

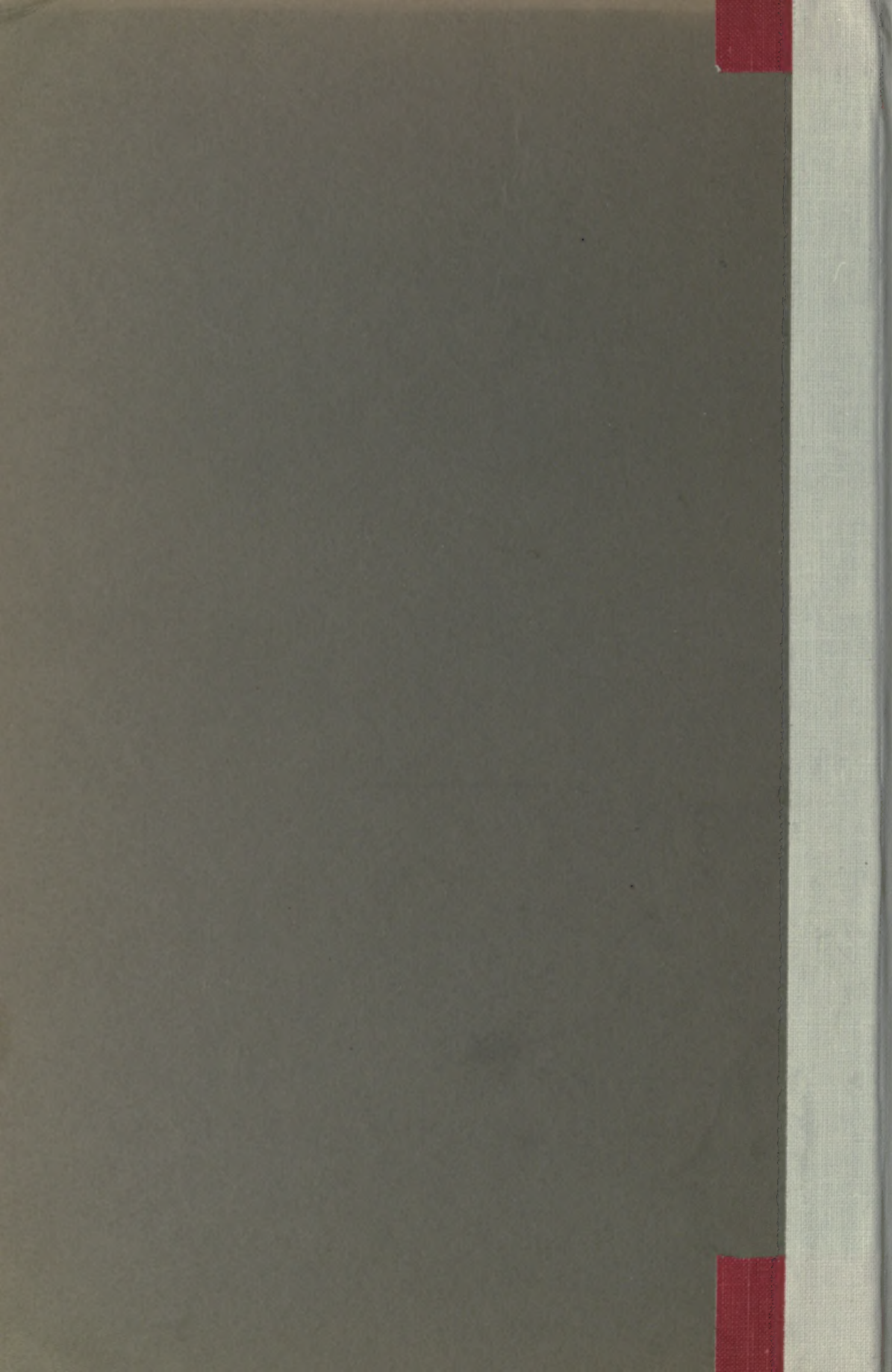
UNIVERSITY OF TORONTO



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INFANT MORTALITY

SPECIAL REPORT

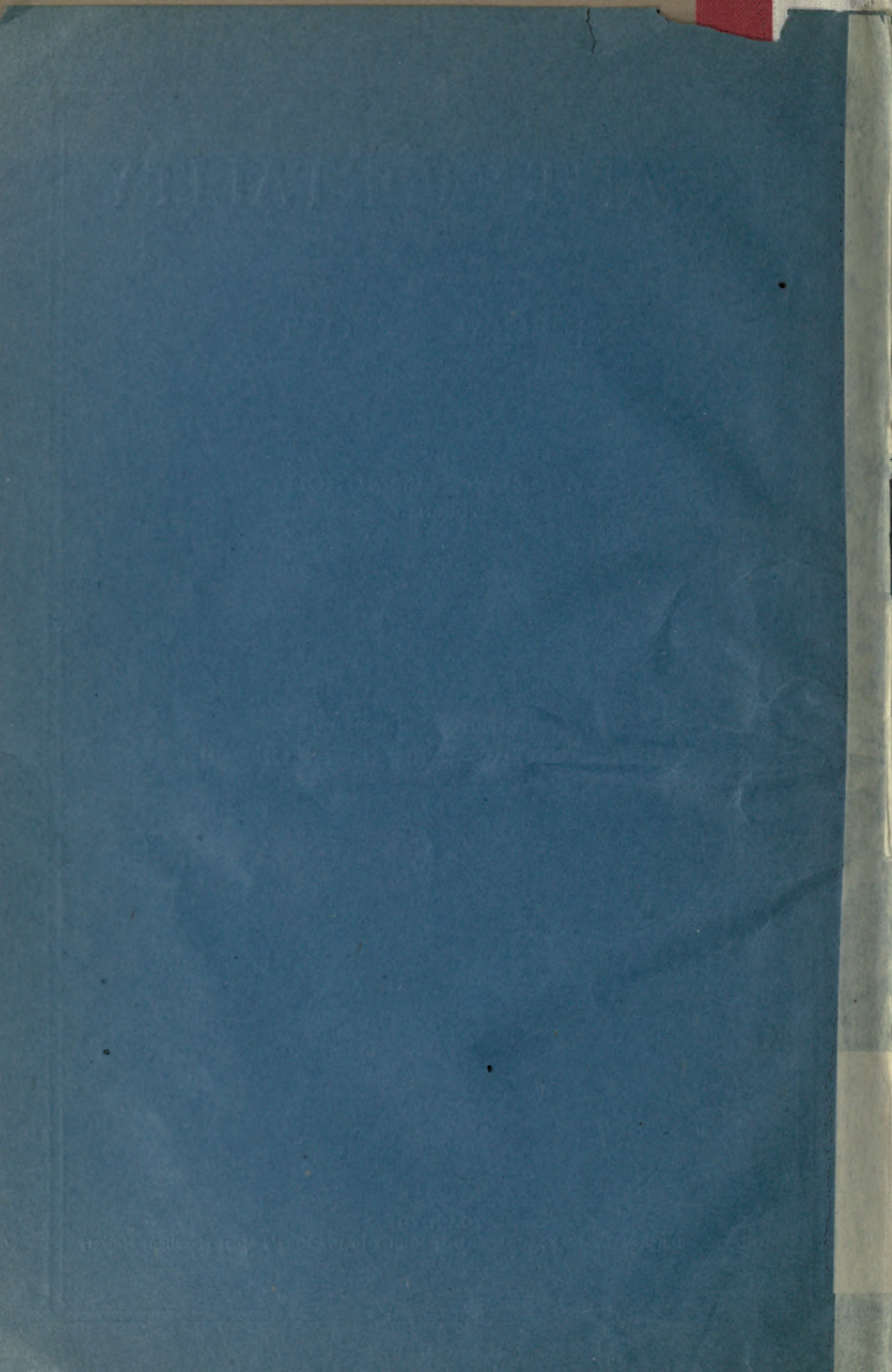
BY
Dr. HELEN MacMURCHY
TORONTO


PRINTED BY ORDER OF
THE LEGISLATIVE ASSEMBLY OF ONTARIO



TORONTO:

Printed and Published by L. K. CAMERON, Printer to the King's Most Excellent Majesty
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Printed by
WILLIAM BRIGGS,
29-37 Richmond Street West,
TORONTO

TORONTO, April 25th, 1910.

HON. W. J. HANNA,

Registrar-General of Ontario.

SIR,—Acting upon instructions, I have the honour to submit the accompanying report of Dr. H. MacMurchy on Infantile Mortality.

I have the honour to be, Sir,

Your obedient servant,

THE DEPUTY REGISTRAR-GENERAL.

DR. CHARLES A. HODGETTS,
Deputy Registrar-General for Ontario.

SIR,—I have the honour to submit the accompanying Report on Infant Mortality, prepared under the instructions and by the permission of the Hon. W. J. Hanna, Provincial Secretary for Ontario.

I have the honour to be, Sir,
Your obedient servant,
HELEN MACMURCHY.

Report on Infant Mortality.

The field of modern medical research and labour is infinite in its possibilities, and the greatest of these are found in the domain of Preventive Medicine. Infant Mortality is the greatest problem of Preventive Medicine.

INFANT MORTALITY IN ONTARIO.

In the Province of Ontario, according to the last (thirty-eighth) Report of the Registrar-General, for the year 1907, the total number of deaths was 33,502, and the number of deaths under five years was 9,930. In other words, Infant Mortality is 29 per cent. of our total death-rate.

Compare with this the total number of deaths due to Tuberculosis in 1907, which is 2,530, or 8 per cent. of the total death rate. Not nearly enough is said or done about Tuberculosis, but what is said or done about Infant Mortality?

In the City of Toronto, in 1907, there were 1,313 deaths under one year of age, and the total number of births was 6,680. This gives an Infant Mortality rate of 196 per 1,000, approximately one-fifth, or 20 per cent. Is this true? Is the registration attended to?

AN EDUCATIONAL CAMPAIGN.

This is a record of which we have no reason to be proud, and which proves the need of an Educational Campaign which the Provincial Authorities, the Board of Health, the medical profession and the public, cannot too soon open.

THIRTEEN HUNDRED AND THIRTEEN WHITE COFFINS.

One out of every five of the children born in the City of Toronto is carried out of the home in the little white coffin before the year is out. Whose business is it to find out why? And this in a country where there is much room and much need for new citizens. The best of our new citizens are our children. The potential value to the country of these lives, which might easily be saved by proper maternal and medical care, is beyond price or computation. Every year nearly Ten Thousand Children in Ontario, under the age of five years, go to their graves. We would think ten thousand emigrants a great addition to our population. It is a question if ten thousand emigrants from anywhere would equal in value to us these ten thousand little Canadians of Ontario, whose lives are sacrificed to our carelessness, ignorance, stupidity and eager haste to snatch at less valuable things.

THE CENTURY OF THE CHILD.

The dawn of this century beheld "a great change in the opinions and modes of thinking of Society," and this, as John Stuart Mill once said, "always means an impending revolution in matters social and political." We are beginning to contrast "The petty done, the undone vast." And one of the signs of that revolution is our altered estimate of human values, and especially of the value of childhood. Obvious as the discovery is, we are only now discovering that Empires and States are built up of babies. Cities are dependent for their continuance on babies. Armies can be recruited only if and when we have cared for our babies. The Sanitarian has said that the infant mortality rate is the test of real sanitary sense and progress, and we do not seem to believe it. But we must come back to it.

The Twentieth Century is the Century of the Child. As the attending angels told the watching shepherds, "This shall be a sign to you," and that sign was a Child. In the matter of the nation's greatest asset—her children—we are beginning to see that the greatest nation, the nation that can count on continuance, is the nation who can say—"Ecce! Ego et liberi mei quos dedit mihi Dominus."

THE MASSACRE OF THE INNOCENTS.

But instead of making this glorious boast, what a Massacre of the Innocents we make.

"Herod sent forth and slew all the children that were in Bethlehem and in all the coast thereof, from two years old and under, according to the time which he had diligently enquired of the wise men."

