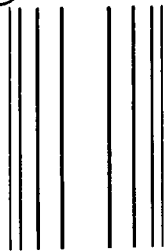
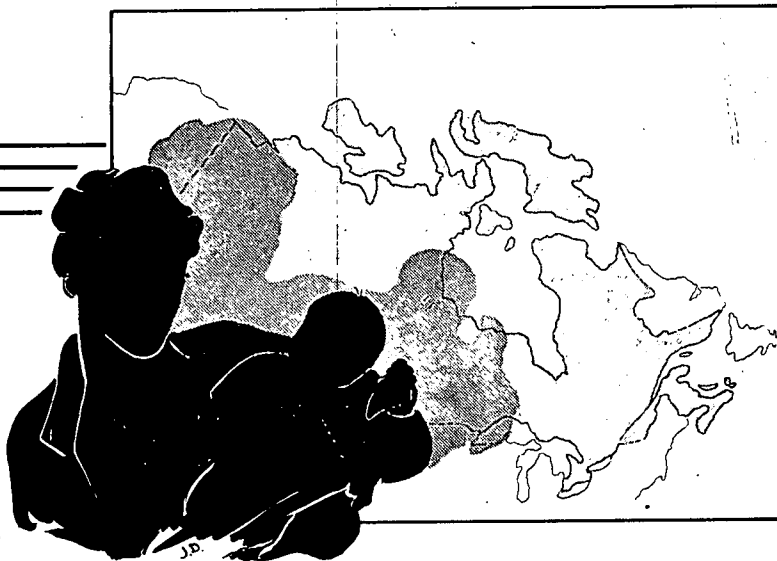
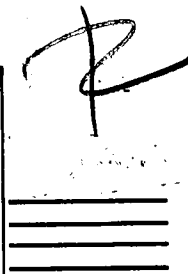
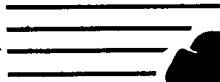
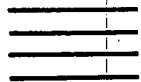


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CANADA



A STUDY  
IN  
MATERNAL, INFANT AND NEO-NATAL  
MORTALITY

Published by Authority of the Hon. James A. MacKinnon, M.P.  
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Ottawa  
1942



A STUDY  
in  
MATERNAL, INFANT AND NEO-NATAL MORTALITY  
in  
CANADA

Prepared by the  
DOMINION BUREAU OF STATISTICS  
in collaboration with the  
DEPARTMENT OF PENSIONS AND NATIONAL HEALTH

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Chief, Vital Statistics Division:  
J.T. Marshall.

OTTAWA

1942

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## I N T R O D U C T I O N

This study presents the basic statistical features of maternal, infant and neo-natal mortality in Canada, in conjunction with nativity, general mortality, marriage and stillbirth statistics for the fifteen-year period 1926 to 1940.

The material contained in this study has been prepared by the Dominion Bureau of Statistics in collaboration with the Department of Pensions and National Health, for use in the Medical Schools, by physicians in private practice and by public health workers and educators in Canada.

The analysis shown opposite each chart has been prepared by Dr. Ernest Couture, Chief, Division of Child and Maternal Hygiene of the Department of Pensions and National Health and are designed to assist in the interpretation of the material.

The tables and graphs are based upon data published in the Vital Statistics of Canada prepared in the Vital Statistics Division of the Dominion Bureau of Statistics.

In order to preserve continuity, the causes of death were grouped according to the Fourth Revision of the International List of Causes of Death, 1929.

The various rates to be found in the study are on the basis of:

- (a) In the case of total births, deaths and marriages per 1,000 of population;
- (b) In the case of Causes of Death per 100,000 live births;
- (c) In the case of Maternal Mortality, Infant Mortality, Neo-natal Mortality and Stillbirths per 1,000 live births.

The populations used in striking the rates for Canada for 1921 and 1931, and for the Prairie Provinces for 1926 and 1936 are based on the enumerations made by the Census Division. The figures for the intermediate years are based upon estimates of population made by the Census Analysis Division.

The Charts were drawn by Mr. J. W. Delisle, Draughtsman, for the Dominion Bureau of Statistics.

### LIVE BIRTHS, MARRIAGES

From 1926 to 1937 the gradual decrease in the birth rate meant a drop of almost 20 per cent. Had the rate of 1926 prevailed in 1937 there would have been about 54,000 more births. The birth rate in 1940 was 21.5 (per 1,000 population), and the number of births was 244,316.

It is interesting to observe the relation between the birth rate and the marriage rate. In some years the reduction in these two rates ran a parallel course but from 1934 until 1937 the birth rate kept coming down although the marriage rate increased.

The rate of natural increase for the 5-year period, 1926-30 was 13.0, and for the year 1940 was 11.7 per 1,000 population.

### STILLBIRTHS

The following definition of a stillbirth, recommended by the International Commission, has been used since 1932 for the statistical recording of stillbirths:

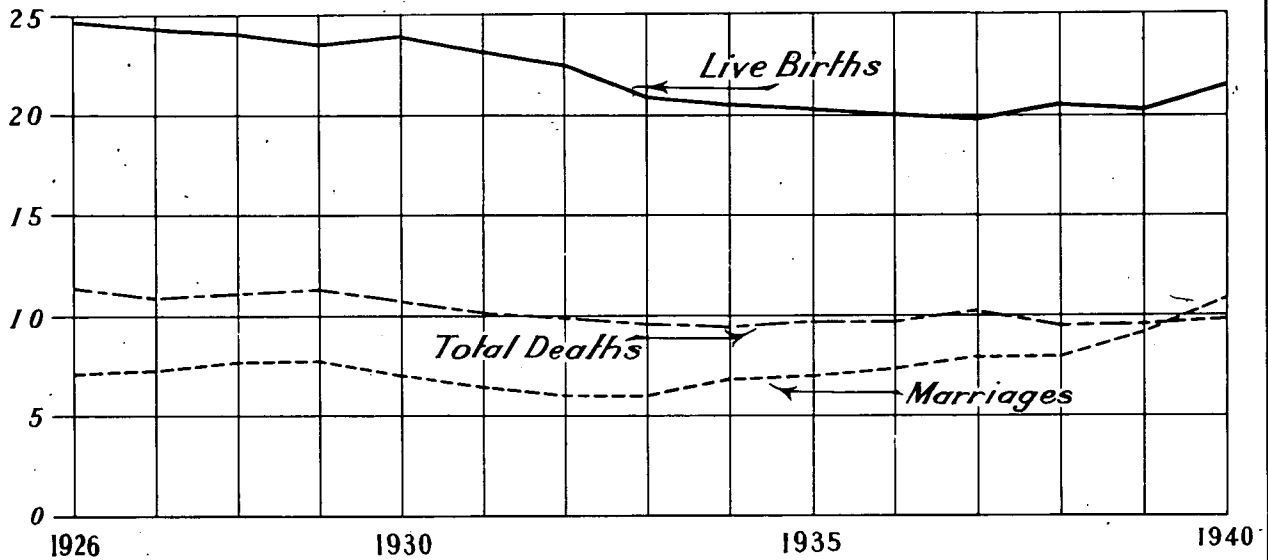
"The birth of a foetus after 28 weeks or  $6\frac{1}{2}$  months of pregnancy, measuring at least 35 centimetres from the crown of the head to the sole of the heel, in which pulmonary respiration does not occur."

Prior to 1932 the minimum period of gestation was defined as 6 months (26 weeks) instead of 28 weeks. This change would account for a reduction in the number of stillbirths for 1932, and the figures from that date on are not comparable to those prior thereto. The reduction in the stillbirth rate since 1934 and 1935 is very closely related to the obstetrical results, that is the maternal mortality rate, except for the year 1936.

The rate of 27.2 per 1,000 live births in 1940 means 6,634 still-born babies.

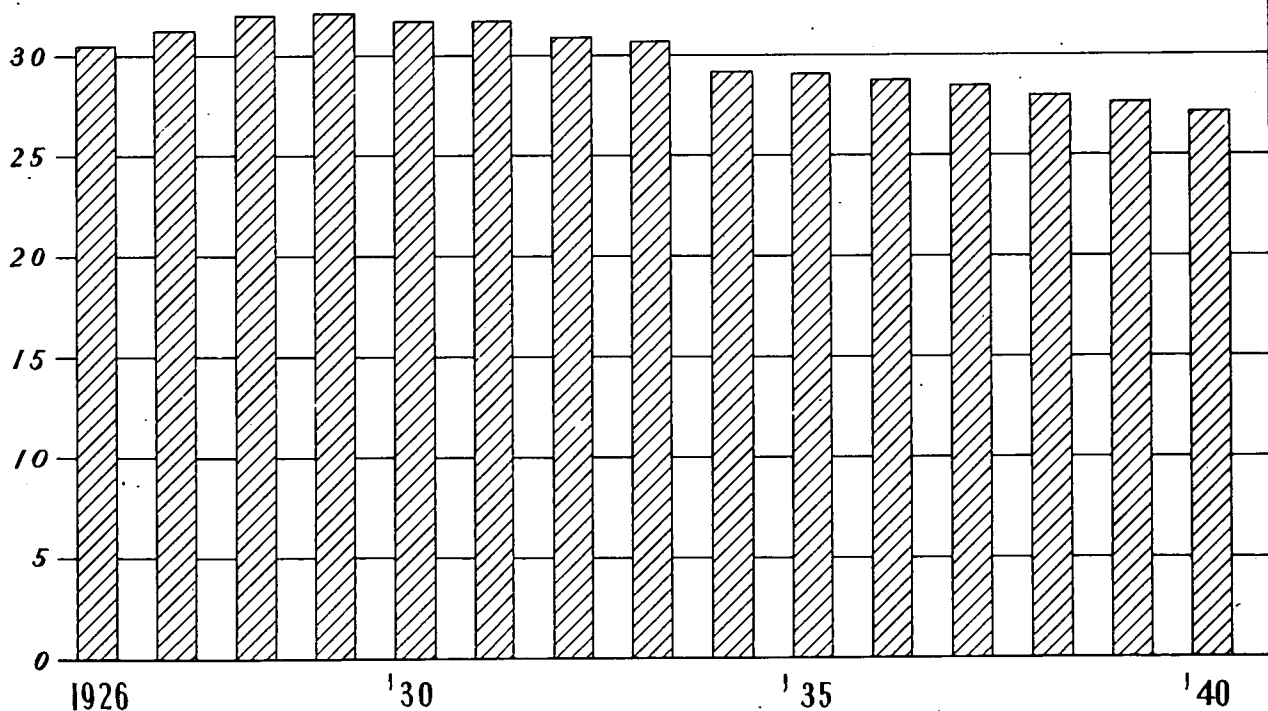
# BIRTHS, DEATHS AND MARRIAGES IN CANADA

RATE PER 1000 POPULATION  
1926-1940



## STILLBIRTHS IN CANADA

RATE PER 1000 LIVE BIRTHS



### MATERNAL MORTALITY.

This chart shows that the maternal death rate for Canada, which after remaining stable for a number of years, began a downward trend in 1931. During the last ten years there has been a decided improvement, except for the years 1934 and 1936. Since 1937 the decrease in the maternal mortality rate has been striking and most encouraging. The rate for 1940 was the best ever recorded in Canada - 4.0 per 1,000 live births. Contrasting 1940 with 1930 there was a drop of 31 per cent. The number of deaths in 1930 was 1,405 (a rate of 5.8, based on 243,495 live births), and in 1940 the number of maternal deaths was 978 (a rate of 4.0, based on 244,316 live births). This means the saving of some 400 mothers.

We owe the improvement to many factors: Educational efforts for a number of years (including particularly the Maternal Mortality Survey of 1926 and 1927 which was directed by Dr. Helen MacMurchy of the Federal Division of Child Welfare); the multiplication of prenatal services; better hospital facilities; an increased tendency to seek hospitalization; and better obstetrical technique.

Our rate of 4.0 in 1940 is not considered by any means the irreducible minimum because a large number of deaths occur from causes which are controllable. Chart No. 2 will illustrate this point.

In 1940 there is a range in the maternal mortality rates for the provinces from 2.9 to 4.8, and in the rates for the larger cities (40,000 population and over) from 2.1 to 7.0. In view of the low rates attained by some provinces and cities, it may not be too optimistic to hope that the country as a whole will achieve further considerable reductions in the maternal mortality rate.

The following list of rates for various countries demonstrates that further improvement in Canada's maternal situation is possible.

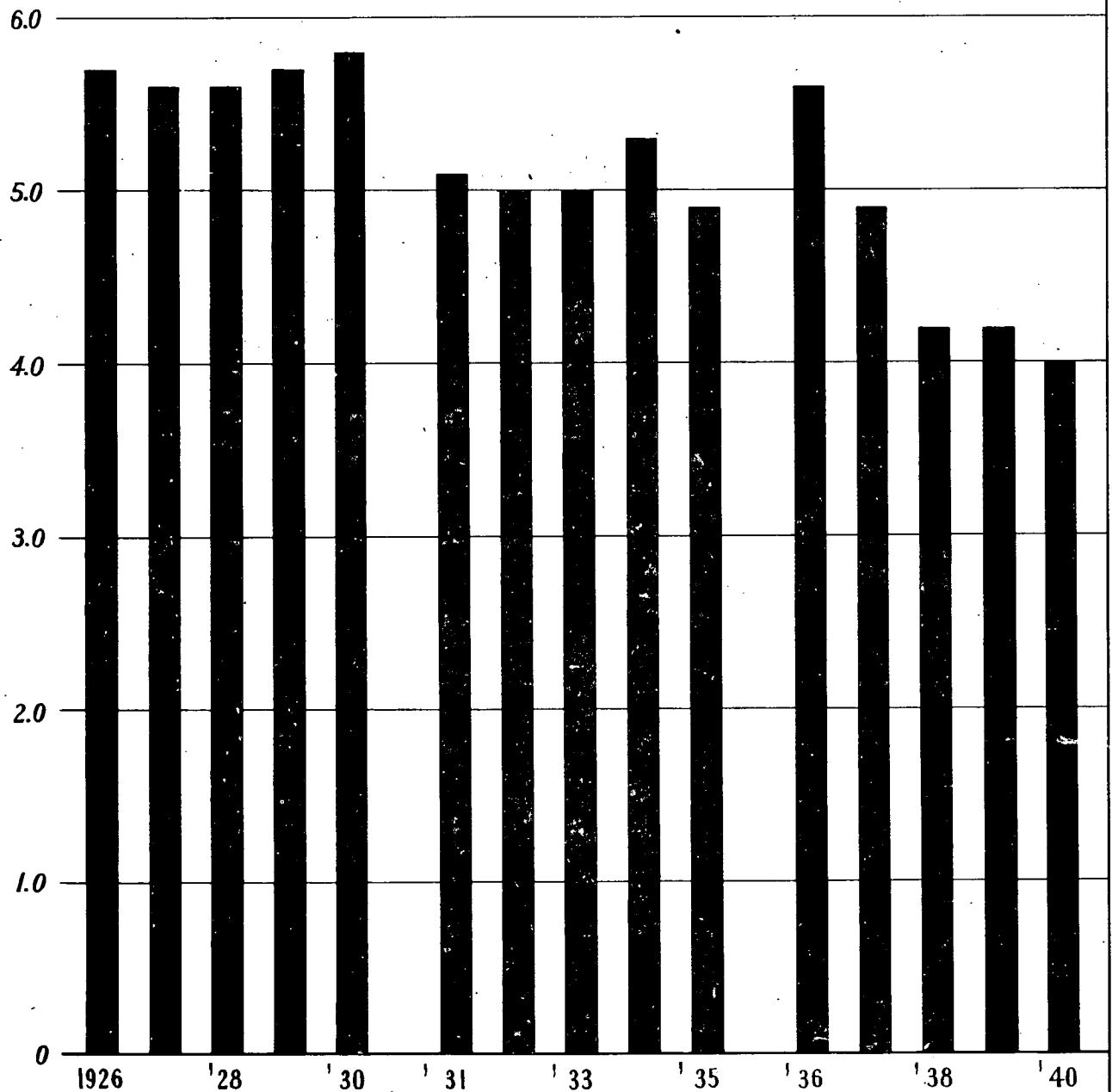
|                   |            |                                |            |
|-------------------|------------|--------------------------------|------------|
| France            | 2.1 (1936) | Sweden                         | 3.1 (1936) |
| England and Wales | 2.3 (1940) | British Isles                  | 3.4 (1938) |
| Netherlands       | 2.6 (1937) | Switzerland                    | 3.5 (1939) |
| New Zealand       | 2.9 (1940) | Union of South Africa (Whites) | 3.6 (1939) |
| Norway            | 3.0 (1937) | Northern Ireland               | 3.8 (1939) |
| Denmark           | 3.1 (1938) | United States                  | 3.8 (1940) |
| Irish Free State  | 3.1 (1940) | Canada                         | 4.0 (1940) |



