I.

THE CARE OF THE INFANT AND YOUNG CHILD (TO FIVE YEARS) IN EDINBURGH.

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As Professor Holt\(^1\) has said, "It may not be true in adult life, but in infancy money may purchase not only health, it may purchase life, since it puts at the disposal of the infant the utmost resources of science, the best advice, the best food, and the best surroundings for the individual child. To relieve, or even greatly to diminish, infant mortality, these basal conditions of modern city life—poverty and ignorance—must be attacked."

Poverty and ignorance, in so far as they relate to the welfare of early child-life in Edinburgh, is, I am well aware, a very comprehensive subject, and in view of the nature of the development of relief agencies at the present time, I am convinced that it is necessary that emphasis should be laid upon the medical side of the question, if such agencies are to be fully efficient.

More particularly is this true of early childhood, and especially of the years before the period of school life is reached—the first four or five years of life. The development of the medical inspection of school children is almost universally admitted to be bearing good fruit, but I have it on the authority of a distinguished medical officer of health in our own country that there "is urgent need for an association which will take up the children before school age."

During these early years growth and development are more marked than at any other period of life—physically and mentally the normal child progresses by leaps and bounds. At this time it is inevitable that his association with his guardian be of the closest and most intimate nature, and throughout these years the home environment is one of the most powerful factors in determining his condition of health or sickness.

The pressing needs of this period may be summed up as—(1) Close womanly attention; (2) reliable supply of milk; (3) fresh

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\(^1\)\textit{Journ. of Amer. Med. Assoc.}, 26th February 1910.
air and warmth; and (4) the avoidance of infection, such as, for example, the presence of a phthisical person in the house.

In how far are these needs, generally speaking, supplied in Edinburgh for children of the poorer classes of society?

In the cases of 645 children seen at the New Town Dispensary, I have noted that 226 (35 per cent.) were bottle-fed, or nursed at the breast for less than six months; and while, so far as I know, there is no reliable estimate of the work done by pregnant and newly-delivered women in the town, yet one cannot work at a children's out-patient department for a series of years without realising that, in addition to home duties, in no inconsiderable number of cases, the burden of supplying the income wherewith to keep the household together rests, to a large extent, on the shoulders of the wife and mother.

With the best will in the world satisfactory maternal suckling is, not infrequently, impossible—it may be the call to work, or it may be physical debility—whatever the cause, the fact remains.

And, naturally, we look next to the condition of the milk supplied in the town. In fifty samples of milk, obtained from the more outstanding dairies in Edinburgh and Leith, I found the percentage amount of fat was in one case as low as 1.8 per cent., and in one case as high as 6.2 per cent., while the amount of solids, other than fat, varied from 6.25 per cent. to 10.95 per cent.

One is, therefore, justified in saying that the chemical composition of the best milk in the town varies enormously. We, consequently, cannot tell, without elaborate analysis, within rather wide limits, what is the composition of the fluid in the baby's bottle, and a change from one dairy to another almost certainly means marked alteration of the baby's food.

Again, this milk teems with micro-organisms.

Dr. Hunter Stewart, in the Annual Report of the Public Health Department of the City of Edinburgh for 1908, gives the bacteriological contents of samples of milk as delivered to the retailers in 1906 as:—Town milks, 223,000 micro-organisms per c.c.; country milks, 180,000; and railway milks, 541,000. As a contrast to these figures he takes the average of forty-six samples "as representing what can be easily attained when the

1 *Lancet*, 27th January 1906.
2 *Edin. Med. Journ.*, September 1908.
3 By A. Maxwell Williamson, M.D., B.Sc., Medical Officer of Health.
cow is milked with ordinary precautions, and in the usual routine fashion in a byre, and not in a special milking-shed." The figure for these forty-six samples is 9150 micro-organisms per c.c. It has, of course, to be realised that these last samples were tested, on an average, three-quarters of an hour after the time of milking, whereas the previous figures applied to milks always several hours old.