"Then was fulfilled that which was spoken of by Jeremy the Prophet, saying—In Rama was there a voice heard, lamentation and weeping and great mourning, Rachel weeping for her children and would not be comforted because they were not." That was one of the world's tragedies, and one of the world's crimes.

HEROD OUT-HERODED BY MODERN CIVILIZATION.

But the crime of Herod is out-Heroded by the crimes of modern civilization. In Bethlehem then, as the commentators tell us, there were perhaps 1,000 inhabitants, and the slain children might number 20 or 30. The tragedy of Bethlehem pangs before the tragedy of the Babylon of Modern Civilization.

The Modern City with its democratic government, its relief agencies, and its charitable organizations, is only too familiar with the tale of Infant Mortality. "Where the white hearse goes most often, there you will find the weakest places in your municipal housekeeping"—(Sherman C. Kingsley, Superintendent of the United Charities of Chicago).

GIVE THE BABY A CHANCE.

There is something wrong with the place where children die. It has been pointed out that in a modern city the new-born child has, on an average, less chance of living a week than a man of four score years and ten, and less chance of living a month than a man of four score. Give the baby a chance. Whoever is in fault when the baby dies, it is usually not the baby. Nature sees to it that even when the parents physically are not what they should be, the baby is, in 80 or 90 per cent. of cases, born healthy. Nature does her part, but we leave ours undone.

"The number of deaths of babies under one year of age is greater than the number of deaths from any other single cause or disease the world over.

"The National Government of the United States spends \$7,000,000.00 on plant and animal health every year, and hundreds of thousands fighting beetles and potato bugs, but not one cent to aid the six million babies that will die under two years of age during the next census period while mothers sit by and watch in utter helplessness. This number could probably be decreased by as much as one-half. Why is nothing done? Charities have been organized in all countries to protect and relieve the poorer mothers; societies have been formed to provide pure milk to the mother and her babe; fresh-air funds have proved a magnificent help; societies to enable mothers to have a breath of the sweet country air answer many a need. With what splendid results have little ones in the care of ignorant, helpless mothers had these blessings. Many lives have been saved, but still statistics continue to show the appalling mortality. Why? Principally because the present efforts are

in the nature of relief work and not systematic educational work—they lack practical medical supervision of infant health; they do not strike at the root of the evil conditions, the ignorance which mothers are so willing to admit, and the need for practical medical supervision, which is the crying necessity. Nothing so far proposed has materially reduced the death rate. Passive interest will accomplish nothing. Spasmodic conventions to discuss this momentous question will accomplish nothing. The question is, what is to be done, and how to do it?

"The saving of babies—the preservation of infant health, can be accomplished in only one way, and that is to awaken the active interest of everybody in the problem on behalf of the little ones, and then to join the hands of the mother, the family physician, the infant specialist, and the trained nurse in one grand effort to reduce infant mortality. The purpose is so high, so imperative, so humane, that it appeals to the common sense of everyone." (Mrs. Arnoldi, quoted by the American Committee of One Hundred on National Health.)

WHAT WE KNOW ABOUT INFANT MORTALITY.

THE MOST IMPORTANT THING.

One thing we know about Infant Mortality. If the baby is nursed by its mother the chances are great that it will live. If the baby is fed in any other way the chances are great that it will die. This is putting it moderately, as the following facts will show. Of 300 infants admitted to the Dresden Children's Polyclinic in 1900 to 1901, there were 53 deaths. All the deaths, 53 in number, were among the bottle-fed babies. Among 93 breast-fed babies, during the same period, in the same hospital, there was not a death. Of children dying under one year, more than two-thirds die from gastro-intestinal diseases, in other words, from food-poisoning. When trade is depressed and work scarce, when wages are low, and employment intermittent, the rate of infant mortality drops. What explanation is there for that, except that the mother is at home and the baby is nursed, because good wages and easily got work do not tempt the mother to work outside her home?

In the Siege of Paris, 1870-1871, when the general mortality rate is said to have doubled, the infant mortality actually fell 40 per cent.

The same tragic and dramatic proof occurred during the cotton famine, and it occurs every time there is a big strike affecting women's work.

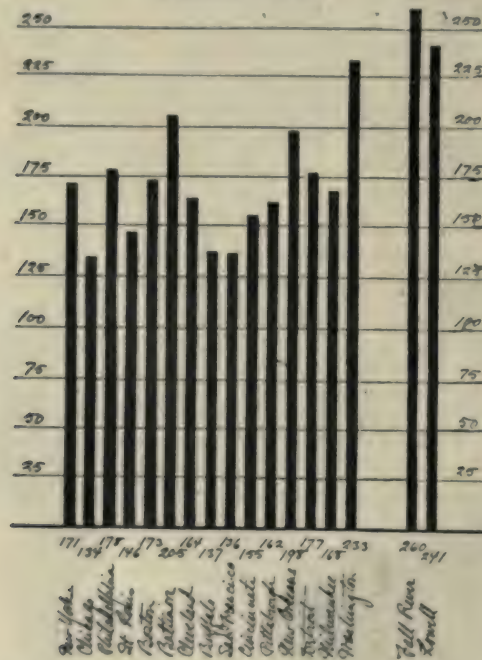
In July, 1909, the number of deaths of children under one year from gastro-intestinal diseases in the Borough of Manhattan, New York, amounted to 423, or 62.4 per cent. of the deaths of children under one year from all causes. During the month of August the number of deaths of children under one year from gastro-enteritis was 731, and from all causes 1,081, 67.6 per cent being due to intestinal disturbances. In the City of Berlin, Germany, in July, 1909, there were 913 deaths of children fed on cow's milk, and 86 deaths of children breast-fed. In August, 1,445 deaths occurred among the artificially-fed babies, and 76 among those maternally nursed. The Medical Officer of Health for Birmingham enquired into the deaths of 3,000 babies in Birmingham, and found of these 3,000 dead babies only 24 had been nursed at the mother's breast only. Mother's milk is the only really safe food for baby. The baby that has one chance for its life if fed on condensed milk would have two chances for its life if fed on good cow's milk, and one hundred chances for its life if fed on its mother's milk and nursed at her breast.

INFANT MORTALITY IN ONTARIO.

The following table gives the infant mortality in Ontario during the last ten years:—

| — | Total births. | Total deaths all ages | Total deaths under 1 year including still-births. | Total deaths under 5 years. | Per cent. of deaths under 1 year to total deaths | Per cent. of deaths under 5 years to total deaths | Deaths under 1 year to 1000 births. |
|------|---------------|-----------------------|---------------------------------------------------|-----------------------------|--------------------------------------------------|---------------------------------------------------|-------------------------------------|
| 1898 | 46599 | 26370 | 5975 | 7967 | 22.658 | 30.212 | 128.22 |
| 1899 | 44705 | 28607 | 6342 | 8252 | 25.665 | 28.846 | 141.86 |
| 1900 | 46127 | 29494 | 7163 | 9152 | 24.289 | 31.030 | 155.28 |
| 1901 | 46061 | 29608 | 6543 | 8397 | 22.102 | 28.360 | 142.05 |
| 1902 | 47796 | 27864 | 6003 | 7987 | 21.543 | 28.656 | 125.59 |
| 1903 | 48742 | 29664 | 6700 | 8634 | 22.585 | 29.106 | 137.66 |
| 1904 | 50265 | 31290 | 6902 | 8513 | 22.058 | 27.206 | 137.31 |
| 1905 | 51911 | 31369 | 7694 | 9534 | 24.527 | 30.424 | 148.21 |
| 1906 | 51710 | 32782 | 8405 | 10088 | 25.632 | 30.772 | 162.54 |
| 1907 | 53584 | 33502 | 8041 | 9930 | 24.001 | 29.640 | 150.06 |

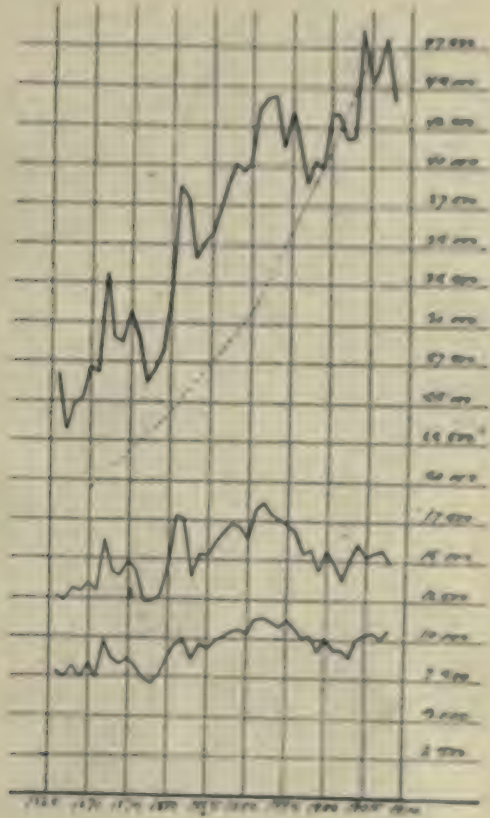
INFANT MORTALITY IN GREAT CITIES AND MANUFACTURING TOWNS WHERE WOMEN WORK.



* 1. Deaths under one year of age per 1,000 births, as reported to census enumerators in 1900, in the fifteen largest cities of the United States and in two manufacturing cities in Massachusetts.

Diagram 1 shows that great cities have a great Infant Mortality, and also shows that manufacturing towns where women work have a still greater Infant Mortality.

INCREASE OF POPULATION AND INFANT MORTALITY.

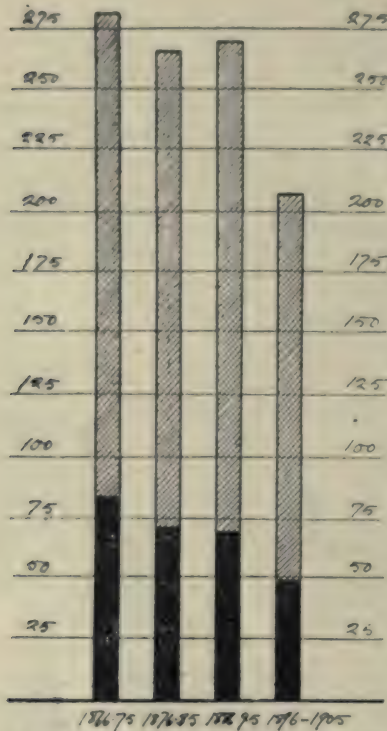


2. Deaths in Manhattan and Bronx Boroughs of New York City, 1866-1906.

Upper line: deaths at all ages.
 Middle line: deaths under 5 years of age.
 Lower line: deaths under one year.
 Dotted line: population at census years, on a scale 50 times smaller.

Diagram 2 shows that Infant Mortality has not increased so fast as the population.

IMPROVEMENT IN NEW YORK INFANT MORTALITY.



3. Average annual death-rates (per 10,000 population) in Manhattan and Bronx Boroughs for four decades. Entire column represents death-rates at all ages; the black part at the bottom, death-rates under one year of age.

Diagram 3 shows that in New York Infant Mortality has decreased. Hard work on the part of the authorities brings it down. The New York Health Department works for the babies, and works hard.

General death-rate decrease, 1896-1905, 26 per cent.

Infant death-rate decrease, 1896-1905, 43 per cent.

There is another consideration as Dr Devine points out. The decrease in infant mortality occurred at a period when there was an enormous increase in the Jewish population. Had this anything to do with the improvement? Where do the Jews live? The next diagram answers the question.

THE JEWS AND INFANT MORTALITY ON THE EAST SIDE OF NEW YORK.



