

given free or cheap board and lodgings, and carry out their treatment at the hospitals to which the hostels are attached. Not many adult prostitutes find their way into them. A certain number of young women who have just lapsed into prostitution are admitted; but the greater number are wage-earners who for the time being are unable to earn their living. By taking them in hand, looking after their creature comforts, and giving them the shelter of a home temporarily such women are often saved from prostitution. One advantage of the system is that girls are not cut off from the outside world, as they would be in a home, and so have not to be reacquainted to the world again. The disadvantages are that a hostel is not a suitable place for women in the acute stages of venereal disease, for pregnant women, or for girls on probation. These require institutional treatment. In France this is given in hospital until patients are fit for ambulatory treatment; but in England the Lock Hospital authorities have found from long experience that such women do best if kept until cured. The London County Council have now followed this example, in spite of the extra cost entailed, because they too have found that women who are willing to remain as in-patients in the wards will not come back regularly for treatment once they have left.

It may thus be seen that most European countries are taking this problem in hand, and handling it after some method adaptable to each country's national character. The results of these experiments in social reclamation, if judged from the *percentage* of genuine rehabilitation, are disappointing. But if one thinks rather of the individual women that have been rescued from misery, and saved from spreading disease, it seems well worth while to persevere and extend this work in spite of many disheartening failures.

THE THERAPEUTIC POSSIBILITIES OF HEPARIN

THE anticoagulant substance known as heparin was discovered accidentally in 1916 by JAY McLEAN while he was working in W. H. Howell's laboratory; it was subsequently investigated by HOWELL and HOLT (1918) but it is only within the last ten years that interest in the practical exploitation of its properties has been revived. This revival is due in part to C. H. BEST and his associates in Toronto and in part to a group of workers in Stockholm. Until quite recently preparations of heparin have not been pure enough to allow of its introduction into the body, though hæmatologists have found it a serviceable anticoagulant for drawn blood. The work of CHARLES and SCOTT (1933) and of E. JORPES (1935) has now, however, made the substance available in a form that can be introduced into the blood intravenously without the production of untoward symptoms. Studies of the chemistry of heparin have led JORPES to believe it to be a mucotin polysulphuric ester¹; and with others² he has

put forward reasons for suggesting that it is produced by the tissue mast cells throughout the body and that it may normally have the function of a physiological anticoagulant. The possible scope of heparin in medicine has been extended by this work and its developments. WILANDER³ has shown that heparinised samples of venous blood may be used for routine hæmatological examinations as well as for measuring the sedimentation-rate and also for determinations of blood-sugar, calcium, uric acid, non-protein nitrogen, and phosphatase. This discovery should reduce considerably the trauma which the hapless patient now suffers at the hands of clinical pathologists. Heparin has also been tried as an intravital anticoagulant for blood transfusion and in the treatment, prophylactic or therapeutic, of intravascular thrombosis. We published last year a review by HEDENIUS of 150 transfusions for which the blood donor had been "heparinised," no other anticoagulant being applied. Although no ill effects were observed this method seems to have no advantage over the simpler technique of adding sodium citrate to the shed blood and is of interest rather as a tour de force than as a useful addition to the armamentarium of a transfusion service.

The hope that heparin in suitable dosage may act as a prophylactic against post-operative thrombosis has some experimental justification. BEST and his colleagues have shown that in heparinised dogs thrombotic occlusion of traumatised veins does not take place and, more recently, that in such animals blood may be "shunted" through a glass tube without the formation of white thrombi which occurs in such experiments in the normal animal.⁴ The success and safety of these experiments has led them to administer intravenous heparin to patients following operation⁵; 1000 units of heparin (10 mg. of the purified substance) are added to each 100 ml. of saline solution and the fluid given by the intravenous drip method at such a rate as will keep the coagulation time at three times its normal value. It is stated that "the injection is continued for varying periods up to fourteen days after the operation." Already 222 cases have received this treatment but no analysis of the results is yet available. CRAFOORD (1937) has recorded a small series of cases which showed that the injection was without danger and was not productive of a hæmorrhagic tendency. It is impossible to draw any conclusions, as MURRAY and BEST are careful to point out, until figures for a much larger series have been published. Since, however, deaths from pulmonary embolism after operation occur only about once in every thousand cases the therapeutic endeavour is bound to seem disproportionate to the results and only if almost complete success is attainable would post-operative injection of heparin be likely to become a routine practice. Of more practical importance, for the

³ Wilander, O., *Acta med. scand.* 1938, **94**, 258.

⁴ Best, C. H., Dowan, C., and Maclean, D. L., *J. Physiol.* 1938, **92**, 20.

⁵ Murray, D. W. G., and Best, C. H., *J. Amer. med. Ass.* 1938, **110**, 118.

¹ Jorpes, E., *Uppsala LäkFören. Förh.* 1937, **43**, 83.

