THE NEW ZEALAND SCHEME FOR PROMOTING THE
HEALTH OF WOMEN AND CHILDREN.

By F. TRUBY KING, M.B., B.Sc. (Public Health), Edinburgh; Ettles
Scholar; Member of the Psychological Association; Lecturer on
Mental Diseases, Otago University; President of the Society for the
Health of Women and Children, New Zealand.

In the course of the last seven years a society (the Society for
the Health of Women and Children) founded in Dunedin, New
Zealand, with the object of improving the foundations for child
life, has seen a steady fall in the local infantile death-rate from an
average of 80 per thousand for 1900-07 down to 40 per thousand
for the last two years—the latest statistics showing only 38. Prior
to this organised and concerted effort there had been no tendency
to any decline in the deaths of children under one year—indeed
the rate for Dunedin in 1907 was 90 per thousand. With the pro-
gressive expansion of the society to cover the whole country (there
are now some seventy branches, with 1500 members on the local
executive committees) a similar tendency has manifested itself in
all directions, the infantile mortality of the whole dominion having
come down from nearly 90 per thousand to 56 per thousand for
1911 and 51 for 1912.

However, the society is less concerned in reducing the death-
rate than in improving the health of the people. As a health
society it is more interested in firmly establishing the all-round
fitness of the 24,000 or 25,000 annual new arrivals who will live
than in reducing the potential deaths from 2000 to 1000; but the
problems are, of course, intimately related.

Dunedin is a city with a population of some 60,000, and has a
fair proportion of factories and other concomitants of city life more
or less inimical to the rearing of healthy children. As regards site,
soil, mean temperature, daily and seasonal variations, moisture,
solar radiation, etc., there is nothing to mark out Dunedin from
the average conditions of the southern counties of England.
Dunedin has no outstanding advantages, climatic or social, over
the picked fourteen “Smaller Towns” of Kent (“the Garden of
England”), grouped by the Registrar-General as having populations
ranging from 20,000 to 50,000 inhabitants, and including such
places as Beckenham, Bromley, Tunbridge Wells, Dover, Margate,
and Ramsgate—towns with a large proportion of the well-to-do
residential class and comparatively few of the submerged. Why
Table showing how many children die in the first year of life for every hundred born.

**ST. PETERSBURG and MOSCOW (1910).**

| City                      | Infant Mortality Rate |
|---------------------------|-----------------------|
| St. Petersburg and Moscow | 28%                   |
| Vienna (1910)             | 17%                   |
| Berlin (1910)             | 15.1%                 |
| Liverpool (1910-1912)     | 14%                   |
| Manchester (1910-1912)    | 13.1%                 |
| London (1900-1909)        | 13.4%                 |
| Stockholm & Christiana (1910) | 8.3%       |
| Dunedin                   | 8%                    |
| New Zealand (1912-1913)   | 7.6%                  |
| Norway (1908-1909)        | 7%                    |
| England and Wales (for 1910) | 6%             |
| Russia, about              | 5%                    |

Note: The figures are almost as striking if taken for countries instead of cities. Thus, the latest annual statistics available show that out of 1000 children born there died in the first year of life:

- In Russia, about 250
- In Germany and Austria, about 175
- In England and Wales (for 1910), 117
- In Norway (1908), 76
- New Zealand (1912-1913), 51

Next to New Zealand, the Norwegian infantile death rate is the lowest in the world. This is attributed to the fact that in Norway nearly all babies are suckled.
should such places have an average infantile death-rate above 80 per thousand and Dunedin fall below 40 per thousand?

Before attempting to give an answer I should like to ask a broader question, viz.:—Are we satisfied as to the soundness of the foundations on which the rearing of infants was based in the latter half of the Victorian era, and, if not, have we freed ourselves, even now, from the thralldom of errors which our profession endorsed or originated last century and which for a time dominated us and the public alike? Take one of the most vitally important considerations, viz.:—

FOOD AND FEEDING.

1. Feeding intervals.
2. The average quantity of food needed in the successive months of babyhood.
3. Breast-feeding and artificial feeding—the best forms of artificial food.

