

Though the old obstacles to equality of opportunity in the medical profession have long since crumbled away, others of a different kind remain. Hardly a year passes without letters in the medical press from women doctors complaining that they are unable to find work which can be fitted into lives that must in part be devoted to bringing up a family, perhaps in the absence of outside domestic help. Both the structure of the Health Service and the system of taxation imposed by successive Governments prevent women from obtaining all the medical employment they would wish.¹ The need for reform here is widely acknowledged and is clearly something on which the continued expert guidance of the Medical Women's Federation should be brought to bear. In congratulating the Federation on reaching its golden jubilee, the medical profession will wish it as much success in the next fifty years as it has achieved in the past.

Temporary Support of the Liver

Patients with a failing liver can now have its function taken over temporarily by an animal liver connected to their blood stream. At p. 341 of this week's *B.M.J.* Mr. J. McK. Watts and his colleagues from Melbourne report the recovery of a 22-year-old woman with hepatic coma after her blood had been perfused on two occasions through an isolated pig's liver in an extracorporeal circuit. Two other patients treated similarly did not survive, though lightening of consciousness occurred during five of the total of six perfusions carried out in these three patients. The response in the patient who recovered can only be described as dramatic. At the beginning of the second perfusion she responded to painful stimuli only, whereas three hours after its completion she began to speak.

There can be no doubt from the studies described by Watts and his colleagues and from the results of other workers—notably B. Eiseman^{1,2} and W. V. McDermott and his colleagues³ (who also used a pig liver) and P. K. Sen and his colleagues⁴ (who used cadaver human liver) that such isolated perfused livers can function satisfactorily. Over periods of up to eight hours oxygen is utilized, bile is produced, and bilirubin and ammonia are extracted from the patient's blood. It has been found that the bile salts excreted in the bile of a perfused pig liver have human rather than pig characteristics, whereas the immunological structure of the proteins synthesized and returned to the patient remains that of the pig.⁵ So far there have been no anaphylactic reactions or unfavourable immunological reactions in the patients who have had repeat perfusions, but the latter have been done at relatively short intervals (up to 10 days) and reactions may well occur when perfusions are repeated after long intervals.

According to Eiseman, who has recently summarized his overall results,⁶ about one-third of the 45 patients treated have shown neurological improvement—though only eight

recovered completely and five of these died during ensuing months from a further episode of hepatic coma. These were patients with alcoholic cirrhosis who began drinking again as soon as they left hospital. Full evaluation of these results is difficult, since many of the patients had received other forms of treatment—including exchange transfusion, withdrawal of protein from the diet, administration of neomycin, and correction of anoxia and electrolyte disturbances. Nevertheless, the results of perfusion treatment are sufficiently promising to merit further intensive study of its value in selected patients with potentially recoverable hepatic disease. The selection of these patients is a difficult problem in itself. Though the liver has a tremendous potential for regeneration—and indeed this is the rationale for temporary support of the liver in patients with fulminant hepatitis—it may well be that at a certain stage of lobular disorganization restitution of normal structure is impossible and the subsequent development of cirrhosis inevitable. Thus S. J. Saunders has reported⁵ that two of four patients with acute hepatic coma due to fulminant hepatitis who recovered after exchange transfusion now have definite evidence of cirrhosis.

The development of methods for temporary support of the liver has, however, much wider and more exciting possibilities in the therapy of irreversible liver disease—namely, in connexion with transplantation of the liver. The pioneer work of T. E. Starzl and his colleagues⁶ has shown that transplantation of the liver is technically feasible. Though the longest survival in man has been 23 days, recent studies in the dog have shown that rejection of the transplant can be delayed with immunosuppressive therapy for periods of up to 18 months. In the pig rejection processes appear to be less severe. A. G. Riddell and R. Y. Calne and their co-workers have recently reported that pigs survived for some months after transplantation of the liver without immunosuppressive therapy.⁵ Many problems remain to be solved, but clearly homotransplantation of the liver in man using cadaver liver is no longer an unattainable dream. The development of efficient and practical methods of temporary liver support, which may be needed both before and after such an operation, is an essential prerequisite for transplantation, just as was artificial dialysis for kidney transplantation.

Australian Meeting

Now that a journey by air to the other side of the world can be made in rather greater comfort than one across Britain by car, many readers will wish to know well in advance about a meeting to be held in Australia next year. The B.M.A. and the Australian Medical Association have arranged a joint annual meeting in Sydney from 12 to 16 August 1968, and it will be associated with the Third Australian Medical Congress. A large programme of symposia and discussions is being arranged to cover many aspects of current practice and research. To lighten the weight of learning, social events will include visits to places of great scenic beauty or unusual natural history. It hardly needs saying that visitors from Britain are assured of the warmest of welcomes from hosts who are renowned throughout the world for their open-hearted generosity. Though the meeting is some 15 months ahead, intending visitors would be well advised to start thinking about their arrangements. Details may be obtained from the Secretary of the B.M.A. at B.M.A. House, London.

¹ Eiseman, B., *Ann. roy. Coll. Surg. Engl.*, 1966, 38, 329.

² — Van Wyk, J., and Griffen, W. O., *Surg. Gynec. Obstet.*, 1966, 123, 522.

³ Norman, J. C., Saravis, C. A., Brown, M. E., and McDermott, W. V., *Surgery*, 1966, 60, 179.

⁴ Sen, P. K., Bhalerao, R. A., Parulkar, G. P., Samsi, A. B., Shah, B. K., and Kinare, S. G., *ibid.*, 1966, 59, 774.

⁵ Proceedings of Colston Research Society Symposium (1967). *The Liver*, Blackwells, in press. See *B.M.J.*, 1967, 2, 305.

⁶ Starzl, T. E., Marchioro, T. L., Faris, T. D., McCardle, R. J., and Iwaski, Y., *Amer. J. Surg.*, 1966, 112, 391.