PUBLIC HEALTH REPORTS

VOL. 42 MARCH 18, 1927 NO. 11

THE PROBLEM OF FETAL AND NEONATAL DEATH

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I. Extent of the problem

In the year 1924, in the birth registration area of the United States (estimated to contain 76.2 per cent of the population), there were born alive 1,930,614 babies. In addition there were 75,817 dead births. Since the registration of stillbirths is notoriously inadequate, the number of infants born dead is obviously much greater than the figures indicate, and the number of actual and possible additions to the population was decidedly in excess of the reported 2,006,431.

Of the infants born alive, 28,631 died before they were one day old. Within a week, the number rose to 64,004; two weeks brought the toll up to 69,688; and in less than a month 74,527 of the babies born alive in the registration area in 1924 had died (1). Since every stillbirth has been a potential live birth and a possible increment to the population, the loss to the population through death in infancy must necessarily include the stillbirths.

When to the number of neonatal deaths, 74,527, are added the 75,817 stillbirths we have a total of 150,344 neonatal (within one month of birth) and fetal deaths, which is 70.7 per cent of the whole number of infant deaths, antenatal, natal, and postnatal, in the birth registration area.

These figures are for the birth registration area only. If the same rates obtained for the remainder of the country, the stillbirths and early infant deaths amounted to about 100,000 each for the entire United States in 1924. More than one-half of the total infant mortality in the country is accounted for by these early infant deaths in the first month (1), (2).

These figures indicate the seriousness of the problem, and its gravity is increased by the fact that the fall in the neonatal mortality rate does not keep pace with the fall in the total infant mortality rate. A comparison between the two rates in this country can be made only for the past nine years, before which time we have no record of the neonatal rates.

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Total infant mortality rates and neonatal mortality rates in the expanding registration area 1916 to 1924

Year	Total infant mortality rate	Neonatal mortality rate
1916	101	44
1917	94	43
1918	101	44
1919	87	42
1920	86	42
1921	76	40
1922	76	40
1923	77	40
1924	71	39

It will be seen that in nine years there was a fall in the total infant mortality rate of about 30 per cent, while in the neonatal rate the decrease was about 11 per cent. In other words, the total rate has fallen almost three times as fast as the neonatal rate.

The graphs in Figure 1 show how slight is the downward trend in the neonatal rates as compared with that of the total infant mortality rates.

In England in the 14 years from 1911 to 1924 there was a decrease in the neonatal rate of 17.5 per cent (3). In New Zealand there has been practically no decrease in the average of the male and female neonatal rates for the 50 years from 1872 to 1923 (4). The total infant mortality rate fell from 106 in 1872–1874 to 48.6 in 1915–1919.

Our neonatal mortality rate is greater than that of England and Wales (1924), Australia (1924), Ireland (1922), New Zealand (1924), Netherlands (1922), and Uruguay (1923).

When to the stillbirths in the United States are added the neonatal deaths, we have approximately 200,000 fetal and neonatal deaths in a single year in this country. If we can secure a reduction of only 12 per cent in another nine years, and our present birth rate continues, we shall have lost upward of 2,000,000 prospective citizens at the end of the next decade. This is naturally a matter of grave concern to the country.

II. Causes of Fetal and Neonatal Mortality

(A) CAUSES OF STILLBIRTHS

Considerable confusion has centered around the definition of stillbirths. The following classification, however, is that used by the Health Organization of the League of Nations (5) and in the reports of the Ministry of Health of Great Britain (6), as well as by investigators in this country (7):

Antenatal stillbirth: Stillbirth before labor.

Intranatal stillbirth: Stillbirth during labor.

Postnatal stillbirth: Stillbirth a short time after birth, during which the heart beats but respiration is never established.

In the infant mortality statistics for 1924, issued by Census Bureau (1), from a selected section of the United States registration area (Connecticut, Illinois, New Jersey, Oregon, Utah, District of Columbia, Baltimore, Md., and New York City) the causes of the stillbirths reported are those listed below, together with the percent-

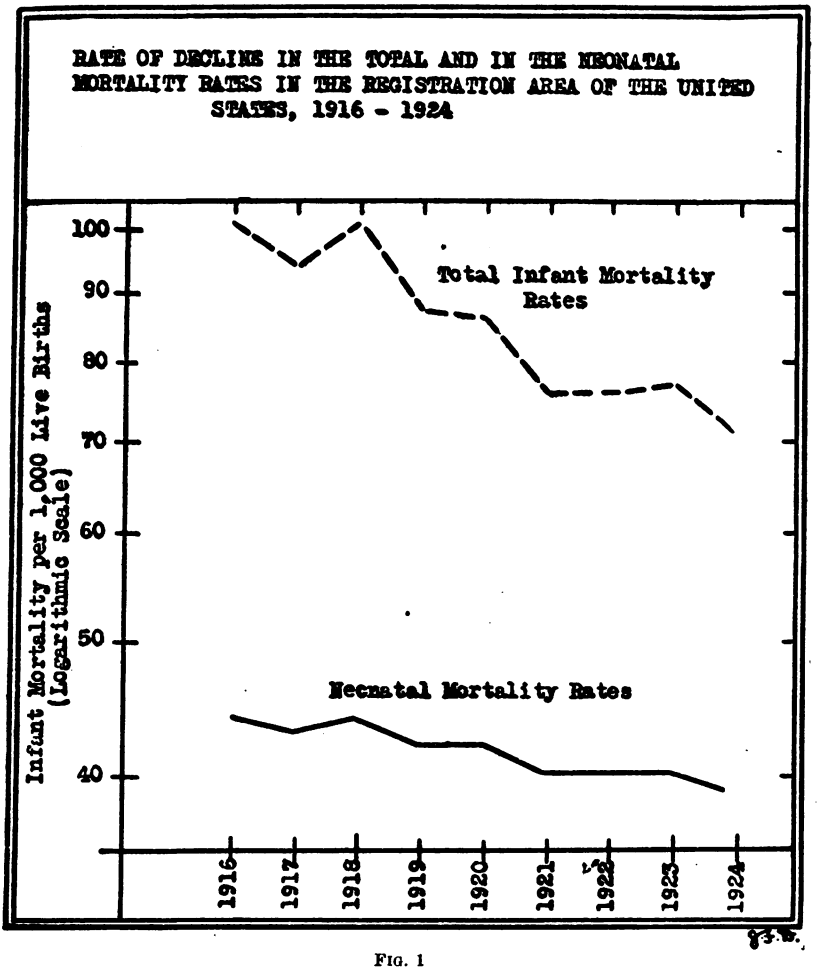

FIG. 1

ages of certain causes to stillbirths from all causes. The specified causes are arranged in the order of their frequency.

Causes of stillbirth	Per cent
All causes	100
Prolapse and compression of cord	9. 1
Diseases of placenta and membranes	8. 9
Difficult labor	8. 6
Abortion, miscarriage, and premature birth	8. 2
Malpresentation	5. 3

Causes of stillbirth	Per cent
Albuminuria and other diseases incident to pregnancy	5. 2
Asphyxia of child (cause not stated)	4. 1
Malformation	4. 1
Traumatism and overwork	3. 7
Syphilis	2. 6
Death in utero	2. 8
General diseases	3. 1
Other specified causes	4. 0
Causes not specified and unknown	30. 2

These are the actual diagnoses made by the attendants who reported the 18,634 stillbirths under consideration, and may be considered as representative of the knowledge of the causation of stillbirths of the average accoucheur in the selected area. It is not to be supposed that other than a clinical diagnosis was made in the vast majority of these cases.

It is interesting to compare these diagnoses with the conclusions reached by the few investigators who have made a study of the pathology of fetal and neonatal death. Prominent among these are Williams and Adair and O'Brien in the United States, Holland in England, and Schwartz in Germany. In the studies made by autopsy upon stillborn babies and those dying in the neonatal period, evidence is obtained which vastly supplements the clinical diagnosis. Williams's (8) series of 302 fetal deaths occurring in 4,000 consecutive deliveries included infants dying at the time of labor, those dying during pregnancy from the time of viability onward, and those during the two weeks immediately following labor.

This, therefore, includes neonatal as well as fetal deaths, and the causes determined refer to the group as a whole. The close relationship between fetal and neonatal deaths is well expressed by Holland (6) who states that "the high infant death rate during the first few days and weeks of life is doubtless due in part to causes which, in some cases, result in fetal death, and we may reasonably hope that a reduction of stillbirths would be associated with a lowered infant mortality."

Of the 302 dead babies in Williams's series, 212 came to autopsy. His analysis of the causes of death in the whole series resulted in the following figures:

Cause	Per cent	Cause	Per cent
Syphilis	[1] 34. 44	Placenta praevia and premature separation	5. 26
Dystocia	15. 20	Deformities	3. 64
Toxemia	11. 55	All other causes	10. 69
Prematurity	10. 59		
Cause unknown	8. 61		

Prematurity was assigned as the cause of death only after the exclusion of any underlying cause, such as toxemia, placenta praevia, or acute infectious disease in the mother. To be classed as a cause of

[1] White only, 12.12.

death, it was necessary that the imperfect state of development of the child should be the only ascertainable cause.

A clinical history and Wassermann test were obtained in the case of each of the 4,000 mothers; a microscopical examination of the placenta was made and a fetal Wassermann was taken at the time of birth.

In a study of 705 fetal and neonatal deaths reported by Williams in 1915 (9) the following figures are given:

Causation of 705 fetal deaths (white and colored)

Cause	Number	Per cent incidence	Cause	Number	Per cent incidence
Syphilis	186	26.4	Deformity	24	3.4
Unknown	127	18.0	Inanition	23	3.3
Dystocia	124	17.6	Placenta praevia	22	3.1
Various	79	11.2	Premature separation of placenta	13	1.8
Prematurity	50	7.1	Suffocation (criminal)	6	.9
Toxemia	46	6.5	Debility	5	.7

In this valuable study each placenta was carefully described and subjected to microscopical examination and nearly 90 per cent of the dead babies came to autopsy. Under dystocia is grouped the deaths following mechanically difficult labor, whether operative or spontaneous. Toxemia includes eclampsia, nephritis, and occasional rare conditions, and Williams calls attention to the fact that this cause of death, which is usually considered the best point of attack in prenatal care, is only operative in 6.5 per cent of the deaths.

In the series of Adair and O'Brien (7) autopsies were performed on approximately 240 cases. Antenatal stillbirths made up nearly one-fifth of the total and were caused mainly by toxemia of pregnancy, syphilis, and undetermined causes.

About one-sixth of the series were intrapartum stillbirths, in which birth trauma played a large part.

The postnatal stillbirths included a considerable number of major malformations. About one-half of these deaths were caused by trauma.

Adair and O'Brien (7) found the cause of fetal and neonatal death in a series of over 200 cases approximately as given in the table below. These figures are approximations from the untabulated report studied.

Cause	Per cent incidence	Cause	Per cent incidence
Malformations	11.42	Prematurity	6.67
Toxemia	10.47	Infection in infant	6.67
Syphilis	7.61	Various	11.42
Placental causes	2.86	Unknown	6.67
Dystocia and birth injury	36.19		

Eardly Holland (6) reported, in 1922, the results of a brilliant piece of work in which an exhaustive study was made of 300 fetal deaths. He concluded that the primary causes of these deaths were—

(*a*) Maternal states, such as syphilis and eclampsia.

(*b*) Complications of labor, such as placenta praevia, contracted pelvis.

(*c*) Placental states, such as retro-placental haematoma.

(*d*) Fetal states, such as prematurity and deformities.

Holland's methods of studying the various factors concerned were such as to give his results great weight. In the case of the mother, he secured a clinical and obstetrical history, a Wassermann test, and a catheter specimen of urine, if possible. A Wassermann reaction in the father was obtained where possible.

The fetus was weighed, measured, and given a complete post-mortem examination. A culture was made from the heart blood. No Wassermann reaction was obtained, but the fetal organs were weighed and measured; the organs of the fresh fetuses were examined histologically; and pieces of liver, spleen, lung, kidney, and suprarenal capsule were examined by Levaditi's method for *Treponema pallidum*. In 200 fetuses, dark field examination was also employed. The ends of the long bones of the fetus were examined for osteo-chondritis. The placenta was weighed, measured, and examined microscopically and macroscopically. The umbilical cord was also examined.

This painstaking care resulted in ascertaining the causes of death in Holland's series to be as follows:

Causes of death in 300 fetuses (Holland)

Cause	Per cent incidence	Cause	Per cent incidence
Syphilis	16	Placental causes	6
Toxemia of pregnancy	10	Fetal deformity	5
Complications of labor	51	Unknown	10
Maternal diseases	2		

Holland notes that his findings with regard to the incidence of syphilis are in close accord with the results obtained by Williams in 1915 (9). This refers to the white cases only in Williams's series. He concludes that cranial stress is responsible for far more fetal deaths than has been hitherto suspected. Among 167 fresh fetuses the tentorium cerebelli was found torn in 81 (48 per cent), and this was associated with tearing of the falx cerebri in 5 cases and with subdural hemorrhage in all but 6. More fetuses died from the complications of labor than from maternal or placental diseases during pregnancy.

Of 100 dead-born viable fetuses Holland found that, generally, 40 were macerated and 60 were fresh (10). Since maceration indicates that the death of the fetus occurred before labor, the figures support the conclusion stated.

In one series of autopsies on stillborn fetuses, Holland (11) found injury of the dura in about half the cases.

In Schwartz's (12) autopsies, evidence of hemorrhage and degenerative changes in the brain substance was found in the big majority of cases up to 5 months of age.

The recent study of Holland and Lane-Claypon on fetal and neonatal death (13) of a series including 1,269 stillbirths and 404 neonatal deaths brings out again the predominance of the complications of labor as a causative factor. In 1,408 of these cases the following percentage distribution was found:

Causes of fetal and neonatal deaths (Holland and Lane-Claypon)

Cause	Per cent	Cause	Per cent
Complications of labor	35. 5	Placental states	1. 2
Antepartum hemorrhage	18. 8	Fetal states	10. 5
Toxemia of pregnancy	11. 1	Prematurity	3. 6
Syphilis	8. 7	Unknown	8. 1
Maternal states	2. 5		

The frequency of intracranial lesions is not as high as in Holland's earlier study, which may be accounted for by the fact that the data in the later report are less detailed.

Ehrenfest (14) states that in "at least 40 per cent of all autopsies properly performed on all stillborn infants and those dying within the first few days after birth, intracranial traumatic lesions of some sort are discovered." He considers that many of the infant deaths ascribed to asphyxia are due to serious trauma, since the appearance of the child in these cases closely resembles that of deep asphyxiation.