4. Manhattan, by wards.

| A. Density of population in 1900. | B. Child mortality in the decade 1890-1900, (total annual number of deaths under 5 years of age per 100,000 population of all ages). |
|--------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| Under 100 per acre: Wards 1, 2, 3, 5. | Less than 100: Wards 2, 5, 7, 11, 12, 15, 16. |
| 100-199: Wards 8, 9, 12, 15, 16, 18, 19, 21, 22. | 100-199: Wards 9, 10, 12, 17, 20, 21, 22. |
| 200-299: Wards 4, 6, 20. | 200-299: Ward 18. |
| 300-399: Ward 14. | 300-399: Wards 8, 15. |
| 400 and over: Wards 7, 10, 11, 13, 17. | 400 and over: Wards 1, 4, 6, 8, 14. |

Diagram 4 shows that the lower part of Manhattan below 14th Street has a lower infant mortality than the upper part of Manhattan above 14th Street—and the Lower East Side of New York has a lower infant mortality than the Lower West Side.

But the sons of Jacob and all the tribes of Israel live on the lower East side.

RACHAEL IS A GOOD MOTHER.

Though Rachael herself never lost a child, it is remarkable that her name comes to the mind of the Sacred writer as the representative of the loving and beloved Hebrew mother. Rachael gave her own life for her child, dying when Benjamin was born. "And it came to pass, when her soul was in departing, for she died, that she called his name Benoni (Son of my Sorrow)."

The miraculous survival of the Hebrew race, ages after the very names of their oppressors have perished from the earth, is manifestly largely due to their proverbial attention to, and success in, their parental duties, and this diagram proves it.

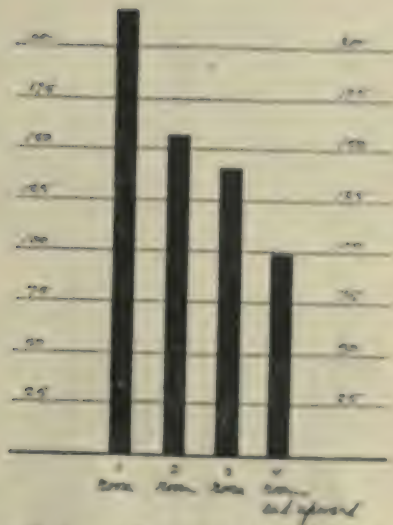
Congestion of population, fatal to the infants of other races, has been overcome in the Lower East Side of New York by the devotion of the Hebrew mothers to their children. It is well known that Hebrew mothers almost invariably nurse their children.

E. W. Hope, the Medical Health Officer of the City of Liverpool, and one of the greatest health authorities in the world, says: "I desire to add a few words in reference to the Jewish community, and for the purposes of my illustration I take fifty poor—some very poor—Jewish families, taken consecutively. The family earnings averaged from 10s. to 30s. per week. The points which stand out are, first, that in every instance the children are well looked after, all suitably clad, and not one ragged or barefooted child seen. Domestic dirtiness is uncommon, but even where it existed all the mothers seemed to realize their duty and act upon it. The beds were clean, and always a cot provided for the baby beside the mother's bed. Thriftiness and sobriety were universal; no drunkenness at all. A noticeable feature which always impresses the visitor is the attention given by the mothers to the children's food. In no single instance was the midday meal wanting; moreover, it is usually good and wholesome and prepared in a way which the children relish. It must be remembered that some of these families were in receipt of relief from the Jewish Board of Guardians."

Nor are the Hebrew women left alone to bear more than their share of family cares. Jewish men are at home a good deal. It is pretty safe guessing to say that doctors see more of Hebrew husbands and fathers than they do of any other nationality. They watch their families. As a rule, when the mother has to go to the hospital with some thought of an operation her husband goes with her. In a recent operation at Toronto General Hospital for ectopic gestation—a condition the danger of which is not always easy to explain to the husband so as to secure his consent to instant operation—the chief surgeon expressed a wish to send for the husband. There was no need to send, he was downstairs at the moment, and when he was told of the favourable result of the operation, he fervently said: "I am very thankful to God and to Dr. R."

Far away from Galilee, from Judea and from Jerusalem, so far on the other side of Jordan that they may scarcely know the names of the places which were the cradle of their race, in the depths of grinding poverty, not only submerged but struggling for existence at the bottom of such a pit as is dugged for their feet by the lowest conditions of life in a great city, still are the Jewish parents true to the traditions of their race, and still does the Jewish mother save her children, too often, alas, as her physicians know, by the sacrifice of herself.

OVERCROWDING.

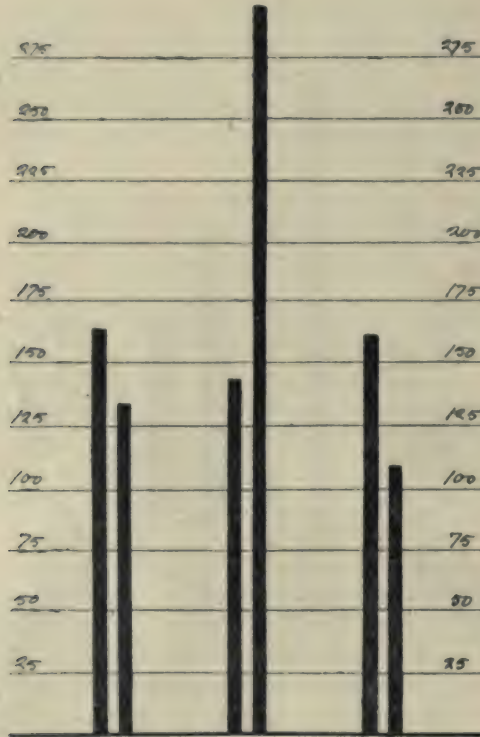


5. Infant mortality per 1,000 births in the Metropolitan Borough of Finsbury, 1906, classified according to the number of rooms occupied by the family.

But as Diagram 5 shows, when a family lives in one room, the result is very fatal to the baby.

In Berlin, 1903, Newman investigated 2,701 infant deaths. Where the families were in one-room dwellings he found 1,792 deaths; in two-room dwellings, 754 deaths; in three-room dwellings, 122 deaths, and in larger dwellings, 43 deaths.

MALE AND FEMALE—BLACK AND WHITE—CITY AND COUNTRY.



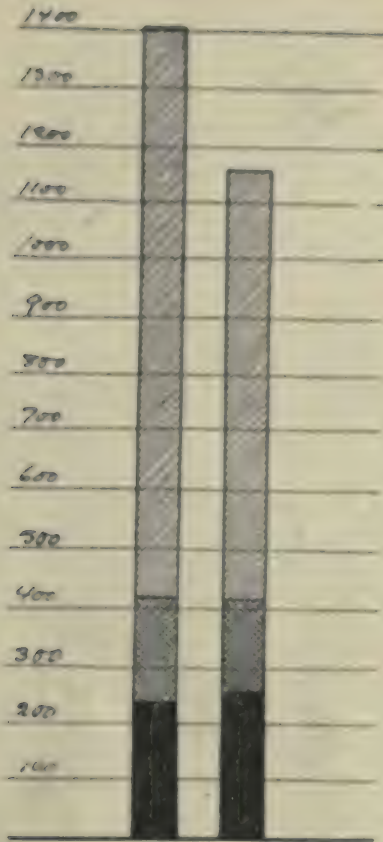
Males, 164. White, 143. Cities, 161.
 Females, 134. Colored, 297. Country, 109.

6. Deaths under one per 1,000 births in the registration record of the United States, 1900.

Diagram 6 shows that male infants have a higher infant death-rate than female infants.

Also that the poverty and ignorance of the black race doubles infant mortality, and finally that the country is a better place for babies than the city.

CITY AND COUNTRY.



London Rural Counties.

Under 1 year . . . 1,403.0 1,158.8
 Under 1 month . . . 417.5 414.6
 Under 1 week . . . 240.5 258.8

7. Infant mortality rates per 10,000 births in 1902, in London and certain rural counties.

Diagram 7 shows that, except in the first week of life, the country is a safer place for babies than the city. The figures for the first week are probably explained by the fact that medical assistance is easier to get in the city.

When we consider the remarkable tendency to urbanization in modern life, this matter will be seen to be of great moment to the infant mortality rate.

Sixty years ago in England, 75 per cent. of the population was rural, and 25 per cent. urban. But now the conditions are reversed: 25 per cent. is rural and 75 per cent. urban. City conditions must be thoroughly studied by those interested in Infant Mortality. The same conclusion is forced upon us by a study of the following tables, by Dr. Newman.

When we remember that our industries in Ontario are mainly agricultural, we should not have such a large infant mortality as 150 per 1000.

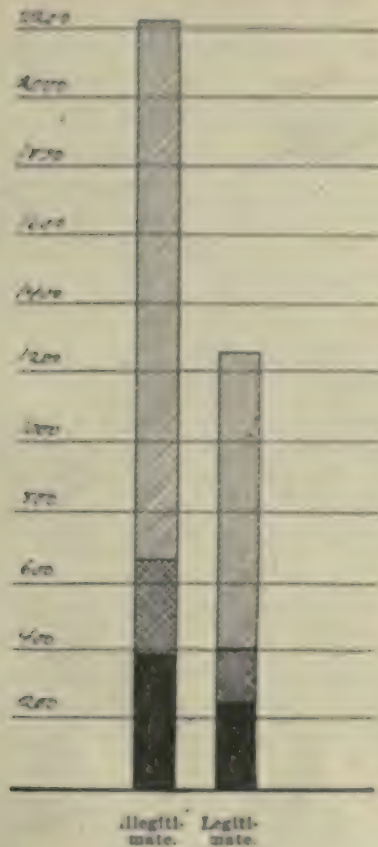
TABLE 1—INFANT MORTALITY RATES IN WILTSHIRE AND ENGLAND AND WALES,
1900-1904.

| Districts. | 1900 | 1901 | 1902 | 1903 | 1904 |
|------------------------------|-------|-------|-------|-------|--------|
| County of Wiltshire..... | 94.0 | 93.7 | 97.23 | 85.63 | 95.99 |
| Urban Districts (Wilts)..... | 95.6 | 106.8 | 93.63 | 89.27 | 100.32 |
| Rural Districts (Wilts)..... | 115.7 | 83.8 | 99.89 | 82.76 | 92.52 |
| England and Wales..... | 154.0 | 151.0 | 133.0 | 132.0 | 145.0 |
| Large towns in England..... | 172.0 | 168.0 | 145.0 | 144.0 | 160.0 |
| Rural England and Wales..... | 138.0 | 137.0 | 135.0 | 118.0 | 125.0 |

TABLE 2.

| Age. | Of 100,000 infants born, the number surviving at each age. | | | Annual death rates per 1,000 living in each successive interval of age. | | |
|----------------|------------------------------------------------------------|---------------------------------------------------------------------------------------|------------------------------------------------------|-------------------------------------------------------------------------|---------------------------|------------------|
| | Three rural counties: Herts., Wilts., Dorset. | Five mining and manufacturing counties: Staffs., Leic., Lancs., W. R. Yorks., Durham. | Three selected towns: Preston, Blackburn, Leicester. | The three rural counties. | The five mining counties. | The three towns. |
| At birth..... | 100,000 | 100,000 | 100,000 | 213 | 331 | 382 |
| 3 months..... | 94,820 | 92,051 | 90,874 | 75 | 154 | 240 |
| 6 months..... | 93,068 | 88,574 | 85,574 | 61 | 128 | 180 |
| 12 months..... | 90,283 | 83,081 | 78,197 | | | |

LEGITIMATE AND ILLEGITIMATE.



| | Illegitimate. | Legitimate. |
|---------------|---------------|-------------|
| Under 1 year | 2,234.9 | 1,250.2 |
| Under 1 month | 694.1 | 404.5 |
| Under 1 week | 387.6 | 242.6 |

8. Infant mortality rates per 10,000 births among illegitimate and legitimate children in London and certain rural counties in 1902.

Diagram 8 shows that the Infant Mortality among illegitimate children is greater than among legitimate children. The illegitimate child is not so well taken care of, and Infant Mortality is a question of education, care and comfort. One English writer states that in the aristocratic classes of England 10 per cent. of the babies die in the first year. In the middle classes of England, 21 per cent. of the babies die in the first year. In the working classes of England, 32 per cent. of the babies die in the first year.

