

APPENDIX.

MEDICAL RESEARCH.

PART I.—RESEARCH INTO STILL-BIRTHS AND NEO-NATAL DEATHS.

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The initial steps in this research were taken in April, 1928. The need for this inquiry is shown by the fact that, whereas the infant-mortality rate shows a steady decline, the still-birth and neo-natal death-rates show a steady rise. This condition is not confined to New Zealand, but is general throughout the world. New Zealand has the lowest infant-mortality rate in the world. The most recent figures relating to the urban rate show a further improvement from 45.12 per 1,000 in 1927 to 41.4 in 1928. The urban still-birth rate, on the other hand, shows during the same period an increase from 27.89 to 30.0 per 1,000. This unsatisfactory state of affairs has been fully brought out in a recent paper by the Government Statistician. In that paper Mr. Fraser points out the great disparity between different countries in the definition and statistical treatment of still-births. He urges that, "If the true incidence of still-births is to be obtained, either still-births should be included in the computation of mortality-rates or note should be taken of the intra-uterine age and two classifications made, all full-time live births to be included in the computation of infant-mortality rates, while all births of infants born prematurely to be classified separately with the still-births and have separate mortality-rates computed for this class. At the present time, while registration of still-births is compulsory, they are included neither in the statistics of births nor of deaths. Thus a child born alive at seven and a half months and dying two weeks later is counted as a birth and as a death, but an infant still-born at eight and a half months is not included either as a birth or as a death."

Mr. Fraser's figures (as also research elsewhere) clearly show that the principal factors leading to still-birth and neo-natal deaths are ante-natal in their action. This being the case, is it not clearly desirable to go further than the registration of still-births—i.e., to the registration of all interruptions of pregnancy (abortions and miscarriages)—with in every case a note of the intra-uterine age? The factors leading to these mishaps must in many cases have a bearing on the problem of still-births and neo-natal deaths. They must be taken into consideration.

In the present inquiry the problem has been approached along two lines—(1) Statistical; (2) pathological.

In connection with the former, a questionnaire embracing most of the circumstances which may be expected to throw light on the problem has been drawn up and printed. Supplies of this questionnaire have been sent to all the St. Helens Hospitals in New Zealand and to the chief maternity hospitals, with the request that one be filled up with respect to every still-birth and neo-natal death which may occur in the institution. This questionnaire is similar to that of the League of Nations, so that the results may be readily comparable.

In connection with the latter, arrangements have been made for the bodies of all still-births and neo-natal deaths to be forwarded to Wellington for post-mortem and histological examination. A complete post-mortem examination is carried out in every case except where maceration is so advanced as to make it worthless; but even in these cases all information which is considered reliable is collected. In every case the aim is to determine from the history and the post-mortem findings the mode and the probable cause of death. To determine the foetal age a record is kept of the centres of ossification in the femur, tibia, os calcis, astragalus, cuboid, and sternum: these are correlated with the weight and length of the body. A record is also kept of the weights of internal organs and their ratio to the body-weight and to the normal, as far as it is possible to ascertain it. Evidence of the presence or absence of syphilis is sought in—(1) The condition of the epiphyseal line of the femur; (2) the presence or absence of *Spirochaeta pallida* in smears of the liver and supra-renal stained by Giemsa's method or with nigrosin; (3) in sections of liver and other organs treated by Levaditi's method. Histological examination is made of the liver, spleen, thyroid, thymus, lung, supra-renal gland, and kidney by various methods. In some cases sections are taken of the pancreas, pituitary, and parts of the central nervous system.

To date thirty-one bodies have been sent in for post-mortem examination. In addition to the questionnaire relating to each of these bodies, other questionnaires relating to bodies not available for examination have been sent in. These will be filed for analysis when a sufficient number have accumulated.

The number of cases examined so far is too small to admit of summary by percentages, but, nevertheless, some interesting facts have emerged. For example, in a case of anencephaly, a condition hitherto ascribed to a mechanical cause—viz., adhesion of the amnion—there was found to be complete absence of the supra-renal glands. Examination of the literature shows this to be a frequent association, so that the condition of anencephaly must be due to a more fundamental cause than adhesion of the amnion. The examination for syphilis, as far as it has gone, tends to show that syphilis is not a preponderating factor in New Zealand.

Again, it is noted that there is a considerable variation in the size and ratios of the various endocrine glands. Lesions of these glands may be an important factor in still-births. For example, hæmorrhage into the supra-renal capsules, which is not infrequent and sometimes considerable, must have far-reaching effects. In some cases of still-birth there is found great enlargement of the thyroid gland. It would appear that in some cases the enlarged thyroid, being wrapped round and compressing the trachea, may have contributed to death (the mode of which was by asphyxia). The normal weight of the thyroid in a full-time child is about 1.2 grammes. In this series thyroids of 7.7 grammes to 12.4 grammes have been found. What is the cause of this large ante-natal enlargement?