It will be of interest to note the causes of stillbirth as given by students of the subject who have not based their diagnoses on pathological examinations.

Lezynsky and Brown (15) state that the causes of stillbirth in San Francisco in 1919 were as follows:

Causes of stillbirth in San Francisco, Calif., 1919

Cause	Per cent incidence	Cause	Per cent incidence
Congenital defect in infant	7. 63	Syphilis	0. 56
Injuries at birth	8. 76	Prematurity	27. 12
Toxemia in mother	9. 88		

Howard (16) gives no figures, but agrees that fetal mortality is influenced by errors of implantation and of development of the fetus, accidents in utero, malposition of fetus and cord, infectious diseases of the mother or of the fetus or of both, deformities, various toxemias and chronic diseases of the mother, and by injuries and accidents in pregnancy and labor.

In Beck's (17) series of 1,000 cases supervised during pregnancy there were 19 stillbirths (1.9 per cent) the causes of which were as follows: Complications of labor, 5; toxemia, 4; accidental hemorrhage, 2; placenta praevia, 1; syphilis, 1; not stated, 6.

Baker (18) considers that stillbirths are due to falls, accidents, fright, injury, shock, induced labor, debility, malnutrition, fatigue, overwork, severe illness, syphilis, or abnormal development of the child before birth.

In Greenhill's (19) series of 78 mothers with eclampsia there were 23 fetal deaths, including macerated fetuses, stillborn fetuses (presumably fresh), and neonatal deaths. Eclampsia was presumably the cause of these 23 deaths, but it is impossible to say just what proportion of the mortality was due to stillbirths.

Davis and Harrar (20) note that in 472 cases of toxemia of pregnancy with convulsions (eclampsia) at the New York Lying-In Hospital prior to 1919, there were 175 stillbirths, or 37 per cent. Since 1918, in 134 cases there were 29 stillbirths, or 22 per cent.

Hipsley (21) reported a series of 100 deaths occurring in 1,417 cases. Of this number, 68 were stillborn and were due to the following "probable causes:"

Probable cause of death	Fresh stillbirth	Macerated stillborn	Total	Per cent
Eclampsia and allied conditions	12	5	17	25.0
Severe anemia and acute infections associated with high temperature	1	1	2	2.94
Syphilis in mother	2	0	2	2.94
Accidental hemorrhage	5	2	7	10.29
Placenta praevia	4	1	5	7.35
Congenital deformities	2	1	3	4.41
Malpresentation and malposition	3	0	3	4.41
Dystocia due to disproportion between head and pelvis—high forceps or craniotomy	8	0	8	11.76
Breech births	6	0	6	8.82
Prolapsed cord	5	0	5	7.35
Cause not ascertainable	4	6	10	14.71

It will be seen that in this series by far the greatest fetal mortality has been ascribed to the toxemias of pregnancy (25 per cent). However, there are some changes which must be made in this tabulation if the results are to be compared with those of Williams and other investigators. Among the dystocia should be included those deaths due to breech births, prolapsed cord, and malpresentations and malpositions. With this correction, stillbirths due to dystocia or the complication of labor (32.34 per cent) are 29 per cent greater than those due to the toxemias of pregnancy.

Doctor King (22), medical officer of health of the Borough of Ilkeston, in a series of 35 stillbirths, ascribes the fetal deaths to the following causes:

	Per cent
Complications of labor	31. 4
Syphilis	15. 5
Toxemia of pregnancy, "such as excessive vomiting of pregnancy and diseased condition of placenta"	14. 2
Miscellaneous maternal diseases and fetal deformities	11. 9
Toxemia of pregnancy (macerated fetus)	9. 1
Various illnesses of mother just before confinement	8. 5
Unknown	9. 1

Complications of labor again stand out as the most important causes of stillbirths. The criticism which might be made of this report is that it fails to show accurately the incidence of toxemia as a cause of stillbirth. If everything mentioned in the report under this classification can be legitimately included therein, the percentage incidence of toxemia would be 23.3; but whether such summation is justifiable is a question. There can be no doubt that "vomiting of pregnancy" is due to toxemia; but the term "diseased conditions of the placenta" may be used to describe various abnormalities, some of which probably have no connection with toxemia. If in this particular instance, infarcts of the placenta are meant, some of these might properly be ascribed to toxemia, as the association of these conditions with albuminuria and pronounced nephritic toxemia has been noted.

The Health Organization of the League of Nations (5) sums up the causes of stillbirths in a few concise phrases:

The cause of antenatal fetal death is usually some maternal or placental disease. The fetus is usually macerated when born.

The common causes of intranatal fetal death are intracranial injury, prolonged labor, prolapse of cord, separation of placenta, etc.

The common causes of postnatal fetal death are severe head injuries due to difficult labor.

Miscarriage.—It is extremely difficult to determine accurately the frequency with which abortion, or miscarriage, occurs or the percentage incidence of the various etiological factors. Since the laws in most of the States relating to the reporting of stillbirths do not require reports on all products of conception, it follows that many, if not most, abortions or miscarriages are not reported.

Statistics given by various authors differ widely, but Rock (23) in a recent paper concludes that, in general, about one out of every four pregnancies ends prematurely. Ballantyne (24) states that "there is no certain knowledge regarding the miscarriage rate, but it may be safely stated to be not less than 150 per 1,000 conceptions." Williams (25) concludes that a conservative estimate indicates that about every fifth or sixth pregnancy in private practice ends in spontaneous abortion. This does not take into account the very earliest cases or those abortions criminally produced.

These estimates give an idea of the magnitude of the nonviable fetal loss.

Since the expulsion of the ovum in the early months of pregnancy is usually preceded by the death of the fetus, Williams (25) ascribes as cause of the death and subsequent abortion the following factors: Abnormalities of development of the fetus; infectious diseases or poisoning, with phosphorus, lead, illuminating gas, etc., of the mother; malnutrition of mother (very exceptional); abnormalities of generative tract; possibly chronic metritis; reflex influences (few cases); alcohol and other chronic poisoning; defective diet (possible). Traumatism and overwork are frequently assigned as causes of miscarriage.

Rock (23) cites Huntington's paper (26) in which the latter states that, in a series of 39 miscarriages, 21 were definitely due to defective germ plasm. Three were probably due to the same cause. One was due either to defective germ plasm or arrested development due to extreme retroversion. In one case the death of the fetus was caused by extreme fibroid degeneration of the uterus. In another the degeneration of the fetal tissue was apparently caused by nephritis. One followed appendectomy with drainage; another, dilation and curettage for continual bleeding; and one followed rupture of amniotic sac by artificial means. Two were due to placenta praevia; three were therapeutic abortions; and four were due to unexplained causes. Seventy per cent of the fetuses were dead before the miscarriage occurred. In 20 per cent the cases were not accidental; and in only 10 per cent could trauma or mental shock be possibly ascribed as a cause.

Rock (23) refers to Hunner's (27) work in support of ureteral stricture as a cause of abortion; and to the work of McCollum (28) and Evans and Bishop (29) as indicating that a defective diet may possibly be incriminated in some cases.

Since the Holland study of fetal death is by far the best that has been done when stillbirths alone are considered, a comparison of his data with those of the Bureau of the Census will tend to bring out clearly the difference between the knowledge obtained by careful autopsy and that possessed by the average obstetrician or midwife.

Causes of fetal death or stillbirths

Cause	Bureau of the Census	Holland
	Per cent	*Per cent*
Complications of labor	23.1	51
Diseases or conditions of placenta and membranes	8.9	6
Prematurity (abortion, miscarriage, and premature birth)	8.2	
Toxemias of pregnancy	5.2	10
Malformation (congenital defects)	4.1	5
Syphilis	2.6	16
Traumatism and overwork	3.7	
Other diseases and conditions of mother	3.1	2
Various causes	10.9	
Not specified and unknown	30.2	10

The application of the Chi square test to these two sets of items shows that there is almost no probability that the differences between the two distributions could be due to chance alone. The causes assigned by autopsy are quite different from those assigned by clinical diagnosis.

(B) CAUSES OF NEONATAL DEATHS

Since medical authorities agree that fetal deaths, or stillbirths, and neonatal deaths are largely due to the same causes, the investigators who have done the most important work in the etiology of these conditions have made no attempt to separate the two. Hence, in the studies of Williams, Adair, and Holland and Lane-Claypon the causes of fetal and neonatal death are considered together.

In the report of the Bureau of the Census (1) the most important of the causes of death under 1 month of age are given in the list below. The causes have been arranged in the order of their greatest incidence, as reported by the attendants who notified the deaths. It will be seen that premature birth accounts for almost one-half this mortality.

Most important causes of death under 1 month, birth registration area, 1924

Cause	Per cent	Cause	Per cent
Premature birth	43. 9	Syphilis	0. 8
Injury at birth	12. 4	External causes	. 7
Congenital malformation	11. 9	Whooping cough	. 4
Other diseases of early infancy	6. 2	Diseases of stomach	. 4
Congenital debility	5. 2	Measles	. 2
Respiratory diseases	5. 2	Erysipelas	. 2
Diarrhea and enteritis	3. 0	Tetanus	. 2
Convulsions	1. 0		

It is worthy of note that the respiratory diseases constitute quite as important a cause of death as "congenital debility," which was formerly a cloak for many doubtful diagnoses.

Adair's studies (7) led him to the conclusion that probably 50 per cent of the deaths in early neonatal life are due to birth trauma, and that infection plays a very prominent rôle after the fourth day of life. In his series the main factors in the etiology of fetal and neonatal deaths are toxemias of pregancy, birth trauma, syphilis, other infections and undetermined causes. Premature birth due to some of these factors and to other unintentional causes plays an important rôle.

Holt and Babbitt (30), in a study made in 1914, state that prematurity was responsible for half the deaths occurring during the first 14 days in a series at the Sloane Hospital, New York. Congenital weakness and atelectasis together made up 58 per cent of the total deaths; complications of labor, 20 per cent; malformations and congenital diseases other than syphilis, 4 per cent; and syphilis 4 per

cent. In this series, the number of stillbirths was one-and-one-half times as large as the number of deaths from all causes during the first two weeks. Holt and Howland (31), in 1919, stated that about one-third of the deaths at birth or in the first few days, at the Sloane Hospital, were due to complications of labor.

Lezynsky and Brown (15), in San Francisco, found the causes of deaths within the first and second weeks to be as follows:

Cause	Per cent	Cause	Per cent
Congenital defects in infant	30. 14	Syphilis	1. 37
Injuries at birth	7. 30	Prematurity and debility	41. 10
Toxemia in mother	4. 57		

In studies made by the Children's Bureau (32) in Gary, Ind., prematurity was found to be the largest single cause of early death. This was also true of Akron, Ohio (33), and Baltimore, Md. (34); but in New Bedford, Mass. (35), congenital debility far outstripped prematurity as a cause of death. In the light of such studies as those of Williams, Adair, and Holland, we know that many of these deaths were due to causes underlying the prematurity.

In Beck's series (17), of 1,000 consecutive deliveries there were 6 deaths of infants under 14 days—1 caused by acrania, 1 premature, 1 case of syphilis, 1 of umbilical hemorrhage, and 2 in which the causes are not stated. These, however, were all supervised during pregnancy, and can not be compared with a random group.

In a New Zealand study (4), among 3,399 infants dying under 1 month of age from 1920 to 1923, the causes were stated as follow:

Cause	Per cent	Cause	Per cent
Premature birth	45. 2	Diarrhea, enteritis, etc	1. 3
Congenital debility, malformation, and icterus	26. 5	Syphilis	. 4
Convulsions	3. 3	Influenza	. 2
Bronchitis, pneumonia, etc	2. 3	Various	20. 8

Premature birth appeared to be the cause in almost half of the series, while congenital debility, malformation, and icterus accounted for more than one-fourth of the deaths.

In Hipsley's (21) Australian series of 100 fetal and neonatal deaths, 35 died in the neonatal period. The "probable causes" of these deaths were as follows:

Cause	Per cent	Cause	Per cent
Eclampsia and allied conditions	15. 62	Placenta praevia	3. 12
Severe anemia and acute infections	3. 12	Hemorrhagic disease of infant	15. 62
General peritonitis from ruptured appendix	3. 12	Congenital deformities	9. 38
Epilepsy	3. 12	Malpresentations and malpositions	3. 12
Syphilis in mother	3. 12	Dystocia	3. 12
Accidental hemorrhage	15. 62	Cause not ascertainable	21. 88

In this series practically one-fourth (24.98 per cent) of the deaths were due to maternal causes—toxemia or various diseases and conditions of the mother other than syphilis. The latter alone is ascribed as a cause in only 3.12 per cent. Including accidental hemorrhage with placenta praevia (because antenatal hemorrhage is usually associated with placental causes and postnatal hemorrhage is sometimes placental in origin), we have 18.74 per cent of the deaths due to probable placental causes. Disease and deformities of the infant combined are responsible for 25 per cent of the mortality. The complications of labor here do not seem to constitute such a serious problem. Only 6.24 per cent of the deaths are ascribed to this cause.

The statistics of the Medical Research Committee (36) for 1914 place premature birth at the head of the list of causes of infant mortality from developmental conditions:

Deaths under 1 month from developmental conditions (1914)

Premature birth	17.88
Congenital malformation	2.47
Atrophy, debility, and marasmus	6.55

Hipsley makes the statement that many of his cases were premature, but does not give prematurity as a cause of death. This is more in line with the investigators who seek the underlying cause of prematurity. It is a generally recognized fact that a premature infant has less chance of survival than a full term infant, but it is rather begging the question to ignore the cause of prematurity.

Pirquet (37) cites Nobel's (38) investigations in support of his statement that a part of the mortality loosely ascribed to "lack of vitality," premature birth, etc., is in reality due to respiratory infections. He has devised a method (not yet published) for fixing the "apex" of a disease, that is, that day in the calendar year upon which the largest number of deaths occur. The "apices" of the number of deaths, based on English statistics, are as follows:

Disease or condition	Number of deaths	Date of apex—average for 1912–1919	Disease or condition	Number of deaths	Date of apex—average for 1912–1919
Infantile debility	83,000	Jan. 24	Bronchitis	381,000	Feb. 6
Premature birth	140,000	Feb. 2	Pneumonia	120,000	Do.
Congenital malformation	38,800	Feb. 5	Broncho-pneumonia	176,000	Feb. 9

The rates from premature birth and congenital debility in the United States show little variation from month to month (1). It is to be assumed that a part of these deaths are due to other causes, and respiratory infections are probably responsible for a considerable amount of this mortality. Adair (39) says that pulmonary infections are not an infrequent cause of neonatal death.