THE MOTHER VS. THE INSTITUTION.

It is a poverty question largely.

Everything we can do to increase efficiency and prevent poverty, will prevent infant mortality too. And it is through the mother that infant mortality can be prevented. Institutions for infants, Creches, Day Nurseries, Infants' Homes, are not at all the best solution of the problem of Infant Mortality among the poor,

deserted and unfortunate. They have been established by the best and kindest people, and with the best intentions; but when they take the baby away from the mother, they sign the baby's death warrant.

Instances were given by Mr. Homer Folks, of the recent Conference on Infant Mortality at Yale University, New Haven, of Infant Asylums where the death-rate was 85 per cent. We pridefully plan to set up an Orphan Asylum or a Foundling Hospital or an Infants' Home. *We cannot do what the mother can.* Nature spurns our false ideas of putting babies in institutions. Her one institution is the home, and a home must be made for the baby. As Kipling says of the Cave Dwellers, "They went to another cosier cave when the baby came." The institution has been tried and found wanting.

"I do not hesitate to say that the results of a rather careful study recently carried on (to which, I am glad to say, the Institutions have carefully lent every assistance) shows that in the very best of such Institutions and under the most favourable circumstances, not more than 50 per cent. of the children admitted for permanent care survive, while in other cases the percentage still runs much higher.

"The reason for this has become clear. It is not that the infants are neglected or uncared for; it is not that the Institutions are not humanely administered; it is the fact that the infant is deprived of its natural food. Artificial feeding is what kills babies in infant homes. The New York City Health Department, in its campaign to prevent infant mortality, says, 'Ten bottle-fed babies die to one that is breast-fed.' The conclusion is unescapable that the deliberate separation of a nursing infant from its mother in the vain hope of saving some one's good name, or, rather, to save his feelings, is to deliberately incur a most serious responsibility, and is to become an accessory to a process which in 50 per cent. or more cases results in the child's death."—*Homer Folks.*

MARRIED WOMEN'S LABOUR.

Even such excellent institutions as Creches and Day Nurseries, do, to some extent at least, encourage the mother to work. On the other hand this should be the very last resort.

"The best and most paying job that the community can set any mother at is that of raising her own child to the highest pitch of efficiency and intelligence. Some day we will have sense enough to pay her to do it and feed herself well in the process; though the ultimate, most desirable and permanent solution would be to give higher wages to the father."—*Woods Hutchinson, M.D.*

Dr. Woods Hutchinson might have added to the above, to make the father worth higher wages. That is another great difficulty. But any man who does useful and necessary work, such as driving a street car, digging drains, or delivering letters, should be paid enough to allow him to marry and support a family. The mother's labour outside the home, as John Burns says, is "an individual mistake, a social tragedy, a commercial blunder." It makes the idle husband, "buttressing a beer-shop, or French-polishing the outside of a public house." And he goes on to say, speaking as an authority on the wage question, "The combined wages of husband and wife do work out rarely equal to the remuneration of the man who is determined to have a standard of comfort that will keep his wife at home and himself at work."

Dr. George Reid, in 1906, speaking in London, at the National Conference on Infant Mortality, divides the working class into three divisions, according to the question of the mother's work: 1. Those among whom the proportion of employed, married and widowed females between eighteen and fifty years of age reached or exceeded 12 per cent. 2. Those among whom the proportion was 6 to 12 per cent. 3. Those among whom the proportion was below 6 per cent. The decades 1881 to 1890, 1891 to 1900, and four years, 1901 to 1904, were studied. The infant mortality was always highest in group 1 and lowest in group 3. The average yearly infant mortality rates of group 1 were, per thousand, 195, 212 and 193; group 2, 165, 175, 156; group 3, 156, 168, 149.

THE MOTHER WORKS, AND THE BABY DIES.

Where the mother works, the baby dies. Nothing can replace maternal care. The destruction of the poor is their poverty.

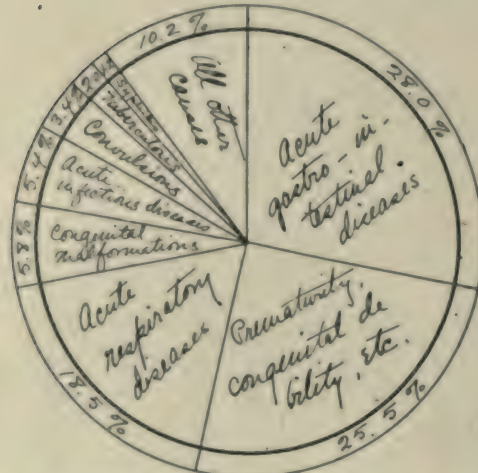
Helle examined into the social status of parents of 170 infants dying in Graz during 1903 and 1904; 112 infants who died had very poor parents; 49 children had poor parents; 9 had well-to-do parents, and no deaths occurred among the children of the rich; the percentage of the four classes being 65.9, 28.8, 5.3, none.

A supreme objection to the mother being compelled to work, is that she cannot nurse the baby if she works. (See also Diagram 10.) We all know and we should impress it upon any one with whom we have any influence, or for whom we have any responsibility, that the way above all others to save the baby and reduce Infant Mortality, is to see that the child is being nursed by the mother, and any occupation that prevents this or makes it hard, is a direct cause of Infant Mortality.

THE ILLEGITIMATE CHILD.

Then comes the question of the illegitimate child. Who is to blame? The community certainly. What have we done to rebuke and uproot vice, to protect virtue, to foster manliness and womanliness? The church cannot escape blame, nor the medical profession, nor the merchant or manufacturer, unless we can show that we have done something at least to remove temptation and to lessen wrong conditions. The grandparents presumably are to blame. They are usually the very ones who have the child kept away from the mother and out of sight. The father and mother beyond question are to blame. The only one who is really innocent of blame is the poor baby, and yet on that little child the heaviest penalty falls. It would surely be better for the community to provide, as far as possible, that the mother should nurse her own child and care for it at least a year. There are some societies and institutions which insist on this, but until we are willing to care more for the baby's life than for our own dislike to hear such things mentioned, so long the illegitimate child will die, and its blood will be required at our hands.

CAUSES OF INFANT MORTALITY.



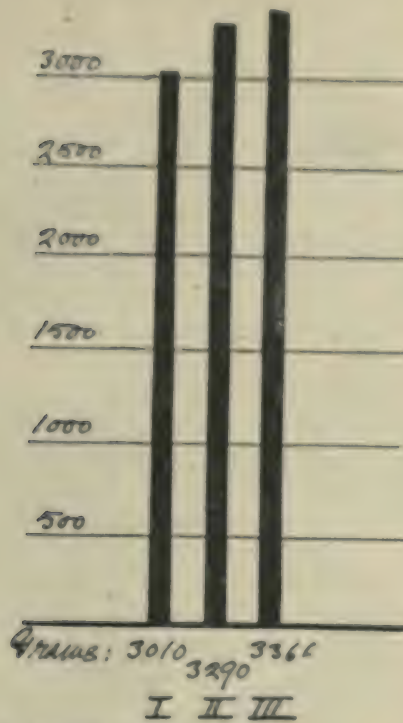
9. Causes of infant mortality. From a classification of the causes of 44,226 deaths under one year of age in New York, Philadelphia, Boston and Chicago, in a lecture by Dr. L. Emmett Holt in the course on Sanitary Science and Public Health in Columbia University, 1909.

Diagram 9 shows that the Causes of Infant Mortality are very largely preventable, perhaps 75 per cent. may be set down at once as preventable.

INFANT MORTALITY PREVENTED.

At least 50 per cent., and probably 60 per cent., or even 80 per cent., of Infant Mortality, is preventable. The proof of this statement is that it has been done. It was done in 1907 by a Parish Priest in the Province of Quebec, who cut the Infant Mortality of his parish in two. It was done by Mr. Benjamin Broadbent, the Mayor of Huddersfield, whose personal efforts, including the famous Mother's Promissory Note, reduced the Infant Mortality of Huddersfield 50 per cent.—and it was done in Hertfordshire, where the Infant Mortality in 1908 was 79 per thousand, about half what it is in Ontario.

CARE FOR THE MOTHER-TO-BE.



10. Average weight at birth:
 I. Of 500 children whose mothers worked up to the day of confinement.
 II. Of 500 children whose mothers spent ten days before confinement in a pre-natal home.
 III. Of 500 children whose mothers spent more than ten days in a pre-natal home.

Diagram 10 shows a good way to prevent Infant Mortality. Take care of the mother, and save the child that is soon to come.

Another illustration is given by John Burns. North Staffordshire is a district where many married women work. South Staffordshire is not.

| | North Staffordshire. | South Staffordshire. |
|---------------------------------------|----------------------|----------------------|
| Abnormalities at birth per 1,000..... | 15 | 6 |
| Still-births per 1,000..... | 9 | 3 |

INFANT MORTALITY IN RELATION TO THE SIZE OF THE FAMILY.

It is well known that where there is a high birth-rate, there is also a high Infant Mortality, and in a study of 160 families of the poor, wage-earning class (parents foreign-born in 97 per cent.), Dr. Alice Hamilton, of Hull House, Chicago, shows that the Infant Mortality of the families having six children, was 2 1-2 times that of the families having four children or fewer.

THE PRODUCTS OF INJURED INFANCY.

Infant mortality has another aspect. Where one dies, many are maimed for life. The unemployable, the useless, the hopeless, the feeble in body and mind, are simply "the matured products of injured infancy." Much loss of life means much loss of health and vigour. And when we have found and put into practice proper measures to prevent loss of life in infancy, we shall have prevented the permanent loss of health and strength in many of the survivors.

The Report of the Registrar-General of England, for 1903, shows for England and Wales, 51.4 per cent. of infant deaths in the first three months; 19.9 per cent. in the second three months, and 28.7 per cent. in the last six months in the first year of life. In the year 1904, in Berlin, 53.6 per cent. of deaths of infants under one year occurred in the first three months. They die in the first three months because of insufficient vitality or of insufficient care. But of the survivors, how many are really fit to live?

INFANT MORTALITY IN OTHER COUNTRIES.

We must go to Egypt and the East for the highest Infant Mortality. In Egypt it is 283 per thousand.

In Alexandria, in 1907, 319 per thousand; while in Chili, it is 326, and Russia, 268.

Grabam states that, in 1903, the infant mortality of France was 137. In the previous twenty years it was 167, and yet this death-rate ought to be still more greatly reduced, for we know that Ireland has an infant death-rate below 100. Norway, in 1902, had an infant death-rate of 75, and Sweden, 107 per 1,000. Belgium has now a rate 155 per thousand, Italy 172, and Germany 204.

INFANT MORTALITY SLOWLY DECREASING ELSEWHERE.

Four years ago it was truly said that in spite of all our progress, infant mortality remained stationary. It is not so now in England, France, Germany and the United States. In many places infant mortality has been reduced one half.

In France, 1874 to 1893, the average infant mortality was 167 per thousand. Ten years later, in 1903, it was only 137 per thousand. In Paris it was only 101; Paris has the smallest birth-rate and the lowest death-rate of any large European city.

IN THE UNITED STATES.

Grabam says: "That a general propaganda against infant mortality has been vigorously pushed all over the United States is shown by the census, 1880 and 1890. In 1880 the general infant mortality of the United States was 246 per thousand; in 1890 it had fallen to 159 per thousand, and during the same period it is gratifying to note that the infant mortality in cities decreased from 303 to 184 per thousand. This is surely a record to be proud of."

INFANT MORTALITY IN CHARLOTTENBURG.

The mortality of children for the first year of life reckoned for 100 living, amounts to 12.5. The following figures show the gradual reduction of mortality in Charlottenburg. For 1880: 33.67; 1885: 28.75; 1890: 25; 1895: 22.60; 1906: 14.16 for 100 born living. And still this is ten times as great as the general death-rate.

INFANT MORTALITY IN HERTFORDSHIRE.

