the next few years. If it turns out that the expectations of its producers are fulfilled, then they will have forged a valuable new tool for making enough vaccine soon enough to have a real impact on epidemic influenza.

Even so, there will be serious questions still to answer, such as how to predict the major shifts of antigen type and whether widespread vaccination with a laboratory-grown "senior" strain would have the effect of hurrying up the evolution of the virus in nature.

<sup>1</sup> Pereira, M. S., Chakraverty, P., Schild, G. C., Coleman, M. T., and Dowdle, W. R., *British Medical Journal*, 1972, 4, 701.

<sup>2</sup> Fazekas de St. Groth, S., *Bulletin of the World Health Organization*, 1969, 41, 651.

## Advice on Heart Transplants

The Department of Health rarely offers advice on clinical matters, but the letter to heart surgeons from the Chief Medical Officer (see p. 431) is one of the exceptions to this general principle. A group of experts on transplantation called together by the C.M.O. has in effect recommended that no heart transplants should be undertaken in Britain for the time being, and this seems to be the explanation for the recent press reports<sup>1</sup> that the possibility of such an operation was considered and rejected at a London hospital earlier this month.

The first rush of heart-transplant operations after Professor C. Barnard's pioneer work<sup>2</sup> in 1967 caused widespread public disquiet, and since 1970 only a very few centres throughout the world have continued to carry them out. The most encouraging results have come from N. E. Shumway's group in the U.S.A., which has been able to achieve 60% two year survival among those patients surviving the immediate postoperative period.<sup>3</sup> Not unreasonably, cardiac surgeons in Britain are anxious to try to match these results, so the C.M.O.'s letter must have been a disappointment to them. There are, however, good reasons for advocating a voluntary embargo on cardiac transplantation at present. Good as Shumway's results are, the procedure is still experimental and carries a high peri-operative mortality. The attitude implicit in the letter—that development of the techniques of cardiac transplantation should be further advanced before more attempts are made in Britain—is certainly one that will receive considerable support. Two other arguments should also be considered. Firstly, at a time when resources of money and staff are severely limited heart transplantation cannot yet justify priority; and, secondly, there is a real probability that resumption of heart transplants now might prejudice public opinion at the very time when the supply of donor organs for kidney operations is at last beginning to improve. When the potential benefit to a handful of patients is weighed against the possible ill effects on hundreds of patients with renal failure, the decision seems clear cut.

There are some occasions when the Department of Health can usefully give a lead to the profession in a matter of clinical judgement; soon after the start of professional disquiet about amphetamines, for example, it asked doctors to try wherever possible to find alternatives to their prescription, and this request was generally followed. The suggestion that resumption of heart transplantation in Britain should be deferred for the time being is equally deserving of support by the profession.

<sup>1</sup> *The Times*, 5 February 1973.

<sup>2</sup> Barnard, C. N., *American Journal of Cardiology*, 1968, 22, 584.

<sup>3</sup> Griep, R. B., Stinson, E. B., Dong, E., Clark, D. A., and Shumway, N. E., *Surgery*, 1971, 70, 88.

<sup>4</sup> *British Medical Journal*, 1968, 1, 754.