In order to obtain a clear idea of the consensus of opinion regarding the causation of fetal and neonatal death, it will be necessary to make a careful study of the data already submitted. In order to reduce the number of classes of causes and to facilitate comparison of the data from various sources, it is necessary to group certain causes given in the tables, and use a common nomenclature as far as possible. Such a simplification of the data for the Bureau of the Census (1) concerning the causes of stillbirth results in the following figures:

Cause	Per cent	Cause	Per cent
Dystocia (including complication of labor and birth injury)	23. 1	Traumatism and overwork	3. 7
Diseases of placenta and membranes	8. 9	Syphilis	2. 6
Prematurity (abortion, miscarriage, and premature birth)	8. 2	Other diseases and conditions of mother	3. 1
Toxemia of pregnancy	5. 2	Other specified causes	10. 9
Malformation	4. 1	Causes not specified and unknown	30. 2

In the following table is shown the percentage incidence of various causes of fetal and neonatal death. The data from the Bureau of the Census represent the clinical diagnoses made by the various attendants at the births. The last three columns contain data obtained from autopsies and represent the best investigations in this country and England. While the census reports embrace both the white and colored races, the latter constitutes only about 7 per cent of the total population. In Williams's first series both white and colored are included, but in the second, only white infants are studied. The remaining two investigations are of whites only.

Causes of fetal and neonatal death—Rates

	Bureau of the Census			Williams (fetal and neonatal deaths)		Adair and O'Brien, fetal and neonatal deaths	Holland and Lane-Claypon, fetal and neonatal deaths
	Stillbirths	Neonatal deaths	Fetal and neonatal (average of preceding columns)				
Number of cases	18, 634	74, 527	.....	[1] 302	[2] 273	[3] 237	[3] 1, 408
Dystocia (including complications of labor, malpresentation, and birth injury)	23. 1	12. 40	17. 75	15. 20	22. 3	36. 19	35. 5
Prematurity (abortion, miscarriage, and premature birth)	8. 2	43. 97	26. 08	10. 59	5. 1	6. 67	3. 6
Toxemia of pregnancy	5. 2	.....	2. 60	11. 55	11. 7	10. 47	11. 1
Syphilis	2. 6	. 79	1. 69	34. 44	12. 8	7. 61	8. 7
Malformations	4. 1	11. 92	8. 01	3. 64	6. 6	11. 42	[4] 10. 5
Placenta and membranes	8. 9	.....	4. 45	5. 28	9. 9	2. 86	[5] 20. 0
Traumatism and overwork	3. 7	.....	1. 85	.....	.....	.....	.....
Other diseases and conditions of mother	3. 1	.....	1. 55	.....	.....	.....	2. 5
Various causes	10. 9	5. 93	8. 41	10. 69	12. 1	11. 42	.....
Not specified and unknown	30. 2	.....	15. 10	8. 61	14. 3	6. 67	8. 1
Congenital debility	.....	5. 16	2. 58	.....	[6] 5. 1	.....	.....
Diseases of early infancy and other diseases	.....	19. 83	9. 91	.....	.....	6. 67	.....

[1] 212 autopsies, white and colored.
[2] Nearly 90 per cent autopsies white only.
[3] Autopsies.
[4] Includes fetal states.
[5] Includes antepartum hemorrhage.
[6] Includes inanition.

An analysis of the findings recorded makes it plain that there are certain outstanding factors in the etiology of fetal and neonatal death, the complications of labor occupying a preeminent position. It will be seen also that the autopsy findings tend to change the emphasis on some of these factors. Prematurity, ranking first in the Census figures, goes down to fourth or fifth place in the autopsy group. A post-mortem examination brings to light the real cause of death in many premature infants, showing that the child did not die simply because it was premature, but that its premature birth and death were both dependent upon some other factor.

The autopsy elevates syphilis from a comparatively minor rôle to one of considerable importance. Toxemia rises in the scale also, while congenital debility descends. The latter cause enters into only one of the four autopsy series. The one factor that occupies a high place in all series is that of the complications of labor and birth trauma. The act of being born is apparently the greatest hazard the infant has to face.

Factors Influencing or Associated with the Causes of Fetal and Neonatal Death

The process of reproduction takes place under all sorts of social, economic, and physical conditions; and these factors have been studied in their relation to infant mortality. The question of the economic status of the family has received much attention, and poverty has been blamed for much of the high infant mortality. To quote Pearl (40): "It has been maintained that excessive infant mortality is primarily the resultant of the so-called 'degrading influence' of poverty, and such a contention stirs a warmly sentimental feeling of agreement in the minds of a well-meaning public, zealous to do good." Pearl goes on to say that Greenwood and Brown (41) (whose study he considers the best) are "unable to demonstrate any unambiguous association between poverty * * * and the death rate of infants." It is evident, however, that fetal and neonatal mortality must be considered apart from the total infant mortality.

One usually associates overcrowding, insanitary surroundings, poor nutrition, and employment of the mother with poverty; but these conditions are not necessarily the result of poverty. The father's earnings may be diverted to nonessential things, or the mother may go out to work for some reason other than actual necessity.

Rochester (34) found, in Baltimore, that the neonatal mortality was little affected by the father's earnings; though after the first month of life the mortality rate varied with economic status and home surroundings. Brend (36) states that the influence of postnatal environment in neonatal mortality is small. It is Findlay's (36) opinion that "the unlikelihood of the wage element being a factor of any moment is supported by the fact that in times of famine and

industrial trouble, the infantile death rate usually falls. For example, in 1912 the number of people involved in disputes causing stoppage of work and the aggregate duration of working days lost was the highest on record, and yet, with the exception of 1916, the infant mortality was the lowest ever recorded in most of the chief towns of Scotland and England.

English studies (36) have shown that the death rate among infants during the neonatal period differs but little in different social classes and in different types of environment.

Relation of neonatal mortality to social conditions

Social class	Age at death			
	Under 1 week	Second week	Third week	Fourth week
First class	18.3	5.2	3.6	1.6
Second class	22.0	4.6	4.2	3.2
Third class	21.3	5.4	4.0	3.8
Fourth class	21.7	4.9	4.3	3.8
Fifth class	19.7	5.0	5.5	3.4

It will be seen that, in the first two weeks, in which the bulk of the neonatal mortality takes place, the babies born in the highest social class had little better chance of life than those born in the humblest homes. Doctor Kerr-Love, in evidence given before the Royal Commission on Venereal Diseases (36), stated that the babies of the poorest mothers in Glasgow weigh, on an average, 7.1 pounds at birth, the average weight of a healthy infant being 7 pounds.

Forbes's (42) study of infant mortality in Brighton, England, for the 20-year period (1901–1920) on the basis of the economic standing of the parents, gives results which are shown in the following table:

Infant mortality and economic status

	Illegitimate	Poorest	Unskilled worker	Artisan	Well to do
Total births	3,767	7,910	18,025	16,025	5,052
Infantile mortality:					
First week	27.1	18.7	22.2	24.0	19.4
First month	48.0	35.1	34.9	36.1	27.7
First year	170.0	133.0	102.0	87.0	60.0

Doctor Forbes concludes that "the chances of survival of the newly born infant are not materially influenced by the social and sanitary conditions under which the mother lives during pregnancy, and given equally favorable surroundings, the infants of the various classes have equal chance of survival after birth." Illegitimacy, however, appears to be a real handicap.

Though Ashby (43) agrees with those who feel that poverty and hard work on the part of the mother influence the physique of the

child, he calls attention to the fact that others (Eicholz and Cunningham) have noted the small percentage of unhealthy births among the poor and believe that the results of poverty are not transmissible from parent to offspring. In a recent report, Newman (44) agrees that most babies, even babies of apparently worn-out or unhealthy mothers, are wellborn. Dr. Harold Kerr has recently been able to show that in spite of acute industrial depression the infant mortality rate in Newcastle-upon-Tyne was a low record. What influence, if any, the "dole" has on this rate might be an interesting question.

It would seem, therefore, from the evidence that poverty, per se, must be absolved from an unduly large share in the responsibility for fetal and neonatal mortality. Maternal efficiency appears as the most important factor in the problem of nutrition and growth according to a recent English report (45) and may be active to some extent in the neonatal problem. The efficiency of the mother did not seem to be closely related to poverty, but did seem to have some relation to size of family, overcrowding, and the health of the mother. This report found no connection between maternal health during pregnancy and the condition of the surviving child.

Woodbury states that social and economic factors are of relatively little importance in explaining the high mortality among premature infants (46); and since much of the neonatal mortality is among infants born prematurely, it would seem that social and economic factors are of relatively little importance in explaining the high neonatal mortality. From the same publication the following table seems to show, in the opinion of its author, some correlation between the earnings of the father and neonatal mortality:

Neonatal mortality rates by father's earnings—7 cities

Annual earnings of father	Neonatal mortality rate	Annual earnings of father	Neonatal mortality rate
No earnings	60.7	$650–$849	46.5
Less than $450	55.8	$850–$1,049	38.0
$450–$549	46.0	$1,050–$1,249	33.1
$550–$649	43.3	$1,250 and over	38.2

It is true that there is a slight trend downward in the rates from the lower earnings group toward the higher earnings group. This is also shown in Figure 2. It will be seen, however, that the fall in the death rates from gastrointestinal and respiratory diseases concurrently with the rise in the father's earnings is so much greater than the fall of the death rate from causes associated with early infancy in relation to the same factor that, in comparison, the latter is almost insignificant.

Figure 3, based on data in the same report, serves to emphasize the fact that there is apparently little relation between father's earnings and neonatal mortality.

Employment of mother.—The question of the employment of the pregnant mother in its relation to infant mortality has been studied in various quarters. In an investigation made by the Children's Bureau (34), it was shown that employment of mothers away from home during pregnancy was associated with a high rate of premature births and excessive mortality among full-term babies from causes peculiar to early infancy.

In a study of data obtained in eight American cities by the Children's Bureau (46), the relation expressed in the table below was found to exist between deaths from causes of early infancy and the employment of the mother during pregnancy.

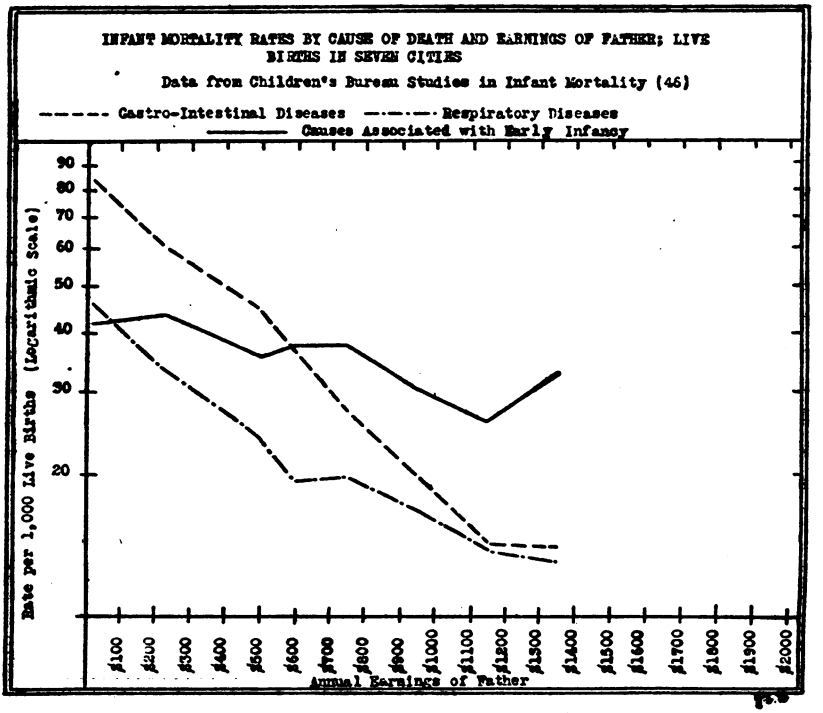

FIG. 2

Infant mortality rates by cause of death and employment of mother during pregnancy (8 cities)

Employment of mother during pregnancy	Infant mortality rates		
	Early infancy	Neonatal mortality [1]	Prematurity (per cent of live births)
Employed away from home	50.3	62.8	6.1
Employed at home	27.2	34.8	3.5
Not employed	35.6	42.7	5.2

[1] For 7 cities.

This table brings out the fact that it is not the actual work done by the mother which is detrimental to the unborn child, but that any unfavorable effect which may be observed is due to conditions associated with employment *away from home.*

In a report of the Medical Research Committee in 1917 (36) it was stated that Dr. Jessie Duncan, in Birmingham, England, found that there was scarcely any difference in the weights of children whose mothers were industrially employed and those whose mothers

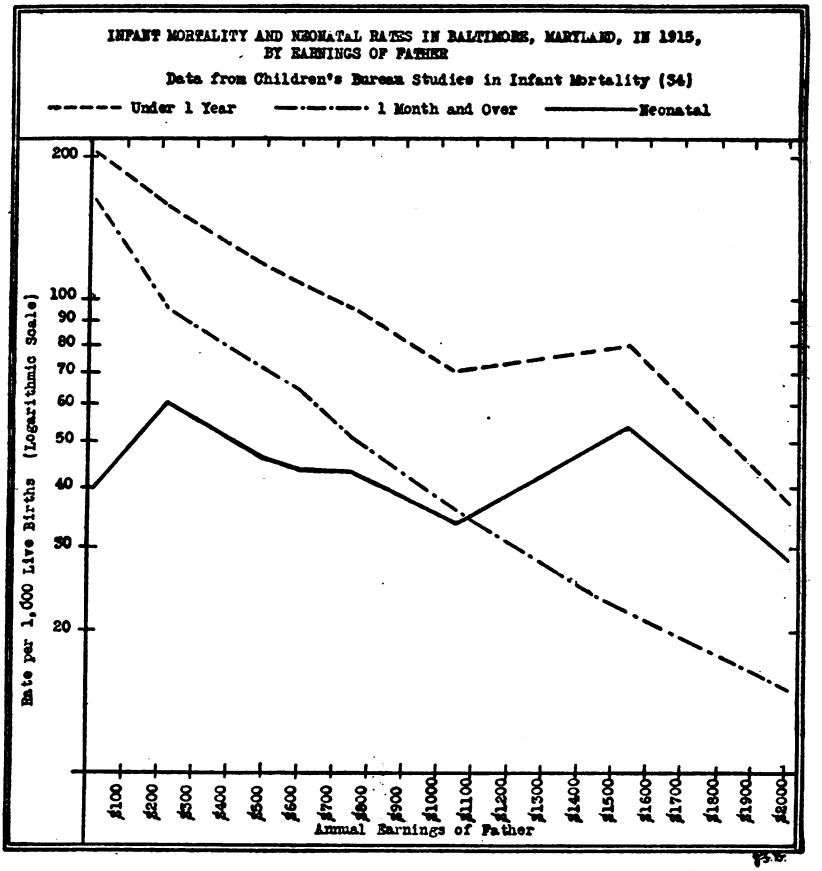

FIG. 3

were not. Whether female labor during the war affected the infant death rate is a rather difficult question. The British report states that it did not seem to cause a rise in Great Britain. In any event, the great influenza epidemic, with its tremendous influence on all death rates, would tend to obscure the trend.