In 1908 the infant mortality for Hertfordshire reached 79.0, the lowest figure it has yet touched. With slight setbacks in 1904 and 1906, it shows a steady decline. But the low figures of the last two years have been partly due to the weather. Only in 1903 has the number of deaths from diarrhoea been previously so low; and, last year, although there were eleven more infant deaths from this cause than in 1907, there were still 81 fewer than in 1906. In this connection, Mr. Francis Fremantle, C.M.O., writes: "A hot, dry summer will again raise the rate. Moreover, we have no reason for satisfaction in the loss of 80 infants out of 1,000 born. In England and Wales, the rate until recently was a little lower than in 1850, the highest rate being that of 163 in 1899; and only 40 infant deaths out of every 1,000 births can be considered strictly non-preventable."

INFANTILE MORTALITY IN HUDDERSFIELD.

There is the bright example of Huddersfield, which, in 1891, had an infant mortality of 184 per 1,000, and in 1907, 97 per 1,000. Bristol's infant mortality in 1891 was 184 per 1,000, and in 1907, 98 per 1,000. The parish of Battersea, in the same period, doubled its population and reduced its Infant Mortality from 176 to 115 per 1,000, and in some districts of Battersea, the infant mortality was as low as 52 per 1,000. In 1891, in Westminster, out of every 1,000 infants born, 164 died before reaching the first anniversary of their birth, but in 1900 the number was reduced to 148, and in 1908 it was 103.

INFANT MORTALITY IN ENGLAND AND WALES.

The following tables show the Infantile Mortality since 1850 for England and Wales. It will be seen that more progress has been made in the last five years than in fifty years previously:

| Years. | Death rate per 1,000 population. | Deaths under one year per 1,000 births. |
|-----------------|----------------------------------|-----------------------------------------|
| 1851-1855 | 22.6 | 156 |
| 1856-1860 | 21.6 | 151 |
| 1861-1865 | 20.5 | 151 |
| 1866-1870 | 22.4 | 156 |
| 1871-1875 | 21.9 | 155 |
| 1876-1880 | 20.8 | 144 |
| 1881-1885 | 19.4 | 138 |
| 1886-1890 | 18.8 | 145 |
| 1891-1895 | 18.7 | 150 |
| 1896-1900 | 17.6 | 156 |
| 1901 | 16.9 | 151 |
| 1902 | 16.3 | 135* |
| 1903 | 15.4 | 132* |
| 1904 | 16.2 | 146 |

* Unusually favorable meteorological conditions. The summer was neither hot nor dry.

INFANT MORTALITY IN EACH OF THE YEARS 1904 TO 1908.

Deaths under one year to 1000 births in the years.

| | 1904 | 1905 | 1906 | 1907 | 1908 |
|--------------------------------------------|------|------|------|------|------|
| England and Wales..... | 145 | 128 | 132 | 118 | 121 |
| 76 great towns, including London..... | 160 | 140 | 145 | 127 | 129 |
| London..... | 145 | 130 | 131 | 116 | 113 |
| 142 smaller towns..... | 154 | 132a | 138 | 122 | 124 |
| England and Wales, less the 218 towns..... | 125 | 113b | 116 | 106 | 110 |

From "Parliamentary Intelligence" in *The Lancet*, Dec. 11, 1909.

INFANT MORTALITY IN THE FIRST NINE MONTHS OF THE YEARS 1904 TO 1909.

Deaths under one year to 1000 births in the first three-quarters of each of the years.

| | 1904 | 1905 | 1906 | 1907 | 1908 | 1909 |
|-----------------------------------------|------|------|------|------|------|------|
| England and Wales..... | 149 | 131 | 135 | 113 | 115 | 106 |
| 76 great towns, including London..... | 165 | 142 | 148 | 118 | 123 | 114 |
| London..... | 149 | 129 | 133 | 110 | 110 | 104 |
| 142 smaller towns..... | 157 | 136a | 140 | 118 | 117 | 107c |
| England and Wales, less the 218 towns.. | 127 | 116b | 117 | 104 | 105 | 97d |

a., 141 small towns; b., less 217 towns; c., 143 small towns; d., less 219 towns.

From "Parliamentary Intelligence" in *The Lancet*, Dec. 11, 1909.

WHAT IS DONE IN OTHER COUNTRIES.

FRANCE.

In 1904 Madame Coulet (with a capital of 10 francs) began a Restaurant in Paris, where any poor mother, who shows that she nurses her child, receives every day two good meals, free. These meals are given at 11 to 1 in the morning, and from 5.30 to 7.30 in the evening. Anyone applying also received soup, bread and cheese between 8 and 9 a.m. As M. Coulet says:

"At every meal they get soup as much as they desire, then lentils, beans, potatoes, cabbage or macaroni, as much as they wish to have. Bread, of course, in the same manner, and meat, mostly beef, sometimes veal and pork. A pound of meat is allowed for six or seven persons. Then they get cheese or a stick of chocolate." There are now five Coulet Restaurants, one has given 100,000 free meals, and all have saved many lives.

There are other efforts made in the same direction, and among these are the Consultation de Nourrissons, and an off-shoot from it called the Goutte de Lait, which is really a milk dispensary from which infants are fed under medical supervision upon sterilized milk, and where breast-feeding is encouraged, as far as possible, though many of the children are those for whom breast-feeding is impossible.

The Consultation, on the other hand, is attached to a Maternity Hospital, where the expectant mother is placed, and after she leaves the Hospital, she is required to bring the child every week to the dispensary, where it is seen by a doctor, weighed, all the particulars about it recorded, and, if necessary, sterilized milk is given. But breast-feeding is earnestly encouraged. At the Clinique Tarnier, 527 children were under supervision for two years, required by the rules, and 448 were nursed by the mother.

UNITED STATES OF AMERICA.

In the United States, great efforts are now being made to reduce Infant Mortality, and, as we have already seen, nowhere more successfully than in New York and Chicago.

In the first place, wherever you improve general conditions, you reduce Infant Mortality. The infant death-rate is the best test we have of the general sanitary conditions of any city. Improve the water supply, the sewerage system and the system of disposing of refuse, introduce better pavements, such as asphalt, and at once there is a decline in Infantile Mortality. Since the tenement houses have been better inspected, and more open spaces provided, and free ice has been available for some of the poorest mothers, and anti-toxin supplied by the Board of Health, and Sea-Breeze and other places for New York's poor children to get the ocean air, have been founded, of course the Infant Mortality is less. Above all, something has been done to improve the milk supply. First, sterilized milk; second, pasteurized milk; third, clean milk. And every one of these plans has been good. Every one has helped.

Here is the mortality at the Infant Asylum at Randall's Island for three years before, and six years after, a pasteurization plant was installed by the Hon. Nathan Strauss:

BEFORE PASTEURIZATION.

| Year. | No. of Children Treated. | No. of Deaths. | Death Rate per cent. |
|-----------|--------------------------|----------------|----------------------|
| 1895..... | 1,216 | 511 | 42.02 |
| 1896..... | 1,212 | 474 | 39.11 |
| 1897..... | 1,181 | 524 | 44.36 |

AFTER PASTEURIZATION.

| Year. | No. of Children Treated. | No. of Deaths. | Death Rate per cent. |
|-----------|--------------------------|----------------|----------------------|
| 1898..... | 1,284 | 255 | 19.80 |
| 1899..... | 1,097 | 269 | 24.52 |
| 1900..... | 1,084 | 300 | 27.68 |
| 1901..... | 1,028 | 186 | 18.09 |
| 1902..... | 820 | 181 | 22.07 |
| 1905..... | 542 | 101 | 18.63 |

In Boston, last summer, as described in a recent number of *Hygiene and Physical Education*, the milk stations were managed by the Committee on Milk and Baby Hygiene. A trained nurse, who gives all her time to the work, is attached to each station.

"Milk is obtained from clean, fresh farms, under the supervision of the Committee, the equipment and the employees being under their rigid inspection.

The milk is furnished at cost (8c. per quart) to pregnant women, to nursing mothers, to children old enough to take whole milk, and for home modification to those mothers capable of learning how to modify the milk at home. Milk properly modified in a well-equipped laboratory under the direct supervision of a physician and a bacteriologist is also supplied, at cost (at the rate of 4 1-2c. per pint), in a suitable variety of formulae.

No milk is furnished to sick babies without a physician's prescription, and the Committee's physicians, who meet the mothers in the Consultations, carefully avoid treating any sick babies, but refer them, instead, to the family doctor or to a hospital or dispensary. It is felt that it would be in the highest degree improper to allow the Consultations to become Clinics, inasmuch as the existing agencies of relief for the sick babies of the poor in Boston are already ample. The work of the Committee is prophylactic and educational—cultivating a field peculiarly its own and hitherto untilled—and a sharp distinction is to be kept between it and the work of existing agencies for the relief of sick babies. This attempt at solving the problem of Infant Mortality attacks that problem nearer its root and strives for that prevention which is better than cure, while furnishing, in addition, the means for making sick babies well, so far as proper food and instruction can go, in co-operation with the family physician and the Clinic. In this way duplication of relief agencies is effectually avoided and co-operation in all ways is made thoroughly practicable. Milk is furnished to well babies only after an examination of the mother shows that she is unable to nurse, or that she has not enough nourishment for her child. Where the mother has insufficient milk every effort is made to conserve and to increase what she has. Detailed directions are given her by the physician in charge of the Conferences how best to increase the flow, and milk is furnished *for the mother*, as thus an economic saving is effected, because two individuals receive nourishment. The value of the educational influences thus set in motion, for the present and for the future, is incalculable.

It is found not infrequently that a mother applies for milk for her infant, when upon examination she is shown to have an abundant supply of breast-milk, but owing to the necessity of earning her and its living she must wean the baby and go out to work. For these cases the Boston Provident Association furnishes a pension so that the mother may remain at home and nurse the infant. This is one respect in which the Boston work excels, it is believed, that of any similar organization in the world.

Finally, for those babies who need supplementary or exclusive artificial food, or who come with a physician's prescription, milk is furnished and this milk is given out daily by the trained nurse in charge of the station. Ice is also supplied to those who are unable to secure it, in order that the milk may be kept cold at home. Inexpensive ice-boxes devised for this purpose can also be obtained at cost at the stations.

An outfit for the home modification and pasteurization of milk has been prepared and will, together with simple printed directions, be furnished at cost to the mothers at the stations.

All mothers who secure milk at the stations are required to bring their babies once a week to the Conferences or Consultations. To these Conferences are also encouraged to come expectant mothers and the older girls, who in many cases are obliged to be "little mothers," to the younger children. This has seemed advisable in order that the benefit of the instructions given may have a wider circle of usefulness.

The Consultations usually, but not always, begin with a short general talk to those present. This is not always practicable and sometimes the general remarks are deferred until the end or omitted altogether. Individual attention is considered much more important. Sometimes a demonstration is given instead of the talk. In the talks brevity and clearness are aimed at. They are given by physicians who speak in the native tongue of the mothers present. The language used is as simple as possible and only the most important points are emphasized, all unnecessary details being omitted. An attempt is made to give the reasons for the advice and illustrations are used which are likely to appeal to the common sense of the mothers. They are then encouraged to ask questions, however simple, and it is in this way that some of the most valuable points are brought out and enforced. Regularity of feeding, bathing, clothing, fresh air—these are some of the topics dealt with. A talk would run somewhat as follows: "A large number of babies die every year in Boston from 'summer complaint.' Most of these babies could be saved if the mothers knew just how to feed and care for them. That is what we have come here for, to tell you how to care for your baby. Ask questions of the doctor, not of some neighbour. The doctor has studied babies for many years and his advice is safe to follow. That of the neighbour may not be.

"Do not dress your baby too warmly in the hot weather. Have the clothing thin and light. Consider it as drapery rather than clothing. The baby will not 'catch cold,' if the clothing is reasonably light.

"Let the baby kick. Have the arms and legs free. Babies love to kick. That is the way they get the exercise they need. Do not bind up the chest. If the chest is bound tightly the baby cannot breathe easily.

