develop these themes once the problem has been weighed and appreciated in a particular case. If this kind of discussion is handled effectively the development from the individual to the general makes it easy to establish the need for regular contact—for reporting back on the way the doctors' suggestions are received at the hospital, or for continuing a discussion which has been left unfinished—and it may be possible to move gradually from the individual case to the whole community as the focus for mental health care.

This programme was evolved by the entire staff at Dingleton Hospital in weekly reviews of its practice. Dr. Maxwell Jones (physician superintendent 1962-9) was the leader of the hospital, and much of the thinking stemmed from his concept of multiple leadership in a multidisciplinary setting. The admission assessment procedure was worked out under the leadership of Dr. Paul Polak between 1964 and 1966. Joy Tuxford's action research project, involving an attitude study of all the family doctors, between 1966 and 1969 stimulated and crystallized thinking about the relationships between the hospital and the family doctors.

New Appliances

Monitoring Pacemaker in Treatment of Acute Heart Block

British Medical Journal, 1972, 4, 784-785

Dr. EDGAR SOWTON, consultant cardiologist at Guy's Hospital, London, S.E.1, writes: Heart block developing during cardiac infarction is usually of short duration provided that the patient survives, but the block is intermittent before sinus rhythm is finally re-established. There is wide variability in the duration of the heart block, and occasionally patients remain in or have recurrent episodes of block for periods longer than a month (Fig. 1).^{1,2} Often it

FIG. 1—Time of onset of heart block and duration pacing catheters remained in patients.

is difficult to decide when artificial pacemaking should be withdrawn and when the temporary electrode should be removed. The present apparatus, developed in conjunction with Devices Ltd., 26-8 Hyde Way, Welwyn Garden City, Herts., was designed to help with the latter problem.

Apparatus

The equipment is in two parts—an external demand (ventricular-inhibited) pacemaker and a small monitor which can be plugged into the pacemaker when necessary (Fig. 2). The pacemaker functions in the conventional manner and has protection against interference signals. In the presence of overwhelming interference the pacemaker reverts to fixed rate pacing.

The monitor incorporates a memory which stores information from the pacemaker and can be interrogated when a but-

FIG. 2—Demand pacemaker (right) and monitor (left).

ton is pressed. If three or more consecutive pacing impulses have been supplied by the pacemaker since the interrogation button was last pressed then a red "YES" lamp lights. If the pacemaker has not supplied three consecutive impulses then a green "NO" lamp lights. Single impulses from the pacemaker or a sequence of two impulses will not activate the red lamp. Releasing the button clears the memory of the monitor.

The function of the monitor differs in principle from that of the simple, paced-beat counter, which sums all pacing impulses delivered by a demand pacemaker. Occasional ectopic beats followed by a compensatory pause might well result in a demand pacemaker delivering a single stimulus although heart block had not returned. These would be added up by a paced-

FIG. 3—Typical chart showing variation of apex rate as sinus rhythm is re-established. ● = "No" lamp (green) lights on interrogation. ○ = "Yes" lamp (red) lights on interrogation.

beat counter, which might therefore indicate that many pacing impulses had been delivered during the previous hour. A simple paced-beat counter of this type will not differentiate between many single impulses, which are of little significance, and a prolonged period of continuous pacing, which indicates that heart block is still occurring. The three consecutive beats required to activate the present monitor cannot occur as a response to a compensatory pause and therefore indicate that there has been a significant period of bradycardia since the previous interrogation.

Method of Use

The demand pacemaker is used normally until the question arises whether stable sinus rhythm has returned. The demand pacemaker rate is then set at 50 beats/minute and the monitor

is attached. The interrogation button is then pressed once every four hours and a mark corresponding to the colour of the illuminated lamp is entered on the patient's chart. If the red lamp does not light at any interrogation over a period of 24 hours this indicates that no pacing has been required over that time and it is therefore unlikely that heart block will return. The electrode catheter can therefore be removed. The entering of coloured circles on the patient's chart is a convenient method of indicating the progress of the patient, since the electrode should not be removed until 24 hours have passed from the last red circle (Fig. 3).

References

- ¹ Hatle, L., and Rokseth, R., *British Heart Journal*, **33**, 595, 1971.
- ² Watson, C. C., and Goldberg, M. J., *British Heart Journal*, **33**, 120, 1971.