To compare procedures adopted for keeping milk, shop samples of milk which had not undergone transit by train, and which were not more than ten hours old, were compared with samples taken from byres and kept at definite temperatures. The results showed that in shop samples the number of micro-organisms per c.c. was 505,800, whereas in samples taken from the byres and kept ten hours at 50° F. the number was 39,680, and in samples taken from the byres and kept five hours at 50° F., and five hours at 60° F., it was 58,000.

He says: "The total number of micro-organisms in a milk is, I think, valuable as a measure of the general conditions under which it has been produced, and the temperature at which it has been kept. . . . In the light of the bacteriological condition of the forty-six samples of milk which I have taken as a standard for comparison, and in the production of which no extraordinary care was taken, it is difficult to understand why the milk from town and country byres, as delivered to the milk shops in the morning, should show so great bacterial contamination within four or five hours of milking, even though not cooled. . . . One explanation suggests itself, namely, that the milk delivered in the morning consisted, in some cases, partly of milk which had been milked the previous evening, and not cooled. The bacteria in the previous evening's milk would have greatly increased in the interval, and its mixture with the warm milk would accelerate their growth. If this be so, it is only another proof of the necessity for cooling all milk to at least 50° F. shortly after its production. The condition of the milk vessels is also of great importance. It should be clearly realised by all those engaged in the production and handling of milk that what is popularly called cleanliness is not sufficient in the case of milk vessels, and that scrupulous care in the washing and, later, scalding of the vessels is necessary.

"To prevent contamination from dust, &c., milk should not be kept in the milk shop in open vessels. It also should be kept as cool as possible, either artificially at 50° F., or in the coolest part of the milk shop."
"The measures I have suggested are simple. It may be urged that their adoption would increase the price of milk. I do not know that it necessarily would, but even if it did slightly increase the price, the benefits obtained would be a compensation. To the milk seller it would be an advantage. No preservatives would be required, no scalding would be necessary, and there would be no loss from milk becoming sour and unsaleable. Much work is at present being done in this subject, and, as a result, it is becoming more and more recognised that measures such as are suggested in this report are absolutely necessary if the degree of cleanliness of the milk supply which the public have a right to expect is to be attained."

This degree of cleanliness has not yet been obtained, and we are bound to recognise that herein lies a very serious danger to health in early childhood.

In his Annual Report, just published for the year 1909, Dr. Williamson, Medical Officer of Health for Edinburgh, says: "The closest attention has, as hitherto, been devoted to the detection of any form of tuberculous disease affecting dairy cows, and particular importance attaches to the result of these examinations, owing to the fact that a larger number of animals with tuberculous udders have been discovered than in any previous year. When it is stated that no fewer than thirty-seven cows which had been contributing to the city's daily milk supply were ordered to be removed owing to their tuberculous condition, the importance of the circumstance in its bearing on the prevalence of tuberculosis among the citizens cannot be overestimated.

"In thirteen of these cows the udders were affected, and in every one of these cases the milk they were yielding was proved to contain the tubercle bacillus. The knowledge that such fruitful sources of infection have been discovered, though disconcerting in itself, should prove a ready and useful guide towards explaining one, at least, of the probable modes of propagating this disease.

"I have referred to this matter at length in previous reports, emphasising the total inadequacy of the powers at the disposal of the local authorities for effectively ensuring that protection against further danger from an ascertained source which the community are entitled to expect, and which can only be secured by the immediate destruction of the infected animals."

Passing for the moment from the subject of the milk supply, I find, from the Annual Report for 1908 already quoted, that the
infantile mortality rate in Edinburgh for that year was 114 per 1000 births, as compared with 121 per 1000 during the preceding years, and 147 per 1000 ten years ago—very satisfactory figures from the comparative point of view. I also find, from a diagram setting forth the relative infantile mortality rates in thirty large towns in Great Britain, that many of these show a rate of from 130 to 150 per 1000 births; several others show a rate varying from 115 to 130 per 1000 births; while of those towns here selected only six show a rate less than that in Edinburgh—these towns being Southampton, London, Derby, Huddersfield, Brighton, and Portsmouth.

Now poverty as one of the great causes of infantile mortality is closely associated with the subject of housing, and in such comparisons as those just made it is important to remember that Edinburgh is largely a residential city. Dr. Williamson says, in speaking of the infantile mortality rate, "in spite of the fact that Edinburgh compares favourably with other cities, the existing conditions cannot by any means be regarded as satisfactory."