"Bathe the baby every morning in lukewarm water and in hot weather sponge it off two or three times each day.

"Don't allow the napkins to remain on the baby after they are soiled. If you do they will make the skin red and sore.

"Every mother should try to give her baby the breast. It is better for the mother as well as better for the baby. Ten babies die on the bottle to every one on the breast. Even if you have enough for only two or three feedings, still give the breast and help out with the bottle.

"If you have to give the bottle be sure that you keep the milk cold until you are ready to warm it for the baby. Be sure to keep everything very clean. If the bottles and the nipples are not clean the baby may get sick and may die.

"In feeding the baby have the baby in the right position. The nurse is showing you how to place the baby to be fed.

"Feed the baby regularly. If you do not you will upset the child's stomach. How would you like to have your meals every hour? You would soon lose your appetite and detest food. It is easier to upset a baby's stomach than a grown person's. If the baby cries he may not be hungry—he may be thirsty. Give him water. He needs it. But give no milk except at the times ordered. If he doesn't take it all in 20 minutes take the bottle away. And don't use what is left in the bottle. Throw it away and use fresh milk next time. If the baby is asleep when the time comes to feed him, wake him to be fed.

"Do not give the baby tea or coffee, or a 'taste' of the things you have to eat. One taste may give the baby diarrhoea and from the diarrhoea it may die.

"If the baby has green movements it is sick. Stop feeding and give water instead and take it to the doctor. Don't wait because your neighbour tells you it is only the teeth. It probably isn't the teeth, but the food. Get advice from the doctor.

"Here is a baby that has gained only 3 ounces in the last 2 weeks. This baby has been fed every hour. That is wrong. The mother was told to feed the baby every 2 hours, but she thought he was hungry and fed him every hour and he has not gained. If she will feed the baby every 2 hours he will gain faster. Let us see how much he will gain by next week.

"Here is a baby that is vomiting. It is on the breast. The mother has no regular time for feeding but gives him the breast every time he cries. He cries all the time. He is a very fussy baby. He should be fed regularly every two hours. The mother is going to try regular feeding and let us know next week how the baby has improved.

"This baby is 6 months of age. He has a severe diarrhoea and is 'vomiting everything he eats.' He looks sick. His mother goes out to work and his older sister cares for him. The day before yesterday, she gave him a taste of ice cream from one of the little cones that the children buy. The baby liked it so well that he was given seven of them, which he ate, one after the other. That is why he is now sick. You should not give your young babies such things to eat. You should give nothing but milk except by the advice of the doctor."

The demonstrations consist of the method of bathing and sponging the baby, the cleansing and care of bottles and nipples, the preparation of barley water, and kindred subjects.

The value of the social interchange of experience among the mothers themselves is an important item to be considered.

At each Conference each baby is stripped, weighed by the nurse and examined by the physician and records made of the weight and the condition. Valuable lessons are learned from these records. If the child is gaining properly, the mother is encouraged to persevere. If the gain is not sufficient or the baby is vomiting or having diarrhoea, an effort is made to find out the cause and to remove it. Mothers are constantly found who give their infants tea, coffee, bread, cake, soup, beer, and wine. Special instruction of each mother is aimed at in these Conferences and individualized advice is always given. This necessitates in some cases long hours for the physicians and nurses, but so great is the interest manifested in the work that all the time necessary is ungrudgingly and gladly given. The nurses spend the time which they have free from the dispensing of the milk and from the Consultations in visiting the homes of the patients and seeing that they do actually carry out the advice given by the physician. They give the mothers instruction and show them how to do the necessary things at home. One nurse got so interested in a weak baby, whose mother was absolutely incompetent, that she visited the house regularly three times a day for several weeks. Without her devoted care the child must have died. In fact without the conscientious follow-up service of a well-trained nurse, this whole plan would lack a great part of its efficiency.

A large printed card of instructions has been prepared and distributed in the homes. This is issued in three different languages. Printed slips of directions in several languages have also been prepared and are in use.

A model set of infants' clothes is on exhibition at each station, so that mothers may copy them.

The nucleus of a reference library on infant mortality and the effect of milk thereon, and of the milk stations in reducing it, has been formed, and contributions are requested of books, articles and reprints, which will be kept properly arranged and indexed, and will be available to physicians and all others interested. The need of such a collection is self-evident.

It will be seen on reviewing the necessary means for diminishing infant mortality as deduced from the known facts at our command, that this movement supplies them all. Education of the prospective mother, of the mother, of the dairyman, of the public; help in the nutrition of the expectant mother; guidance of the mother in her treatment of the new-born babe; encouragement of breast-feeding; furnishing where necessary of a pure milk properly modified, drawn under proper conditions from healthy inspected cows; continual oversight of the infant, with advice ready when needed to prevent illness; continual, educational, uplifting influences, at the Conferences and in the homes; all these this system supplies in the most logical and direct way.

It would seem that such should appeal to every person interested in the betterment of his fellows. It is not an untried system, but has been operated successfully in other cities.

The enthusiasm that soon pervades everyone brought in close contact with this work is one of its most remarkable features and vistas of its immense possibilities are "opening more widely, more surely, more radiantly," day by day. It is evidently destined to lead to yet undreamt-of good. Just as the Medical Inspection of Schools had for its original object merely the early detection and isolation of contagious diseases, but has by a natural growth become so important a factor in the betterment of all that pertains to school life, so this attempt to prevent disease by inspection and supervision of infants, (who really need such supervision much more than older children, as witness the comparative mortality rates) will doubtless lead to much more than we at present realize. We feel that we are building better than we know. And if it be true, as was said by Phillips Brooks, that "He who helps a child helps humanity with a distinctness and a definiteness which no other help given to human creatures can possibly give," surely here is one of the most logically worthy objects in the wide world for the exercise of practical philanthropy.

Since the Consultations were established under Dr. Conally's direction in June, one of the five hundred babies has died. There has been a fifty per cent. increase in the demand for the modified milk furnished at cost by the committee—this in spite of greater care than ever to prevent the early weaning of babies whose mothers can be made to nurse them. During the month from June 24th, the date of opening the first Consultation for mothers, to July 24th, 1909, the number of deaths of babies in Boston was 104 less than during the corresponding period of 1908." This plan, as outlined above, now in operation in Boston, under the direction of Mr. Walter E. Kruesi, is perhaps the best and most effectual. Of the value of such work there can be no doubt.

The Milk Committee of the New York Association for improving the condition of the poor, has conducted a campaign which has already had splendid results. Dr. Darlington, the head of the Department of Health in New York, has under him a corps of physicians and nurses, who, during the school vacation, devote themselves wholly to Health Department work, chiefly for the babies. A Register is kept of every baby in New York, and mother and baby are visited, advised and helped.

CONFERENCE AT YALE UNIVERSITY.

On November 11th and 12th, 1909, the American Academy of Medicine held a conference on Infant Mortality at Yale University, where an impetus was given

to the study of the question and there was gathered a large number of those interested in the question, citizens, physicians, philanthropists, doctors, nurses, educators and others. Several of the conclusions reached have already been referred to, especially those in Dr. Devine's paper. A brief list of some of the more important papers follows, and it will be seen at once that this congress was a remarkable one. In point of attendance and interest, it would rank high, but its significance includes also the plans suggested, and the far-reaching character of its conclusions. The personnel of the meeting was unusual. Not talkers, but workers, gathered there. Among the papers were:

The Relation of Alcoholism to Infant Mortality, Dr. J. H. Mason Knox, Jr., Associate in Pediatrics, the Johns Hopkins University Medical School.

The Relation of Tuberculosis to Infant Mortality, Dr. Clemens von Pirquet, Professor of Pediatrics in the Johns Hopkins University.

The Relation of Syphilis to Infant Mortality, Dr. Richard A. Urquhart, Instructor in Pediatrics at the Johns Hopkins Medical School, Baltimore.

Institutional Prevention of Infant Mortality, Mr. Homer Folks, Secretary of the New York State Charities Aid Association.

In institutions for providing a home for presumably well infants mortality has always tended to be very high. Of 28,436 babies received at the St. Petersburg Foundling Hospital, 24,272 died, 85 per cent. In such institutions mortality has been reduced, but is still excessively high, not more than 50 per cent. surviving amongst the best institutions.

This is not from neglect. Artificial feeding is what kills babies in infant homes. Babies and their mothers should be kept together.

Hospitals for sick babies are necessary and valuable.

PROVIDING SITUATIONS FOR AND OTHERWISE ASSISTING HOMELESS "MOTHERS WITH THEIR INFANTS."

Miss Mary R. Mason, Agent of the Committee on Assisting and Providing Situations for Mothers with Infants, New York City.

Abstract: The death-rate is frequently 90 to 100 per cent. when babies are separated from their mothers.

Agencies find it entirely practicable to place women with babies in domestic service, chiefly in the country or small towns, with wholesome environment. Increasing stringency in the domestic service market increases desirable opportunities. The Philadelphia Society, 1908, placed 609 mothers. In 15 years the New York Agency has provided over 7,000 situations. Statistics are difficult to present as the situation is usually only temporary (until father obtains work, or families are reconciled; many widowed or unmarried marry). In three years (1900-1902) of the mothers kept track of four-fifths of the babies lived and were in good condition; one-fifth died or were in poor condition.

Agencies need closer co-operation with maternity hospitals to induce mothers to keep, not abandon their babies; more temporary homes; more places for training incompetent mothers. The plan of keeping mothers and babies together is susceptible of much wider application.

NATIONAL ASSOCIATION TO PREVENT INFANT MORTALITY.

At the conclusion of the Conference, it was decided to organize a National Association for the Study and Prevention of Infant Mortality, which was accordingly done.

The directors as elected held a meeting and elected officers and arranged to hold the first meeting in Baltimore some time next fall. Dr. J. H. Mason Knott, Jr., of Baltimore, was elected President; Dr. Henry I. Bowditch, of Boston, Secretary. Prof. Charles R. Henderson, of the University of Chicago, was named as the President-elect.

GREAT BRITAIN.

In October, 1905, an International Congress on Infants' Milk Depots was held in Paris, and among others there were present, Mr. Benjamin Broadbent, Mayor of Huddersfield, and Baillie W. Fleming Anderson, Chairman of the Health Committee, of Glasgow. On their return, these gentlemen used their influence to have a National Conference on Infant Mortality summoned in Great Britain. The result of their efforts was the First National Conference on Infant Mortality, under the patronage of their Majesties King Edward VII. and Queen Alexandra, in Caxton Hall, Westminster, on June 13th and 14th, 1906. The President of the Conference was the Rt. Hon. John Burns, M.P., who delivered an inaugural address of a memorable character. After pointing out that in the last 50 years the average age of engineers has been extended ten or twelve years, he adds, "In that period of fifty years, the infant mortality has been stationary, or slowly declining. Wealth has increased, but the infant has not shared in it; physical comforts undoubtedly have enlarged, but the weakest, the smallest, and the dearest to us all, alone bear unduly the penalty and the burden of death." Mr. Burns' chief remedy for Infant Mortality is, First, "Concentrate on the mother. Let us glorify, purify and dignify motherhood by every means in our power. Let us see to the nursing child in every way. Nourish the mother, you feed the child."

The Conference produced a profound impression in Great Britain, and doubtless this influence, and the influence of a second Conference of the same character, in March, 1908, again under the patronage of their Majesties, and under the Presidency of the Rt. Hon. John Burns, had a determining part in the Children's Bill, (brought in by Mr. Herbert Samuel, M.P., a leading member of the Conference), recently enacted, which has special provisions in regard to Infant Mortality. Other legislation mentioned by Mr. Burns, in his President's address at the second National Conference, as being closely connected with the work of the Conference, were as follows:—

- The Medical Inspection of School Children.
- The Optional Feeding of School Children.
- The Butter and Margarine Act.
- Prohibition of Night Work for Women.
- Laundries' Hours' Act.
- Notification of Births Act

and the attention given to legislative work in other subjects, particularly in regard to milk. Mr. Burns also draws attention to the fact that where illiteracy prevails most among women, the Infant Mortality rate is proportionate; and said that whereas in 1870, 199 women who were married, signed their marriage lines with a cross, only 20 do so to-day.