1. The best intervals between feedings, and the desirability or otherwise of night-feeding (i.e. feeding between, say, 10 or 11 P.M. and 5 or 6 A.M.).

How did we arrive at our present tables, showing feeding every two hours from 6 A.M. to 10 P.M., and one or more night-feedings—ten feedings in all? I have come across no one who could give any definite answer to this question. Dr. David Forsyth says that "feeding-tables" for infants are of quite recent origin, and that the earliest he has found appears in a text-book dated 1884. Presumably the authors merely set down what had become more or less customary at the time, and the prevailing custom was no doubt largely determined by the fact that the wave of artificial feeding with very attenuated milk mixtures (having for a month or so only a third of the strength of human milk) had brought about the impression that frequent feeding of infants was universally desirable, simply because it had become more or less necessary under the prevailing conditions of bottle-feeding. Of course the necessity for using highly diluted milk and frequent feeding disappears when properly modified milk is used. However, the fact that the publishing of Czerny and Keller’s classic investigations and conclusions (showing that feeding every four hours sufficed, and that the feeding of babies more often than every three hours was certainly undesirable) failed to effect any widespread change for nearly ten years, shows how hard it is to bring about the reversal of printed instructions, however
erroneous, once they have been widely and authoritatively circulated and generally adopted.

The curious thing is, that the arbitrary dogma of two-hourly feeding should have been so quickly and unreservedly accepted by our profession, in face of the fact that Dr. Bull's well-known book for mothers, which was so much in vogue in the earlier half of the Victorian era, stated specifically that the best feeding times after the first month were every three or four hours, and that there should then be no "night-feeding."

I have spoken confidently as to two-hourly feeding being erroneous, because practice shows conclusively that babies do better when fed at longer intervals; and a wide series of independent scientific investigations (rendered possible only through subsequent advances in bacteriology, radiology, biochemistry, and biophysics) have since come to confirm the earlier clinical conclusions, by showing that the time needed, both for gastric digestion and for the keeping in check of microbes, indicates the desirability of longer intervals. It is gratifying to find that at last there has appeared in England a sufficiently definite and specific official pronouncement almost to compel general attention to this extremely important question—see the following paragraph in the Second Report to the Local Government Board on Infant and Child Mortality, 1912-13, by Dr. Arthur Newsholme:

"There can be little doubt that one important factor leading to the abandonment of breast-feeding has been the mistaken idea that two-hourly meals are required by the infant during the day, and four-hourly, or even three-hourly, meals at night. In most instances four-hourly meals suffice from birth onwards, or at least from the end of the first month, the infant not being fed at all from 10 P.M. to 6 A.M. The important conclusion that infants thrive better with the less frequent feeding has been proved on a large scale in the experience of infant welfare work in the most important centres in Germany, Austria, and other countries. The improved results obtained with diminished frequency of feeding have been fully confirmed by all who have adopted this method in this country."

The italics are not in the original and are used here merely to emphasise the extreme significance of the passages.

The fair trial of four-hourly feeding commenced years ago in the North-Western Infirmary at Chicago; the favourable conclusions there arrived at and the official leaflets which have since
been issued by the Public Health Department of the city, advising all mothers to use the longer intervals, afford significant confirmation of the soundness of what has become the general practice in Germany, Austria, and elsewhere. Surely the whole medical profession could now unhesitatingly go the length of advocating three-hourly feedings for the first few months and four-hourly afterwards. This has been done throughout New Zealand with the most beneficial results. I do not know of a single doctor or nurse who, having tried the longer feeding intervals, has failed to be impressed by the great advantages to both mother and child.

In the society's Baby Hospital at Dunedin hundreds of infants have been treated on these lines during the last four or five years, with more than satisfactory results. Further, the Plunket nurses (registered hospital nurses who have undergone a special course of extra training in the baby hospital in order to fit them to help in the rearing of many thousands of infants every year throughout New Zealand) have but one opinion in this matter. They all remark the contented restfulness of the babies and the gratification of the mothers themselves on being relieved of the irksome stress of having to resume suckling with scarcely more than an hour and a half of intermission. Many of our nurses had had prior experience of the ordinary routine practice of frequent feeding, and these women tell us they have no doubt whatever that mother and child are more comfortable and do better when the feeding intervals are extended and when there is no "night-feeding."