# MATERNAL MORTALITY CANADA

1926-1940

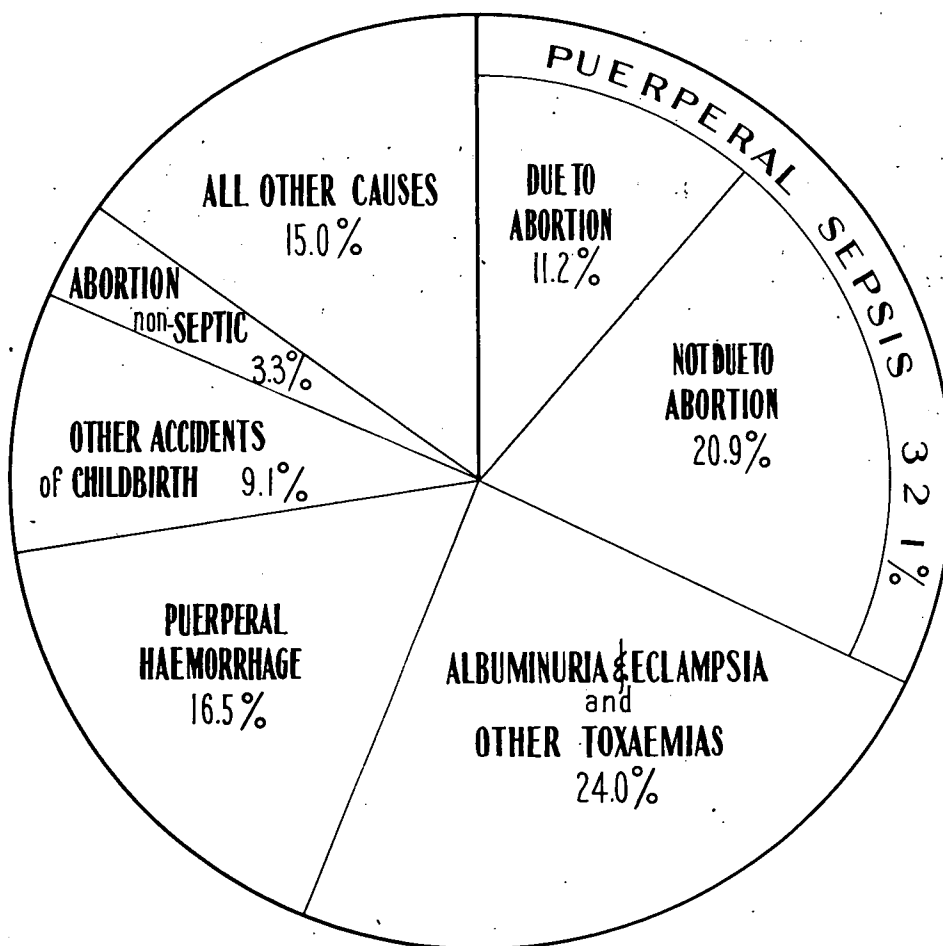
Rates per 1000 Live Births



CAUSES OF DEATH BY MAIN GROUPS

According to this chart for 1939, 72.6% of all maternal deaths (or 702 out of 967) are attributable to three chief causes - puerperal sepsis, toxæmias of pregnancy, and puerperal hæmorrhage - all conditions which could be prevented.

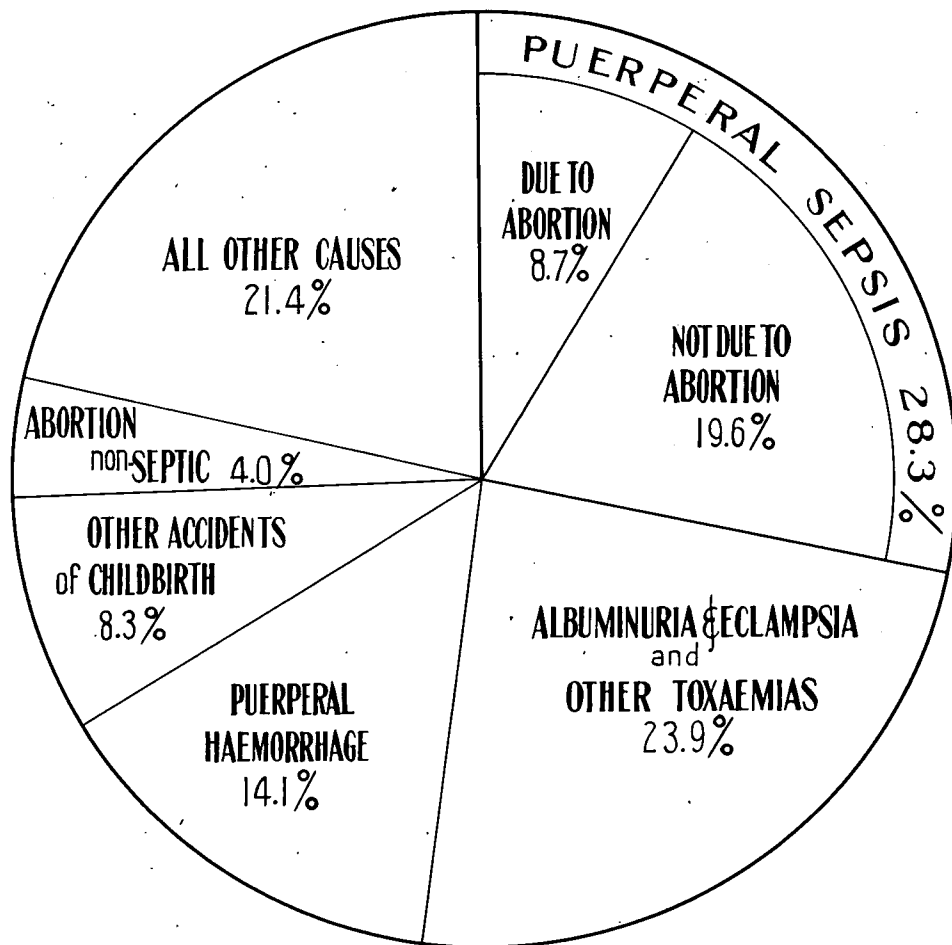
CAUSES  
OF  
MATERNAL MORTALITY  
CANADA  
1939



CAUSES OF DEATH BY MAIN GROUPS - 1940

In 1940, 66.4 per cent of all maternal deaths (or 649 out of 978) were due to puerperal sepsis, toxæmias of pregnancy and puerperal haemorrhage. When the figures for 1940 are compared with those for 1939 it is found that mortality from sepsis in cases of abortion was reduced considerably in 1940 but that the percentage of non-septic abortion mortalities increased. The reduction in mortality due to sepsis from abortion is not necessarily a criterion of the number of abortions occurring.

CAUSES  
OF  
MATERNAL MORTALITY  
CANADA  
1940



### PUERPERAL SEPSIS

This chart shows the relationship of puerperal sepsis since 1931. This condition was largely responsible for the sudden rise in the maternal mortality rate in 1936. It is significant that this 1936 increase was coincident with the advent of sulphanilamide. New Zealand experienced a similar increase in 1934. On the other hand, it is worthy of note that since the more general use of this drug there has been a marked decrease in the number of fatalities from sepsis. Whether there is a relationship between the use of this drug and the increase or decrease of fatalities from sepsis is a debatable point.

In 1940 there were 277 deaths from puerperal sepsis. This was the most frequent cause of maternal death.

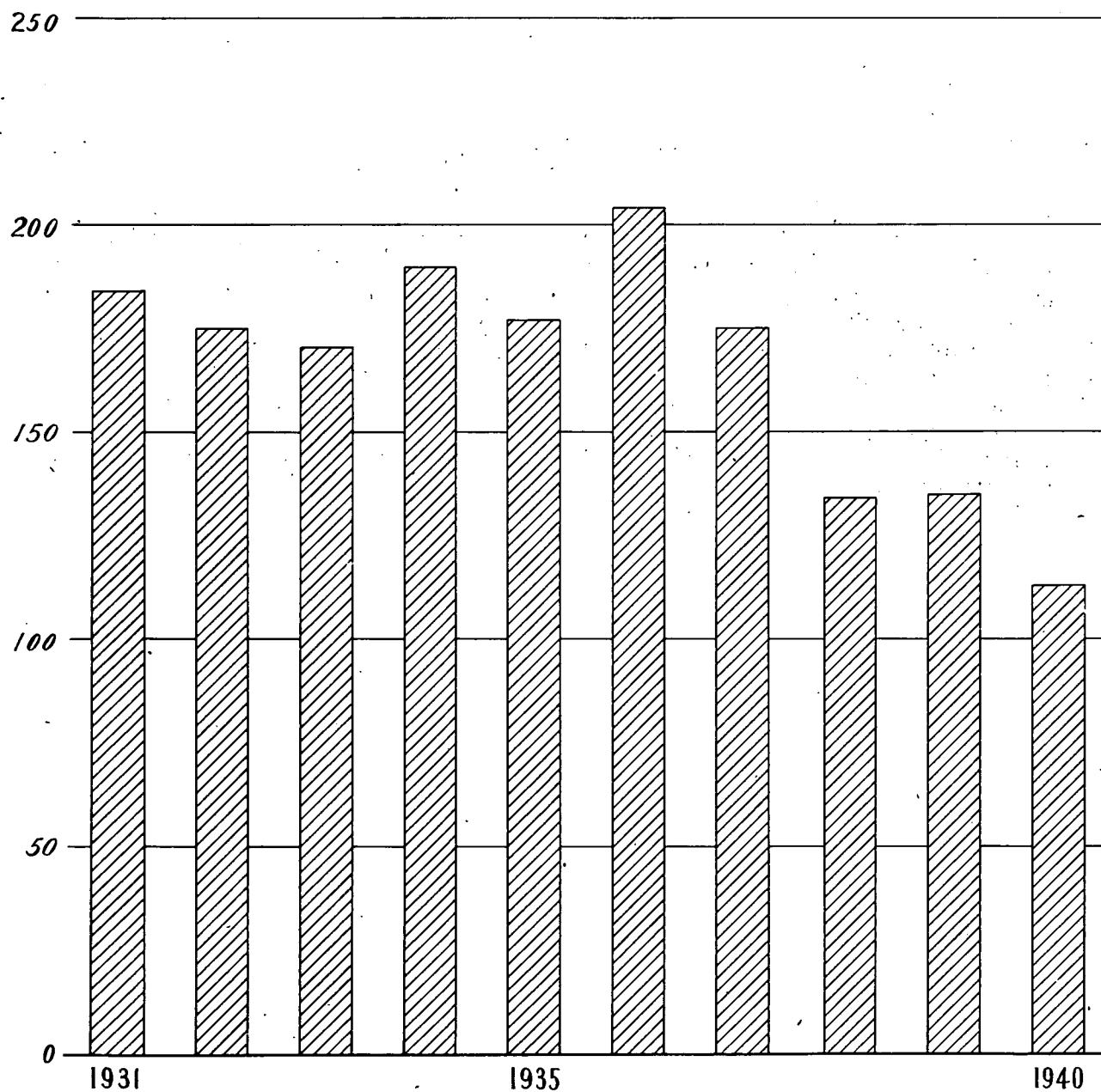
# MATERNAL DEATHS

FROM

## PUERPERAL SEPSIS

( # 140 a,b, 142 a, 145 a,b, )

Rates per 100,000 Live Births



### ACCIDENTS OF PREGNANCY

This chart, depicting accidents of pregnancy, includes abortion (without mention of septic conditions), accidental or self-induced; ectopic gestation (without septic conditions); and other accidents of pregnancy (haemorrhage excluded). On account of the number of conditions covered by this chart it is to be expected that the rates will vary from year to year. In 1940 abortion accounted for 52.7 per cent of the mortalities in this group. In 1936 (the highest rate encountered for maternal deaths from accidents of pregnancy) abortion accounted for 58.9 per cent (53 out of 90 cases). In 1938 abortion caused 49.4 per cent of the deaths in this group (43 out of 87).



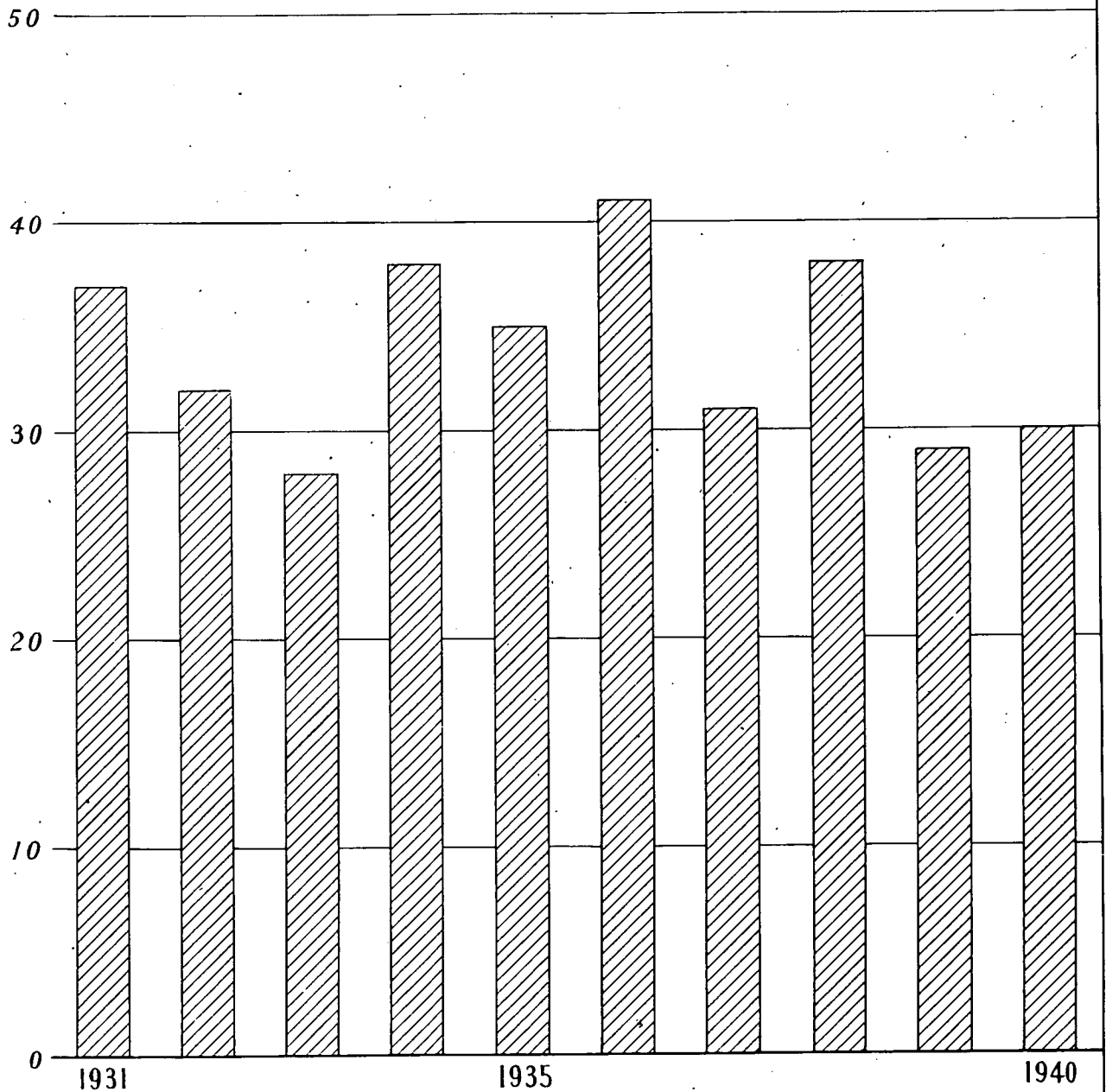
# MATERNAL DEATHS

FROM

## ACCIDENTS

( #<sup>s</sup>141 a, b, -142 b -143 )

Rates per 100,000 Live Births



### HAEMORRHAGE

It will be noticed that, generally speaking, there has been very little improvement in maternal mortality from haemorrhage since 1931. There appears to be little satisfactory explanation of the advance in the rates for some years such as in 1932, 1933, 1934, 1936 and 1939.

