children's teeth in good condition could be done on that money under those conditions.

With regard to statistics, he said that he purposely omitted to mention these, as figures varied very much, but children with carious teeth are found to be quite 90 per cent.

What has been overlooked in regard to the examination of the teeth of school children was that only carious teeth had been looked for, but there were other reasons accounting for defective mastication. Mouths had been passed as sound where there were very few carious teeth; this was a mistake, because if the child had lost its molars before its time there must be defective mastication.

He thanked the Branch for their invitation to open the discussion on a subject in which he took so great an interest.

MODERN EDUCATIVE METHODS FOR THE PREVENTION OF INFANTILE MORTALITY.*

By HAROLD KERR, M.D. Edin., D.P.H. Camb.,
Assistant Medical Officer of Health, Newcastle-upon-Tyne.

IN order that we may carry out efficiently the great principle which underlies the policy of, and is indeed the *raison d'être* for, the preventive branch of our profession, it is essential that we not only take a leading part ourselves in the practical application of all the methods available for the prevention of disease, but that we also do everything in our power to instruct others from our own knowledge and experience how best to avail themselves of the means at their disposal for guarding against the morbid influences to which they are liable to be exposed.

In no section of our work is this more necessary than in that which relates to the preservation of infant life, and in none other is time and trouble, spent in the education of others, more productive of good results.

The terribly heavy death-rate among young children in our towns is of course due to a certain extent to the relative unhealthiness of their surroundings, but that is by no means the chief cause. The factor that is of primary importance is maternal mismanagement. I use this word advisedly, because all mothers, with very few exceptions, love their babies, and desire to do the best for them; but every visitor in the homes of the working, and even lower middle, classes knows only too well the hopeless ignorance of the majority of the mothers in

regard to everything connected with the rearing of healthy offspring. In the case of illegitimate children the mother's love is often less, and, with the consequent occurrence of wilful neglect, the mortality is much higher than in the case of infants born in lawful wedlock.

The only advice obtained by a large proportion of mothers is that of baby's grandmother; and I wonder what percentage of the infantile mortality is directly attributable to the baneful influence of this infanticidal expert! We have all learned in the course of our duties that the esteem in which a woman's erudition is held is often in direct ratio to the number of babies she has lost, and the higher this is, the greater is the assurance and effrontery with which she delivers her dicta. You will perhaps remember the little story, retold recently in the *British Medical Journal*, of the poor health visitor who was asked by one of these sybils if she had had any children, and on answering confusedly in the negative, was promptly advised to go away, and not come blethering about "fresh hair and civilized milk" to a "lady" who had buried seven bairns. Most health visitors have been told something to the same effect, often enough.

So helpless are the average young mothers, that one is almost driven to the conclusion that in the process of evolution the human female has lost the natural maternal instinct which guides all the other animals in the care of their young, and has failed to replace it with any kind of acquired knowledge.

Many sanitary authorities are now taking steps to educate mothers, and there are various other agencies which are working to the same end. These all obtain their effect either by dealing directly with the mothers, or indirectly by teaching those who will influence them. The following are the principal media through which information and instruction are imparted:—

Female officers, or health visitors, appointed specially for the purpose by the sanitary authority. These may be in the "whole time" employment of the authority, or may be voluntary workers who co-operate with the permanent officials.

The medical practitioner, whether in private practice or in institution employ.

The midwife.

The district nurse.

Such institutions, charitable or otherwise, as hospitals and dispensaries, general or special.

* Read before the Northern Branch of the Society of Medical Officers of Health, October 22nd, 1909.

Municipally or privately conducted milk depôts.

Crèches.

Mothers' and babies' welcome societies.

Mothers' meetings.

The National Society for the Prevention of Cruelty to Children.

These all deal directly with the mother and child. Other agencies which act less directly are:—

The education authorities, many of whom are now doing most valuable work in training pupil teachers and senior girl scholars in domestic economy and in the care of infants, and in giving lessons on temperance.

Domestic service—for many a girl, while acting as a nursemaid, gets most useful preparation for the time when she will have babies of her own.

Temperance societies.

And, generally, there is the moral effect of regular and frequent attention to premises on the part of the sanitary inspectors.

Let us look at the rôle taken in this work by the Public Health Department.

The medical officer of health directs and supervises all the preventive measures, but cannot himself spare time for regular house-to-house visitation. For this many authorities have appointed ladies to act as health visitors; in some districts they are called female *inspectors*—a most inappropriate and unfortunate title. In certain towns there exists a voluntary association of ladies who act in co-operation with the health visitors.