2. The average quantitative food needs of the average baby during the first nine months.

Here, again, the drawing up of specific tables is of quite recent and for the most part of empirical origin. However, while there has been almost complete unanimity and uniformity in error with regard to "frequency" of feeding, there has been every conceivable diversity of opinion, and of advice tendered, as to the most suitable forms and quantities of artificial foods for the average baby.

The tendency in England has been to ignore and even deprecate resorting to the more or less precise indications furnished by the making of caloric estimates, though this affords the only readily available scientific standard when preparing feeding tables, and would, as Professor O'Meara of Cornell University says, in his masterful summing up of the subject, alone suffice to save us from making the "ridiculous mistakes" so frequently met with in practice.
The diversity of the food-values of mixtures and allowances recommended in standard text-books, when taken out and contrasted on graphic charts, is very striking, but probably more harm is done by the multitude of well-intentioned popular books and pamphlets for mothers sent all over the world in tens and hundreds of thousands every year. Many of these have every appearance of being reliable guides. Take, for instance, one which I have beside me: it is for sale on all bookstalls, and must command an enormous circulation. This is one of a comprehensive series of booklets dealing with a great variety of important subjects, and written for the most part by men of note in various professions. The writer of this particular volume explains that she is both a university woman and a mother of several children. The food allowance recommended for a normal baby, entering its third week, is equivalent to only 3 ozs. of human milk a day—or less than a fifth of Nature's average. As the result of weighing before and after suckling for twenty-four hours several nurslings in their third week (babies born in a London slum area), I found that the average intake of mother's milk was a little more than a pint \(\text{per diem}\) — representing more than 400 calories, which corresponds to the German standard of needs, viz. 100 times the body weight expressed in kilogrammes, or, roughly, 50 times the body weight in pounds \((50 \times 8\frac{3}{4} = 437\frac{1}{2}\) calories), whereas the total value of the food allowance above referred to would be at the outside 60 or 70 calories \(\text{per diem}\). Similarly misleading tables and allowances appear from time to time in nursing journals and elsewhere, and are even to be found quoted as correct answers to examination questions. One cannot doubt that such grossly misleading advice is a serious direct factor in infant mortality, besides driving nurses and mothers to the use of patent foods, the proprietors of which are usually fairly careful not to recommend a starvation diet.

At the recent Congress on Infant Mortality, Dr. Eric Pritchard strongly opposed a suggestion made by several members (including the writer) that an approximate average feeding standard should be drawn up by the leading authorities present, with a view to securing more uniform and reliable advice for mothers. The ground of opposition was the alleged extreme variability of the food requirements of normal infants living under different climatic and other conditions. However, this argument was scarcely valid, seeing that the proposal was merely to replace the existing arbitrary and erroneous tables with more reliable instructions abreast
of present-day knowledge. Further, the contention that healthy nurslings in the poorer quarters of London differ extremely in their food intake and nutritive needs from infants living elsewhere in temperate climates is not borne out in my own experience. During a period of over four months I have had some thousands of weighings of babies before and after feeding, carefully made for whole periods of twenty-four consecutive hours, at first on several successive days and then at regular intervals. These weighings were done in the case of over fifty nurslings living in the poorest quarters of Bethnal Green and elsewhere, and they show that the nutritive needs of such children accord very closely with the average ascertained standards for New Zealand, Paris, Berlin, New York, and Boston.