It is noted that in localities where there is much employment, such as Lancashire, Staffordshire, West Riding of York, Gloucester, Berks, Oxford, and Hereford, the first three have a high rate and the last four a low rate; and in Glamorgan, Northumberland, Durham, and

Monmouth, where there is little employment, there is a high infant death rate. These facts suggest no correlation, but suggest even more strongly the need of a close comparison of other conditions in the same localities.

Miners' infants have a high rate, though miners' wives do not go out to work (43); but this simply eliminates one factor from the problem of mortality among miners' babies. The employment of the mother away from home after confinement would have little effect on neonatal mortality, since few mothers go out to work until after the first month following confinement.

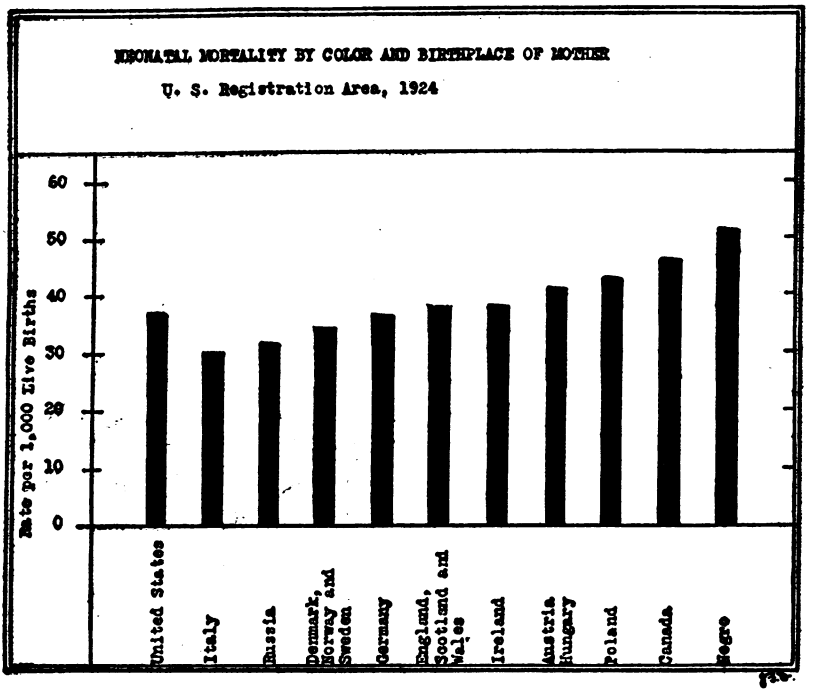

FIG. 4

Racial stock.—The evidence so far accumulated indicates that neonatal mortality is influenced by the nationality of the mother. This is undoubtedly a question of racial stock rather than of mere nationality. New York, in 1925, had the lowest infant mortality rate of any city of the million-population class in this country, and a Jewish population which is estimated to be one-third of the total population (47).

That these facts may be closely related is suggested by the well-known fact that the mortality among Jewish babies is noticeably low.

The accompanying table shows the infant mortality and neonatal rates of children born to native and certain foreign-born mothers in the birth registration area of the United States in 1924:

Infant mortality and neonatal mortality rates, by color and birthplace of mother, United States birth registration area, 1924

Color and birthplace of mother	Neonatal rate	Infant mortality rate	Color and birthplace of mother	Neonatal rate	Infant mortality rate
White mothers:			White mothers—Continued.		
United States	37.1	63.2	England, Scotland, and Wales	38.1	60.6
Italy	30.1	69.8	Ireland	38.6	69.3
Russia	31.7	55.7	Austria, Hungary	41.0	85.5
Denmark, Norway, and Sweden	34.6	57.8	Poland	43.0	92.1
Germany	36.5	64.0	Canada	46.5	80.1
			Negro	51.8	114.1

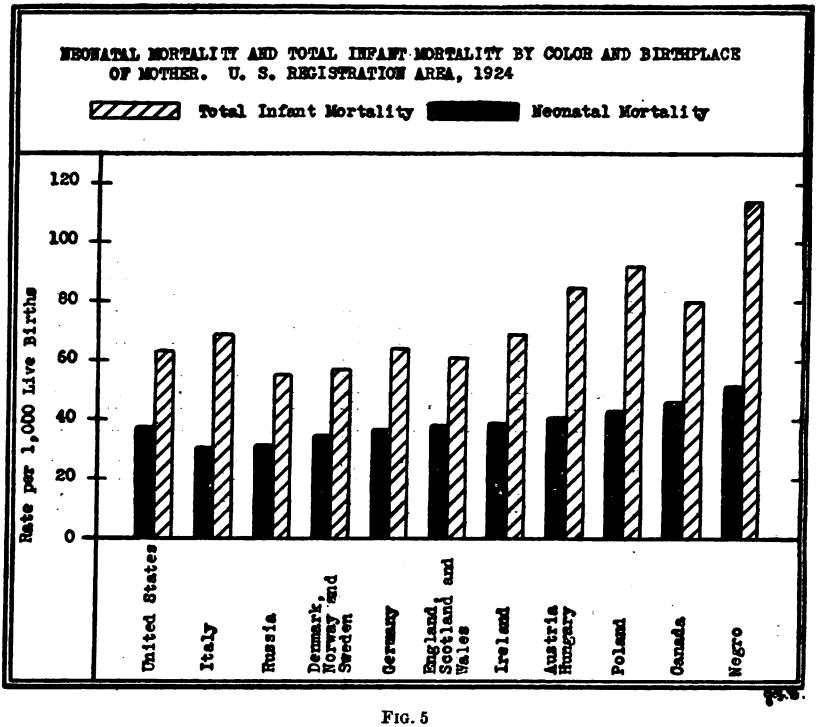

FIG. 5

These figures show that the neonatal mortality rates among four classes of foreign-born mothers fall below that of native white Americans, viz, the Italians, by 18.8 per cent; the Russians, by 14.5 per cent; the Scandinavians, by 6.7 per cent; and the Germans, by 1.6 per cent. This is shown graphically in Figure 4.

The low rates of the Italians and the Russians are particularly significant for this neonatal period. Figure 5 shows the relation between the neonatal rates and the total infant mortality rates in the same races.

The Scandinavians and the Russians maintain a low rate throughout infancy, but the Italians fall below the native white Americans in

later infancy, while the Germans have a total rate very similar to that of the native white.

In Eastman's article (48) quoted by Pearl (49), the mortality rates from premature birth, congenital debility, and malformation in New York State in 1916 are those given in the following table. While these rates would not be exactly identical with the neonatal rates, they would be an approximation thereto.

Rates for infant mortality from principal causes and by nativity of the mother, 1916, New York State (from Eastman)

Nativity of mother	Mortality rates from premature birth, congenital debility, and malformation	
Total mothers		42.8
Total white mothers		42.5
Total colored mothers		90.5
Total native white mothers		45.3
Total foreign white mothers		37.7
Italian mothers	31.0	
Russian mothers (excluding Russian Poland)	34.4	
Austro-Hungarian mothers (excluding Austrian Poland)	42.3	
Polish mothers (including German, Austrian, and Russian Poland)	36.3	
Total for group		35.0
British mothers	36.4	
Irish mothers	43.7	
German mothers	51.0	
Canadian mothers	48.2	
Other foreign-born mothers	45.4	
Total for group		45.3

Much of the Russian and Polish stock in New York is Jewish. The low rates of the Italian and Russian groups in Eastman's study show an even greater superiority over those of native white stock in the mortalities of early infancy than do those given by the Bureau of the Census. Pearl contends that "the fewer deaths from prematurity and congenital defects among the children of Italian and Slavic mothers indicate that superiority of innate biological constitution which is generally associated with emigrating stock." One fails to understand, however, why the mothers of the second group—the British, Irish, German, Canadian, and other foreign-born mothers—are not also of "emigrating stocks." If there is any "superiority of innate biological constitution" in this group, it fails to show itself in fewer deaths from prematurity and congenital defects. It is evidently necessary to seek further for the cause of the low rates found in the Italian and Slavic groups.

The illegitimate death rate is higher than the legitimate rate, and DePorte's (50) figures show that the illegitimate birth rates are lower for Italian and Russian infants than for any other nationalities.

Illegitimate births per 1,000 live births

White children, total	12.2	Ireland	9.8
United States	15.3	Germany	6.6
Austria	5.3	Italy	1.8
Hungary	5.2	Poland	4.4
Canada	10.5	Russia	2.5
Scandinavia	7.8	Negro	121.4
Great Britain	8.2		

Referring to employment, DePorte states that the foreign-born women are at a disadvantage. A greater proportion of them are married and nearly one-half of them work in manufacturing and mechanical industries (1920); of the latter, nearly one-half are textile workers, among whose children congenital malformations are said by Ashby (43) to be especially common. Yet, as has been shown, neonatal mortality is less among some of the foreign-born races. This is not only true of the year of the latest Census report, 1924, but is equally true of the six-year period 1916–1921. DePorte has reduced the figures of this period to an index and shows the relative mortality of children under one month of age of different racial stocks as compared to that of white children and children of native white mothers.

The following table is from DePorte's study:

Relative mortality of children under 1 month of age, 6-year period, 1916–1921, in the birth registration area of the United States

[United States rate=100]

Country of birth of mother	Rate	Country of birth of mother	Rate
White children, total	100	Ireland	110
United States	100	Germany	100
Austria	111	Italy	80
Hungary	94	Poland	119
Canada	120	Russia	82
Scandinavia	89	Negro children	136
Great Britain	99		

We see here again a marked difference in favor of the Italian and Russian infants in neonatal mortality. To quote DePorte: "The racial groups whose infants suffer more from environmental defects, suffer less from causes that are mainly dependent upon the child-bearing mechanism of the mother. Economic and social conditions have little effect upon this period of infant mortality. Here nature plays no favorites, and nonviable, malformed infants are equally frequent among the rich and the poor."

That the death rate in early infancy of children of native-born parents greatly exceeds that of the foreign element has been noted by Schwarz (51), who states, in addition, that the miscarriage rate is greatest when both parents are native born, and least when both parents are foreign-born. His colored group, as was to be expected,

shows the largest number of miscarriages, which he thinks is no doubt due to the great amount of syphilis among them.

In San Francisco, in 1919, Lezynsky and Brown (15) found that there was a slightly larger percentage of stillborn in full American parentage, but in neonatal mortality there was a slight percentage in favor of American parentage—47.04 per cent American, 48.67 per cent foreign parentage.

Levy (52), in 1922, commented on the fact that the lowest stillbirth and neonatal mortality rates at that time were found in foreign mothers whose economic, social, and housing conditions would naturally be held to be unfavorable.

Boston studies (53) indicate "somewhat unexpectedly" that infant mortality for native American, Jewish, and Italian mothers is virtually the same in Boston, and noticeably lower than that for foreign-born French, Scandinavian, or Irish mothers. This is a very significant statement and indicates conditions worthy of the closest study.

An analysis of the data accumulated by the Children's Bureau in its study of 8 cities (46) brings out the relative frequency of the various causes operating to produce the sum total of neonatal mortality. These are distributed as follows:

	Death rate first month of life		Death rate first month of life
All causes	44.8	Early infancy	30.3
Gastric and intestinal diseases	3.0	Epidemic and other communicable diseases	1.0
Respiratory diseases	2.9	Other causes	4.2
Malformations	3.3		

It will be seen that about 25 per cent of the total neonatal mortality is due to causes other than malformation and other conditions associated with early infancy. The susceptibility of the various races to these other causes, to methods of feeding, and to environmental conditions, is reflected in the difference between their death rates from causes associated with early infancy and their total neonatal rates as shown in the following table:

Infant mortality and nationality in 8 cities

Color and nationality of mother	Death rate from causes associated with early infancy	Neonatal mortality	Color and nationality of mother	Death rate from causes associated with early infancy	Neonatal mortality
Native white	36.1	41.5	Foreign-born—Continued.		
Foreign-born	33.7	45.9	Polish	38.7	52.1
Italian	33.7	46.3	Portuguese	20.9	40.4
Jewish	22.7	28.4	Other	35.8	49.6
French-Canadian	44.7	54.0	Colored	52.2	64.5
German	30.9	42.5			

In these studies the method of feeding the infant was ascertained, and it was found that the amount of artificial feeding varied with nationality of mother as follows:

	Per cent		Per cent
French-Canadian	44.0	Polish	11.1
Portuguese	31.9	Italian	13.1
Native white	28.3	German	21.5
Jewish	11.3	Colored	19.7

In some instances a high percentage of artificial feeding is associated with a high neonatal death rate, as in the case of the French-Canadians, and a low percentage with a low neonatal rate, as in the case of the Jewish infants. On the other hand, the Polish mother shows the smallest percentage of artificial feeding and next to the highest neonatal death rate among the whites. The colored mothers, likewise, have a comparatively low percentage of artificial feeding and a high neonatal death rate. These figures, however, have little meaning when taken alone, because of the many factors entering into the problem. In some instances, breast feeding may be able to overcome other adverse circumstances, while in others it is not sufficient to stem the adverse tide.

Ashby (43), in England, has noted the low rates among the Jews, and comments upon the remarkable fact that the Jewish people, living in the poorer parts of towns where there is overcrowding, defective housing, and a good deal of poverty, are able to rear and bring up their children better than non-Jewish people in more favorable circumstances. This is true both of Manchester, England, and of New York City.

Rural and urban environment.—The neonatal mortality rates for the last six years (1) in the birth registration area as of 1917 (exclusive of Rhode Island) are shown for both urban and rural areas in the accompanying table.