The Manitoba Pregnancy Survey brought out the fact that transfusions were used in far too few cases. Blood banks for emergency maternity cases would prevent much loss of life and health.

Vitamin K is being used in some institutions as a routine during the course of labour. Studies and nutrition surveys have revealed that the incidence of haemorrhage is reduced through good nutrition during the pre-natal period.

In 1940 maternal deaths from haemorrhage numbered 138, and comprised 14.1 per cent of all maternal mortalities.

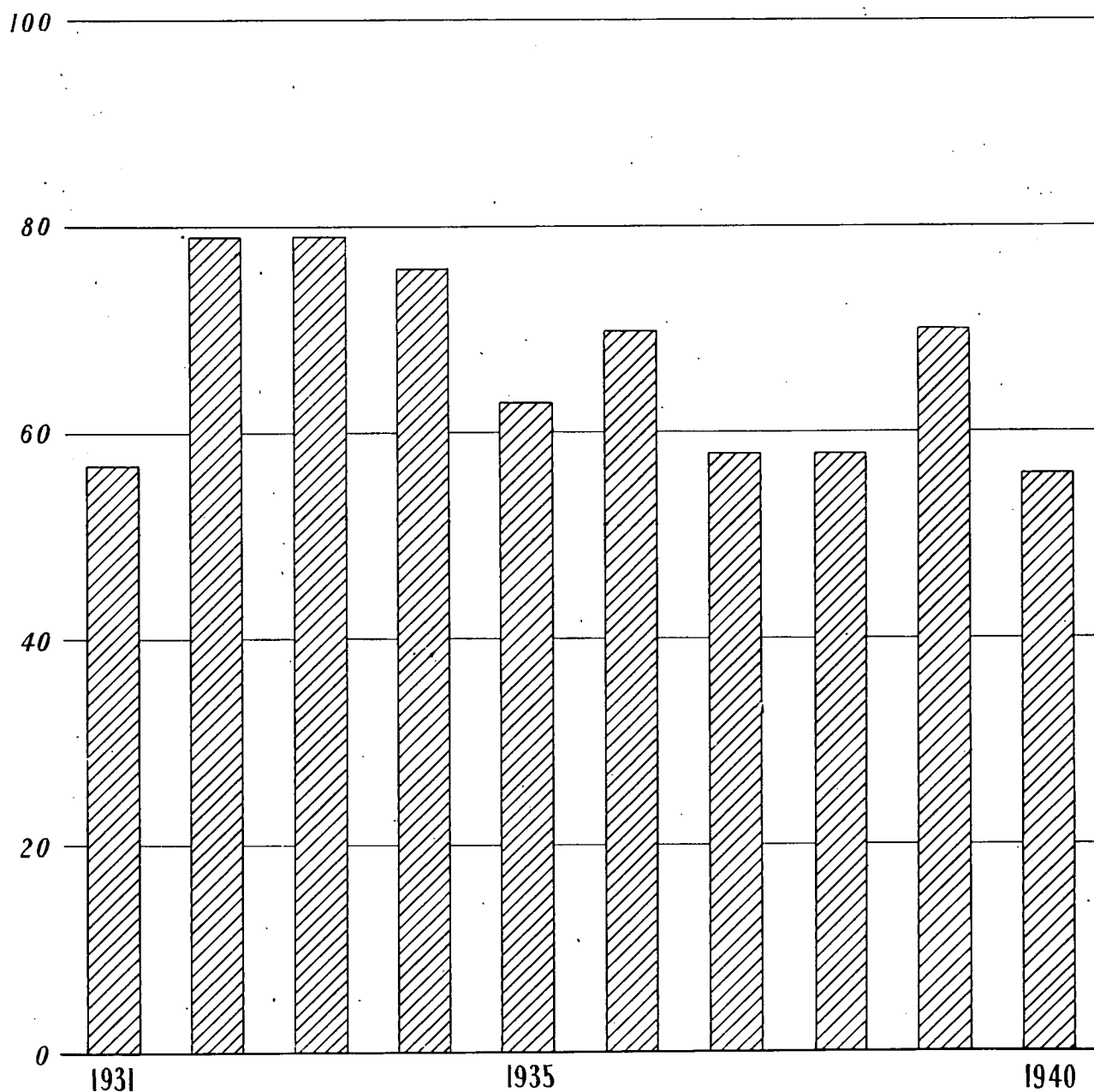
# MATERNAL DEATHS

FROM

## HAEMORRHAGE

(# 144)

Rates per 100,000 Live Births



### TOXAEMIAS OF PREGNANCY

After a lowering of the rate in 1932 there was a steady rise until 1936 inclusive. This reaction might bear out the contention that poor nutrition or a general lack of prenatal care during the economic crisis was responsible for this unfavourable record. It is significant that in 1936 the mortality rate from toxaemias of pregnancy rose above the rates for the other years just as septicaemia and haemorrhage did in the same year. However, since 1937 the reduction has been quite encouraging. Perhaps this is the result of better organized relief in necessitous cases, and the establishment of a greater number and variety of services. Toxaemias could be avoided in many cases if mothers received adequate prenatal care.

In the Manitoba Pregnancy Survey only 25 per cent of the mothers received what is considered the recognized minimum of prenatal care (using five or more visits as a standard); moreover, the percentage was only 17 if the quality of care is considered, (that is, taking of blood pressure, weighing of the patient, urinalysis, blood tests, pelvic measurements, etc.).

Some authorities claim that if the haemoglobin percentage is kept high through good nutrition or medication, toxaemias of pregnancy are much less likely to occur.

Toxaemias come second to septicaemia as a cause of maternal deaths, and take first place if septic abortion is excluded. In 1940, deaths from toxaemias of pregnancy numbered 234 or 23.9 per cent of the total maternal deaths.

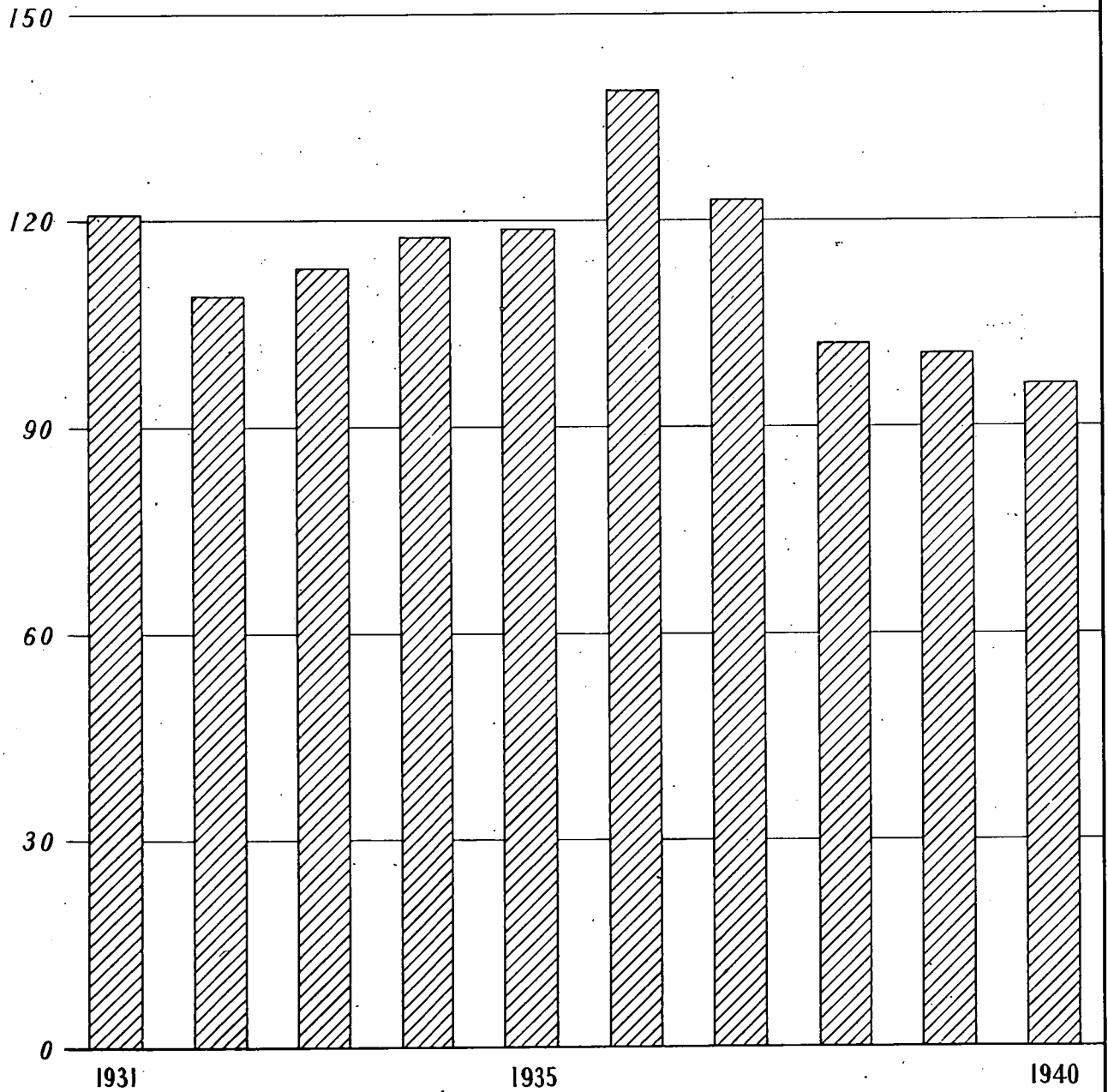
# MATERNAL DEATHS

FROM

## TOXAEMIAS

(#146 & 147)

Rates per 100,000 Live Births



PHLEGMASIA ALBA DOLENS, EMBOLISM OR SUDDEN DEATH

The interesting feature of this chart is that the rate of mortality from this type of infection does not run a parallel course with sepsis, but quite at variance with it. The almost steady rise in the rate since 1935, ending with a definite peak in 1940, suggests the need to question obstetrical technique and treatment used. It is noteworthy that the rate of mortality from phlegmasia alba dolens, embolism or sudden death in 1940 was the highest in the last 10 years, whereas the rates for all other conditions except accidents were lowest in that year.

The rate of 64 per 100,000 live births means a loss of 156 mothers in 1940.

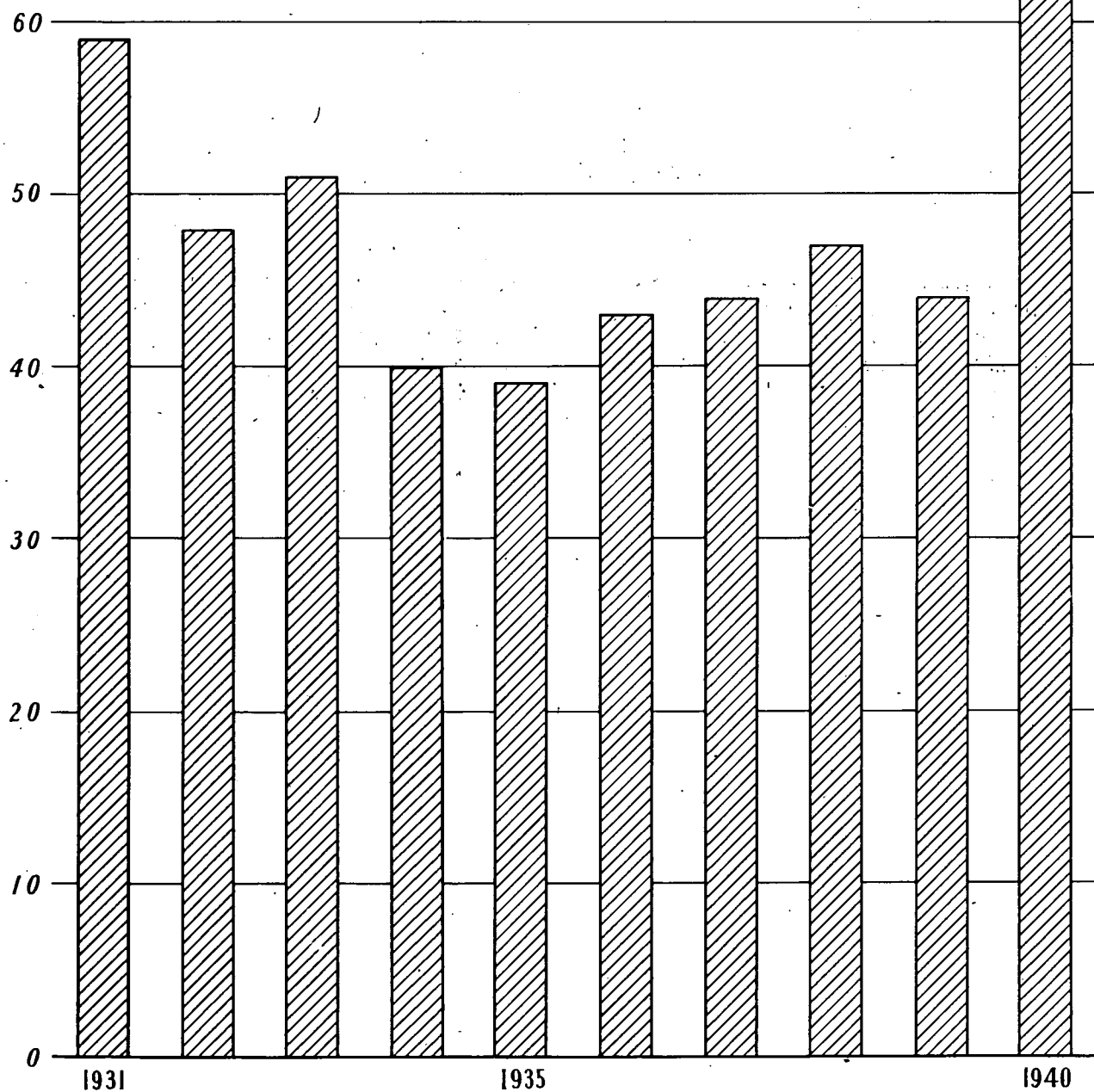
# MATERNAL DEATHS

FROM

## PHLEGMASIA ALBA DOLENS

(#148 a.b.c.)