WHAT WE CAN DO TO PREVENT INFANT MORTALITY.

I.—NURSING.

It is evident, and it must be made known and thoroughly taught and impressed upon everyone, that the great and most effectual and important means of lessening infant mortality, is that the baby should be nursed by the mother. The mother needs adequate nourishment, skilled attention and protection from overwork. Her great work is the child until it is a year old at least, and if in want she should be supported (see Boston plan) by a pension while she is doing this, and both she and the child should have medical supervision.

We forget that good nourishment is the urgent necessity of a nursing mother. Hutchinson says that—

“The chemical energy expended daily in nursing an infant six months of age, would be sufficient to raise a ton weight 800 feet high—or more than twice as high as the top of the dome of St. Paul’s.”

WHY DOES A MOTHER NOT NURSE HER CHILD?

1.—Ignorance—She does not know that it makes all the difference to the child. When she does know, she nurses it. Most mothers think cow’s milk is just as good. We must tell her that is not so.

2. Because the mother-in-law, or the sister-in-law, or the nurse, or the neighbour, or some other meddling busybody, has told her not to, etc. Many people ignorantly give this advice. We must give her skilled medical advice.

3. Because, in a very small proportion of cases (not more than 1 in 100, or 1 in 1000) she cannot nurse her child, or, (rarer still) the milk does not agree with the child. Here again she needs skilled medical advice.

4. Because she has to work and she cannot take the child with her or come back to it. This is something we must set our faces against as a public danger. Everything possible must be done to avert this calamity to the child, and prevent the community making the blunder of allowing it. *It should not be allowed to happen. The mother should have a pension, if necessary, to take care of the family. She is the one to save the baby, and the only one.* Later on, if the baby is bigger, a few months old, and the mother must work, everything should be done to improve conditions for her. A nursing mother, if she has to work, should have short hours, and lunch early, and generally good conditions. If sanitary conditions were good—light, air, and cleanliness—it would be much better.

In England, the Factory Act of 1901 states: “An occupier of a factory or workshop shall not knowingly allow a woman or girl to be employed therein within four weeks after she has given birth to a child.”

In Mulhouse, Mr. Dollfus, who owned a large cotton mill, established a fund to which all the married women subscribed, and he personally contributed. Each woman subscribing received from the fund sufficient for her support during the two months following her confinement. On resuming work at the end of this two months, she was granted time at mid-day to return home and care for her baby. This procedure alone reduced the infant mortality more than 50 per cent.

In France and Italy the advantages of breast-feeding are recognized by the government. In France it is common in factories to post placards describing the advantages of breast-feeding and offering every opportunity to women to nurse their infants, including special rooms; and the women are allowed leave of ab-

sence at intervals for this purpose. In Italy each a room is obligatory in every establishment employing more than 50 women.

The chief advantage of Infants' Milk Depots and Consultations is, that they encourage nursing by the mother, and give skilled medical supervision and nourishment for the mother.

At Varengeville before the establishment of the Consultations des Nourrissons not a single mother breast-fed her own child. At the end of the first year the percentage of breast-fed children was raised to 47.5 and at the end of the second year to 75 per cent.

At Saint-Pol only 22 per cent. of mothers breast-fed their own children before the establishment of the Consultations; at the end of the first year the percentage was raised to 35 per cent. and at the end of the second year to 71 per cent.

At Dr. Brosset's Consultation in the rue St. Dominique in Paris only 46 per cent. of mothers breast-fed their own children before the establishment of the clinic; at the end of the first year the percentage had been raised to 62 per cent., and at the end of the second year to 81 per cent.

Before the establishment of Dr. Brosset's Consultation in the rue Oudinot, 61 per cent. of mothers breast-fed their own children; at the end of the first year this percentage had been increased to 67 per cent., and at the end of the second year to 71 per cent.

The close relation between the increase in the number of breast-fed children and the decrease of infant mortality indicates the true responsibility of a milk depot. In its normal development it should sell less and less modified milk to babies and more and more whole milk to mothers; becoming ultimately a clean milk depot from which food is fed through the mother to the child."

II.—EDUCATION.

A campaign of education should be undertaken forthwith, to arouse public sentiment, to awaken interest and to enlist the co-operation of patriotic and able citizens who would guide the movement to good results. The clergy, the various societies, the medical profession and others are much needed for this. Practically, we expect the ideal mother to know everything by instinct, without giving her any chance to learn. We might much better expect her to read by instinct, for the alphabet can always be found not far away. We teach reading, and we leave parenthood to come by chance. It does not so come, and there is great need that our people, most of whom are to be parents, should be educated with this great privilege and responsibility and power in view. It would almost seem that as yet we have barely recognized the fact that instinct has lapsed in us, to give play to intelligence. Humanity could never have been evolved at all if mothers did not love babies. But of all details she is bereft. She has instead, an immeasurably greater thing, intelligence; but whilst intelligence can learn everything, it has everything to learn. Instinct can learn nothing, but is perfect from the first, within its impassable limits.

The mother cat not merely has a far less helpless creature to succour, but she has a far superior inherent or instinctive equipment. She knows the best food for her kitten. She does not give it "the same as we have ourselves," but her own breast invariably. None of us can teach her anything as in washing her kitten or keeping it warm. She can even play with it, and so educate it, in so far as it needs education. There are mothers in all classes of the community who should be ashamed to look a tabby cat in the face."—*Dr. Siefert.*

We educate and train and instruct for every other possible calling and responsibility, and as yet we have failed to evolve a training for the vocation of parenthood, the most important of them all. As a nation we have only one chance to do this. It is in our national schools.

When the mother-to-be has become the mother-that-is, she is a great deal besides. She is often cook and seamstress and laundress and housekeeper and all. There is no apathy on the part of any mother one ever meets as to the welfare of her child. But she does not know. How is she to learn? The school seems the only place. And here the school doctor and the school nurse will come in with the love of the work, which is the mark of the truly professional man or woman; they will find a way, without hurting the feelings of the most modest child, in tactful, and restrained and scientific language, to impress on the minds of boys and girls about fourteen years of age, before they leave our public schools, the most important principles on which our duty to our heirs and successors, depends. In Germany, it is customary before boys leave school, to send a notice to the father that a lecture is to be given by a medical man on such important topics, and the father is asked to say if he is willing that the boy shall attend, and invited to attend himself. Similar lectures should be given to girls by a medical woman. Think what an opportunity we miss when we do not avail ourselves of the one chance we have to tell the youth of the nation things the future parents ought to know. How quickly we could tell everybody, for example, the supreme importance of the nursing of children at the mother's breast, if we took this plan.

Canadians should covet the reputation of having good children and being good parents. It is true patriotism.

III.—INTEREST.

The greatest lack of all is a lack of interest in this problem. It is a great safeguard for the people when rulers and influential citizens have lived a right and natural life and when the baby fingers of child or grandchild or stranger child can reach the heart of those who guide public policy.

In San Francisco last summer, a wealthy woman looked at her maid's baby and saw how pale and thin he was in contrast with her own chubby child. She found that the poor child was being boarded by the Associated Charities, and they could not afford to buy certified milk. She brought the matter before a College Women's Association, to which she belonged—the Association of Collegiate Alumnae. They took the matter right up, planned a campaign, issued 2,000 Coin Cards with this on one side:

“When the fog rolls in from the ocean, and the wind begins to blow,
And you pack up your belongings for the seashore or the snow;
Won't you leave behind some money for milk that's clean and pure,
For the little helpless babies of San Francisco's poor?”

And this on the other:

“Certified milk means health and a fighting chance against tuberculosis and other diseases. Certified milk means a decreased infant mortality. Surely the little ones deserve a chance. Help us provide certified milk for the babies who must otherwise depend upon milk from impure sources.”

In two days the coin cards brought in \$55.44. What did it? The kind eyes of the wealthy mother that looked on the other baby.

Nobody is too busy to take interest in this, the nearest question of national welfare. The Bishop of London, the Rt. Rev. Winnington Ingram, is said to be the busiest man in the world. In July, 1909, he found time to go to the St. Clement's Maternity Home, at Fulham, in that East End of London he knows so well, in order to encourage the efforts made there to lessen infantile mortality, which is there very great. Prizes were offered to all the mothers whose infants showed care and attention, and these were distributed by one of the Princesses of Teck, assisted by the Bishop of London. Seventy-eight prizes were given, most of which were articles of clothing, but two of them were the well-known collapsible carriages. The Bishop took one of the carriages, played a prize winner in it, and wheeled the baby along the terrace, followed by the Vicar, who did likewise. The Bishop, in his speech, said that he could not imagine a more delightful scene than the one they were witnessing that afternoon. It meant a great deal both to the nation and to the church. He had been for years trying to back up the efforts both of Miss Heatley and her excellent staff at the Maternity Home, and of others, in seeing that the children of the nation were properly fed and looked after in their early years. No one who saw those fat, rosy, smiling, jolly babies could fail to acknowledge that a great improvement had been effected. He loved to see their dear old church in the thick of everything that was for the good of the people. They had to learn from their Master to care for the bodies as well as for the souls of the people, and he could not imagine a more beneficent work for the church to put her hand to than to help people to bring up their children, not only fat and rosy, but good Christians also.

Is there any reason why someone in every parish in Ontario should not do what a parish priest did in Quebec?

In Vol. 9 *Bulletin Sanitaire*, published by the Provincial Board of Health of Quebec, we find that he noticed the large mortality among infants in his parish and came to the conclusion that the ignorance of their mothers and lack of proper care were principally responsible for the sad results. Speaking from the pulpit, he pleaded with the mothers of children about their duties towards their offspring and enlarged on the proper care of infants.

Before the sermon was given to the mothers 19.78 per cent. of new-born children died in that parish; since then 8.53 per cent. have died; a saving of 18 lives in one parish in two years (1907-1908).

The greatest agency to prevent Infant Mortality is the sympathetic, efficient experienced visitor, who reaches the mother if possible before the baby is a day old. The question of nursing or no nursing is generally settled one way or the other within the first 24 or 48 hours.

IV.—EFFICIENCY.

We always come back to the personal equation. The efficient person, the adequate and strong character, the person of principle and affection, will succeed where the weakling, the unemployable, untidy, unthrifty, good for nothing, will never succeed.

Dr. Hope, of Liverpool, took 874 families, consecutively, because an infant had died in each family, and found that the total number of children in these families was 3801, and that 1895 had perished—practically all in infancy—a rate of 498 per thousand. Of such is one special case, Mrs. E., who had 14 children, and 10 of them died in infancy, all of them being artificially fed. She is an incapable woman and regards the death of her children as an inevitable matter.

On the other hand, Mrs. S., of No. 6 T. St., has 7 living children, all healthy, the youngest two being twins of four months old. Mrs. S. is a genius. The father is a dock labourer, and his wages are about 12s. per week. The house is very clean and comfortable, and the children are well cared for, those of school age attending school. The mother is nursing the twins regularly, and receiving milk for herself from the Corporation Milk Depot, and it is a striking example of what can be done with very little money, when it is not wasted in drink and gambling.

V.—NOTIFICATION AND REGISTRATION.

Births should be notified at once. The new English Act provides that this must be done within three days. In this Province the limit is 30 days. In Huddersfield, all births practically are notified within 48 hours. The best way would seem to be to give a fee of 1s. or 2s. for notification. It is worth it. Nothing can be done until we know where the babies are, and when they arrive. Then we can send visitors (skilled and experienced—the mothers know too much to listen to theorists) and get into touch with them at once and give printed information and other information. That is what our enterprising friends, dealers in "Baby Exterminators" (patent foods) do now. They send to every mother as soon as the birth appears in the newspapers, much printed matter, with congratulations and pictures and advice, most of it bad.