Any Questions?

We publish below a selection of questions and answers of general interest

Fluoride Supplement to Diet

What is the current view about the addition of fluoride to the diet in areas where the level in the water supply is low? Below what concentration should dietary supplement be taken, and what would be an appropriate preparation and dose for children? Is there any value in added dietary fluoride for adults with teeth that are caries prone?

Investigations undertaken in many countries have shown that the consumption of water containing 1 p.p.m. fluoride in temperate climates is associated with a reduction of about 50-60% in caries experience in teenagers resident throughout life in such areas. Furthermore they have shown that concentrations higher than 1 p.p.m. do not produce substantially greater additional reductions in caries experience and that the prevalence and severity of hypoplasias of enamel, of which one cause may be grossly excessive fluoride ingestion, are at an exceptionally low level when the water supplies contain 1 p.p.m. of fluoride. Other constituents of the diet apart from tea and fish provide little fluoride and it is probable that, unless much tea is drunk, such dietary constituents only contribute 0.2-0.6 mg fluoride a day.

Dietary fluoride may act either systemically, thereby, being incorporated into teeth as they are formed, or locally during ingestion by coming into contact with the surfaces of erupted teeth. Both mechanisms may reduce caries, though the long term systemic effects are more important in the case of fluoridated water. Where the water supplies contain low fluoride concentrations, it is desirable to supplement the fluoride ingested so that in adults or children the total intake from the water and the supplement is about 1.0-1.5 mg a day. (The normal intake of water is 1.0 to 1.5 l. a day which would provide 1.0-1.5 mg of fluoride if it contained the optimal concentration of 1 p.p.m. of fluoride.) Often this is done by dissolving tablets containing sodium fluoride in appropriate drinks, thus obtaining benefits from both the systemic and local action. The dosages usually recommended for such supplementation in areas with little fluoride in the water is 0.25 mg up to the age of 2; 0.5 mg 2-4 years and thereafter 1 mg. Such supplementation is commonly maintained until the age of 12-14 after which the incidence of caries usually falls rapidly even without the use of caries preventive meas-

ures, but the greatest benefit will be achieved by administration during the first seven years of life while the crowns of all teeth, except the wisdom teeth, are being formed. Before advising such supplementation, the doctor should be satisfied that the parents are responsible and will keep such tablets safely out of reach of infants because an infant could easily ingest a dangerous dose of such small tablets. Secondly, it is advisable to check that the young child is not in the habit of swallowing fluoride toothpaste when he brushes his teeth, a not uncommon habit in young children, and that he does not drink excessively large quantities of tea for his age. Toothpaste loaded with a fluoride dentifrice usually contains about 0.4-1.0 mg of fluoride (or of fluoride available after hydrolysis of monofluorophosphate) and a cup of tea customarily contains about 0.2 mg of fluoride.

The ingestion of fluoride tablets, if maintained consistently, produces effects on caries similar to those obtained from the drinking of fluoridated water, reducing the development of caries eventually to about half of the normal level. Fluoride tablets are produced commercially and may be obtained from many chemists. Fluoride supplementation by means of the use of fluoridated salt or milk has also been advocated: such communal measures either are not as effective or are less safe or practical than fluoridation of the water supplies.

As the teeth of adults are already formed and erupted, the ingestion of fluoride will produce benefits only by their local action on the surfaces of the teeth. Such local effects can be obtained more effectively by the use of fluoride containing dentifrices, by topical applications by dentists or dental hygienists at regular intervals of solutions usually with a concentration of about 1% fluoride to the teeth, or by brushing or rinsing with solutions containing 500 p.p.m. of sodium fluoride. If the preparations are correctly formulated, most investigations show that the first two methods usually reduce caries incidence in older children by between 15-40% and the latter by about 30-40%.

- Hardwick, J. L., *Fluoride and Dental Health in Caries and Dental Health*, ed. H. R. Held, Forum Medici, No. 13, 1971.
- Horowitz, H. S., and Heifetz, S. B., *Journal of the American Dental Association*, 1970, **81**, 166.
- Marthaler, T. M., *Caries Research*, 1971, **5**, 343.
- Volker, J., Bibby, B., Duckworth, R., Volpe, A., Thomas, A., and Mergele, M., *Bulletin of the Academy of Medicine, New Jersey*, 1968, **14**, 201.