Rates per 100,000 Live Births



OTHER ACCIDENTS OF CHILDBIRTH

Included under this heading are caesarean operations, other surgical operations and instrumental deliveries, dystocias, ruptures of the uterus in parturition, etc., together with other or unspecified conditions of the puerperal state (puerperal diseases of the breast, etc.) In 1940, there were 99 deaths attributed to these causes.



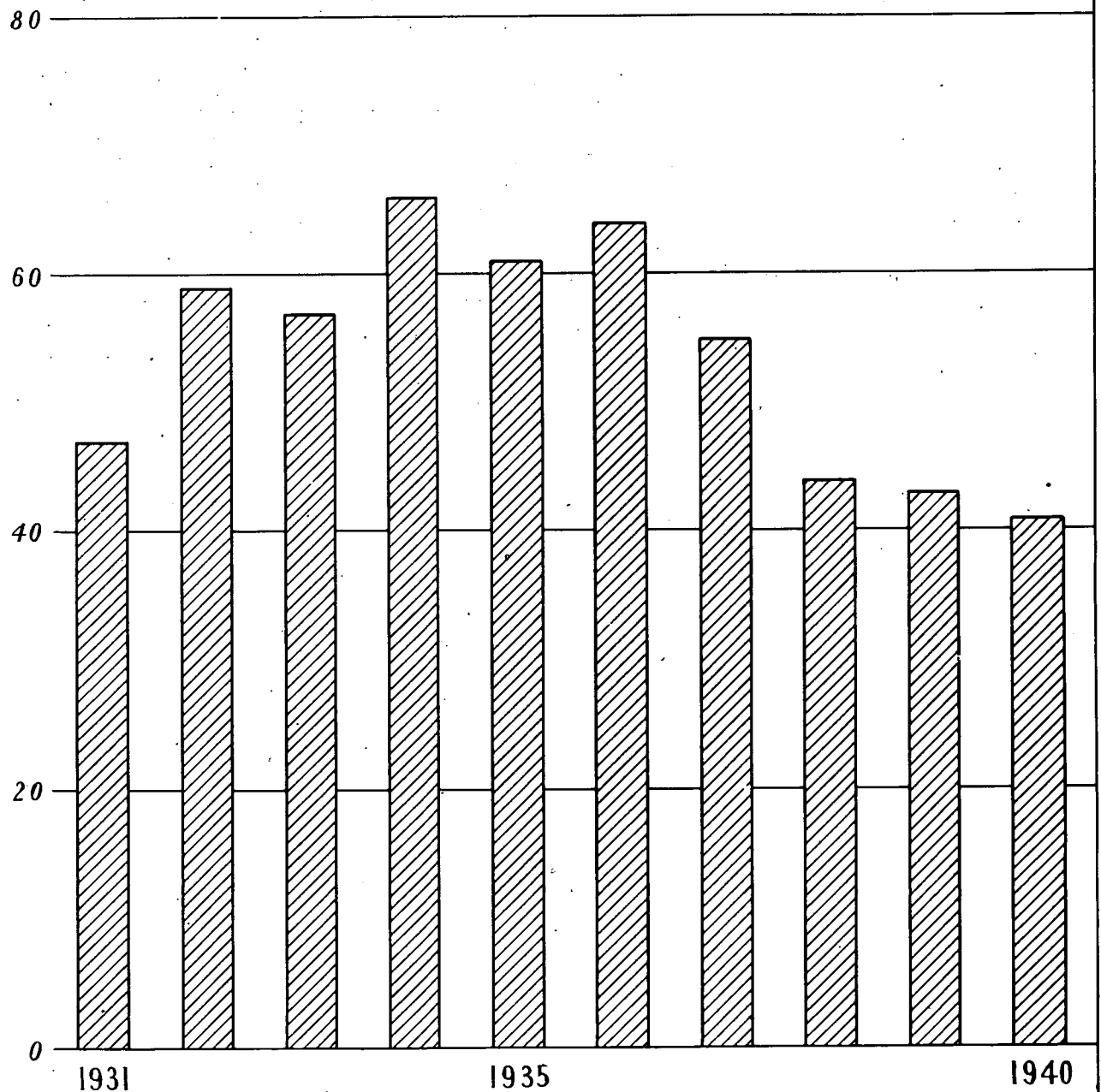
# MATERNAL DEATHS

FROM

## OTHER AND UNSPECIFIED CAUSES

(# 149 - 150)

Rates per 100,000 Live Births



### INFANT MORTALITY

This chart shows a reduction in infant mortality since 1926 of 45.1 per cent. This means a saving of some 11,100 lives. With the exception of 1937 the improvement has been constant.

The detailed analysis of causes which follows will indicate that a further reduction is possible. Furthermore, when we consider the 1940 range in the rates for the provinces from 80 to 38, and in the 1940 rates of cities of 40,000 population and over, from 95 to 24 per 1,000 live births, it becomes evident that a greater saving of lives could be accomplished.

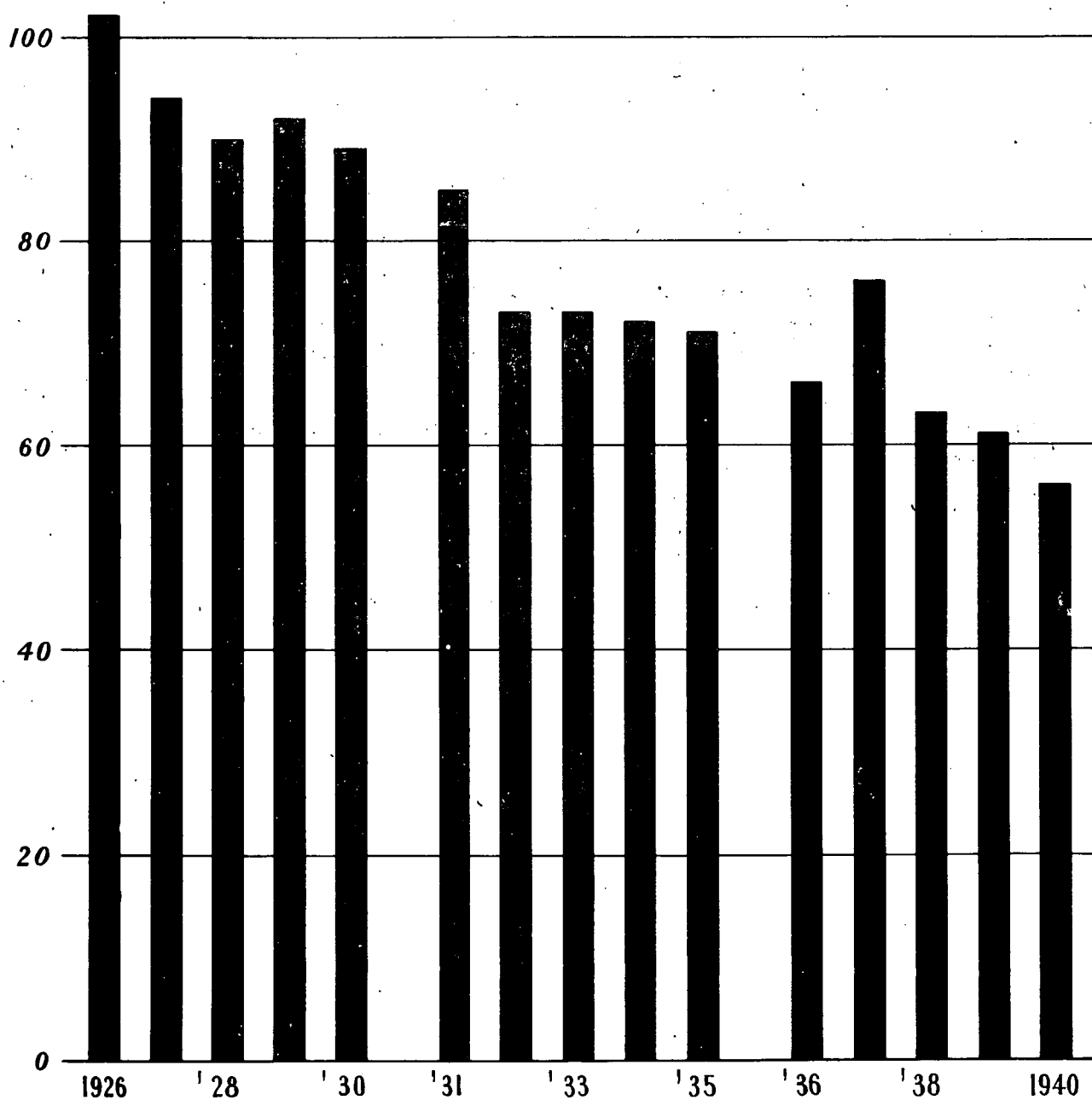
It is interesting to note the rates for some other countries, and a list of some of the countries appears below. Our infant mortality rate is 19 per cent higher than that of the United States in spite of an advantage which we have, through the Canadian definition of stillbirth used in classification of vital statistics. This results in about 5 per cent of our deaths being excluded from the Infant Mortality.

|                            |    |        |
|----------------------------|----|--------|
| New Zealand                | 30 | (1940) |
| Iceland                    | 32 | (1937) |
| Netherlands                | 38 | (1937) |
| Australia                  | 38 | (1939) |
| Sweden                     | 41 | (1938) |
| Norway                     | 42 | (1937) |
| Switzerland                | 43 | (1939) |
| United States              | 47 | (1940) |
| Union of South Africa (W.) | 50 | (1939) |
| British Isles              | 54 | (1939) |
| England and Wales          | 55 | (1940) |
| Canada                     | 56 | (1940) |

# INFANT MORTALITY CANADA

1926 - 1940

Rates per 1000 Live Births



NEONATAL MORTALITY (MORTALITY IN THE FIRST MONTH OF LIFE)

In 1940 of the total deaths in the first year of life, 52.6 per cent occurred in the first month. The rate of 30 per 1,000 live births in 1940 represents a loss of 7,256 babies under one month of age.

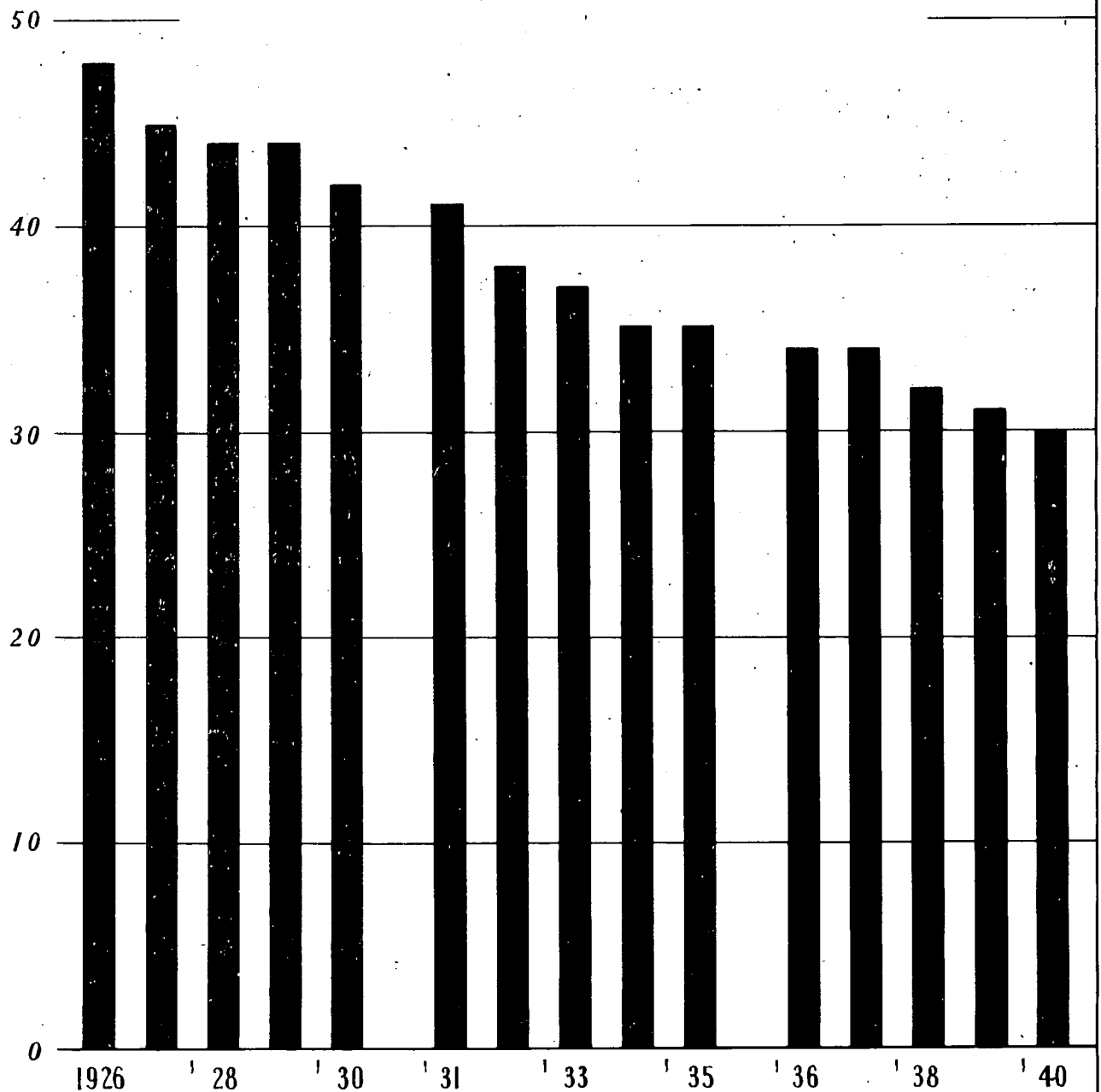
Comparing the rates for 1926 and 1940, it is found that the reduction in neonatal mortality has been only 37.5 per cent as compared with a decrease of 45.1 per cent for all deaths during the first year of life.

More attention during the prenatal period, and during the first few weeks of life are essential if a reduction in the general infant mortality rate is to be achieved.

# NEONATAL MORTALITY CANADA

1926-1940

Rates per 1000 Live Births



### NEONATAL MORTALITY

Deaths under 1 month by age periods.

In 1940 out of 13,783 infants dying in the first year of life, 7,256 (or 52.6 per cent) died in the first month. In 1931 the percentage was 48.6 per cent. As shown in the chart this should not be interpreted as an increase in deaths during the neonatal period but that the infant mortality during the second to the twelfth month has been reduced to a greater extent than that during the first month of life.

Of the deaths during the neonatal period 74.5 per cent occurred during the first week. This represents 39.2 per cent of the total infant deaths during the first year of life. Many of the conditions accounting for infant deaths during the first week are closely related to the condition of the baby at birth due to prenatal or intranatal factors. It becomes evident that adequate prenatal care and postnatal care of the premature baby would go a long way to reducing infant mortality.