VI.—INFANT MORTALITY BEFORE BIRTH.

Probably, as soon as we are educated a little farther, the doctor should also be requested to report, or notify all cases of abortion or miscarriage. There are grave reasons for this. It is only too well known that in this Province we have disgraceful instances of criminal abortion, every little while.

Always, on a death certificate for a child under a year old, it should be stated how the child was fed, in detail, and how long it was nursed.

The number of births and deaths should be reported weekly to the Provincial authorities and published in the newspapers. This would stir up everybody and keep up public interest, especially where improvement may be noted.

The visitor's work in connection with the Health Department is most important. One fully qualified visitor is required for about every 1000 infants registered in a year.

VII.—INFECTIOUS DISEASES.

Protection of nurslings against infectious diseases is very important.

Free diphtheria anti-toxin for poor children should be provided by the Health Department.

VIII.—OVER-CROWDING.

Overcrowding is present in at least one city in Ontario. There are families living in one room. This problem should be dealt with at once. It causes Infant Mortality.

IX.—INSTITUTIONS.

Institution children whose mothers are dead or absent, should have a Nurse-Mother, who will at least sometimes hold the babies in her arms.

Babies should not be allowed to remain in Institutions. Every effort should be made to get a home for the mother and the child. Nurses should visit these

homes regularly, and the infants should be carefully protected by law. No Institution should be allowed to take a baby separated from its mother, (often before she has seen it) for \$50 or any other sum. It is said that this is done at present in certain places in Ontario.

X.—ALCOHOL.

Alcohol is poison to a child, and if the mother drinks it, the baby is poisoned. This should be made known.

XI.—PARENTAL RESPONSIBILITY.

Parents' responsibilities, especially in the case of fathers, should be brought home to them. The great attention directed to this subject in Britain, France and the United States, has enforced and strengthened the sense of parental responsibility.

XII.—MILK.

At about nine months of age, the baby should begin to use clean cow's milk. Sometimes babies have to use it sooner. Improvement in the milk supply alone has been known to cut the infant mortality rate in two. We urgently need legislation defining clean milk, giving a legal standard, both chemical and bacteriological, and requiring a nourishing milk with a low bacterial count and clean. The provision of free ice in summer is very important for poor mothers. Milk Depots are good, but Consultations are better, and their success is measured by the small quantity of milk they sell and the large number of nursing babies and mothers that come to them.

XIII.—CITY CONDITIONS.

Conditions in the city must be made as nearly like good country conditions as possible.

More parks and open spaces are needed, more workingmen's houses on the outskirts of the city. More chances for holidays and fresh air funds, and more sympathetic neighbourliness, a matter in which the health visitor can help.

XIV.—FOODS AND DRUGS FOR BABIES.

Foods sold for babies should be labelled in accordance with facts, and not described as "a perfect substitute for mother's milk." These foods should not be used till the baby is nine months old at least, and then only by the advice of a physician.

Mrs. Winslow's Soothing Syrup should be marked in accordance with its contents. It contains opium.

Steedman's Powders should be marked as containing calomel and starch, and so with similar preparations.

CONCLUSION.

Looking back only three years, it will be seen how great has been the progress in Britain about Infant Mortality. It is far ahead of Ontario. England, with an infant mortality rate of 132 per 1,000, is far ahead of Ontario; and Scotland and Ireland are farther ahead still. We have not even the figures for 1908

published, and in 1907, Ontario had an infant death rate of 150. London itself has an infant death rate of 113, and England is a country where the conditions of life are not easy, "where industries flourish, where mothers labour, and where babies decay."

"MISTRESS IN MY OWN."

It remains for those who proudly say,

"Daughter am I in my Mother's house,

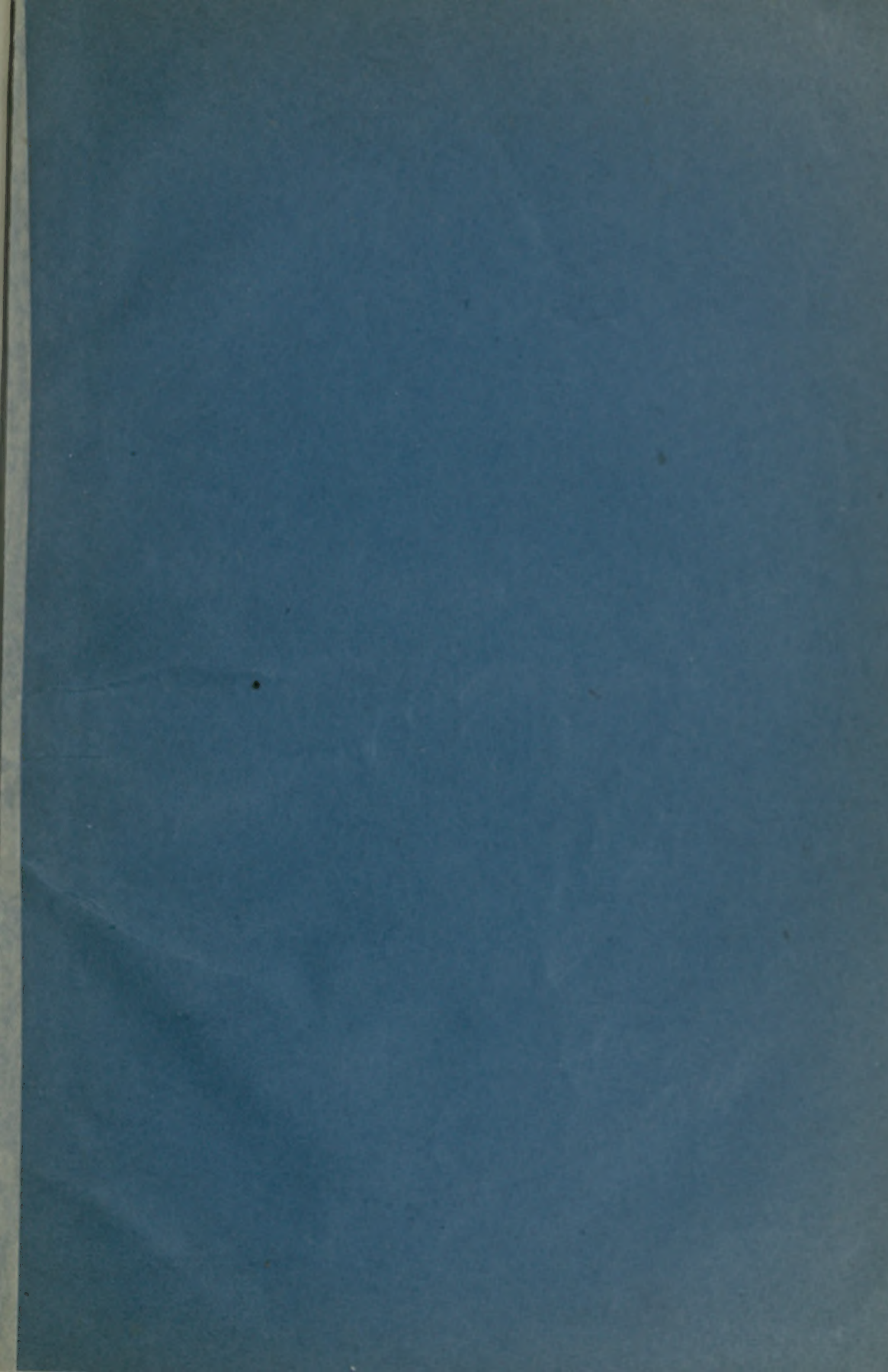
But Mistress in my own,"

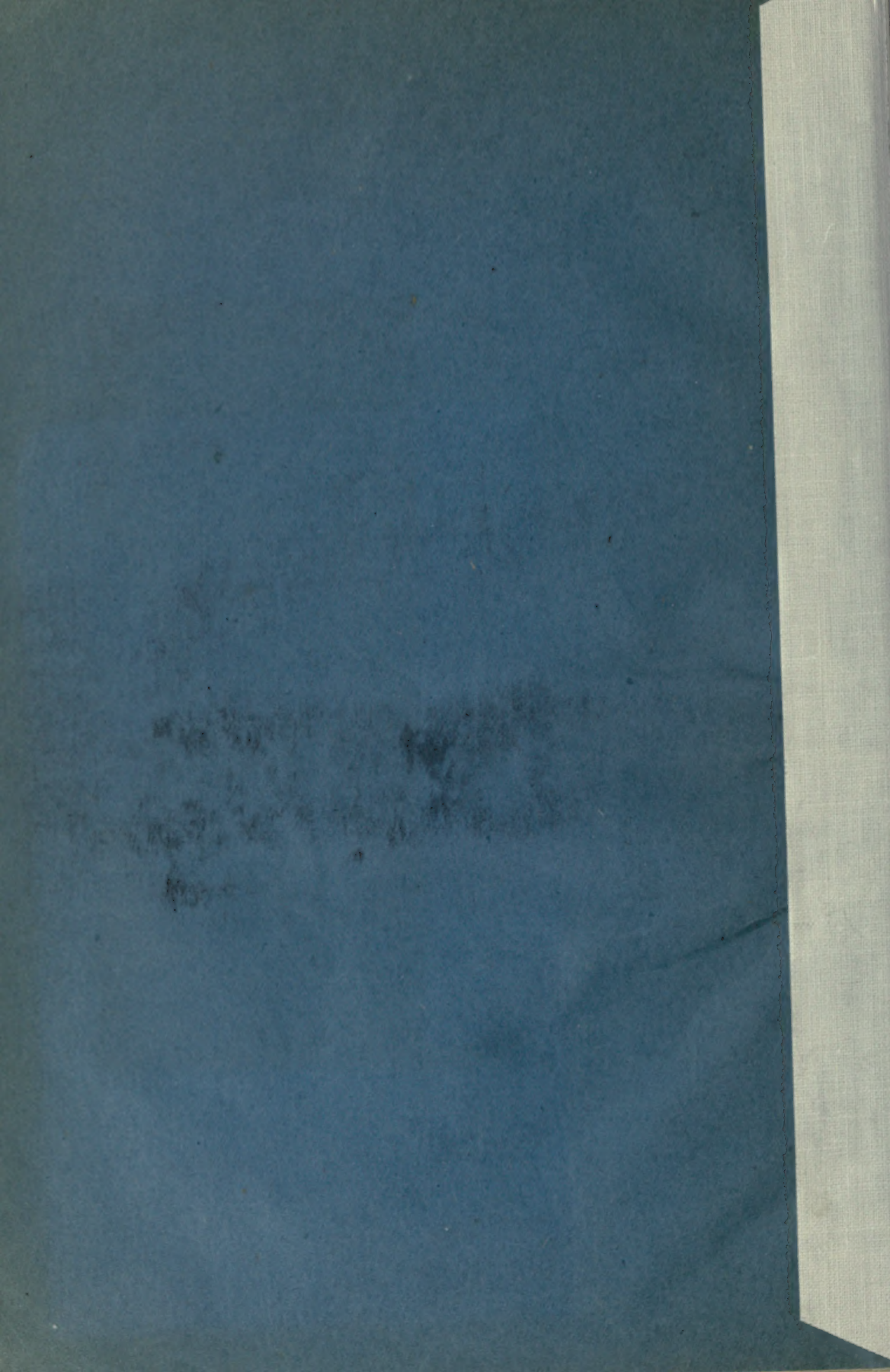
to set that house in order.

The lines are fallen unto us in pleasant places, but our goodly heritage will go to the sons of the stranger, unless we put our hands and our minds in earnest to the work of rearing an Imperial race. The Jews have discovered the secret of National Immortality, and what is it? It is very simple. "Take care of your children." The future of our Province, the future of our country, the future of our Empire, the future of our race, is signified by the same sign, and that sign is a child.

Before the babe this year newly-born, or yet unborn, takes his first step and speaks his first word, the question of vigour or degeneracy is almost settled for him. The keys that unlock the problem of Infant Mortality, are the keys of National and Imperial hope and power.







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