In order that such officers may be of real utility, it is most essential that only the right kind of women are employed, for a tactless or unsympathetic person can utterly ruin any chance that an entire staff might have of doing good. Work of this description is foredoomed to failure if taken up for the sole purpose of making a living. In itself it is not by any means an idyllic employment; it takes one among depressing and dingy, not to say frequently filthy and verminous surroundings, and unless prosecuted by those who can find a reward in the knowledge that they are helping to abolish squalor and ignorance and to save life, had better by far be left alone altogether.

The duties of the female members of the staff of a Public Health Department are much the same everywhere, so for convenience I shall describe the system adopted in Newcastle.

First, then, we find the superintendent of

midwives, herself a registered midwife, and also trained as a health visitor. In some cities this officer is a qualified medical practitioner, in which case, of course, the duties are more responsible and comprehensive than are outlined below. Her primary duty is, as her designation implies, supervision of the midwives of the district, and in the performance of this every child not under the care of a medical practitioner is visited within a fortnight of its birth. Owing to the fairly efficient working of the Notification of Births Act, 1907, comparatively few are missed, and thus there is maintained an efficient check upon the unregistered handywomen, while a good idea is also obtained of the care given by the midwives to their patients. During the winter the midwives receive a six-months' course of weekly lectures from the superintendent, and as a result of much painstaking effort our midwives, from most unpromising material, have become surprisingly efficient. During 1908 not a single case of puerperal septicæmia occurred in the practice of any of them.

Originally this work occupied the whole of the time of the superintendent of midwives, but it is now possible for her to omit the first visit to quite a considerable proportion of the midwives' cases, as a number of the midwives themselves are well able to advise the mothers as to the proper care of their infants.

Next come the health visitors, who revisit every case, not attended by a medical practitioner, at regular frequent intervals throughout the first year of the infant's life, and instruct and help the mothers, by friendly conversation, in the general principles of domestic hygiene and the upbringing of their children.

The ladies are all actively interested in various charitable and other associations and institutions for the education and assistance of mothers. Of the institutions, one of the most noteworthy is the Mothers' and Babies' Welcome Society, where poor women can receive a substantial meal daily, for the nominal charge of a penny, during their pregnancy and for nine months after parturition. Here also are held little "at homes" and "health talks" for the mothers, who are encouraged to bring their babies with them, to be weighed, and to report progress generally.

Another institution of note is the Day Nursery, which is simply a crèche, where also mothers receive instruction and help with their children.

Then there are mothers' meetings galore,

and our ladies are much sought after for addresses to these.

At the Health Department itself there is each week a full programme of events—lectures, interviews, weighings, and not the least important part is the education of the midwives and of ladies interested in the work, in everything that will render each of them capable of playing a useful part in the saving of infant life.

In Newcastle we are fortunate in that there is little employment of women, and consequently there is not the same hindrance to natural feeding that one finds in the big towns of the cotton districts, for example. But nevertheless there is the tendency on the part of many mothers to substitute artificial food for the breast—a practice for which, to some extent at least, we have to blame the unscrupulous methods of certain canvassers for the sale of patent foods—and although one does not meet with so many of the grosser outrages upon the infantile digestive organs as one sometimes hears of elsewhere, such as feeding a three-months' child with pickled onions or soothing him when fractious with a whelk soaked in gin, one still finds fairly frequently that baby gets the same as the rest of the family.

In order to drive home the principle of the necessity for breast-feeding, it was decided recently to hold an exhibition of breast-fed babies in Newcastle, and under the patronage of the ladies of the city a scheme was drawn up for this purpose.

About that time I was privileged to be present at the third annual baby show of the Corporation of one of the big Yorkshire boroughs, and had an excellent opportunity of obtaining information and forming an opinion as to the value and effects of such a function. I was assured by the medical officer of health that the good results were indisputable and more far-reaching than had ever been anticipated. It had been found that a baby show appeals strongly to the parents, and in order that their youngster may score as highly as possible, he is most carefully tended and kept, the ladies of the Public Health Department being frequently appealed to for advice. The mother finds that if baby is to be clean, the house must also be clean; then, of course, the mother has to keep herself smart, or she would look out of keeping. The home being now more attractive, the husband spends more time there, and consequently there is more money available for

domestic purposes. Some of the neighbours are stimulated by the spirit of emulation, and so the ball starts rolling. This all sounded very Utopian, but nevertheless I saw enough to convince me that as a sociological factor a properly conducted baby show has an undeniable value, and I was genuinely impressed with its possibilities of usefulness.