Neonatal mortality rates in the birth registration area of 1917 (exclusive of Rhode Island)

Age	1924	1923	1922	1921	1920	1919
Under 1 day:						
Urban	15.4	15.2	15.2	16.2	15.1	14.7
Rural	14.3	14.2	14.6	14.2	14.4	14.2
1 day:						
Urban	4.5	4.7	4.7	4.9	4.9	4.7
Rural	4.0	4.2	4.1	4.2	4.3	4.1
2 days:						
Urban	3.5	3.6	3.4	4.0	3.6	3.5
Rural	3.2	3.1	3.1	3.2	3.2	3.2
3 to 6 days:						
Urban	6.3	6.2	6.6	6.9	6.8	6.3
Rural	6.1	6.1	6.4	6.1	6.0	6.2
1 week:						
Urban	4.4	4.6	4.8	5.1	5.4	5.7
Rural	4.8	5.3	5.1	5.2	5.3	6.0
2 weeks:						
Urban	2.7	3.2	3.3	3.6	3.9	3.9
Rural	3.3	3.8	3.3	3.5	3.7	3.9
3 weeks:						
Urban	2.5	2.5	2.6	2.8	3.3	3.1
Rural	2.6	2.9	2.6	2.8	3.0	3.1
Under 1 month:						
Urban	39.2	39.9	40.6	43.4	42.9	41.9
Rural	38.1	39.7	39.4	39.0	39.9	40.7

It will be seen that the rural total neonatal rates are uniformly lower than the urban rates, and that the decrease in the six-year period has been only 0.06 per cent greater in the urban than in the rural area. This fractional per cent—six one-hundredths—is slight recompense for the far greater effort made along child welfare lines in urban communities. The decrease in rate in the urban area as compared with the decrease in rate in the rural area furnishes striking evidence of the existence of some factor, or factors, favorable to the rural infant which practically compensates for the excess of welfare work bestowed upon the urban infant. Stillbirths are also more numerous in urban communities. Pearl (40) states that "we are far from a scientific understanding of why rural communities exhibit a lower rate of mortality than urban communities" and thinks "it is probable that there is no definite or significant correlation between the rate of infant mortality and the density of population in American cities."

This disparity between urban and rural infant mortality is not confined to our own country. Brend (36), in the 1917 report of the Medical Research Committee, was of the opinion that probably the excess was due to "some factor or factors in industrial towns, the centers of large cities, and mining areas, of which possibly the most important is a polluted state of the atmosphere."

Levy (54), in 1915, expressed the opinion that the "high rates in industrial towns have no relation to size of city, congestion, nature of the population, general sanitation, water or milk supply, but are associated with the industries and certain standards of living accompanying them." It becomes evident that Pearl's frank acknowledgment of our ignorance in the matter is most timely.

Mode of delivery and the care and feeding of the new-born.—There is striking evidence, though the amount of data is not large, that neonatal mortality is influenced by the method of delivery of the pregnant woman. In Woodbury's study (46), the mortality from injuries at birth in instrumental deliveries was 28.1 as compared with 2.3 for normal births. In instrumental delivery there was 12.2 per cent of stillbirths as compared with 2.8 per cent in normal births. Banister (55) found that in 589 cases of induction of premature labor in the treatment of contracted pelvis there was a fetal mortality of 8.5 per cent when the delivery was unassisted. In 132 cases in which the delivery was completed by forceps, there was a fetal mortality of 23.4 per cent. In view of these figures, it might be worth while to inquire whether the more common use of forceps in city practice is related to the higher urban rates. In a recent English study (13) it was noted that a majority of the cases of intracranial lesions (tentorial tears) were associated with the use of forceps, or with the practice of podalic version.

The method of delivery in cases of eclampsia may be looked at from a rather different angle. In Greenhill's series (19) the fetal mortality was as follows: Spontaneous delivery, 30 per cent; abdominal caesarian section, 18 per cent; forceps, 10 per cent; version and extraction, 29 per cent; and vaginal caesarian section, 100 per cent. The high mortality in spontaneous deliveries may be due to the fact that the delay incurred in waiting for spontaneous birth permitted a too long exposure of the infant to the toxemia, and resulted in its death. In these cases the delivery by forceps gave the best results.

Since more than one-half of the neonatal mortality takes place in the first two days of life, the question of feeding has not been considered an important factor in this death rate. It has been found (46), however, that early artificial feeding appears to be especially hazardous.

Pirquet (37) criticizes the management of feeding in the neonatal period and comments on the fact that many do not allow the child to be put to the breast until 24 hours after birth. It is quite possible that a study of this particular phase of the question might furnish valuable data.

There can be no doubt that the care of the new-born should include special precautions to protect the infant from contagious and infectious diseases. This is especially true of the respiratory diseases. In the birth registration area in 1924 (1), 5.2 per cent of the neonatal deaths were due to diseases of the respiratory system, including influenza—a total of almost 4,000 deaths. This does not include the few cases of tuberculosis reported.

In Neale's study in New Zealand (4), 2.5 per cent of the neonatal mortality during the period 1920 to 1923 is attributed to respiratory diseases, including influenza. Pirquet's belief in the frequent occurrence of respiratory infections has already been mentioned (37).

However far-fetched his "apex" theory may appear to some, the fact remains that the indications contained in the data cited are corroborated by other findings. Rochester (34) found that the hazard for the respiratory diseases was highest during the first month of life, and Adair (39) states that pulmonary infections are not an infrequent cause of neonatal death. A striking fact observed in this study of the literature is the very small amount of tuberculosis noted.

In a recent study by Holland and Lane-Claypon for the British Medical Research Council (13), infection played a large part in one series of 97 neonatal deaths; pulmonary conditions, 62; sepsis and enteritis, 16; nephritis, 9; other conditions, 10.

Age of mother, order of birth, and legitimacy.—The age of the mother at the time of birth of the child is apparently related to the early

loss of infant life. The following data from the Bureau of the Census show the relation of the age of the mother to stillbirth:

Age of mother (years)	Still-birth (per cent)
10–14	8.66
15–19	4.28
20–24	3.31
25–29	3.25
30–34	3.94
35–39	5.16
40–44	6.38
45–49	8.72
50–54	12.24

It will be seen that the very young mothers have a high rate, which decreases up to the twenty-ninth year. For the next five years the rate remains practically stationary, and then rises steadily till at 50 and upward it is almost four times the minimum at 25–29 years. In the Baltimore study it was noted that these rates varied less markedly in the deaths from early infancy.

In the Woodbury study (46) it was found that neonatal mortality was highest among infants of mothers under 20 and of mothers 40 years of age and over. In Gary, Ind. (32), mothers under 20 or 40 and over had a higher rate of premature births than mothers in the twenties or thirties; and in Baltimore (34) also premature births were most prevalent among the youngest mothers. It was noted, too, that children born after a short interval between births had a higher mortality rate than those born after a longer interval. With one-year interval the neonatal mortality rate was 51; with a two-year interval, 37; with three-year interval, 37; and with four years or more, 38. Premature births were more common after the shorter intervals (46). Whether or not there is, as Pearson held, a "handicap of the first born" is a disputed question.

It is everywhere conceded that illegitimate children have a higher death rate than those born in wedlock. In the birth registration area in 1923 the respective rates are as follows: Legitimate, 3.8 per 100 births; illegitimate, 8.2 per 100 births.

A high percentage of premature births has been noted among the illegitimate, as well as a high rate from causes associated with early infancy. Unless prohibited by law (as in Maryland), many illegitimate infants are separated from their mothers at a very early period, which always results in a high rate of mortality. The death rate for syphilis in illegitimate infants is eight times as great as that of legitimate infants (56).

In one study (34), 45 per cent of the mothers of illegitimate infants were under 20; the majority were first births; far more of the births occurred in hospitals; there was much employment outside the home; and there was a slightly higher percentage of illiteracy.

Literacy and habits.—The literacy of the parents would not of itself have any effect on infant mortality, but might be some indication of the intelligence used in caring for the pregnant mother and her new-born infant.

Schwarz (51) found that, in 358 literate families, there was an infant mortality rate of 111 per 1,000 births; and in 113 illiterate families there was an infant mortality rate of 172 per 1,000 births. In Baltimore (34) it was noted that Italian and Polish mothers who could speak English were more likely to wean their babies during the early months than the Italian and Polish mothers who had not learned to speak English; while exactly the reverse was true of the Jewish mothers. More of the Polish mothers who could read and write than of the illiterate Polish mothers were weaning the babies during the early months, while Italian and Jewish mothers used less artificial feeding when the mothers could read and write than when they were illiterate.

There is a small amount of data relating to the mortality of children in relation to the habits of the parents with respect to indulgence in alcoholic drinks. Juillerat (57) reports a study of 879 children, of whom 305 children of 141 families of moderate drinkers showed a mortality of 19 per cent; 248 children of 108 families of decided drinkers showed a mortality of 26 per cent; and 326 children of 147 families of very decided drinkers showed a mortality of 55 per cent. It is not known what percentage of these children died during the neonatal period. A study of a more definite character is that of Sullivan (58), which shows that of 600 children born to 120 women of marked alcoholic habits, 335, or 56 per cent, were stillborn or died within the first two years. Of 138 children of 28 relatives of these women, where both husband and wife were sober, only 24 per cent died during the first two years.

Since in neither of these instances are other factors known which undoubtedly had some influence on this child mortality, nothing definite can be deduced from the figures. It is not to be expected that a mother of marked alcoholic habit will give her baby the care that an infant requires. This alone would tend to increase the infant mortality.

Out of the foregoing mass of data and divergent views of various investigators, a few facts stand out clearly:

(1) That the most important causes of fetal and neonatal mortality are dystocia (including complications of labor and birth trauma), prematurity, malformation, toxemia, syphilis, other infections, and congenital debility—and the greatest of these is dystocia.

(2) That the actual relationship of many factors associated with infant mortality is more or less an unknown quantity.

A brief consideration of the more important causes of neonatal mortality, with a view to the possibility of prevention, seems worth while.

The complications of labor with the trauma so often associated therewith have been shown to be of paramount importance. In the birth registration area (1) in the six-year period from 1919 to 1924, there has been an increase in the mortality rate from injuries at birth from 3.4 to 4.8. Even with prenatal care, such as was given by the Maternity Center Association of New York in 1919 and 1921, no reduction was effected in the number of deaths from birth injury (59). Brain injuries occur not only in pathologic labors and those artificially terminated, but in so-called normal labors as well.

In the recent British report of Holland and Lane-Claypon (13), of the 465 deaths due to the complications of labor, the distribution of causes is as follows:

Cause	Per cent	Cause	Per cent
Contracted pelvis	37. 6	Umbilical cord complication	8. 8
Abnormal presentation	30. 5	Other complications	6. 0
Difficult or prolonged labor (due to other causes)	12. 5	Normal labor	4. 5

The obstetrician must be able not only successfully to cope with pathological emergencies, but must recognize the dangers of parturition in the many variations of spontaneous delivery. Contracted and malformed pelvis must be carefully studied. Prolonged labors, and violent though short labors, may result in serious injury. Ford (60) mentions, in addition, the liability to birth injury accompanying rigid soft parts and overlarge fetal heads, and calls attention to the fact that prematurity may be a contributing cause of intracranial hemorrhage probably because of abnormally fragile blood vessels and the thinness of the premature infant's skull.

No good is accomplished by the assertion that all mortality from birth trauma is due to ignorant and poorly trained doctors and midwives. It is true that much better training in obstetrics is needed, but the root of the matter lies deeper than this. We need a more intimate and widely dispersed knowledge of the significance of all the factors associated with childbirth, from which may be adduced efficient measures for their control. In a recent study by Friedman (61) there is some evidence that a controlled diet resulted in a marked decrease in the length of the first stage of labor, with coincident diminution in the number of operative deliveries; and in a slight but definite decrease in the weight of the baby with less likelihood of birth injury. It is plain that not only must we have better obstetrics, as we now know the subject, but that

our knowledge must be broadened by research, which should include a close study of maternal health.

Though modern research work has stripped prematurity of much of its importance as a cause of neonatal death, it still has something to answer for. In a large proportion of the cases, the exciting cause of the premature birth is the factor at fault. Hess (62) ascribed the following causes as etiological factors predisposing to premature birth: Overwork, anxiety, trauma, improper hygiene, insufficient and improperly balanced diet, syphilis, nephritis, acute illness, constitutional defects and congenital malformation in the fetus, placenta praevia, operations, tuberculosis, heart diseases, exophthalmic goiter, anomalous positions of the fetus, multiple pregnancy, diabetes, pernicious anemia and leukemia, and drug intoxications.

Woodbury (46) found that the neonatal mortality rate for premature infants was 440 as compared with 24 for the full-term infants; and that social and economic factors are of relatively little importance in explaining the high mortality among premature infants. The total mortality among premature infants was found to be five or six times as high as that among full-term babies. It will be seen at once that these deaths are those which are likely to be reduced by prenatal care; and this is seen to be the case. In the Maternity Center cases, premature births were reduced to 4.8 as compared to 14.7 in New York City as a whole. In Boston (63), prenatal care reduced the stillbirth rate almost 45 per cent and the infant mortality rate almost 60 per cent.

Of the cause or causes of congenital debility and malformation we know very little. These rates change but little, and we do not know whether that little change is merely a chance variation or the result of some unknown cause. Schlapp (64) thinks that certain malformations in the child are due to some prenatal pathological condition in the mother, such as a chemical imbalance in the blood, the toxic effect of certain drugs, as morphine or alcohol, and disturbances of the ductless glands. In our present state of knowledge, these can be little more than conjectures.

While the prevalence of syphilis among women of the child-bearing age and its effect upon fetal and neonatal mortality is a matter of much importance, it is one that can (at least theoretically) be handled with a high degree of success. The incidence of the infection is probably between 9 and 18 per cent in the white race and very much higher among negroes. Though the diagnosis of syphilis in the pregnant woman may often be difficult, with efficient medical prenatal treatment the incidence of congenital syphilis can be remarkably lowered. Williams (65) states that with no treatment 48.5 per cent of the children showed signs of syphilis; with inefficient treatment, 39.2 per cent; and with efficient treatment, only 6.7 per cent of the

children gave evidence of syphilitic infection. Gebhart (66) also reports good results; and Watson, of the Glasgow Lock Hospital (67), states: "In no case in which the mother attended sufficiently early to undergo a full course of '914' injections was there a stillbirth or death of an infant. For this purpose a period of at least two months before full-time is required. There is no department of our work which gives so much satisfaction to the staff in the excellent results achieved as the treatment of pregnant women."

Sharpe (68) states that in the present state of medical knowledge it is unnecessary for any child to be born syphilitic, provided diagnosis is made sufficiently early during the pregnancy of the mother.

The incidence of congenital syphilis in the infant population is probably not as great as is commonly thought. Of 12,180 admissions to the Babies Hospital, New York City, there were 193 cases of congenital syphilis (69). This percentage of 1.58 is probably lower than in the general population.

The toxemias of pregnancy rank third or fourth in the causation of fetal and neonatal death. While the value of prenatal care in these cases is recognized, it must be acknowledged that not all cases of eclampsia are preventable in our present state of knowledge (19). In Greenhill's series of 78 patients, 18 per cent had good prenatal care and yet developed eclampsia. Davis and Harrar (20) state that while improvement has taken place in antepartum and intrapartum eclampsia, there has been no such improvement in post-partum eclampsia.

