present time in view of its forthcoming association with the school.

It is not yet possible to say when the doors of the British Post-Graduate Hospital and Medical School will be opened to students, but the decisions of the Government and of the London County Council to treat the establishment of a post-graduate institution as an indispensable health service, and of the Governing Body of the school to appoint a dean forthwith, are welcome indications that a project which has for so many years been under discussion is now about to be realized.

THE ELECTROCARDIOGRAPH AND ALTERNATING CURRENT INTERFERENCE

BY

N. G. LETHLEAN

TEST ROOM SUPERINTENDENT, ELECTRICITY SUPPLY DEPARTMENT, DUNDEE

AND

W. S. MALCOLM, M.D.

ELECTROCARDIOGRAPHER, DUNDEE ROYAL INFIRMARY

After the corporation supply at the Dundee Royal Infirmary had been changed to alternating current, the cardiograms showed a definite superimposed ripple, with a frequency of 50 cycles per second; but the source of the interference was not readily determinable. The wards from which the patients were connected through to the cardiograph room had been wired many years ago for a direct current system of supply, and it was found impossible to trace the run of the wires and their conduits, or to discover whether the conduits were earthed and electrically continuous throughout the building. It was therefore decided that to remove the effect, rather than the cause, would be the most practicable method, particularly as the use of electrical appliances in the wards might set up a fresh source for the extremely small extraneous currents that had been disturbing the cardiograph circuit.

The interference could not have been caused by electromagnetic induction, as it persisted when all lights were

FIG. 1.

switched off. Electrical leakage was likely to have been negligible, as the resistance of the cardiograph circuit, including the rubber-covered flexible "patient leads" and the bed, was not under 10 megohms. The remaining source of interference was electrostatic induction, and currents due to this cause could flow if there was a difference of potential between the cardiograph circuit and the alternating current supply in near conductors. This condition was aggravated by the different capacities of the patient's body to the conductors inducing the currents. The point of lower potential was formed by

the earthed metal conduit containing the wires running from the wards to the cardiograph room.

All traces of interference were successfully removed by using insulated flexible "patient leads" having a shrouding of braided wire, which was connected at the plug end to the earthed conduit, and at the "patient end" to the wire mattress of the bed. This placed the bed and the shrouding at earth potential, and formed a path of

FIG. 2

low impedance for the capacity currents, which were consequently eliminated from the cardiograph circuit.

The ill-defined electrocardiogram (Fig. 1) shows the blurring effect of alternating current interference on the work of an electrocardiograph run on constant current. While the electrocardiogram was being taken the shadow of the moving fibre could be seen to lack definition and to have the appearance of being split into two, and in the finished electrocardiogram the two cycles can be made out in each twenty-fifth of a second in the time record.

Fig. 2 shows how complete has been the elimination of the interference, the two tracings being from the same patient, with a short interval, in order to emphasize the change which the cure had effected. Since the new leads have been in use there has not been the slightest recurrence of the trouble, and no other alterations have been made.

Ireland

Northern Ireland: Vital Statistics

The Registrar-General for Northern Ireland has now published his annual report for 1930. The number of marriages registered was 7,547, which gives a rate of 6.07 per 1,000 of the population. This rate is a slight increase on that for the previous year, and maintains the upward tendency in the marriage rate which began in 1927. There were 25,879 births registered during the year. The birth rate was 20.8 per 1,000, which is a slight increase on the rate for 1929, but 1.8 below the average for the ten preceding years. The death rate fell to 13.8 per 1,000, which is the lowest yet recorded for Northern Ireland. This rate is 2.1 below that for the previous year, and is 1.6 below the average for the ten preceding years. The death rate from tuberculosis continues to decrease, the rate for the year under review being 1.28 per 1,000, the lowest yet recorded. The deaths from this cause, however, still account for more than 50 per cent. of the deaths between the ages of 15 and 25, and 40 per cent. of those between the ages of 25 and 35. There was a further increase in the cancer death rate; 1,477 deaths from this disease were registered, giving a rate of 1.19 per 1,000, which is the highest yet recorded for Northern Ireland. The deaths of infants under 1 year of age numbered 1,754, or 68 per 1,000 births registered,