3. Breast-feeding and artificial feeding—the best forms of artificial food.

In general, our profession has no doubt advocated breast-feeding, but during the eighties and nineties we know that suckling had come to be almost superseded in many quarters by artificial feeding, often with the acquiescence and too often on the advice of medical practitioners. Is any serious, widespread, concerted effort being made by the public or ourselves to dispel once and for all the mistaken notions of the past, to root out error and prejudice in these matters, and to instruct women of all classes in the fundamental hygienic requirements essential for healthy childbirth, care of breasts, milk supply, suckling, etc.? Of course, much has been done in the way of help for the very poor, by schools for mothers and other charitable agencies, but practically nothing has been attempted with a view to systematically educating, safeguarding, and helping the more capable, provident, receptive, and self-respecting four-fifths of the population. This applies equally to the New and Old World. In response to a question put to Dr. La Fetra of New York at the close of his excellent address given at the Congress in London in August 1913, he said:

“The vast number of the people (in the United States) in moderate circumstances have not yet been reached—that is a problem we have yet to work out. I am very glad to hear what has been done in New Zealand, and think we shall learn something of great value from the experience of that country.”

The vexed question of the best practically available baby foods is too complex, and the testimony on the subject is too conflicting,
to admit of its being discussed here. However, I may mention in passing that in New Zealand the society has all along advocated the modification of cow's milk on the simplest lines consistent with arriving at a reasonable approximation to human milk. This has proved so eminently successful that, where artificial feeding must be resorted to, modification on the lines recommended has been adopted throughout the whole country.

AIR, CLOTHING, EXERCISE, ETC.

If there has been lack of agreement throughout the civilised world as to the feeding of babies, the prevailing customs have certainly been no less conflicting in regard to fresh air, clothing, warmth, exercise, bodily restrictions, etc., and other simple factors which mainly determine the question of delicacy or hardiness in infancy.

It appears to be more than a coincidence that the infantile death-rate increases so enormously as we travel eastwards in Europe—as the houses become more and more warm, stove-heated and stuffy, and as infant clothing is found to be more and more irrational and hampering. One cannot help feeling that there is a very close connection between these factors and the high death-rates of Germany and Austria.

The houses in Berlin and Vienna do not "breathe"; the temperature regarded as ideal in baby hospitals is 70° Fahr., and in Vienna the customary swaddling in home and hospital is practically the trussing up of the Florentine bambino. Dr. Ludwig Meyer's recent monograph on Hospitalismus, and what he and others say as to the virulent respiratory epidemics which keep sweeping through the German institutions for babies, simply suggest the ordinary results of excessive coddling. Nothing in this connection has struck me more forcibly than the marked contrast between the whole aspect and condition of infants, as one sees them treated on these lines, and what one finds where the conditions approximate to those of an open-air sanatorium, whether one is dealing with public institutions or with private houses.

Provided due care is taken in instructing mothers as to how the baby's bed is to be made, and how to avoid excessive draughts, we have found in New Zealand nothing but benefit from wide-open windows and pure cold air. The wards, not only of our baby hospital but of the St. Helen's Maternity Hospital, are unheated even in winter time, except for a few special cases.
Our whole effort is directed towards bringing about a high state of physical fitness of all classes throughout the whole country on simple natural lines.

**Origin and Growth of the Society.**

Nearly seven years ago the work was entered into with great spirit by a committee of twenty-five earnest women in Dunedin, drawn from all creeds and classes, who felt that a stand ought to be made for rational education, help, and training in the simple essentials for healthy, normal motherhood and babyhood.

Since then some seventy branches have been formed; these branches are presided over by local executive committees, numbering from fifteen to thirty members each, and embrace a very large, earnest, and influential membership roll, representative of the motherhood of the dominion. All creeds and classes are included. The members meet on grounds of common motherhood and humanity, without any trace or suggestion of patronage or charity.

The society has gradually come to be looked to by all classes, and by the Government itself, as exercising a very beneficent influence over the domestic aspect of the care and safeguarding of mother and child. The newspaper press of the whole country has played a leading rôle in the movement, offering every help and encouragement, endorsing and advocating the work, and publishing at the present time some 200,000 copies of a weekly article under the heading “Our Babies’ Column,” supplied by the society to fifty newspapers, and reaching practically every home in the dominion—penetrating, indeed, the remotest back-blocks, beyond the reach of doctor or nurse.

The society issues an illustrated text-book—*Feeding and Care of Baby* (now published in London by Macmillan & Co. at 1s.)—and the Public Health Department sends, without charge, to every mother, on the birth of her child, a pamphlet—*Baby’s First Month*. Both these works were prepared by myself on consistent and harmonious lines, and thus no conflicting advice is given as to the simple hygienic essentials.