The idea being a new one in Newcastle, we had at first no notion of what support it would receive, but very quickly found that the function would be a most popular one. With no more advertisement than through the health visitors and the midwives, some 564 entries were obtained, and as this was the utmost number which it was possible to accommodate in the space at our disposal, the lists were closed at an early date, otherwise we might easily have reached 1,000.

During the week preceding the exhibition the babies were weighed and classified, the visit to the Health Department being made the occasion for much useful advice to the mothers. Forms had been previously drawn up, and on these were entered the particulars of each candidate, including number, name, address, number of teeth, actual weight, and normal weight for corresponding age, with a space left for the judges' awards. The youngsters were classed according to age, in three-month periods, from birth to fifteen months; there were special classes in addition for twins and for prematurely born infants.

The only proviso, beyond that of locality of birth, was that no child should be admitted which had not been entirely breast-fed until nine months old. The ladies of the Health Department have a fairly extensive knowledge of the people among whom they work, and there is no reason to believe that there were admitted many babies who were not genuinely breast-fed.

Each mother received a ticket on which were marked the name, class, and number of her child, in order that on the day of the exhibition the exhibitors might be arranged the more easily in the order of their names upon the judges' lists. No charge for admission was made in the case of exhibitors, so that no mother might be excluded on account of poverty. All risk of confusion and accident was obviated by the provision and instruction of a large number of stewards (many of whom were midwives), whose business it was to shepherd and assist the mothers during the judging, to conduct them in batches to tea as the

judges were finished with them, and to see that the general public were not allowed among the babies. The visitors were placed in the galleries and elevations surrounding the hall.

Some twenty local medical practitioners volunteered to act as judges; these were largely drawn from the staffs of the children's and maternity hospitals. They had, perhaps, the most difficult task of the day, for it was by no means easy to say that any particular children were finer and healthier than the rest where the average of all was good. The system of marking adopted was as follows:—With 100 marks as maximum, 30 were allowed for weight, marks being deducted for excessively high figures; 30 for general development, under which head came pathological conditions; 30 for the condition of skin, eyes, ears, nose, mouth, nates, etc.; and 10 for general vitality and vigour.

About eighty prizes were offered by private donors, and all were of a useful description—perambulators, baths, cots, clothing, fireguards, etc.—and all prize-winners were decorated with appropriately coloured rosettes.

The judging commenced about 2 p.m., and everything was over and the babies on their way home by 5.30 p.m., which, all things considered, denoted fairly expeditious work.

The judges took every opportunity to point a useful moral and to render the occasion as educative as possible for the mothers.

Prize-winners were more than satisfied with the day. The unsuccessful aspirants took their disappointment much more cheerfully than had been anticipated. All that could be said to please and encourage them was said, and every mother, whether a prize-winner or not, got a substantial tea. There were no long, weary waits, and, so far as one can hear, nobody has been much the worse for his or her part in the day's proceedings.

Special prizes were presented to the midwives whose case-registers showed the highest percentage of living mothers and children for the twelve months preceding the exhibition. These awards were very keenly competed for, and were perhaps more highly valued than any others given that day.

From the great demand there was from the outset for visitors' tickets, which were retailed at sixpence, it was soon obvious that there would have to be some counter-attraction to the babies, otherwise a large number of visitors would never see these at all. It was there-

fore decided to have an exhibition of nursery appliances in the large Corn Market, immediately below the hall in which the babies were. Accordingly business firms in the city were invited to take stands and show articles connected with the nursery, all such articles to be first submitted for approval. No patent foods or medicaments of any kind were permitted.

A very representative show was thus obtained; it included such lines as baby linen, clothing, cots and bedding, baths, perambulators, furniture, fireguards, feeding bottles and sterilizers, pasteurizers, nursing and accouchement requisites; while a firm of art publishers made a very attractive exhibit of prints from well-known pictures in which the baby occupies a prominent place. This last, though not strictly appropriate, nevertheless served a useful purpose in adding to the interest of the exhibition.