#### The Year 1940

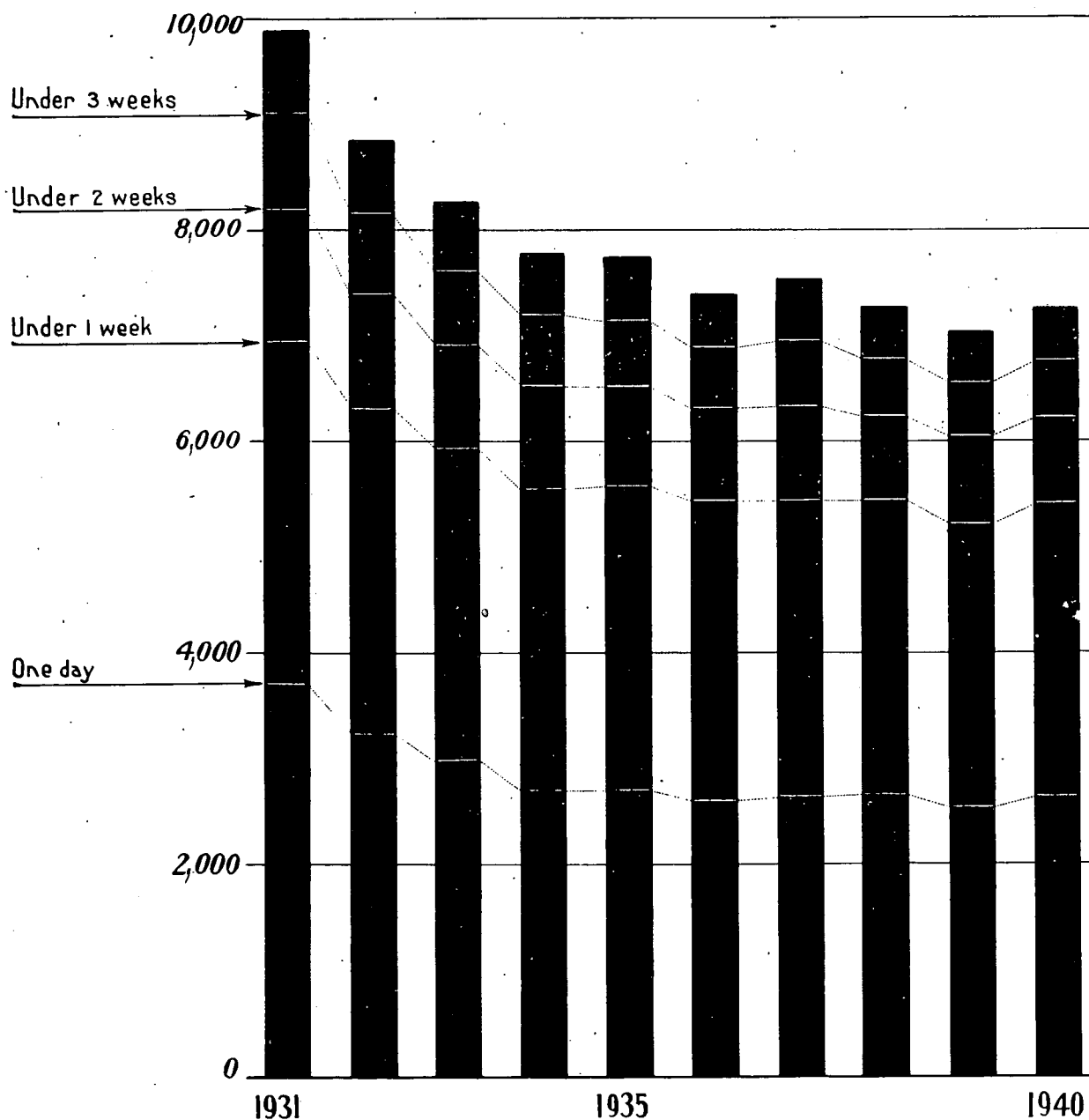
Percentage of deaths in the first month of life occurring

|                    |      |
|--------------------|------|
| On the first day   | 36.2 |
| In the first week  | 74.5 |
| In the second week | 11.2 |
| In the third week  | 7.3  |
| In the fourth week | 7.0  |

# NEO-NATAL MORTALITY

Deaths under one month

1931-1940



### INFANT MORTALITY

The year divided into months - 5-year averages.

This chart serves to demonstrate very strikingly the proportion of deaths which occur during the first month as compared with the other 11 months of the first year.

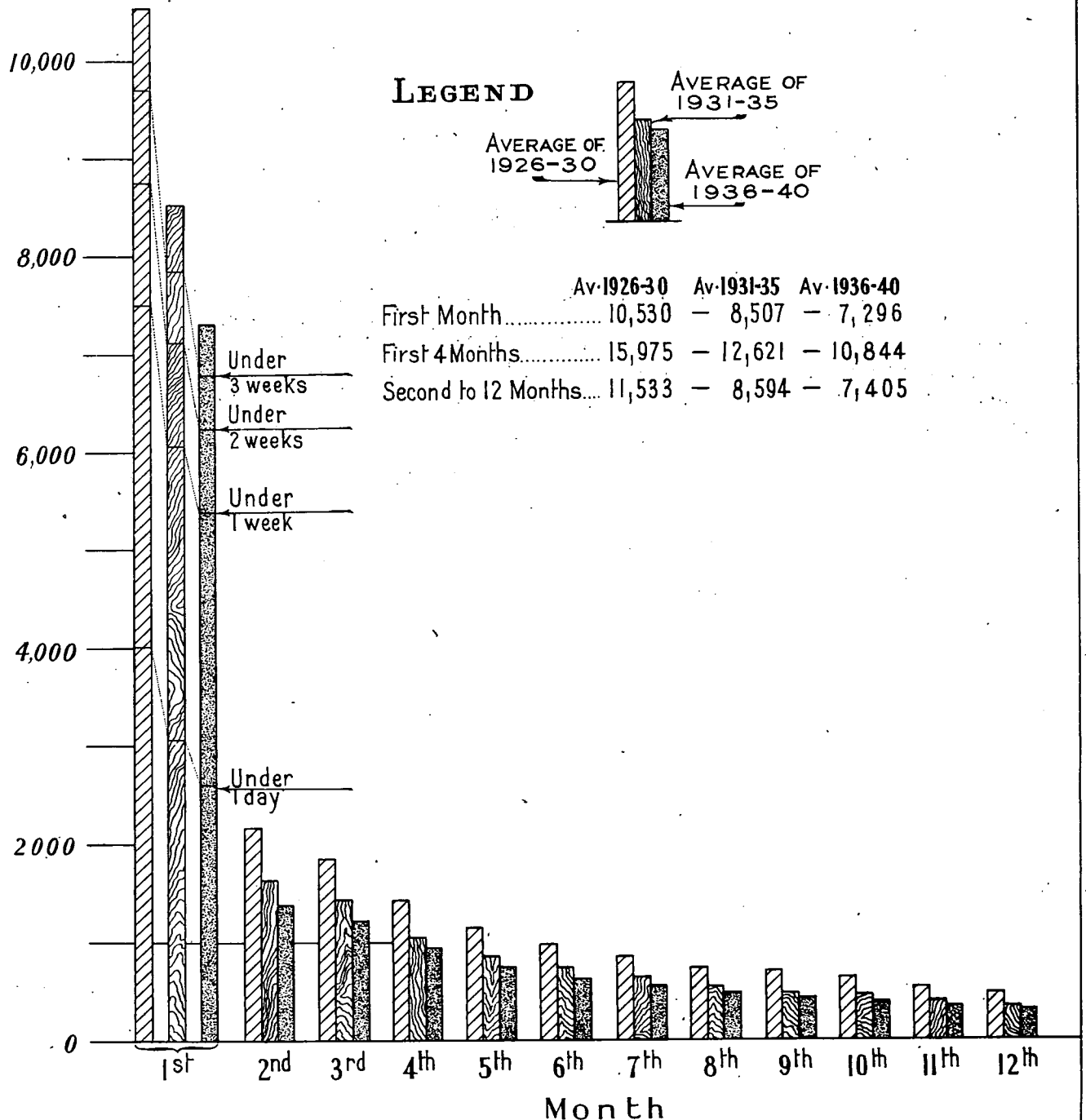
It illustrates the fact that as a child gets older its expectation of life is much greater. It is a fact that as many children die during the first year of life, as during the next 30 years added together.



# INFANT MORTALITY

## Five-Year Averages

### CANADA



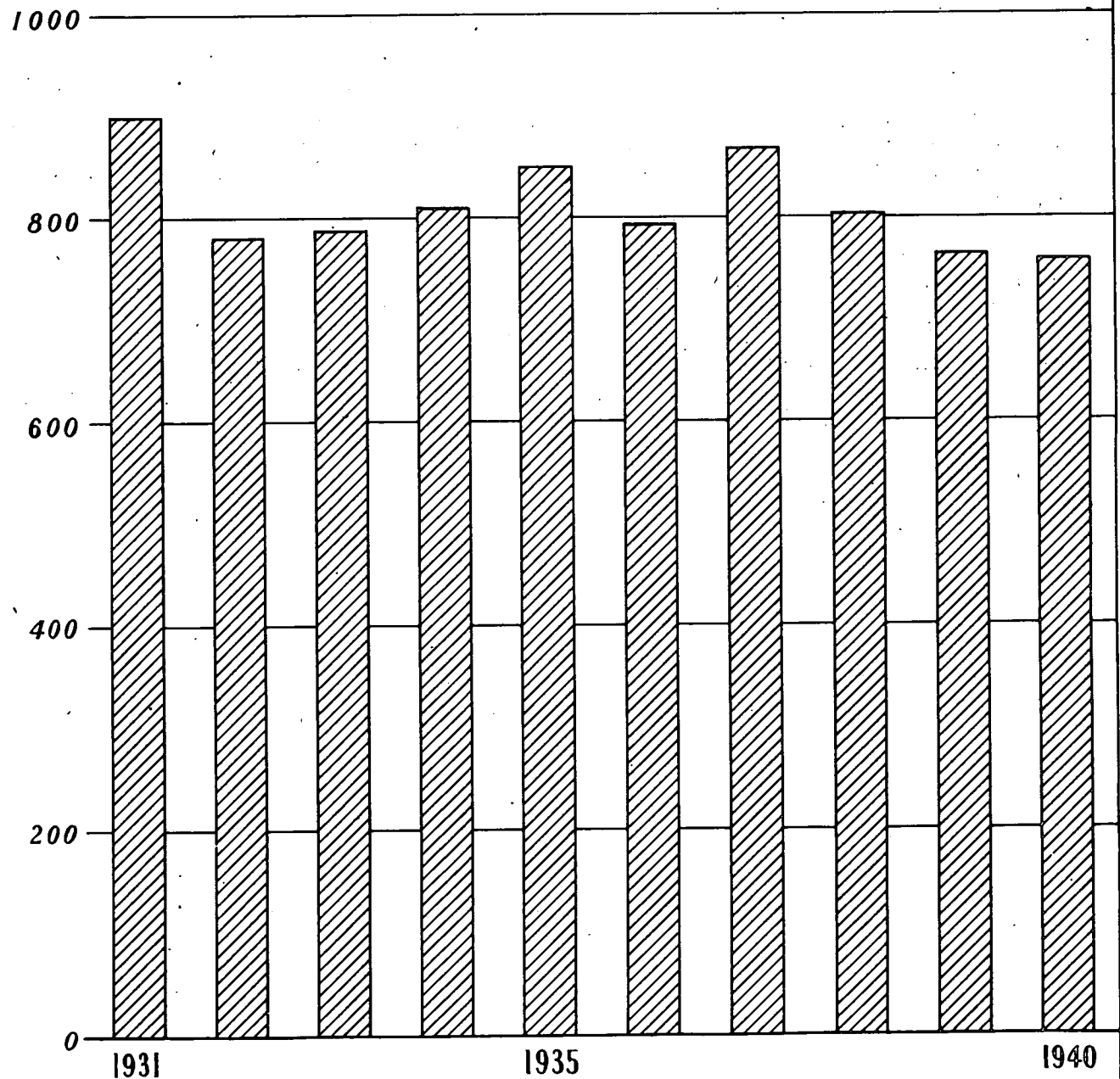
PNEUMONIA

This chart reveals that there has been very little improvement since 1931 in the rate of mortality from this cause. Pneumonia is the second most frequent cause of infant mortality, and 1,858 deaths were attributable to this cause in 1940. This situation indicates the urgent need for education regarding hygienic measures for the prevention of pneumonia.

# INFANT MORTALITY PNEUMONIA

(#<sup>s</sup> 107a,b-108-109)

Rates per 100,000 Live Births,



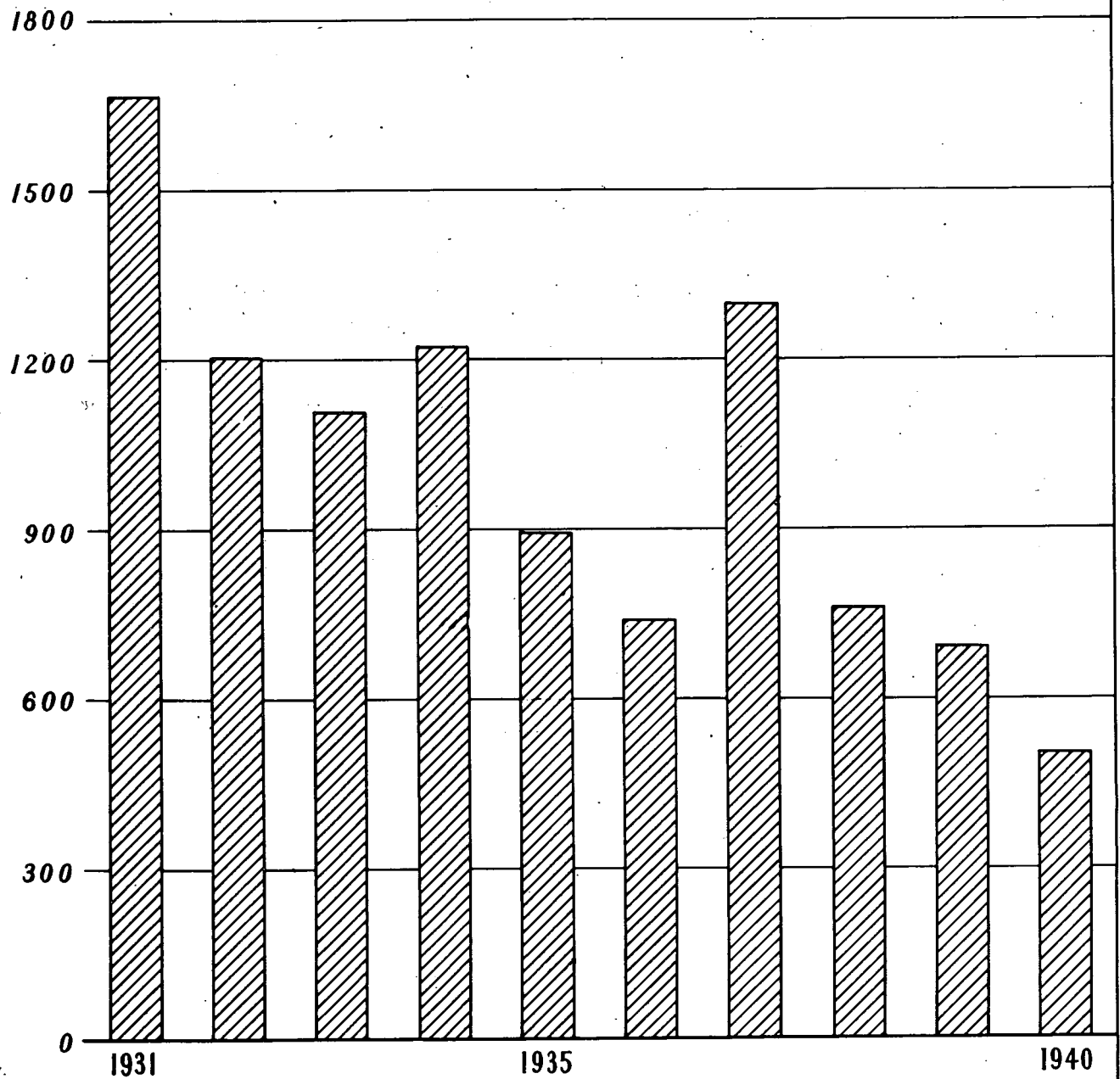
### DIARRHOEA AND ENTERITIS

The incidence of diarrhoea and enteritis has always been considered as an index of the application of the principles of hygiene. The decrease in the rate from 1931 to 1940 therefore carried with it much significance. The rate of 504 in 1940 (representing 1,231 deaths) is less than 1/3 of the rate in 1931.