In a table giving the numbers of houses, with their rentals, in the various wards in the city, I find that of a total of 71,000 houses, 22,000 have a rental of over £20, and that of those houses with a rental of over £50 the great majority are in the wards of Newington, Morningside, and Haymarket. From another table I find that the infantile mortality rate in these three wards is respectively 54, 38, and 102 per 1000 births.

The other side of the picture is disclosed by Dr. Williamson, as follows:—"From those wards which showed a high general and infantile death-rate, I selected a number of areas capable of being readily identified, and subjected these to a careful scrutiny, so as to arrive at a correct figure as representing the infantile death-rate within the area defined.

"The highest figure is reached in an area in St. Giles Ward containing the High Street (from Bank Street to St. Mary Street) and the closes contiguous thereto. The infantile mortality here is at the rate of 232 per 1000 births, or rather more than double that of the city as a whole.

"If the Cowgate be taken, along with its environs, as forming another area which would include Tron Square and Waverley Buildings, the rate thus obtained would be 216, whereas, if the Cowgate be taken separately, it yields a death-rate of 344, which is decidedly the worst met with in the process of compiling these figures.
“Only slightly better than the area just referred to is that comprising Grassmarket, West Port, and adjacent streets, with a rate of 214. The Greenside area shows a death-rate of 184, and the Lawnmarket, with the courts and closes there, gives 170 per 1000.

“Following on this is an area composed of Richmond Streets, North, South, &c., Richmond Court and Place, and Oakfield Court, where the rate is considerably lower, the actual figure being 155. This district is contained in St. Leonard’s Ward, where the rate is 130.

“The South Back Canongate furnishes another suitable area, which includes Holyrood Square, St. John Street, &c., and here the rate is 149. The next area to be compared is taken from St. Andrew’s Ward, and I have selected St. James’s Square and the streets in its immediate proximity. This area returns a mortality of 136 per 1000, and if an individual street is selected from the group, namely, North St. James’s Street, the figure rises to 286.”

Regarding the subject of the opportunities of infection offered to young children in the town, it is almost impossible to determine precisely the risks run as they compare with those in other cities. I would, however, briefly allude to figures obtained by Dr. John Thomson and myself,¹ relative to the prevalence of abdominal tuberculosis, as being highly suggestive:—"While of 67,489 children treated in hospitals in England and Scotland (elsewhere than in Edinburgh and Glasgow) the percentage amount of abdominal tuberculosis was 1.6, of 68,498 children similarly treated in various Continental countries it was 1.13; and of 37,129 American children’s hospital patients it was only 0.28; yet among 23,939 children treated in Edinburgh and Glasgow the percentage was no less than 3.9. In no other centre or centres do the figures even approach those of Edinburgh and Glasgow, the nearest being those from Buda-Pesth, which show a percentage of 2.0 in 27,173 children.”

Enough has been said to show that, looked at as a whole, Edinburgh takes no mean place in comparison with other cities as regards the welfare of her youngest citizens, but that even such an honourable position is compatible with a huge, unnecessary loss of life in early childhood.

What are the agencies in Edinburgh for ameliorating the conditions?

¹ "On the Relative Prevalence of Abdominal and Meningeal Tuberculosis in Children in Different Countries, as shown by Clinical Hospital Statistics.” —Kelynack, Tuberculosis in Infancy and Childhood, 1908.
The secretary of the Charity Organisation Society writes, giving me the names of the following agencies:—The Health Visitors; Day Nurseries; Children's Shelter; Society for the Prevention of Cruelty to Children; Free Kindergartens; Boarding Homes for Widowers' Children; Donaldson's Hospital; Church of Scotland Orphanage; Quarrier's Homes, Bridge of Weir; Red House Home, Musselburgh; Orphan Hospital, Dean; and there are also several more, among which may be mentioned the Cripples' Home; Gilmerton Convalescent Home; and the Leith, the Kinghorn, and the Humbie Holiday Homes.

The agencies are many, and most of them merely require mention.