A large space was set apart for the display of home-made appliances; this was under the charge of the superintendent of midwives, and consisted of sets of clothing made by mothers (for the best of which prizes were offered); model sets, paper patterns of which were on sale at a nominal figure; and all sorts of contrivances calculated to show the poorer visitors how it is possible to construct comfortable cots out of such extremely cheap materials as banana crates and orange boxes; by slinging a big towel or clean sacking between the up-turned legs of a small table; while a cheap shilling fireguard was converted into a snug little cot, and supported at the side of the mother's bed on rods thrust between the bed frame and the mattress. A makeshift incubator for a delicate or premature infant was contrived out of an ordinary clothes basket and some wool wadding; penny pepper castors took the place of powder puffs, and certainly appeared preferable from the point of view of cleanliness; stone ink bottles and demijohns made useful hot-water bottles; and, indeed, the list might be continued long enough, but these will serve as examples. In addition there were charts and diagrams of every description dealing with babies, their nourishment, their weight, and their development. In fact, the display of nursery appliances as a whole was a most interesting and instructive affair altogether.

It is too early yet to speak of results, but from the fact that the Exhibition of Babies and Nursery Appliances was visited by over 2,000 people, the bulk of whom were drawn from the poorer parts of the city, it is difficult to see

how it can fail to exert some influence for good. Further, the local Press took the matter up most sympathetically, and in the long accounts published by the various papers strong emphasis was always laid upon the objects and lessons of the undertaking. The hearty support accorded by the Lord Mayor and Lady Mayoress had also an excellent effect.

One result that has already accrued is that the Health Department's work for the prevention of infantile mortality has been brought prominently before the notice of the public, and much interest has been taken in it by many persons who will be able to render valuable assistance.

Half of our infantile deaths in Newcastle occur during the first three months of life, and one-third of the total deaths under one year are due to premature birth or congenital defects. It is, therefore, during the early months that the greatest attention should be paid to the babies, and for this reason a strong attempt is made to get into touch with the mothers during their pregnancy, before the birth of their children.

During 1908 some 1,100-odd infants were followed right through their first year, or until they died, by the Health Department, and some interesting facts were elicited. As regards the relative risks of natural and artificial feeding, the infantile mortality figures were as follow:—Entirely breast-fed, 94 deaths per 1,000 births; mixed feeding (breast and artificial), 192 deaths per 1,000 births; and of entirely artificially-fed infants, 4 deaths out of 14. The question of feeding is one that can be dealt with to a considerable extent by the health visitors, but the influence of housing accommodation is one that depends mainly upon economic conditions, and is for the most part beyond the control of the Health Department. As a matter of interest, I append the following figures from the annual report of the medical officer of health for 1908:—Of infants living in single-roomed houses, the infantile mortality rate was 129 per 1,000 births; of those in two-roomed houses, 111 per 1,000 births; and of those in three-roomed houses, 103 per 1,000 births.

In all cases the mothers have impressed upon them the value of fresh air and ventilation, but that is a point upon which they more often than not prefer to follow their own opinions. Health visitors have told me, however, that on their appearance in a street there is sometimes, by a curious coincidence,

a sudden stealthy opening of many windows. So much for the stirrings of conscience—or the fear of trouble.

As regards all the different schemes and systems under which mothers receive material reward for successful baby-rearing—such, for instance, as the mayoral bounty in Huddersfield and Rotherham, and the “baby show,” municipal or otherwise—some people hold that these are subversive of the natural affection and instincts of the mother, and should not, therefore, be made use of. They may be right in principle, but in actual practice there can be no doubt of the life-saving value of such schemes, and after all the saving of life is our main object. I therefore hold that, until all women are educated up to a high efficiency in nursery craft, no means whatever that are likely to conduce to that end should be left untried, and no scheme neglected by which their interest may be excited and stimulated. Is it not more likely that by rousing the interest of the mothers in their children the natural affections will also be stimulated and increased?

It is often stated that people cannot be made good or wise by Act of Parliament. That certainly is so; but under recently passed laws much power has been obtained whereby responsible persons may be reached and influenced for good. I refer to the Midwives Act, 1902, which has proved an unspeakable blessing to both infants and mothers where it has been properly administered, and to the Notification of Births Act, 1907. The highest value of the former lies not so much in the death-blow it deals to the Sarah Gamps, but in the possibility it creates for the education of the general body of midwives. The midwife has unrivalled opportunities for influencing the women among whom she works. Of necessity she spends more time with them than the busy medical practitioner can spare, and by her familiarity with the mysteries of parturition—the chiefest incident in the life of woman—is appealed to and consulted in a way that no one else is. Consequently it is of the highest importance that she should be well acquainted not merely with the proper management of labour and the puerperium, but also with the broad principles pertaining to the care and upbringing of children. For this reason it is highly desirable that the midwives of every district should work in close touch with the Public Health Department, and it is a profitable plan to treat them as unofficial assistants, responsible as such for the

instruction of their patients in the elementary rules of domestic hygiene and the care of the young.

