resuscitated and assessed. If the damage is severe they stop breathing and this function is taken over by a mechanical ventilator. If after careful examination by experienced neurologists or neurosurgeons it is established that the brain is totally and irreversibly destroyed, then the ventilator is stopped since the perfusion of a corpse can be of no benefit to the deceased and would cause distress to his relatives and the nursing staff.

The decision to stop the ventilator has absolutely nothing to do with organ grafting. This was an accepted humane procedure before organ grafting was established. Once the decision has been made, however, and if it is likely that the case may be a suitable organ donor, there is then time to discuss the matter unhurriedly and sympathetically with the relatives, and the transplantation team can be prepared. In the USA and several countries in Europe, the organs are removed before the ventilator is stopped, since the intact circulation will ensure that the organ is in perfect condition. In the UK organs are usually not removed until after the ventilator has been stopped and the circulation has ceased. The heart may beat for up to an hour without oxygen; during this period all the organs including the heart are suffering severe damage — since the blood passing through them is becoming progressively depleted in oxygen and nutrients and is becoming increasingly acidic.

The British Transplantation Society recently published a report on the shortage of organs for transplantation, (*Brit. med. J.*, **I**, 251; 1975). It was concluded that apathy in the medical profession was the main cause of the shortage, but that this was aggravated by lack of public information, ambiguities in the law and an unhelpful attitude of some coroners. The report proposed that there should be minor changes in the law, and a code of practice to be followed by all transplantation centres.

Although the main clinical application of organ grafting has been the kidney, both the heart and the liver have been transplanted successfully and have restored moribund patients to normal lives. There are no substitutes for heart and liver function comparable with the artificial kidney. This lack of artificial organ support has held back progress. In spite of this handicap, Dr Shumway in Stanford has transplanted more than 70 hearts with results which are little inferior to those of kidney grafting. There are far more potentially suitable cadaver organ donors than are needed, but sufficient organs are unlikely to become available until it is assumed that after death it should be a routine procedure to remove organs for grafting. □

KENNETH MELLANBY

Paper chains

I FOUND the recent white paper *Food from Our Own Resources*, issued by the Minister of Agriculture, disappointing (Cmd. 6020; HMSO). It makes no provision for the possible effects of a fall in the value of the pound sterling, which would make it impossible for us to continue to import food at the present rate, nor does it suggest the action that would be needed if a world food shortage threatened our imports. It does, however, make modest proposals for increasing our agricultural productivity—by enlarging our dairy herd, increasing the acreage under cereals, and growing some oil seed. Even if all targets are met, we will still be far from self-sufficiency and (at present prices) our balance of payments deficit will still be enormous.

The White Paper does imply that a greater improvement in yield and in our finances may result from research. Those scientists remaining in agricultural research (and whose work, it is hoped, will have this result) may, however, be surprised to read that the "National reorganisation [of research] in line with Lord Rothschild's recommendations is already taking effect in the closer integration of research and development with agricultural progress." Although the precise meaning of this curious example of Whitehall prose may be difficult to disentangle, it presumably means that agricultural research is becoming more and more effective. The sad thing is that the writer of the White Paper probably believes that this is true.

It is perhaps too soon to analyse the total effect on research—and particularly on agricultural research—of the Rothschild system, but it is disconcerting to find that there is such a divergence of views between the actual researchers themselves, and the administrators and committee members concerned with scientific policy. In our laboratories we see the number of the scientists at the bench decrease, and find the vacancies of those who leave (often to move into administrative

posts) remaining unfilled. Morale is lower than ever before, and complaints of time-wasting paper work, often at the behest of unnecessary committees, are widespread. Lord Rothschild criticised the research councils (to my mind, rightly) for wasting too much time and resources on committees, yet he has, no doubt unwittingly, caused the time spent on committees and working parties to be at least trebled.

The central feature of Lord Rothschild's proposals was the "contract". Money previously paid by the government to research councils has been transferred to executive departments who then pay the council for doing some particular piece of research. The idea was that this would make sure that work was concentrated where it was most needed. Now had contracts been the simple things suggested by Lord Rothschild, involving large sums to be spent on some wide field of work, the conditions simply and briefly set out on 'half a sheet of paper', the idea might have had some merit. But, unfortunately, the Civil Service has seen to it that many contracts are small, complicated and requiring the scientists involved to produce detailed 'project plans' and a constant flow of information to feed the computers which are playing an increasing part in sterilising originality at the laboratory bench.

The saddest result of all this administrative complication is that it has destroyed the enthusiasm of many research workers and has encouraged others to transfer to the administrative posts which seem to be so much more esteemed by the authorities. In the past, research for many was a way of life and workers often successfully chose problems which they believed were relevant and soluble. They were sometimes right, and they were then able to do much to see that their results were used, for instance, by the farmers. The trouble about the contract is that the scientist who has to carry it out may think it is for work which he cannot fully believe in. And he may well be right. But although in theory there are ways in which contractors can be persuaded to use their money wisely, few research workers believe that they will be very popular if they constantly shew that the authorities are incapable of selecting the best problems for investigation.

It is perhaps surprising that, though we have made many changes in the organisation of government-financed research in Britain, no one seems to have tried to find out how these have affected its efficiency. The impression certainly exists that no one is looking at all critically at the results of Lord Rothschild's recommendations. Surely someone should place a contract for such a study. □