² — Holmgren, H., and Wilander, O., *Z. mikr.-anat. Forsch.* 1937, **42**, 242.

moment, anyway, is the suggestion of heparinisation of patients following such operations as embolectomy. We publish elsewhere in this issue accounts of experiments in therapeutics which will have a far greater interest to clinicians, as they suggest the possibility that heparin might prove valuable in such serious and common conditions as coronary and cerebral thrombosis. HOLMIN and PLOMAN record an unusually favourable outcome of a case of thrombosis of the central retinal vein treated with heparin and in MAGNUSSON'S case of thrombosis of the posterior inferior cerebellar artery an equally satisfactory recovery was obtained. It is difficult to be convinced by MAGNUSSON'S report that heparin influenced the course of the illness. The negligible hæmorrhage from an accidental abrasion of the pharynx suggests that blood coagulation had scarcely been affected

by the heparin. The observations on the bleeding time following injection of heparin have no practical significance; this substance is known to prolong coagulation by its action as an anti-thrombin and antiprothrombin but to have little effect on capillary hæmorrhage. Further, to argue that a normal bleeding time indicates that there is no undue liability to hæmorrhage is to virtually deny the existence of hæmophilia. MAGNUSSON has taken a gloomier view of the outlook in Wallenberg's syndrome than is usually held in this country and the course of his patient's illness does not appear to differ greatly from that observed where no specific therapy has been employed. It is to be hoped that evidence will be collected of the efficacy of heparin in the treatment of established thrombosis. Meanwhile its therapeutic possibilities cannot be assessed.

ANNOTATIONS

HOSPITAL TICKETS

SINCE Lord Sankey, in presenting the report of the voluntary hospitals committee to the British Hospitals Association conference last year, advocated a State grant through some procedure analogous to that of the University Grants Committee, there has been a movement of public opinion in its favour although no specific recommendation was included in the report. The Scottish Department of Health had already suggested that State assistance might be rendered in the form of a teaching facilities grant in recognition of the service rendered by hospitals in providing facilities for medical teaching. This accords with a practice well established in Scotland by which the medical student is required to provide himself with a ticket. The rule on the subject at the Edinburgh Royal Infirmary, for example, is as follows:

Every student visiting the wards, operating and pathological theatres, attending any clinical class in the Royal Infirmary, or acting as a clerk or dresser, must be in possession of a hospital ticket for the period during which he or she visits, attends, or acts.

A payment of this kind has been made since the earliest days of the Infirmary, two centuries ago. It may well account for some of the thoroughness of medical education in Scotland, since not only has the ticket-holder to record his attendance regularly but his parent or guardian would naturally desire to secure that the money is a profitable expenditure. The fee for a "perpetual" ticket has recently been raised to £18 from the 12 guineas at which it has stood for nearly one hundred years. In the last statement of account the amount received from this source by the Edinburgh Royal Infirmary was £5432. In a full year under the new regulation it will rise to about £8000. This provides an obvious basis upon which a grant could be made by the State through the University Grants Committee without encroachment upon the freedom of the hospital authorities. But before this practice could be extended by the committee throughout Great Britain it would be necessary for English hospitals to establish a similar procedure. Its adoption by the hospitals with medical schools in London would mean an addition of some £100,000 a year to their incomes, outside London an addition of £70,000 a year, taking as a basis the figures in the latest return

of the University Grants Committee. No legislation would be necessary to carry out this arrangement which, if the medical schools agreed, could come into operation with the acceptance of each new student. The establishment of a uniform practice in England and Scotland would afford a basis for an approach to the Chancellor of the Exchequer for a corresponding grant from the Treasury to be devoted to that portion of the work of a hospital which benefits the whole community.

THE "SAFE PERIOD"

THE belief, held by H. Knaus, K. Ogino, and other advocates of the "safe period" method of birth control, that the period of fertility in the menstrual cycle can be accurately predicted has a three-fold basis. It implies first, that ovulation is an event which occurs spontaneously at a fixed time in each cycle; secondly, that the ovum is fertilisable for only a brief period; and thirdly, that the sperm is also short-lived. According to Stein and Cohen,¹ who have recently reviewed the problem, there is no reason for doubting the truth of the second and third of these propositions. They hold, however, that there is need for caution in accepting the theory that ovulation is a fixed event in the cycle. Their initial criticism of this theory is that several other workers have failed to confirm the observations by Knaus on which his conclusion that ovulation is a mid-interval occurrence largely rests—that the uterus is non-contractile during the second half of the ovarian cycle. Stein and Cohen are perhaps rather severe in this criticism, for while many workers have been unable to confirm Knaus's observations, others have obtained results in good agreement with them. Furthermore one must bear in mind the possibility that those patients who show uterine contractions in response to posterior pituitary injections in the second half of the menstrual cycle may not have ovulated in that particular cycle—for the occurrence of uterine contractions signifies only that the uterus was not at the time under the influence of luteal stimulation. Stein and Cohen appear to under-estimate this chance, for according to Mazer and his co-workers,² 30 per cent. of women who

¹ Stein, I. F., and Cohen, M. R., *J. Amer. med. Ass.* 1938, **110**, 257.

² Mazer, C., Israel, S. L., and Kacher, L., *Surg. Gynec. Obstet.* 1937, p. 30.