Dr. Williamson, in his report already quoted, says, "The special efforts which have been initiated in order to effect a reduction on the infantile mortality rate have been attended with a considerable amount of success."

"The first step, of course, towards the attainment of this object was reached when the Notification of Births Act came into force at the beginning of the year, as it is an essential preliminary, in dealing with this question successfully, to have the earliest possible information in regard to all births.

"With the view of taking the fullest advantage of the Act, it was deemed necessary to have notices sent to every householder in the city, directing attention to its provisions, with the result that intimation in regard to so large a number as 90 per cent. of the total births has been received within the time limit. The next step taken by your local authority was the important one of appointing a lady health visitor, and this was immediately followed by the inauguration of the specially satisfactory efforts which are now being carried out by the large body of voluntary health visitors, who are carrying on so splendid a work in the visitation of all newly-born infants in the poorer districts of the city. . . . The procedure adopted is along the following lines. The notifications are, on arrival, passed to the health visitor, entered in the register kept for this purpose, and then handed on to be sorted out in registration-districts preparatory to compiling the returns for registrars. From the office register such addresses are extracted as may require attention. The health visitor calls in person on these, and, where the circumstances seem to warrant future observation, a card is forwarded to the secretary, who, in turn, allocates these to the visitors. These visitors meet at stated intervals to report on the cases under their care, and
to have any circumstances affecting the health of their charges recorded in the books kept for that purpose.

A report by the voluntary health visitors has been published for the year 1908-9. In it, it is stated that “the principles observed in the organising of the voluntary help have been these:—1. The utilising of visitation as already found, and, 2. Co-operation with existing educational, medical, and relief agencies.”

In the rules it is laid down that—“In all cases the visitors shall encourage the mother to nurse the child herself. If the child is not thriving, the visitor may verify this by having the child weighed at the Hospice, 219 High Street, and, if necessary, directions should be given the mother regarding her own diet. In the case of the child continuing to lose weight, the family doctor should be called in, or the child sent to the Sick Children’s Hospital, or to a Dispensary. In no case shall a visitor advise a mother to cease nursing her baby without the approval of a doctor. All children on artificial feeding should be weighed regularly at the Hospice.”

The education of the visitors in the elements of hygiene and prophylactic medicine is being attended to, and classes on a variety of subjects are being held for mothers.

“In January 1909 the medical committee of the Hospice arranged that infants under the charge of the Voluntary Health Visitors might, when necessary, be weighed at the Hospice. . . . At the weekly weighings the mothers are given advice as to the feeding and care of their infants, every effort being made to encourage breast-feeding.

“Arrangements have also been made for the weighing at their own homes of infants which cannot be brought to the Hospice. . . . A report of the condition of the infants weighed is given at the fortnightly meetings of health visitors.

“In connection with the Hospice there is also carried on a milk depot for the purpose of providing a supply of pure milk for infants’ use at a moderate price. In the first half of the year the milk used was Budleised milk, but in the end of July this was given up, and the milk now given out is undiluted pasteurised milk from tuberculin-tested cows. The milk is supplied by the company which supplies the City Hospital, and the dairies and byres are subject to the inspection of the Medical Officer of Health of Edinburgh.

“The milk is put up in sealed bottles in wire baskets. Each bottle contains one feed of milk, and the baskets contain a suffi-
cient number of bottles for one day's use. The milk is supplied at the rate of from one shilling to two shillings per week.”

The Edinburgh Day Nurseries Association have under their charge four day nurseries. “These nurseries are open daily, Sunday excepted, from 6.30 A.M. till 6.30 P.M., and on Saturdays from 6.30 A.M. till 4 P.M. A charge of threepence per day is made for each child, infants under eighteen months fourpence. In the case of two or more in one family a reduction of a halfpenny per child after the first will be made. The matrons may make further reductions when a child is only left for part of a day.”

During the year 1909 the attendance numbered 24,641.

Such being briefly and in outline the nature of the agencies at work in Edinburgh, it is of value, before proceeding to bring forward suggestions, shortly to consider the nature and methods of work of agencies elsewhere, to note the degree of co-operation in each of these localities, and the position taken up by the medical profession.

(To be continued.)