There is, of course, a risk that the midwives might come to believe themselves medical experts; such a danger must be most carefully guarded against by strict supervision.

The Notification of Births Act, 1907, is of value in that it enables us to reach, for the purpose of educating them, many mothers who else would have no assistance other than that of such undesirables as the ignorant and untrained handywoman or the equally dangerous grandmother.

The Children Act 1908 deals with "infants" up to the age of seven years. By controlling baby farmers and providing for the punishment of parents or guardians found to have neglected or improperly treated their young in various ways specified in the Act, it too may be included among the valuable educative enactments.

Such, then, is an outline of the means at our disposal for dealing with the great wastage of life among the young.

But be the means as comprehensive as they may they are of no value unless intelligently used. That they may be really productive of tangible amelioration of the infantile mortality can be readily proved, and, with your permission, I shall terminate my remarks with a further quotation from the annual report for 1908 of the medical officer of health of Newcastle-upon-Tyne:—"Of these (*i.e.*, the 1,100 or so infants kept under observation), which include the children of the very poorest classes and those whose chances of survival are lowest, the infantile mortality rate was 113 per 1,000, as compared with 139 per 1,000 for all infants in the city. Considering the unfavourable climatic conditions (hot, dry summer) and consequent severe incidence of diarrhoea, this figure is a most encouraging one." Indeed, 113 per 1,000 is not a rate with which one can rest satisfied, but at least it denotes some improvement. With stronger effort and increased attention to the subject it is anticipated that the progress will be very much more marked in the future

PRESENTATION TO A MEDICAL OFFICER OF HEALTH.—Dr. C. F. Fenton, who has resigned his office as Medical Officer of Health of Barking after fourteen years' service, has been presented with a handsome mahogany bureau, bookcase, and chair by the members and officials of the Barking District Council and the Education Committee. Dr. Fenton has decided to devote himself to private practice in Barking.

THE MUNICIPAL CONTROL OF THE SUPPLY OF HOUSEHOLD MILK.

DR. JOSEPH P. FRENGLEY, District Medical Officer, Wellington, New Zealand, has recently made an interesting and valuable report on milk control to the Wellington City Council. The report contains many drastic recommendations, which were adopted by the Council, and appear, as adopted, in an appendix to the report in the following form:—

That for the purpose of securing as far as possible a pure milk supply for the city—

(a.) A municipal milk-station be erected on a site to be selected, having railway-siding accommodation, at which all milk arriving by rail shall be inspected and cooled, and from which only such milk as shall have been "passed" by an officer under the Sale of Food and Drugs Act, shall be allowed to be sold as household milk.

(b.) That all dairies and herds from which milk is sent into Wellington City shall continue to be inspected by the Agricultural Department, with whom the superintendent of the municipal milk-station shall be expected to confer, and to whom he shall recommend such alterations or improvements as he may deem necessary. All cans and other receptacles used by suppliers and vendors shall be subject to the approval of the superintendent.

(c.) That within six months of the establishment of the municipal milk-station all herds from which milk is supplied to the city shall undergo the "tuberculin test," and thereafter at least once every year, and no milk shall then be allowed to enter the city except from such cows as have given a satisfactory negative tuberculin test.

(d.) That milk brought into the city by road need not pass through the municipal milk-station, provided it is demonstrable that such milk can be and is being delivered to the consumer within four hours from the termination of the time of milking at the dairy concerned; provided also that vendors of such milk shall undertake to ascertain by test with the proper apparatus that the milk is of standard quality, such milk to be subject to inspection by the Council's inspectors, and regulations be framed for the infliction of severe penalties for the sale of milk not coming up to the required standard. The cancellation of supplier's or vendor's licence to follow a third conviction within a period of eighteen months.

(e.) That all dairies and vendors supplying milk to the city shall only do so as under a licence to be issued by the Corporation, and subject to regulations to be framed.

(f.) That all milk that has passed through the municipal milk-station for distribution to consumers shall still be subject to strict inspection,