Conclusions

(1) That fetal and neonatal mortality is the greatest problem in infant mortality. No other field of public-health work requires more intensive study.

(2) That early infant mortality varies with racial stock for reasons as yet unknown.

(3) That syphilis is the only cause of which we have sufficient knowledge to hope for complete success in prevention.

(4) That the paramount importance of birth injury renders imperative Holland's statement that we must learn how to reduce the occasions for interference with natural birth.

(5) That infections in the newborn should be made the subject of special study.

It is only by the concentration of greater effort on the part of many agencies, both official and voluntary, that we can hope for a solution of these problems. At present we must agree with the Boston writer (53) that "the solution of the infant mortality problem calls for something besides appropriations for intensive child-welfare work. We should honestly face the probability that unknown

factors are affecting the value of much of our infant and child welfare work."

References

(1) Birth, Stillbirth, and Infant Mortality Statistics for the Birth Registration Area of the United States, 1924: Bureau of the Census.

(2) Dublin, Louis I.: 1er Congrès général de l'Enfant. Geneve, 1924.

(3) The Registrar-General's Statistical Review, Text, 1924; Part I, Medical, 1925. London. Reviewed in The Lancet, Oct. 16, 1926.

(4) Neale, Edward P.: A New Zealand Study in Infant Mortality. Jour. Am. Stat. Assoc., Sept., 1925.

(5) Report of the Committee Studying the Definition of Dead Births. Health Organization of the League of Nations, Geneva, April 1, 1925.

(6) Holland, Eardley: Report on the Causation of Foetal Death. inistry of Health (Great Britain), No. 7, 1922.

(7) Adair, Fred L., and O'Brien, William A.: Causes and Prevention of Antenatal, Intranatal, Postnatal, and Neonatal Deaths. Transactions 2nd Annual Meeting of the American Child Health Association, 1924.

(8) Williams, J. Whitridge: The Significance of Syphilis in Prenatal Care and in the Causation of Foetal Death. Bulletin of the Johns Hopkins Hospital, vol. XXXI, No. 351, May, 1920.

(9) Williams, J. Whitridge: The Limitations and Possibilities of Prenatal Care. Jour. Am. Med. Assoc., vol. LXIV, No. 2, January 9, 1915.

(10) Quoted in "Neo-Natal Mortality": Sir Arthur Newsholme. Mother and Child, June, 1920.

(11) Holland, Eardley: Cranial Stress in the Foetus during Labor. Jour. Obstet. and Gynec. British Empire, 29: 549–571, 1922. Quoted in 39.

(12) Schwartz, P.: Erkrankungen des Zentralnervensystems Nach traumatischer Geburtsschadigung. Ztschr. f. d. ges. Neurol. u. Psychiat., Berlin, 90: 263, 1924. Quoted in 39.

(13) Holland, Eardley L., and Lane-Claypon, Janet E.: Child Life Investigations. A clinical and pathological study of 1,673 cases of dead-births and neonatal deaths. Medical Research Council, Special Report Series No. 109, 1926.

(14) Ehrenfest, Hugo: Birth Injuries of the Child. D. Appleton & Co., New York and London. 1922.

(15) Brown, Adelaide, and Lezynsky, Hattie: Infant Mortality in San Francisco, 1919. Calif. State Jour. of Med., 1920, p. 296–301.

(16) Howard, W. T., jr.: The Real Risk-Rate of Death to Mothers from Causes Connected with Childbirth. Am. Jour. Hyg., March, 1921.

(17) Beck, Alfred E.: End-Results of Prenatal Care. Jour. Am. Med. Assoc., Aug. 6, 1921.

(18) Baker, S. Josephine: Child Hygiene. Harper Bros., New York and London. 1925.

(19) Greenhill, J. P.: Eclampsia at the Chicago Lying-In Hospital. Jour. Am. Med. Assoc., July 24, 1926.

(20) Davis, Asa B., and Harrar, James A.: Toxemia of Pregnancy. Eight hundred and seventy-nine cases with convulsions at the New York Lying-In Hospital. Jour. Am. Med. Assoc., July 24, 1926.

(21) Hipsley, P. L.: Stillbirths and Early Infantile Mortality. Med. Jour. of Australia, 1926. V. I. 203–207. Abstract by H. Scurfield in Bulletin of Hygiene, vol. 1, No. 10, Oct., 1926.

32612°—27——3

(22) King, R. de Veil: Notes of the Week. The Medical Officer, Oct. 30, 1926.
(23) Rock, John: Miscarriage: Its Causes, Diagnosis, and Treatment. Boston Med. and Surg. Jour., Oct. 28, 1926.
(24) Ballantyne, J. W.: The Prevention of Antenatal and Neonatal Mortality Quoted by R. A. Bolt in The Mortalities of Infancy, Abt's Pediatrics, 1923.
(25) Williams, J. Whitridge: Obstetrics. D. Appleton & Co., New York and London. 1926.
(26) Huntington, J. L. Incidence of Miscarriage in Private Obstetrical Practice, with a Discussion of the Pathology. New York State Jour. of Med., Dec., 1922. Cited in 23.
(27) Hunner, G. L.: Ureteral Stricture in Obstetrics, with Special Reference to Multiple Abortions (Renal) and to Pyelitis of Pregnancy. Am. Jour. of Obstet. and Gynec., January, 1925. Cited in 23.
(28) McCollum, E. V.: The Newer Knowledge of Nutrition, 1922. Cited in 23.
(29) Evans, H. M., and Bishop, K. S.: The Production of Sterility with Nutritional Regimes Adequate for Growth, and Its Cure with Other Foodstuffs. Jour. of Metab. Res., vol. 3, p. 233. Feb. 23, 1923. Cited in 23.
(30) Holt, L. Emmett, and Babbitt, Ellen C.: A Study of Institutional Mortality of the New-born. Trans. Am. Assoc. for Study and Prevention of Infant Mortality. 1914.
(31) Holt, L. Emmett, and Howland, John: Diseases of Infancy and Childhood. D. Appleton & Co., New York and London. 1919.
(32) Children's Bureau, Department of Labor, Bureau Publication No. 112. 1923.
(33) Children's Bureau, Department of Labor, Infant Mortality Series No. 11. Bureau Publication No. 72. 1920.
(34) Children's Bureau, Departmant of Labor. Infant Mortality. Results of a Field Study in Baltimore, Md. Bureau Publication No. 119. 1923.
(35) Children's Bureau, Department of Labor. Infant Mortality Series No. 10. Bureau Publication No. 68. 1920.
(36) The Mortalities of Birth, Infancy, and Childhood. Medical Research Committee, Great Britain. Special Report Series No. 10. 1917.
(37) Pirquet, C.: The Decrease of the Death Rate Except Among the New-Born Monthly Epidemiological Report of the Health Section of the Secretariat of the League of Nations. 5th year. No. 9. Geneva, Sept. 15, 1926.
(38) Nobel, E.: Zeitschrift für kinderheilkunde, vol. 31. 1921.
(39) Adair, Fred L.: Recent Contributions of Pathology to the Problem of Neonatal Mortality. Transactions of the Third Annual Meeting of the American Child Health Association. 1925.
(40) Pearl, Raymond: Biometric Data on Infant Mortality in the United States Birth Registration Area, 1915–1918. Am. Jour. Hyg., July, 1921.
(41) Greenwood, M., and Brown, J. W.: An Examination of Some Factors Influencing the Rate of Infant Mortality. Jour. Hyg., vol. XII, pp. 5–45, May, 1912. Cited in 41.
(42) Forbes, Duncan: The Infantile Mortalities of Rich and Poor. The Lancet, March 4, 1922, vol. I, p. 426. Cited in 50.
(43) Ashby, Hugh T.: Infant Mortality. University Press, Cambridge, England 1922.
(44) Newman, George: The Health of the School Child. Annual Report of the Chief Medical Officer of the Board of Education [Great Britain] for the year 1925.

(45) Poverty, Nutrition, and Growth. Medical Research Council, Great Britain Special Report Series No. 101, 1926.
(46) Woodbury, R. M.: Causal Factors in Infant Mortality. Children's Bureau, Department of Labor; Bureau Publication No. 142. 1925.
(47) Baltimore Sun. November 15, 1926, page 1.
(48) Eastman, P. R.: A Comparison of the Birth Rates of Native and of Foreign-born White Women in the State of New York during 1916. Bulletin New York State Department of Health. Quoted in 49.
(49) Pearl, Raymond: The Vitality of the Peoples of America. Am. Jour. Hyg., Sept.–Nov., 1921.
(50) De Porte, J. V.: Inter-racial Variation in Infant Mortality. Am. Jour. Hyg., July, 1925.
(51) Schwarz, Herman: Infant and Child Mortality. Am. Jour. Dis. of Children. April, 1920.
(52) Levy, Julius: Certain Factors in the Problem of Neonatal Mortality. Transactions of the 13th Annual Meeting of the American Child Hygiene Association. 1922.
(53) Monthly Bulletin. Health Department. Boston, June, 1925.
(54) Levy, Julius: Infant Mortality Problem in New Jersey. Jour. Med. Soc. of New Jersey, September, 1915, vol. 12, p. 424.
(55) Banister, J. Bright: The Place of Induction of Premature Labor in the Treatment of Contracted Pelves. The Brit. Med. Jour. September 18, 1926, p. 519.
(56) Stevenson in the English Registrar-General's Annual Report for 1913. Quoted in 10.
(57) Juillerat, Paul: Jour. Am. Med. Assoc., LXIII. p. 335. July 25, 1924.
(58) Sullivan, W. C.: Jour. Mental Sc., July, 1899, XLV, p. 489.
(59) Dublin, Louis I.: Trasactions of the 13th Annual Meeting of the American Child Hygiene Association. 1922.
(60) Ford, F. R.: Cerebral Birth Injuries and Their Results. Medicine, May, 1926.
(61) Friedman, L. V.: Diet in Pregnancy. Boston Med. and Surg. Jour., November 25, 1926.
(62) Hess, Julius H.: Premature and Congenitally Diseased Infants. 1922.
(63) 34th Annual Report of the Instructive District Nursing Association of Boston. 1919.
(64) Schlapp, Max G.: Causes of Defective Children. Jour. of Heredity. December, 1923.
(65) Williams, J. Whitridge: The Influence of the Treatment of Syphilitic Pregnant Women upon the Incidence of Congenital Syphilis. Bulletin Johns Hopkins Hospital. Vol. XXXIII, No. 381. November, 1922.
(66) Gebhart, John C.: Syphilis as a Prenatal Problem. Jour. of Social Hyg., April, 1924.
(67) Watson, David: Congenital Syphilis. The Medical Officer. October 30, 1926.
(68) Sharpe, F. A.: Factors in the V. D. Campaign. Notes of the Week. The Medical Officer, January 15, 1927.
(69) Bartlett. Frederick H.: Effect of Venereal Disease on Infant Mortality. Transactions American Association for Study and Prevention of Infant Mortality. 1917.

CURRENT WORLD PREVALENCE OF DISEASE

REVIEW OF THE MONTHLY EPIDEMIOLOGICAL REPORT ISSUED JANUARY 15, 1927, BY THE HEALTH SECTION OF THE LEAGUE OF NATIONS' SECRETARIAT [1]

Plague.—Little change in the world prevalence of plague was indicated by the reports from the various countries received by the health section of the League of Nations' secretariat during the month prior to the publication of the Epidemiological Report of January 15. The situation was very favorable in the Far East; cases occurred during December at only a few of the maritime towns, namely, Rangoon, Colombo, Surabaya, and Makassar.

There were no serious outbreaks of plague in Egypt during 1926, and only three cases were reported during December.

The plague outbreak at Sfax in Tunisia in November appeared to decline rapidly in December. The total number of cases in Tunisia in 1926 amounted to 424, an exceptional number, as in previous years there had been only sporadic cases or small isolated outbreaks.

TABLE 1.—*Plague cases reported in Tunis, by districts, 1926*

Month	Kairwan	Sfax	Susa	Kef	Tunis	Military territories
May	69	1	0	0	0	0
June	98	0	14	2	0	0
July	6	0	5	0	1	0
August	1	0	0	0	0	0
November	0	188	0	0	0	6
December	0	37	6	0	0	0
Total	164	226	25	2	1	6

At Oran, Algeria, 7 cases of plague were reported in the first 10 days of December, as compared with 25 in the last 10 days of November. No new case was reported between December 11 and 20.

An increase in plague incidence occurred in Senegal in November, when 64 cases were reported in the district of Diourbel and 5 in Rufisque, as compared with 27 in the Diourbel district in October. A further increase occurred in Southern Nigeria in October, and 373 cases were reported as against 305 in the preceding month. In Madagascar, 280 cases were reported in November as compared with 228 in the corresponding month of the preceding year. There were 150 cases reported in the first half of December.

Only sporadic cases of plague were reported in the Union of South Africa; 4 during November and 18 during December.

Cholera.—The cholera situation in the Far East was less favorable at the close of 1926 than the plague situation. The number of cases in Tonkin Province of French Indo-China increased markedly during November and December.

[1] From the Office of Statistical Investigations.

TABLE 2.—*Cholera cases reported in French Indo-China November 1 to December 30, 1926*

10 days ended—	Cambodia	Cochin-China	Laos	Annam	Tonkin
Nov. 10	0	3	0	38	265
20	7	1	0	144	318
30	21	2	0	90	409
Dec. 10	16	9	0	76	664
20	4	12	0	54	1,056
31	15	36	0	70	871

The port of Haiphong in Tonkin was seriously infected in December, 243 deaths occurring in the last two weeks of that month. The disease was also prevalent in Calcutta and continuously present in Bangkok, Singapore, Tourane, Rangoon, and Nagapatam.

TABLE 3.—*Cholera reported in the principal maritime towns of the Far East from November 28 to January 1, 1927*

Maritime town	Week ended—				
	December				January 1
	4	11	18	25	
Tuticorin (deaths)	1	0	0	0	0
Nagapatam (deaths)	3	2	9	1	9
Madras (deaths)	0	0	0	0	2
Calcutta (deaths)	31	62	51	62	53
Rangoon (deaths)	2	0	1	1	4
Singapore (cases)	2	2	5	3	1
Bangkok (cases)	1	2	1	4	2
Saigon (cases)	0	1	0	0	0
Tourane (cases)	5	9	8	13	1
Haiphong (deaths)	15	13	66	200	43

The cholera outbreak in Korea, which began early in September, came to an end the middle of October; 252 cases were reported. The outbreak was restricted to North Heian Province, with the exception of the district of Heigen in South Heian Province. The Report states that "267,200 doses of anticholera vaccine were distributed free of charge before the outbreak and 745,920 after the outbreak had begun. About 60 per cent of this vaccine was employed in the two infected Provinces."