The higher rate in 1937 affected markedly all the provinces except Ontario, Manitoba, Alberta and British Columbia. (As a matter of fact, Manitoba had a creditable reduction that year.) It is difficult to account for such a sudden and adverse reaction in 1937 and for the fact that five of the nine provinces were affected at the same time. There is still a wide range in the rates for the provinces - varying from 872 to 159 per 100,000 live births in 1940. A further reduction, therefore, should be possible.

# INFANT MORTALITY DIARRHOEA & ENTERITIS (#119)

Rates per 100,000 Live Births



CONGENITAL MALFORMATIONS

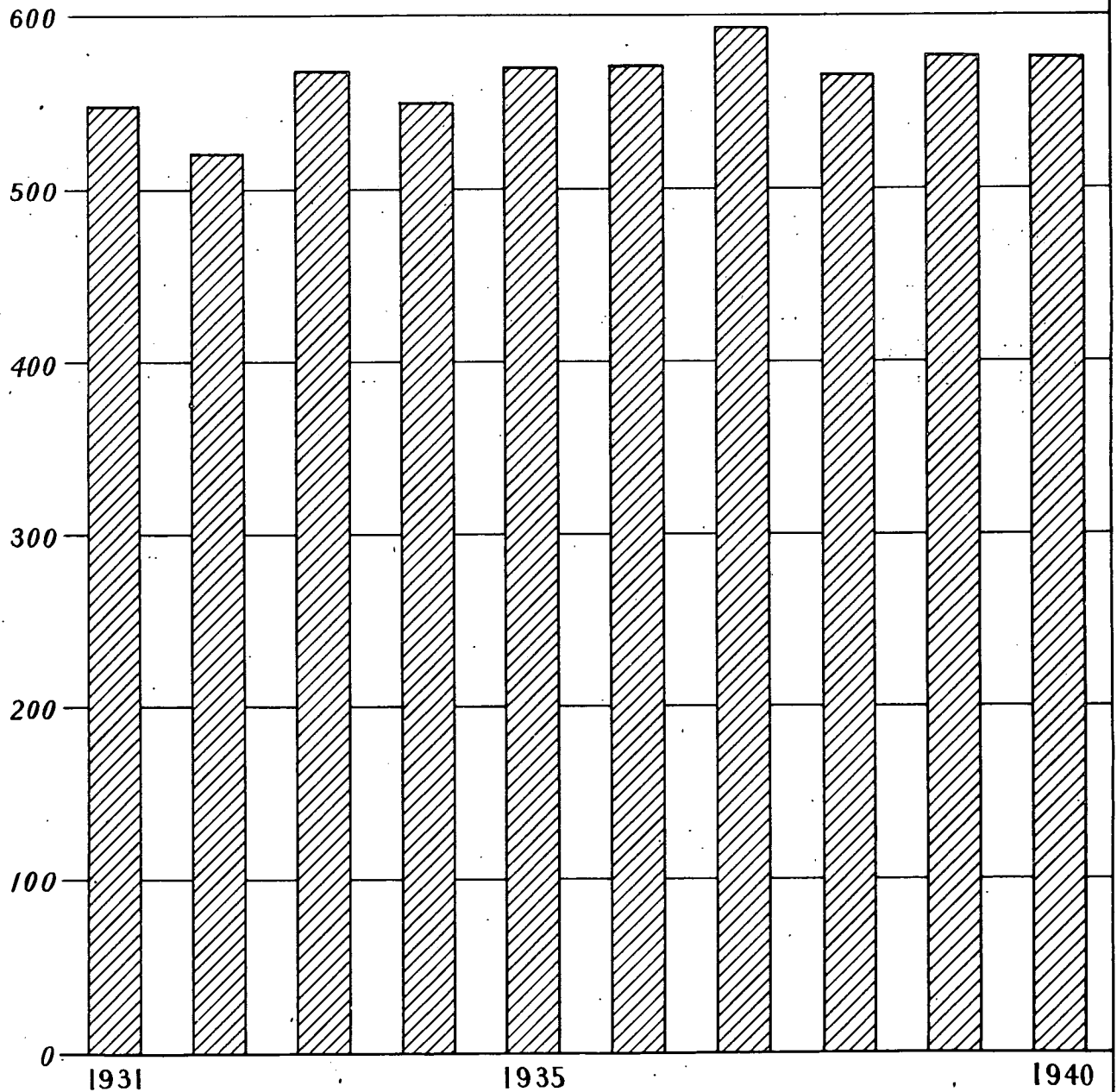
Under this heading are included: Congenital hydrocephalus - spina bifida and meningocele - congenital malformations of the heart - monstrosities - and others under this title.

In 1940 the loss in infant lives from congenital malformation was 1,409.

# INFANT MORTALITY CONGENITAL MALFORMATIONS

(# 157a-e)

Rates per 100,000 Live Births



CONGENITAL DEBILITY

This chart shows a steady improvement in the death rate from 1931 to 1940. The number of deaths in 1940 was 989, or about 7 per cent of the total infant mortality.

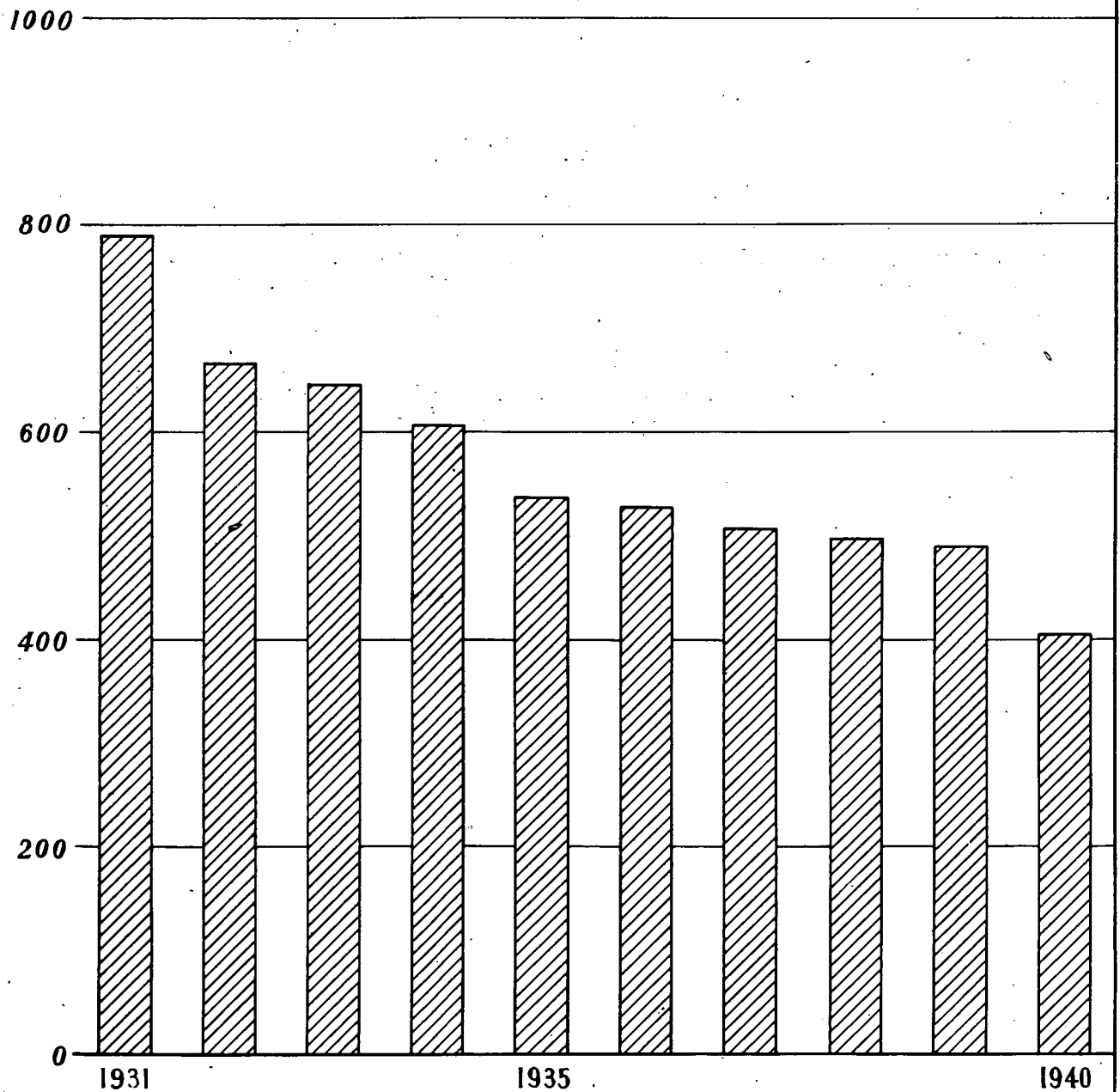
Proper nutrition during pregnancy would favourably affect the situation with regard to congenital debility. This fact has been strikingly demonstrated by recent surveys. No doubt a more general application of prenatal care would effectively reduce deaths from congenital debility.



# INFANT MORTALITY CONGENITAL DEBILITY

(# 158)

Rates per 100,000 Live Births



### PREMATURE BIRTH

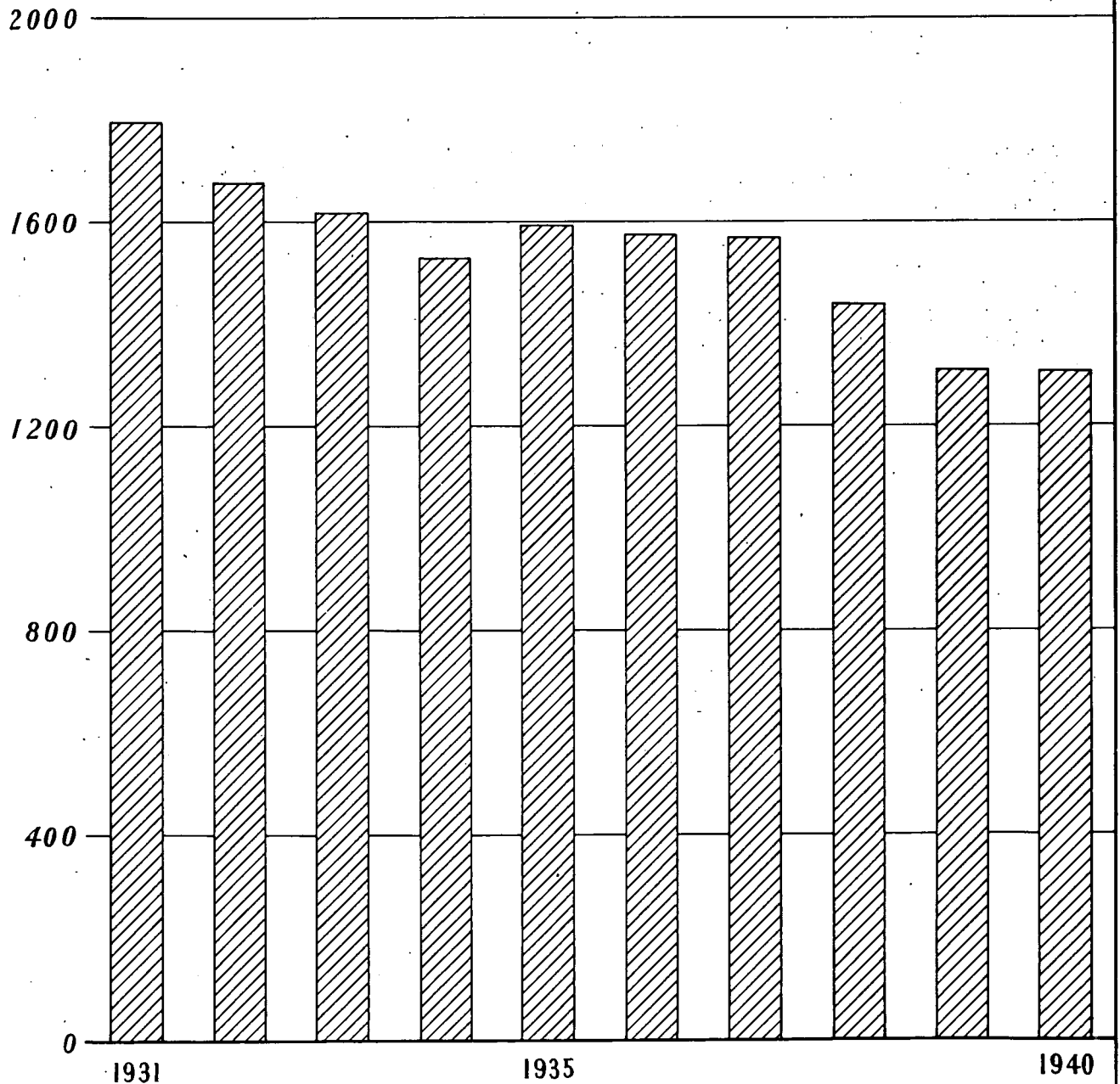
As this chart indicates, there has been an almost constant downward trend in the death rate since 1931. However, prematurity is still the chief cause of infant deaths, and in 1940 it caused the loss of 3,194 babies.

Incubator services for care at home or for transportation of babies to the hospital have been very successful in saving children born prematurely. Human milk depots, wherever established, have proved their worth.

