NEWS AND VIEWS

Is the Placenta Porous?

Dr Francis Crick was recently reported to have said that the proof of an underpopulated discipline in science is the failure to repeat a crucial experiment. In the past few years, there has been such a vigorous growth of interest in all aspects of reproductive physiology that the experiment reported in this issue of *Nature* by M. Tuffrey, N. P. Bishun and R. D. Barnes (see page 1029) will probably be tried out before the week is past in a great many laboratories. As Dr Barnes and his colleagues gallantly admit, their observation cries out for confirmation and explanation. For their result, well tested though it seems, is entirely unexpected. And if the results of this series of experiments can be repeated, current notions about the immunological barrier between mother and foetus will be thrown into the melting pot together, perhaps, with some accepted views of the mechanism of inheritance in mammals.

Dr Barnes and his colleagues were concerned in their experiments to see if there is any cytogenetic relationship between female mice and embryos fostered in their uteruses. What they did was to transfer mouse blastocysts from females of one strain to females of another. Current dogma holds that there should be no transfer of cells from the foster mother to the foetus, chiefly because it is also supposed that the placenta acts as a barrier to transfer in the other direction. So far as the mother is concerned, of course, the foetus is in effect an allograft, and yet is not rejected by the mother's immunological defences.

Dr Barnes and his colleagues now claim that seven of the eight offspring produced when CFW strain blastocysts were fostered in CBA/T_6T_6 uteruses contained CBA/T_6T_6 cells when they were examined up to eight and a half weeks after birth. There seem to be only two possible routes by which these cells could have entered the developing foetus—either across the placenta or from CBA/T_6T_6 litter mates by placental anastomosis. Barnes and his colleagues believe that this second route is the least likely; mice have separate placentas and in any case it should be possible to test this alternative experimentally by examining CBA/T_6T_6 litter mates for the reciprocal transfer. At present, there is no real evidence as to the type of CBA/T_6T_6 cells which migrate into the CFW offspring, although Barnes and his colleagues seem inclined to think that they are lymphocytes.

On the face of things, the result is very clear-cut, but it is so unexpected that its acceptance must await confirmation. It may yet turn out that there are uncertainties in the notoriously difficult job of counting chromosomes, for example. Obviously there is also a need for an examination of the constitution of litter mates. But these are matters which can easily be arranged, and there is every reason to hope that they will be dealt with quickly.

Pulsar Flashes Photographed

The strong optical pulses apparently emanating from the pulsar *NP* 0532 in the Crab Nebula, which Cocke, Disney and Taylor reported in February (*Nature*, **221**, 525; 1969) and two other groups immediately confirmed, have now been detected by television and photographed. On page 1037 of this issue of *Nature*, J. S. Miller and E. J. Wampler of the Lick Observatory of the University of California publish two of their striking photographs showing the pulsar near its maximum and minimum optical intensity. Apart from being a most dramatic illustration of the pulsar flashes, Miller and Wampler's work provides confirmation of the original observation by an entirely different and elegant technique.

In essence Miller and Wampler arranged a television camera and image intensifier at the Coudé focus of the Lick Observatory's 120 inch telescope and interrupted the light beam entering the camera with a mechanical shutter—a rotating disk with half a dozen slots cut into the perimeter. By adjusting the speed of rotation of the disk to match the period of the flashes from *NP* 0532, it was a simple matter to photograph the flashes. When the disk was rotating in such a way that the shutter opened when the pulsar was near its maximum predicted intensity, it appeared on the television screen as a bright source. But when the system was arranged so that the shutter was open only during the intervals between the flashes, the image disappeared.

From forty-six photographs, Miller and Wampler conclude, in agreement with Cocke and his colleagues, that the optical pulses emanate from the south-west central star of the Crab Nebula or, as it must now be called, pulsar *NP* 0532. Since the work of Baade and Minkowski in 1942, this has been regarded as the remnant of the supernova explosion which produced the Crab Nebula. Miller and Wampler estimate that there is at least a fifty-fold difference between the maximum and minimum intensity of the flashes, an estimate which fits in well with the idea that conventional photographs of the south-west star are in fact time average photographs of the flashes. There is a slight discrepancy between Baade's value for the brightness of the south-west star measured by conventional