Yellow fever.—Yellow fever was reported as follows: Seven cases in Senegal between December 14 and January 3; one on December 15 at Segou, in the French Sudan.

Typhus fever.—The typhus incidence in Rumania increased in November, when 145 cases were reported, as against 42 in the preceding month and 39 in the corresponding month of 1925.

In Poland, the incidence was about the same as in 1925; 170 cases were reported during the four weeks ended December 11, 1926, as against 161 in the corresponding period of the preceding year.

Relapsing fever.—Further information on the relapsing fever epidemic in Darfur, previously reported, is as follows:

An outbreak of relapsing fever was first reported from Kebkebia on September 11, 1926, and a similar outbreak was reported from Nyala on September 12, 1926. A provisional diagnosis of relapsing fever was made, which was confirmed microscopically on September 28. By October 4, investigation had shown that the epidemic was affecting Zalingei, Western Nyala, South Masalit, and Kebkebia districts, an area of 20,000 square miles. Up to the end of November, no further extension of the area affected had been reported.

The case mortality in untreated cases is reported as being 60 to 80 per cent, but this is perhaps too high a figure, as many milder cases of the disease probably remain unreported. Cases treated with neovarsenobenzol usually recover.

In the areas in which it has been possible to collect statistics, the proportion of deaths to the total population averages 22.9 per cent; actually, 2,092 deaths had occurred in a population of 9,105.

It was reported on December 19 that 6,000 deaths had occurred in the Zalingei district (Western Darfur) since the beginning of the outbreak.

Smallpox.—Smallpox continued prevalent in the northern counties of England during December. There were 1,287 cases reported during the four weeks ended January 1, 1927, as against 1,200 during the preceding four weeks and 705 in the corresponding period of the preceding year.

In Spain the number of deaths from smallpox decreased very markedly; only nine deaths were reported in the third quarter, as compared with 123 and 350, respectively, in the corresponding periods of 1925 and 1924.

In Iraq fairly extensive outbreaks occurred in October, but the November reports showed a decrease in nearly all districts. There were 89 cases reported during the four weeks ended November 27, as compared with 374 during the preceding four weeks.

The outbreak of severe smallpox at Rio de Janeiro, referred to in the report last month, began to decline in October; there were 279 cases and 187 deaths reported during the four weeks ended November 13, as against 500 cases and 307 deaths during the preceding four weeks. The total number of deaths from smallpox since the beginning of 1926 was 2,083.

Lethargic encephalitis.—The incidence of lethargic encephalitis had shown no marked seasonal increase at the end of 1926 in any of the countries where its notification is compulsory. In England and Wales, as usual, the highest number of cases were reported. The seasonal fluctuation in this country has been very slight; the highest incidence was in February, with 212 cases, and the lowest in the four weeks ended September 11, with 135 cases.

Japan reported an outbreak of lethargic encephalitis in the period from August to October. The following information concerning it is given in the Monthly Epidemiological Report:

The geographical distribution of the cases was very similar to that of the much larger epidemic which occurred during the same months of 1924. The highest incidence was found, as then, in the Provinces around the Inland Sea and particularly in Kagawa, Okayama, and Tottori; but, while the case incidence in these three Provinces in 1924 varied from 100 to 310 per 100,000 inhabitants, it was only from 13 to 15 per 100,000 during the recent outbreak. It appears that the Provinces farther east and north have not been affected by the epidemic.

Influenza.—The information on influenza summarized in the Monthly Epidemiological Report has already been made available through special bulletins which have been published in Public Health Reports.

Epidemic diseases in China.—Reports from hospitals and practitioners in the various Provinces of China on the prevalence of communicable diseases in China during August are summarized in the report. Plague appeared to be less prevalent in southern China during August than during June and July. Rat plague was reported from the interior Province of Szechuan. Cholera was extremely prevalent in the whole of China, with the exception of Yannan and Kansu, both interior Provinces.

Outbreaks of dysentery were reported from nearly all the Provinces, and typhoid fever was also prevalent in most Provinces, although apparently less so than dysentery.

Influenza was reported as epidemic in the two interior Provinces of Hupeh and Kansu, and reported prevalent in most of the other Provinces. No information is available on the mortality caused in any of the Provinces.

DEATH RATES IN A GROUP OF INSURED PERSONS

Rates for Principal Causes of Death for January, 1927

The accompanying table is taken from the Statistical Bulletin for February, 1927, published by the Metropolitan Life Insurance Co., and presents the mortality experience of the industrial insurance department of the company for January, 1927, as compared with January, 1926, and with December and year, 1926. The rates are based on the records of approximately 17,000,000 insured persons in the industrial populations of the United States and Canada.

Health conditions, as revealed by the death rates, were remarkably good in this group of persons during January, the gross death rate being 9.3 as compared with 9.8 for January of last year. Declines from the death rates of a year ago are shown for pneumonia, tuberculosis, typhoid fever, measles, scarlet fever, heart disease, cerebral hemorrhage, Bright's disease, diarrheal complaints, and puerperal conditions.

The most unfavorable item in the record for January, 1927, is the increase in the diphtheria death rate. A slight increase is also shown for whooping cough, and the death rate for cancer is higher than it was a year ago.

Death rates (annual basis) for principal causes per 100,000 lives exposed, January, 1927, and January, December, and year, 1926

[Industrial department, Metropolitan Life Insurance Co.]

Cause of death	Death rate per 100,000 lives exposed [1]			
	January 1927	December, 1926	January, 1926	Year 1926 [2]
Total, all causes	928.2	918.6	981.2	942.7
Typhoid fever	2.4	4.0	3.9	4.2
Measles	3.6	3.3	9.5	10.2
Scarlet fever	3.0	2.4	4.0	3.4
Whooping cough	6.9	5.7	6.6	9.6
Diphtheria	13.6	15.3	11.2	9.7
Influenza	26.1	18.4	27.1	31.0
Tuberculosis (all forms)	80.2	88.4	91.0	98.7
Tuberculosis of respiratory system	69.2	78.9	81.4	86.5
Cancer	72.7	77.2	69.7	73.5
Diabetes mellitus	17.1	19.9	17.6	16.7
Cerebral hemorrhage	57.8	53.9	60.0	55.5
Organic diseases of heart	146.5	137.7	147.0	133.9
Pneumonia (all forms)	118.5	95.9	138.0	97.9
Other respiratory diseases	14.9	15.0	15.9	13.1
Diarrhea and enteritis	14.1	17.1	17.0	29.8
Bright's disease (chronic nephritis)	72.3	76.8	74.8	73.3
Puerperal state	13.8	12.6	14.3	15.3
Suicides	7.6	7.3	7.5	7.6
Homicides	5.8	7.2	7.2	7.0
Other external causes (excluding suicides and homicides)	61.8	61.3	59.2	62.2
Traumatism by automobiles	12.8	14.1	13.6	16.7
All other causes	189.5	199.3	199.6	190.4

[1] All figures include infants insured under 1 year of age.
[2] Based on provisional estimate of lives exposed to risk in 1926.

DIVISION OF VENEREAL DISEASES, JULY 1–DECEMBER 31, 1926

The accompanying tables present a statistical report of the medical work of the division of venereal diseases during the six months ended December 31, 1926, summarizing the activities of the venereal disease clinics and showing the number of cases of venereal diseases reported to the State boards of health during that period.

As shown in Table 1 there were 52,033 new cases of venereal disease admitted to the 410 clinics reporting. Of this number, 55.5 per cent were of syphilis, 41.9 per cent of gonorrhea, and 2.6 per cent of chancroid. There were 1,044,961 treatments given, including 251,859 doses of arsphenamine administered; 164,568 Wassermann tests were made; and 93,536 examinations were made for gonococcus infection. The clinics also report 24,191 patients discharged as noninfectious. This represents 46.5 per cent of the new admissions to these clinics. An average of 20 antivenereal treatments was given to each new patient admitted to the clinics. For each case of syphilis admitted, an average of 8.7 doses of the arsphenamines was administered.

The summary of the 40 States given in Table 2 shows that there were 173,027 new cases of venereal disease reported to the State boards of health—syphilis, 53.2 per cent; gonorrhea, 45.2 per cent; and chancroid, 1.6 per cent.

Compared with the same period in 1925, this year's report shows a decrease in all activities excepting in the number of doses of

arsphenamines administered and the number of Wassermann tests made. This general decrease is due to the fact that Florida, South Carolina, and Texas, which reported for the six-months period in 1925, have not reported in 1926. Also during the period covered, no reports were received from Arizona, District of Columbia, Montana, Oklahoma, and Utah. Among the 39 States reporting, Illinois takes first place in the number of patients admitted to clinics, the number of treatments given, and the number of laboratory examinations (Wassermann tests and microscopic examinations for the gonococcus). Alabama reported the largest number of patients discharged as noninfectious.

TABLE 1.—*Summary of reports of venereal-disease clinics reporting to State boards of health, for the six months, July 1–December 31, 1926* [1]

State	Number of clinics reporting	Number of reports received	Patients admitted				Patients discharged as noninfectious	Treatments given	Doses of arsphenamine given	Wassermann tests made	Microscopic examinations (gonococcus)
			Total	Syphilis	Gonorrhea	Chancroid					
United States	410	2,323	52,033	28,859	21,792	1,382	24,191	1,044,261	251,859	164,568	93,536
Alabama	14	81	5,016	3,685	1,225	106	3,194	57,634	21,312	7,853	1,961
Arizona [2]											
Arkansas	9	50	2,082	1,468	607	7	1,875	42,029	8,928	5,211	1,658
California	13	76	2,948	1,792	1,131	25	525	55,783	23,445	11,711	2,480
Colorado	5	30	337	121	213	3	251	8,188	1,189	639	873
Connecticut	7	37	426	166	249	11	281	9,532	2,136	819	946
Delaware	3	13	118	63	44	11	58	1,665	889	183	120
District of Columbia [3]											
Florida [3]											
Georgia	6	36	1,334	1,035	285	14	118	18,351	6,000	5,824	273
Idaho [2]											
Illinois	22	130	6,361	2,576	3,596	189	3,009	169,386	26,243	27,032	24,349
Indiana	20	116	2,175	1,018	1,078	79	793	61,853	17,239	3,881	2,145
Iowa [4]											
Kansas	6	29	408	219	186	3	327	29,790	3,886	1,517	1,518
Kentucky	15	75	2,762	1,380	1,259	123	1,436	25,284	7,315	3,453	708
Louisiana	2	12	784	416	362	6	769	8,128	3,413	2,059	1,691
Maine	4	22	100	39	57	4	100	2,287	938	283	188
Maryland	15	81	1,268	521	714	33	482	28,909	7,057	1,752	1,882
Massachusetts [4]											
Michigan	14	82	3,376	1,622	1,728	26	479	66,592	10,165	15,903	14,023
Minnesota	4	23	544	219	323	2	300	11,939	3,475	1,379	679
Mississippi	1	6	148	117	29	2	62	962	565	94	64
Missouri	17	94	1,617	1,153	451	13	423	43,013	5,237	3,899	1,432
Montana [3]											
Nebraska	5	30	507	231	269	7	232	17,038	3,935	2,325	2,859
Nevada [3]											
New Hampshire	4	23	57	27	30		18	4,021	1,056	248	112
New Jersey	19	108	1,146	664	480	2	440	27,155	6,556	3,527	1,240
New Mexico [4]											
New York	51	291	3,282	1,962	1,257	63	2,736	78,439	23,600	7,215	3,445
North Carolina	3	15	503	377	126		138	2,443	1,597	537	55
North Dakota	1	6	7	4	3		3	143	21	17	100
Ohio	49	290	5,926	3,109	2,552	265	2,253	115,689	25,420	20,816	10,248
Oklahoma [3]											
Oregon	1	6	175	97	78			3,060	655	353	392
Pennsylvania	45	255	2,723	1,368	1,297	58	1,903	78,157	12,909	5,916	2,653
Rhode Island	7	42	266	135	131		77	6,344	2,480	2,601	1,906
South Carolina [3]											
South Dakota [4]											
Tennessee	12	65	2,335	1,336	736	263	1,090	34,085	10,257	11,621	2,169
Texas [3]											
Utah [3]											
Vermont [4]											
Virginia	8	48	1,055	750	282	23	87	8,843	5,622	5,264	1,257
Washington	3	18	604	315	287	2	378	11,080	1,942	4,401	6,591
West Virginia	11	52	799	452	321	26	181	9,311	3,509	1,589	1,199
Wisconsin	13	78	842	422	404	16	182	7,741	2,896	4,637	3,269
Wyoming [4]	1	3	2		2			87	2	10	11

[1] Includes reports of correctional and penal institutions.
[2] No clinics.
[3] Not reporting.
[4] Clinics not reporting.
[5] For 3 months only.

TABLE 2.— *Cases of venereal diseases reported to State boards of health for the six months, July 1–December 31, 1926*

State	Total	Syphilis	Gonorrhea	Chancroid
United States	173,027	92,092	78,194	2,741
Alabama	7,583	4,727	2,667	189
Arizona [1]				
Arkansas	2,353	1,545	799	9
California	8,701	4,879	3,799	23
Colorado	1,000	225	757	18
Connecticut	1,137	447	689	1
Delaware	291	63	181	47
District of Columbia [1]				
Florida [1]				
Georgia	4,951	2,619	2,153	179
Idaho	191	46	144	1
Illinois	18,148	6,596	11,290	262
Indiana	2,215	1,152	991	72
Iowa	1,530	528	999	3
Kansas	716	280	435	1
Kentucky	20,523	14,588	5,691	244
Louisiana	3,039	1,677	1,241	121
Maine	381	89	288	4
Maryland	3,487	1,831	1,559	97
Massachusetts	3,562	897	2,665	
Michigan	15,016	7,360	5,598	58
Minnesota	5,348	2,305	3,013	30
Mississippi	19,561	7,630	11,931	
Missouri	3,538	1,767	1,408	363
Montana [1]				
Nebraska	1,598	407	1,162	29
Nevada [1]				
New Hampshire	187	80	106	1
New Jersey	4,304	2,612	1,662	30
New Mexico	153	45	104	4
New York	20,933	15,095	5,172	66
North Carolina	1,907	1,057	787	63
North Dakota	567	112	452	3
Ohio	5,926	3,109	2,552	265
Oklahoma [1]				
Oregon	889	224	648	17
Pennsylvania	2,723	1,368	1,297	58
Rhode Island	523	164	359	
South Carolina [1]				
South Dakota	351	64	283	4
Tennessee	3,018	1,615	1,100	303
Texas [1]				
Utah [1]				
Vermont	558	314	244	
Virginia	1,184	768	391	25
Washington	1,400	559	813	28
West Virginia	3,753	2,181	1,487	85
Wisconsin	1,780	467	1,275	38
Wyoming [2]	2		2	

[1] Not reporting.