From first to last main attention has been directed to the essential requirements as regards fresh air, sunlight, cleanliness, proper feeding, exercise, rest, sleep, regular habits, etc., and how to attain these in any home in the simplest and best way. We spare no pains to train prospective mothers, well ahead, with a view to nursing. If the breast milk falls short, we show how to
prepare the best substitute—always insisting that every drop of the mother's own milk is precious. Mothers are taught how suitably to modify milk in their homes in the simplest way. Feeding of babies not more than six times a day at first, and after four months only five times, is strongly advocated, and no night-feeding. The wrongs done by the use of long tube feeders, "comforters," patent foods, condensed milk, etc., are illustrated, and always kept in view. The curse of "pap-feeding" and the need for hard dry food and training in mastication before the end of the first year and onwards are insisted on.

The following passage occurs in the instructions given to the Plunket nurses:

"The society's work is essentially a health mission. In regard to domestic hygiene, its trained nurses, when called in to help, should take the place of untrained, unskilled neighbours or relations in as tactful a way as possible."

The relationship of the society's nurses to the medical profession is clearly defined. The nurses have nothing to do with the treatment of disease, except under medical instruction. Indeed, if a doctor is in attendance, the Plunket nurse is always required to get his sanction before acceding to a call from the mother, even though the information wanted is merely on the simplest point of domestic hygiene. Professional relationships have been properly safeguarded in all directions, and the result is that the services of the Plunket nurses are largely availed of by the doctors for patients of all classes, it being recognised that a competent nurse tends to ensure the intelligent carrying out of the doctor's instructions between his visits. Several of the leading professors in the university are on the advisory board of the central branch, and doctors and doctors' wives form a considerable proportion of the various local committees.

The work of the Plunket nurses is entirely apart from district nursing or the care of sick people. They devote themselves solely to the hygiene and helping of mother and child. The general Government grants a subsidy of 24s. for each £1 raised by voluntary subscription. The nurses receive £150 a year and expenses.

Besides visiting mothers, when asked, in their own homes, and being present at fixed times at the local "Plunket Rooms" ("Schools for Mothers," where expectant mothers are seen, and babies are weighed, and attended to) and organising talks for mothers, or for the committees, the society's nurses are available
for teaching in the schools—giving the girls simple practical lessons in "mothercraft" with the aid of a baby.

The society loses no opportunity for stimulating public interest in the essentials for the health of the home and family by means of popular illustrated lectures. These are given periodically by leading members of the medical profession on such vital questions as "The Saving of the Teeth," "The Nature and Prevention of Adenoids," etc., besides lectures on the universal essentials for hygiene (air, food, exercise, etc.).

I have not attempted to give any direct answer to the question why the smaller towns of Kent show double the infantile death-rate of Dunedin, but is there any reasonable doubt that a mutual, educative, patriotic "health mission" to mothers of all classes, similar to that instituted by the women of New Zealand, would prove equally helpful in England? Less than seven years ago the infantile death-rate of New Zealand was higher than that of the present Kentish rate.

NOTES ON THE TREATMENT AND CONTROL OF VENEREAL DISEASES.

By WM. ROBERTSON, M.D., D.P.H.,
Medical Officer of Health, Leith.

A short course of study at a military hospital set aside for the treatment of venereal diseases prompts this contribution. It does not profess to be a dogmatic pronouncement on treatment. It is rather intended to indicate the lines followed in an institution where the most modern methods are adopted for dealing with cases of venereal diseases occurring in the Army. The treatment of venereal diseases has by no means reached finality. It has made enormous strides, mainly in the direction of curtailing the duration of active medication, and in adding to our knowledge of a complex subject.

One has to keep in mind that in a military hospital the conditions entirely favour systematic treatment, because discipline reigns supreme. That in itself is a factor of very great importance. Everything is done in a most methodical way, from the detailed examination of pathological conditions down to the transcription of these conditions by an orderly, who is an expert shorthand writer. From every sore examined a smear is taken, and a search made on the spot for the detection, under the