# INFANT MORTALITY PREMATURE BIRTH

( # 159 )

Rates per 100,000 Live Births



### INJURY AT BIRTH

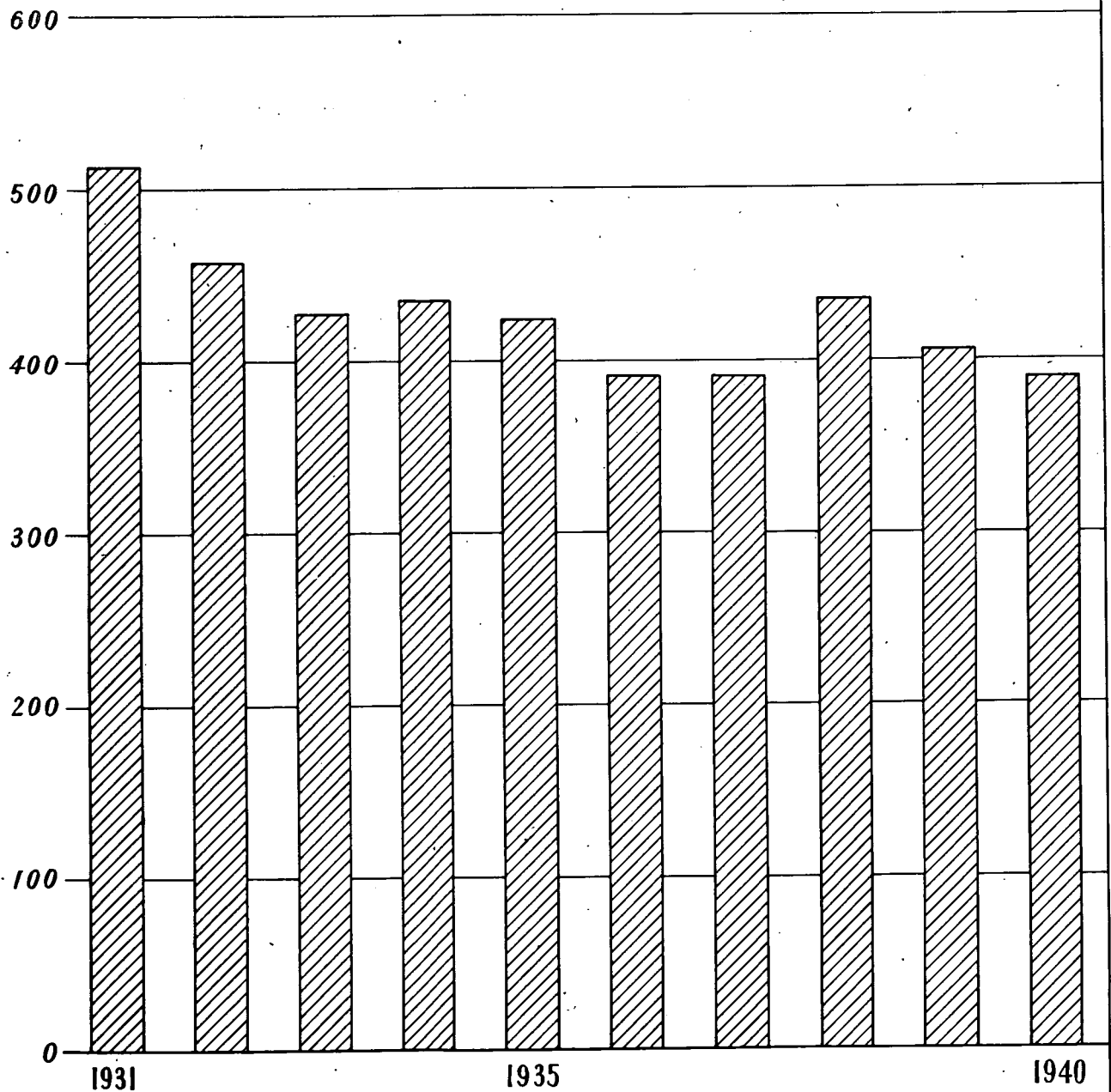
Through this cause there was a loss of 954 infants in 1940, or about 7 per cent of all infants dying in the first year of life. The range in provincial rates from 498 to 195 per 100,000 live births suggests that some portion, at least, of this loss could be avoided.

According to a series of postmortems carried out on stillborn babies, it was shown that some 23 per cent died from intracranial haemorrhage. No doubt if a similar survey were carried out in respect to deaths from injury at birth a somewhat comparable condition would be encountered.

# INFANT MORTALITY INJURY AT BIRTH

(# 160 a,b)

Rates per 100,000 Live Births



OTHER DISEASES PECULIAR TO EARLY INFANCY (Under three months)

Included under this heading are the following conditions: Atelectasis, icterus of the newborn, sclerema and oedema, athrepsia, others (including lack of care), and deaths for which no cause was reported (no doctor in attendance).

In 1940 the deaths recorded under this heading numbered 1,181. This is 8.6 per cent of the total infant mortality.

# INFANT MORTALITY

## OTHER DISEASES PECULIAR TO EARLY INFANCY

(# 161a-e)

Rates per 100,000 Live Births

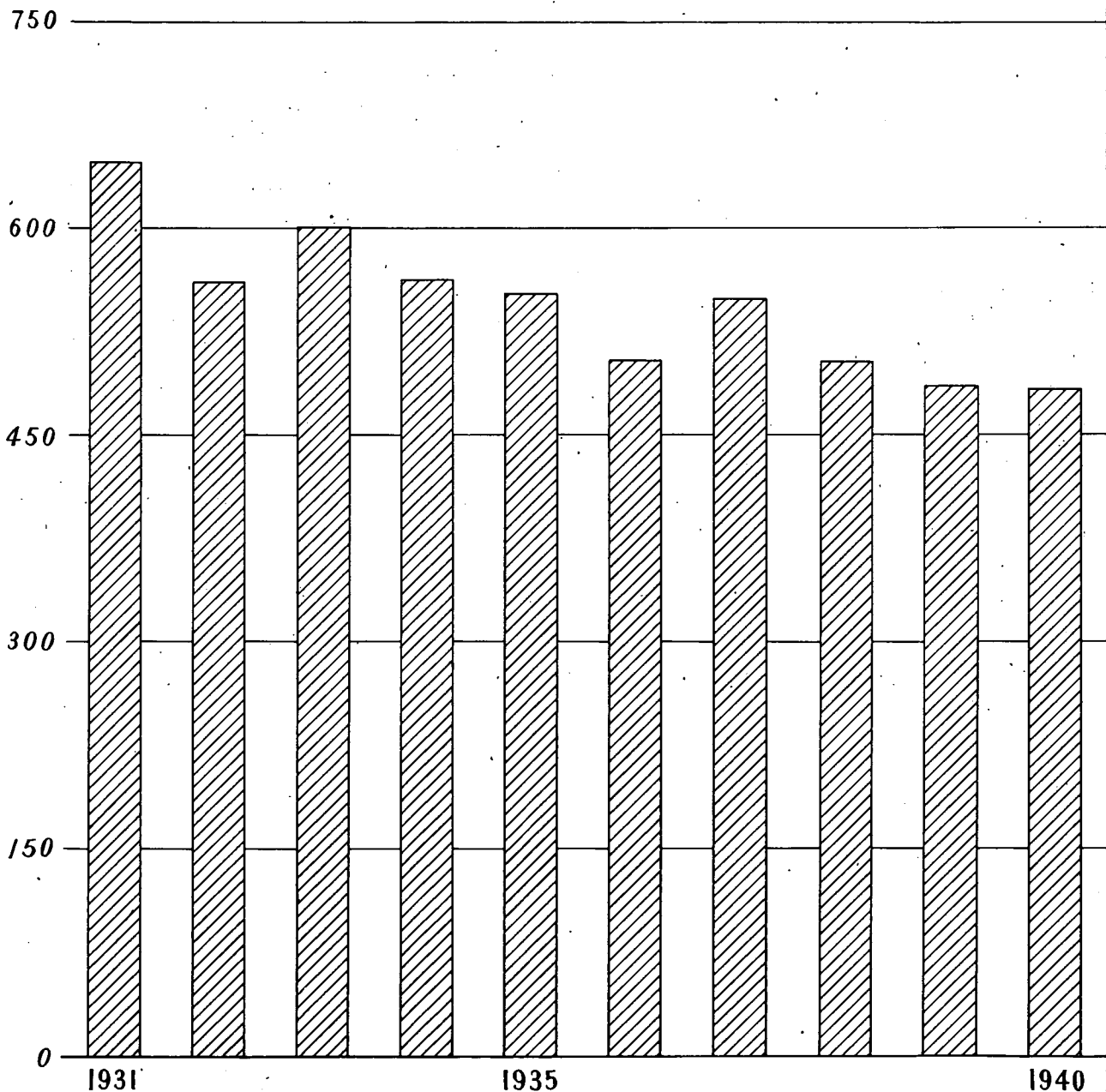


TABLE I.

BIRTHS, DEATHS AND MARRIAGES IN CANADA,<sup>(1)</sup> 1926 - 40.

| Year | Live births |                           | Stillbirths |                            | Total deaths |                           | Deaths from puerperal causes |                            | Deaths under one year |                            | Deaths under one month |                            | Marriages |                           |
|------|-------------|---------------------------|-------------|----------------------------|--------------|---------------------------|------------------------------|----------------------------|-----------------------|----------------------------|------------------------|----------------------------|-----------|---------------------------|
|      | Number      | Rate per 1,000 population | Number      | Rate per 1,000 live births | Number       | Rate per 1,000 population | Number                       | Rate per 1,000 live births | Number                | Rate per 1,000 live births | Number                 | Rate per 1,000 live births | Number    | Rate per 1,000 population |
| 1926 | 232,750     | 24.7                      | 7,105       | 30.5                       | 107,454      | 11.4                      | 1,317                        | 5.7                        | 23,692                | 102                        | 11,091                 | 48                         | 66,658    | 7.1                       |
| 1927 | 234,188     | 24.3                      | 7,336       | 31.3                       | 105,292      | 10.9                      | 1,300                        | 5.6                        | 22,010                | 94                         | 10,532                 | 45                         | 69,515    | 7.2                       |
| 1928 | 236,757     | 24.1                      | 7,577       | 32.0                       | 109,057      | 11.1                      | 1,331                        | 5.6                        | 21,195                | 90                         | 10,349                 | 44                         | 74,311    | 7.6                       |
| 1929 | 235,415     | 23.5                      | 7,566       | 32.1                       | 113,515      | 11.3                      | 1,341                        | 5.7                        | 21,674                | 92                         | 10,430                 | 44                         | 77,288    | 7.7                       |
| 1930 | 243,495     | 23.9                      | 7,707       | 31.7                       | 109,306      | 10.7                      | 1,405                        | 5.8                        | 21,742                | 89                         | 10,247                 | 42                         | 71,657    | 7.0                       |
| 1931 | 240,473     | 23.2                      | 7,619       | 31.7                       | 104,517      | 10.1                      | 1,215                        | 5.1                        | 20,360                | 85                         | 9,897                  | 41                         | 66,591    | 6.4                       |
| 1932 | 235,666     | 22.5                      | 7,284       | 30.9                       | 104,377      | 9.9                       | 1,181                        | 5.0                        | 17,263                | 73                         | 8,845                  | 38                         | 62,531    | 6.0                       |
| 1933 | 222,868     | 20.9                      | 6,848       | 30.7                       | 101,968      | 9.6                       | 1,111                        | 5.0                        | 16,284                | 73                         | 8,271                  | 37                         | 63,865    | 6.0                       |
| 1934 | 221,303     | 20.5                      | 6,452       | 29.2                       | 101,582      | 9.4                       | 1,167                        | 5.3                        | 15,870                | 72                         | 7,777                  | 35                         | 73,092    | 6.8                       |
| 1935 | 221,451     | 20.3                      | 6,449       | 29.1                       | 105,567      | 9.7                       | 1,093                        | 4.9                        | 15,730                | 71                         | 7,747                  | 35                         | 76,893    | 7.0                       |
| 1936 | 220,371     | 20.0                      | 6,350       | 28.8                       | 107,050      | 9.7                       | 1,233                        | 5.6                        | 14,574                | 66                         | 7,393                  | 34                         | 80,904    | 7.3                       |
| 1937 | 220,235     | 19.8                      | 6,275       | 28.5                       | 113,824      | 10.2                      | 1,071                        | 4.9                        | 16,693                | 76                         | 7,527                  | 34                         | 87,800    | 7.9                       |
| 1938 | 229,446     | 20.5                      | 6,426       | 28.0                       | 106,817      | 9.5                       | 968                          | 4.2                        | 14,517                | 63                         | 7,268                  | 32                         | 88,438    | 7.9                       |
| 1939 | 229,468     | 20.3                      | 6,365       | 27.7                       | 108,951      | 9.6                       | 967                          | 4.2                        | 13,939                | 61                         | 7,038                  | 31                         | 103,658   | 9.2                       |
| 1940 | 244,316     | 21.5                      | 6,634       | 27.2                       | 110,927      | 9.8                       | 978                          | 4.0                        | 13,783                | 56                         | 7,256                  | 30                         | 123,318   | 10.8                      |

(1) Exclusive of Yukon and the Northwest Territories.



TABLE 2.

DEATHS FROM PUERPERAL CAUSES IN CANADA<sup>(1)</sup> DURING THE YEARS 1931-40

| Int. list No. | Causes of death  | 1931  | 1932  | 1933  | 1934  | 1935  | 1936  | 1937  | 1938 | 1939 | 1940 |
|---------------|--|-------|-------|-------|-------|-------|-------|-------|------|------|------|
| 140           | Abortion with septic conditions  | 124   | 124   | 124   | 129   | 128   | 135   | 134   | 102  | 108  | 85   |
|               | (a) Abortion   | 108   | 107   | 99    | 101   | 93    | 104   | 102   | 72   | 76   | 58   |
|               | (b) Self-induced abortion  | 16    | 17    | 25    | 28    | 35    | 31    | 32    | 30   | 32   | 27   |
| 141           | Abortion without mention of septic conditions (haemorrhage included)                 | 49    | 28    | 26    | 40    | 42    | 53    | 26    | 43   | 32   | 39   |
|               | (a) Abortion   | 40    | 26    | 19    | 34    | 34    | 42    | 22    | 37   | 26   | 35   |
|               | (b) Self-induced abortion  | 9     | 2     | 7     | 6     | 8     | 11    | 4     | 6    | 6    | 4    |
| 142           | Ectopic gestation  | 39    | 41    | 37    | 53    | 33    | 38    | 29    | 40   | 25   | 34   |
|               | (a) With septic conditions   | 9     | 7     | 8     | 20    | 5     | 7     | 4     | 10   | 5    | 9    |
|               | (b) Without mention of septic conditions   | 30    | 34    | 29    | 33    | 28    | 31    | 25    | 30   | 20   | 25   |
| 143           | Other accidents of pregnancy (haemorrhage excluded)                                  | 11    | 13    | 8     | 12    | 8     | 6     | 18    | 14   | 14   | 10   |
| 144           | Puerperal haemorrhage  | 137   | 187   | 175   | 168   | 139   | 154   | 128   | 134  | 160  | 138  |
|               | (a) Placenta praevia   | 62    | 93    | 62    | 61    | 62    | 76    | 63    | 51   | 32   | 57   |
|               | (b) Other haemorrhages   | 75    | 94    | 113   | 107   | 77    | 78    | 65    | 83   | 128  | 81   |
| 145           | Puerperal septicaemia (not specified as due to abortion)                             | 310   | 282   | 249   | 272   | 259   | 305   | 247   | 195  | 197  | 183  |
|               | (a) Puerperal septicaemia and pyaemia  | 306   | 282   | 249   | 270   | 258   | 304   | 246   | 195  | 197  | 183  |
|               | (b) Puerperal tetanus  | 4     | -     | -     | 2     | 1     | 1     | 1     | -    | -    | -    |
| 146           | Puerperal albuminuria and eclampsia  | 229   | 219   | 201   | 209   | 213   | 240   | 222   | 186  | 184  | 186  |
| 147           | Other toxæmias of pregnancy  | 61    | 37    | 50    | 51    | 51    | 67    | 48    | 47   | 48   | 48   |
| 148           | Puerperal phlegmasia alba dolens, embolism or sudden death (not specified as septic) | 141   | 112   | 114   | 88    | 86    | 95    | 97    | 107  | 101  | 156  |
|               | (a) Phlegmasia alba dolens and thrombosis  | 19    | 21    | 20    | 20    | 17    | 23    | 27    | 31   | 16   | 21   |
|               | (b) Embolism   | 70    | 66    | 71    | 46    | 47    | 52    | 48    | 44   | 54   | 69   |
|               | (c) Sudden death   | 52    | 25    | 23    | 22    | 22    | 20    | 22    | 32   | 31   | 66   |
| 149           | Other accidents of childbirth  | 87    | 124   | 121   | 139   | 124   | 129   | 112   | 96   | 88   | 81   |
|               | (a) Caesarean operation  | 28    | 34    | 31    | 25    | 21    | 30    | 21    | 9    | 19   | 19   |
|               | (b) Other surgical operations and instrumental delivery                              | 11    | 10    | 17    | 19    | 14    | 10    | 8     | 10   | 10   | 8    |
|               | (c) Dystocia   | 21    | 35    | 23    | 36    | 43    | 44    | 33    | 39   | 27   | 16   |
|               | (d) Rupture of uterus in parturition   | 5     | 5     | 13    | 13    | 9     | 11    | 8     | 8    | 12   | 13   |
|               | (e) Others under this title  | 22    | 40    | 37    | 46    | 37    | 34    | 42    | 30   | 20   | 25   |
| 150           | Other or unspecified conditions of the puerperal state                               | 27    | 14    | 6     | 6     | 10    | 11    | 10    | 4    | 10   | 18   |
|               | (a) Puerperal diseases of the breast   | 1     | 1     | 1     | 1     | 1     | 1     | -     | -    | 1    | 2    |
|               | (b) Others under this title  | 26    | 13    | 5     | 5     | 9     | 10    | 10    | 4    | 9    | 16   |
|               | All puerperal causes   | 1,215 | 1,181 | 1,111 | 1,167 | 1,093 | 1,233 | 1,071 | 968  | 967  | 978  |

(1) Exclusive of Yukon and the Northwest Territories.

TABLE 3.

MATERNAL MORTALITY RATES IN CANADA<sup>(1)</sup> DURING THE YEARS 1931-40.

(Deaths from puerperal causes per 100,000 live births).

| Int. list No. | Causes of death  | 1931 | 1932 | 1933 | 1934 | 1935 | 1936 | 1937 | 1938 | 1939 | 1940 |
|---------------|--|------|------|------|------|------|------|------|------|------|------|
| 140           | Abortion with septic conditions  | 52   | 53   | 56   | 58   | 58   | 61   | 61   | 44   | 47   | 35   |
|               | (a) Abortion   | 45   | 45   | 44   | 46   | 42   | 47   | 46   | 31   | 33   | 24   |
|               | (b) Self-induced abortion  | 7    | 7    | 11   | 13   | 16   | 14   | 15   | 13   | 14   | 11   |
| 141           | Abortion without mention of septic conditions (haemorrhage included)                 | 20   | 12   | 12   | 18   | 19   | 24   | 12   | 19   | 14   | 16   |
|               | (a) Abortion   | 17   | 11   | 9    | 15   | 15   | 19   | 10   | 16   | 11   | 14   |
|               | (b) Self-induced abortion  | 4    | 1    | 3    | 3    | 4    | 5    | 2    | 3    | 3    | 2    |
| 142           | Ectopic gestation  | 16   | 17   | 17   | 24   | 15   | 17   | 13   | 17   | 11   | 14   |
|               | (a) With septic conditions   | 4    | 3    | 4    | 9    | 2    | 3    | 2    | 4    | 2    | 4    |
|               | (b) Without mention of septic conditions   | 12   | 14   | 13   | 15   | 13   | 14   | 11   | 13   | 9    | 10   |
| 143           | Other accidents of pregnancy (haemorrhage excluded)                                  | 5    | 6    | 4    | 5    | 4    | 3    | 8    | 6    | 6    | 4    |
| 144           | Puerperal haemorrhage  | 57   | 79   | 79   | 76   | 63   | 70   | 58   | 58   | 70   | 56   |
|               | (a) Placenta praevia   | 26   | 39   | 28   | 28   | 28   | 34   | 29   | 22   | 14   | 23   |
|               | (b) Other haemorrhages   | 31   | 40   | 51   | 48   | 35   | 35   | 30   | 36   | 56   | 33   |
| 145           | Puerperal septicaemia (not specified as due to abortion)                             | 129  | 120  | 112  | 123  | 117  | 138  | 112  | 85   | 86   | 75   |
|               | (a) Puerperal septicaemia and pyaemia  | 127  | 120  | 112  | 122  | 117  | 138  | 112  | 85   | 86   | 75   |
|               | (b) Puerperal tetanus  | 2    | -    | -    | 1    | (2)  | (2)  | (2)  | -    | -    | -    |
| 146           | Puerperal albuminuria and eclampsia  | 95   | 93   | 90   | 94   | 96   | 109  | 101  | 81   | 80   | 76   |
| 147           | Other toxæmias of pregnancy  | 25   | 16   | 22   | 23   | 23   | 30   | 22   | 20   | 21   | 20   |
| 148           | Puerperal phlegmasia alba dolens, embolism or sudden death (not specified as septic) | 59   | 48   | 51   | 40   | 39   | 43   | 44   | 47   | 44   | 64   |
|               | (a) Phlegmasia alba dolens and thrombosis  | 8    | 9    | 9    | 9    | 8    | 10   | 12   | 14   | 7    | 9    |
|               | (b) Embolism   | 29   | 28   | 32   | 21   | 21   | 24   | 22   | 19   | 24   | 28   |
|               | (c) Sudden death   | 22   | 11   | 10   | 10   | 10   | 9    | 10   | 14   | 14   | 27   |
| 149           | Other accidents of childbirth  | 36   | 53   | 54   | 63   | 56   | 59   | 51   | 42   | 38   | 33   |
|               | (a) Caesarean operation  | 12   | 14   | 14   | 11   | 9    | 14   | 10   | 4    | 8    | 8    |
|               | (b) Other surgical operations and instrumental delivery                              | 5    | 4    | 8    | 9    | 6    | 5    | 4    | 17   | 4    | 3    |
|               | (c) Dystocia   | 9    | 15   | 10   | 16   | 19   | 20   | 15   | 4    | 12   | 7    |
|               | (d) Rupture of uterus in parturition   | 2    | 2    | 6    | 6    | 4    | 5    | 4    | 35   | 5    | 5    |
|               | (e) Others under this title  | 9    | 17   | 17   | 21   | 17   | 15   | 19   | 13   | 9    | 10   |
| 150           | Other or unspecified conditions of the puerperal state                               | 11   | 6    | 3    | 3    | 5    | 5    | 5    | 2    | 4    | 7    |
|               | (a) Puerperal diseases of the breast   | (2)  | (2)  | (2)  | (2)  | (2)  | (2)  | -    | -    | (2)  | 1    |
|               | (b) Others under this title  | 11   | 6    | 2    | 2    | 4    | 5    | 5    | 2    | 4    | 7    |
|               | All puerperal causes   | 505  | 501  | 499  | 527  | 494  | 560  | 486  | 422  | 421  | 400  |

(1) Exclusive of Yukon and the Northwest Territories.

(2) Less than 1 per 100,000 live births.

TABLE 4.

DEATHS UNDER ONE YEAR, 1926 - 40.

C A N A D A

|                    | Average<br>1926 - 30 | Average<br>1931 - 35 | Average<br>1936 - 40 |
|--------------------|----------------------|----------------------|----------------------|
| Under one day      | 4,003                | 3,057                | 2,607                |
| Under one week     | 7,474                | 6,052                | 5,378                |
| Under two weeks    | 8,738                | 7,103                | 6,222                |
| Under three weeks  | 9,684                | 7,836                | 6,777                |
| Under one month    | 10,530               | 8,507                | 7,296                |
| 2nd month          | 2,163                | 1,640                | 1,383                |
| 3rd month          | 1,854                | 1,421                | 1,217                |
| 4th month          | 1,429                | 1,053                | 948                  |
| 5th month          | 1,153                | 857                  | 745                  |
| 6th month          | 972                  | 748                  | 621                  |
| 7th month          | 851                  | 647                  | 547                  |
| 8th month          | 744                  | 555                  | 487                  |
| 9th month          | 706                  | 485                  | 432                  |
| 10th month         | 641                  | 455                  | 385                  |
| 11th month         | 542                  | 396                  | 338                  |
| 12th month         | 480                  | 337                  | 302                  |
| 1st month          | 10,530               | 8,507                | 7,296                |
| 1st 4 months       | 15,975               | 12,621               | 10,844               |
| 2nd to 12 months   | 11,533               | 8,594                | 7,405                |
| Total under 1 year | 22,063               | 17,101               | 14,701               |

TABLE 5.

DEATHS UNDER ONE YEAR OF AGE IN CANADA (1) DURING THE YEARS 1931 - 40.

| Int.<br>list<br>No. | Causes of death                          | 1931   | 1932   | 1933   | 1934   | 1935   | 1936   | 1937   | 1938   | 1939   | 1940   |
|---------------------|--|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 7                   | Measles                                  | 56     | 119    | 60     | 73     | 181    | 115    | 268    | 91     | 69     | 68     |
| 8                   | Scarlet fever                            | 14     | 13     | 12     | 7      | 15     | 11     | 11     | 13     | 14     | 6      |
| 9                   | Whooping-cough                           | 502    | 339    | 388    | 605    | 599    | 392    | 485    | 334    | 382    | 472    |
| 10                  | Diphtheria                               | 54     | 27     | 19     | 11     | 11     | 11     | 24     | 20     | 31     | 12     |
| 11                  | Influenza                                | 691    | 667    | 747    | 399    | 676    | 576    | 939    | 519    | 749    | 598    |
| 15                  | Erysipelas                               | 63     | 68     | 60     | 58     | 53     | 69     | 22     | 17     | 15     | 10     |
| 23-32               | Tuberculosis                             | 195    | 174    | 150    | 138    | 147    | 158    | 149    | 144    | 108    | 88     |
| 34                  | Syphilis                                 | 173    | 190    | 165    | 165    | 182    | 207    | 202    | 103    | 86     | 76     |
| 79                  | Simple meningitis                        | 181    | 148    | 164    | 170    | 127    | 129    | 130    | 115    | 107    | 112    |
| 86                  | Convulsions                              | 281    | 234    | 198    | 195    | 184    | 162    | 139    | 140    | 138    | 153    |
| 106                 | Bronchitis                               | 104    | 92     | 77     | 66     | 83     | 76     | 66     | 67     | 50     | 72     |
| 107-109             | Pneumonia                                | 2,164  | 1,842  | 1,759  | 1,794  | 1,883  | 1,750  | 1,914  | 1,843  | 1,753  | 1,858  |
| 116-118             | Diseases of the stomach                  | 151    | 159    | 139    | 115    | 106    | 110    | 95     | 78     | 73     | 61     |
| 119                 | Diarrhoea and enteritis                  | 4,004  | 2,842  | 2,476  | 2,711  | 1,978  | 1,634  | 2,865  | 1,751  | 1,590  | 1,231  |
| 122                 | Hernia, intestinal obstruction           | 69     | 59     | 69     | 73     | 80     | 73     | 59     | 65     | 59     | 67     |
| 157                 | Congenital malformations                 | 1,317  | 1,225  | 1,266  | 1,218  | 1,263  | 1,259  | 1,306  | 1,298  | 1,325  | 1,409  |
| 158                 | Congenital debility                      | 1,899  | 1,573  | 1,441  | 1,344  | 1,192  | 1,165  | 1,116  | 1,143  | 1,124  | 989    |
| 159                 | Premature birth                          | 4,325  | 3,958  | 3,608  | 3,386  | 3,528  | 3,466  | 3,458  | 3,300  | 3,002  | 3,194  |
| 160                 | Injury at birth                          | 1,234  | 1,077  | 949    | 960    | 936    | 861    | 861    | 999    | 932    | 954    |
| 161                 | Other diseases peculiar to early infancy | 1,561  | 1,324  | 1,339  | 1,246  | 1,224  | 1,113  | 1,209  | 1,156  | 1,116  | 1,181  |
|                     | Other specified causes                   | 1,169  | 1,014  | 1,018  | 966    | 1,117  | 1,056  | 1,138  | 1,170  | 1,047  | 1,015  |
| 199,200             | Unspecified or ill-defined causes        | 153    | 119    | 180    | 170    | 165    | 181    | 237    | 151    | 169    | 157    |
|                     | All causes                               | 20,360 | 17,263 | 16,284 | 15,870 | 15,730 | 14,574 | 16,693 | 14,517 | 13,939 | 13,783 |

(1) Exclusive of Yukon and the Northwest Territories.

TABLE 6.

INFANT MORTALITY RATES IN CANADA <sup>(1)</sup> DURING THE YEARS 1931 - 40.

(Deaths under one year per 100,000 live births)

| Int.<br>list<br>No. | Causes of death                          | 1931  | 1932  | 1933  | 1934  | 1935  | 1936  | 1937  | 1938  | 1939  | 1940  |
|---------------------|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 7                   | Measles                                  | 23    | 50    | 27    | 33    | 82    | 52    | 122   | 40    | 30    | 28    |
| 8                   | Scarlet fever                            | 6     | 6     | 5     | 3     | 7     | 5     | 5     | 6     | 6     | 2     |
| 9                   | Whooping-cough                           | 209   | 144   | 174   | 273   | 270   | 178   | 220   | 146   | 166   | 193   |
| 10                  | Diphtheria                               | 22    | 11    | 9     | 5     | 5     | 5     | 11    | 9     | 14    | 5     |
| 11                  | Influenza                                | 287   | 283   | 335   | 180   | 305   | 261   | 426   | 226   | 326   | 245   |
| 15                  | Erysipelas                               | 26    | 29    | 27    | 26    | 24    | 31    | 10    | 7     | 7     | 4     |
| 23-32               | Tuberculosis                             | 81    | 74    | 67    | 62    | 66    | 72    | 68    | 63    | 47    | 36    |
| 34                  | Syphilis                                 | 72    | 81    | 74    | 75    | 82    | 94    | 92    | 45    | 37    | 31    |
| 79                  | Simple meningitis                        | 75    | 63    | 74    | 77    | 57    | 59    | 59    | 50    | 47    | 46    |
| 86                  | Convulsions                              | 117   | 99    | 89    | 88    | 83    | 74    | 63    | 61    | 60    | 63    |
| 106                 | Bronchitis                               | 43    | 39    | 35    | 30    | 37    | 34    | 30    | 29    | 22    | 29    |
| 107-109             | Pneumonia                                | 900   | 782   | 789   | 811   | 850   | 794   | 869   | 803   | 764   | 760   |
| 116-118             | Diseases of the stomach                  | 63    | 67    | 62    | 52    | 48    | 50    | 43    | 34    | 32    | 25    |
| 119                 | Diarrhoea and enteritis                  | 1,665 | 1,206 | 1,111 | 1,225 | 893   | 741   | 1,301 | 763   | 693   | 504   |
| 122                 | Hernia, intestinal obstruction           | 29    | 25    | 31    | 33    | 36    | 33    | 27    | 28    | 26    | 27    |
| 157                 | Congenital malformations                 | 548   | 520   | 568   | 550   | 570   | 571   | 593   | 566   | 577   | 577   |
| 158                 | Congenital debility                      | 790   | 667   | 647   | 607   | 538   | 529   | 507   | 498   | 490   | 405   |
| 159                 | Premature birth                          | 1,799 | 1,679 | 1,619 | 1,530 | 1,593 | 1,573 | 1,570 | 1,438 | 1,308 | 1,307 |
| 160                 | Injury at birth                          | 513   | 457   | 426   | 434   | 423   | 391   | 391   | 435   | 406   | 390   |
| 161                 | Other diseases peculiar to early infancy | 649   | 562   | 601   | 563   | 553   | 505   | 549   | 504   | 486   | 483   |
|                     | Other specified causes                   | 486   | 430   | 457   | 437   | 504   | 479   | 517   | 510   | 456   | 415   |
| 199,200             | Unspecified or ill-defined causes        | 64    | 50    | 81    | 77    | 75    | 82    | 108   | 66    | 74    | 64    |
|                     | All causes                               | 8,467 | 7,325 | 7,307 | 7,171 | 7,103 | 6,613 | 7,580 | 6,327 | 6,074 | 5,641 |

(1) Exclusive of Yukon and the Northwest Territories.



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