[2] For 3 months only.

PUBLIC HEALTH ENGINEERING ABSTRACTS

California practice of garbage disposal by hog feeding. W. T. Knowlton. Proceedings American Society of Civil Engineers, October, 1926, pp. 1660–1661. (Abstract by L. D. Mars.)

This article gives the methods used in the disposal of garbage on a large scale by hog feeding. The city collects the garbage and it is loaded upon gondola cars and shipped to the hog range 55 miles distant. The city receives $0.60 per ton for the garbage, which amounted to some 371 tons per day in 1925. The magnitude of the enterprise can be judged from the fact that 110 men are required to operate the hog ranch.

Norwalk, Conn., finds it pays to use motor trucks for refuse collections. C. P. Shattuck. *American City*, vol. 35, No. 5, November, 1926, pp. 631–632. (Abstract by A. L. Dopmeyer.)

Garbage in this town of 35,000 is collected by four motor trucks and removed to a dump, where it is covered over with ashes and cinders. About twice as much garbage is hauled daily with the motor trucks as was hauled previously with horse-drawn vehicles. Some details of the cost of operation are also given.

Administrative and engineering work in the collection and disposal of garbage. A review of the problem. Samuel A. Greeley. Proceedings of the American Society of Civil Engineers, October, 1926, pp. 1642–1678. (Abstract by L. D. Mars.)

This paper describes briefly some of the administrative and engineering problems in projects for the collection and disposal of garbage. Technical literature occasionally states that the disposal of garbage has not kept pace with other sanitary engineering works. Such statements are generally coupled with the suggestion that closer adherence to competent technical guidance would greatly improve the results. This is a sound suggestion. Some of the troubles are inherent in the situation and will yield finally only to general public opinion.

The paper outlines relative costs for garbage collection and disposal and other sanitary engineering works. Typical procedures for the acquisition of garbage-disposal plants are discussed, recent contracts and specifications are outlined, and engineering items in garbage disposal are listed.

San Francisco makes fills with residue from destructor. Anon. *Engineering News Record*, vol. 97, No. 12, September 16, 1926, pp. 469–470. (Abstract by E. C. Sullivan.)

This article deals with the present methods of refuse disposal in San Francisco. Except for the segregation of garbage by hotels and restaurants, all refuse is collected by private scavengers whose only responsibility to the city is in the form of a permit which gives the board of health control over sanitary conditions. The scavengers are paid direct by the householders, based upon an elaborate schedule formulated and approved by the city authorities. A total of about 600 tons of refuse is collected daily by the scavengers, and, in addition, hog raisers buy and collect from the hotels and restaurants about 125 to 130 tons of garbage each day.

The 600 tons of refuse collected by the scavengers are delivered to the Thackeray destructor, now about 30 years old, which has a capacity of 400 tons per 24 hours. Since there consequently is extreme congestion at the plant, 500 tons are crowded through the destructor, about 25 per cent of which comes out partly unburned. About 100 tons of the refuse is burned daily at the destructor yard.

Due to the greatly overloaded condition of the old destructor and its consequent inefficiency, constituting a neighborhood nuisance, there is vigorous agitation at present for some better disposal system, and the board of supervisors is giving the matter attention.

The ashes, unburned garbage, etc., amounting to 250 to 270 tons per day, including 15 to 20 tons of ashes and material burned in the yard, are hauled away in railroad cars and used to fill lowlands along the railroad track on the bay shore south of the city. The railroad makes a switching charge of $2 per car for hauling a 9-car train daily, having a capacity of 28 to 30 tons per car, from the destructor to the fills, some 5 or 6 miles distant.

The contents of the cars are loaded into dump carts and delivered to the point where the face of the fill is being extended. The preferred method of loading the dump carts is to rake the refuse down into the cart from the car. It usually takes a crew of 10 or 12 men on the dump working 8 to 10 hours per day to take care of the daily delivery from the destructor. The number of horse carts ranges from 7 to 10. The cost of the railroad switching charge and horses and carts averages $750 per month. Only residue from the destructor is used in making the fills and no complaint of any nuisance in connection with the fills has been made. The present fill is about 15 acres in area and averages 6 feet deep.

Each scavenger pays $1 per ton for all refuse delivered to the destructor. This payment goes to the Scavenger's Protective Union, which operates the plant and is charged with the responsibility of effecting sanitary disposal within this price. As recently the costs have somewhat exceeded the rate, the scavengers may have to charge a little more per ton for disposal.

Recent developments in sewage chlorination. L. H. Enslow, sanitary engineer, the Chlorine Institute, New York City. Paper presented at the Ninth Texas Water Works Short School, Dallas, Tex., January 24–29, 1927. (Abstract by V. M. Ehlers.)

Disinfection.—Contact periods between chlorine on sewage is of little, if any, value. Effective disinfection is secured instantaneously when residual chlorine is maintained in the treated sewage. By the orthotolidine test, only 0.2 to 0.5 p. p. m. at the end of the 10-minute contact need be maintained. A positive test for residual chlorine is equally as satisfactory an indication of efficiency as disclosed by bacterial tests. The quantity of chlorine required is determined by "chlorine demand," which parallels the oxygen demand to a great extent. The chlorine demand varies markedly during the year for any particular sewage. The dosage should be varied to meet the conditions existing—each sewage differing in demand. The demand

is high in warm weather and but half or less than half in cold weather. When residual is maintained, solids such as pass through inefficient settling tanks are effectively penetrated by the chlorine and disinfected satisfactorily. For highest efficiency and greatest chlorine economy with simultaneous efficiency of disinfection, residual chlorine tests should be made several times during the day.

Prechlorination.—Application of chlorine at inlet of tanks, rather than to the effluent, offers the following advantages: (1) Less chlorine required to produce a satisfactory disinfected tank effluent; (2) odors reduced or eliminated if desired; (3) flow chambers kept in fresh condition; (4) no contact chambers required beyond tank; (5) tank acts as "balance wheel," smoothing out fluctuation of flow and quality of sewage; (6) oxygen demand reduced; (7) "foaming" of tank prevented or reduced.

Odor control.—Chlorine dosage considerably less than that to produce residual chlorine will retard odor production or reduce that already existing; for this purpose, chlorine should be applied to tank influent and very probably better yet to the sewer proper at some distance ahead of plant. The dosage required will vary with the sewage treated and local conditions varying between 4 and 15 p. p. m.

Fly nuisance and filter pooling.—The Psychoda fly can be controlled and practically eliminated by intermittent application of heavy chlorine dosages (20 to 30 p. p. m.) to insure 3 p. p. m. residual chlorine at nozzles. Chlorine is applied at syphon chamber and continued for a sufficient period to loosen the organic film on the surface, and subsequent applications are made at 14-day intervals during the fly season. Duration of application is 12 hours to night sewage flow. Pooling of beds is eliminated and cleansing of piping and nozzles is simultaneously secured. The spray washes the disintegrated film from the bed, and larvae are drowned. Improvement of the normal filter efficiency follows chlorine application within a few days.

Oxygen demand reduction.—Chlorine combines with a portion of the organic matter in solution in sewage to effect a reduction in the demand of oxygen (5-day B. O. D.). The reduction is permanent for as long as 12 days, beyond which time tests were not carried further. All samples were reinoculated with the unchlorinated sewage after preparing dilutions for the incubator. The B. O. D. reduction varies considerably, depending upon the quality of the effluent ahead of chlorination. Reduction to the extent of 33 per cent and higher is common. Reductions of 60 per cent have been recorded. Certain investigators report reduction of oxygen demand of activated sludge effluent with 2 p. p. m. chlorine from 35 p. p. m. to 22 p. p. m., i. e., 40 per cent approximately. No contact period

is required. Chlorine then should apply to fill many existing deficiencies in plant efficiency at certain periods.

Foaming Imhoff tanks.—Foaming has been relieved in instances in which chlorine has been utilized. The chlorine was applied to the raw influent continuously in one case, and the results were satisfactory and foaming ceased. The dosage was at first 20 p. p. m., being reduced later to 6 p. p. m. and finally to 3 p. p. m.

Cost of chlorination.—Cost of chlorination may be reduced materially when frequent tests for residual chlorine are made. Night sewage requires considerably less than day sewage. A relatively new type of chlorine shipment has entered the sanitary field. The purchase of chlorine in "multiple unit tank car" shipments reduces the cost of chlorine materially. Chlorine is shipped in 1-ton containers on a special car. The containers themselves travel without freight being charged in either direction. Scientific control of application and reduced cost of chlorine should bring about a worth-while reduction in over-all cost of sewage disinfection.

Stream pollution by beavers, special investigation. H. C. Cashmore, assistant, division of water and sewage, State board of health, Helena, Mont. Manuscript. (Abstract by Dana E. Kepner.)

An investigation of the effect upon the public water supply of Helena, Mont., of the presence of beavers on the watershed was made by the author in cooperation with the Helena Water Department and the Montana Fish and Game Commission. Two full grown beavers, trapped on one of the streams tributary to Helena's water supply, were kept in a penthouse at the State board of health building and fed on their natural food, i. e., aspen and willow bark, etc. Samples of fresh feces were collected on each of three successive days, diluted with tap water, and the mixture was examined for *B. coli.* Gas yields of 30 to 40 per cent were obtained in 24 hours in every case; litmus lactose plates made from this broth all gave positive results, and lactose broth tubes inoculated with typical colonies all yielded gas. Controls on tap water alone were all negative.

Routine laboratory examinations of samples of water from two points on the North Fork of Little Boulder Creek, at Boulder, Mont., a stream on which beavers were plentiful, but on which no other sources of contamination were found, gave positive results for contamination, indicating that these animals were responsible. One sample from Little Boulder Creek, taken 9 miles below the beaver dams, gave negative results. On Bozeman Creek, at Bozeman, Mont., no difference was noted in samples taken above and below the beaver dams.

It is concluded that the presence of beavers apparently affects the routine laboratory tests as conducted at the water laboratory.

(Abstractor's note: In a letter transmitting this report to Dr. L. L. Lumsden of the United States Public Health Service, Mr. H. B. Foote, director of the division of water and sewage, Montana State Board of Health, states that feces from moose in Yellowstone National Park gave negative results when tested for *B. coli*.)

The effect of chlorine on the absorption of dissolved oxygen—5-day B. O. D., by polluted waters. P. Gaunt, and W. E. Abbott. *Journal of the Society of Chemical Industry*, London, vol. 45, September 10, 1926 (transactions), p. 323. (abstract by L. H. Enslow.)

Chlorination of sewage effluents reduces their oxygen demand. The period of contact between the chlorine and sewage need be little more than instantaneous. Chlorination may be continuously employed to effect improvement in defective effluents. In the case of activated sludge plant effluent possessing a 5-day oxygen demand of 35 p. p. m., application of 2 p. p. m. chlorine reduced the demand to 22 p. p. m. (37 per cent reduction). Even as little as 1 p. p. m. chlorine effected an oxygen-demand reduction to some extent. The effluent studied contained 30 p. p. m. suspended solids, and therefore was deficient.

Reduction of oxygen demand is also observed when chlorinating crude raw sewage and clarified sewage. The demand of the clarified sewage was reduced approximately 40 per cent (64 p. p. m. reduced to 39 p. p. m.) as a result of application of 8.8 p. p. m. chlorine. Chlorination apparently allows a reduction in the quantity of diluting water ordinarliy required to prevent nuisance in the receiving waterway. The effluent from the activated sludge plant ordinarily would have required 30 volumes of dilution water per volume of effluent. After chlorination with 2 p. p. m. chlorine, the same effluent required only 18 volumes of dilution water to prevent production of nuisance.

In cases of limited available dilution or in the event of a poor quality of receiving water, advantages from chlorination are material. The poorer the quality of plant effluent, the more noticeable become the effects produced by chlorination.

Odor, fly, and other nuisance-control methods at Schenectady, N. Y. Morris M. Cohn. Paper presented at the Ninth Texas Water Works Short School, Dallas, Tex., January 24–29, 1927. (Abstract by V. M. Ehlers.)

This paper deals with the necessity of controlling such nuisances from sewage treatment plants as would result in the filing of formal complaint against the municipality operating such an installation. Under the heading of odor control, the paper explains the various control measures used during routine operation of the various features of the sewage works in question. The final results of an interesting

chlorination study carried out at Schenectady are given and indicate that the application of this chemical to both raw sewage and tank effluent will aid in controlling odors. Various methods for controlling the development of the filter flies are given. Results of another chlorination study carried out on the filters indicate that chlorine application serves as an aid in fly control. The paper presents several methods for controlling the rats and mosquitoes that may become troublesome about a sewage works.

Stream pollution and industrial wastes. James A. Newlands, member of Connecticut Society of Civil Engineers; president, the Henry Souther Engineering Co., Hartford, Conn. (Paper presented at meeting February 16, 1926.) (Abstract by William L. Havens.)

Although the subject of stream pollution has been under consideration for more than 80 years in this country and abroad, there are widely divergent views among laymen as to the proper solution of the problem, and even among engineers and health authorities opinions have changed considerably during this period. Naturally, during the early days of industrial development, when the volume of trade wastes was small, no attempt was made to control the disposal of these wastes and they were discharged without treatment into the nearest water course. As the quantity of these wastes increased and further demands were placed upon the streams for water supply, recreational, and fishing uses, legislative action was taken in order to prevent this pollution.

One of the first laws enacted to control industrial waste pollution was known as the lighting and watching act passed in Great Britain in 1833. This act provided that no washings or other waste liquids arising in the manufacture of illuminating gas should be conducted into any stream and that no pipe lines constructed for the purpose of handling these wastes should interfere with or affect any of the present or future wells, sewers, or drains of the district. This law was ineffective, because no means was indicated for preventing pollution of surface or ground waters and also because subsequent legislation permitted industries to establish a prescriptive right to discharge liquid wastes into a water course if they had done so without opposition for a period of 20 years or more. This law was followed by the salmon fisheries act of 1861; but here again no penalty was enforced in case a person could establish a prior right or could show that he had used "the best practicable means within reasonable cost" to render harmless the liquid or solid matter discharged into the stream. Then followed the reports of the First Royal Commission of Rivers Pollution in 1865, the second commission in 1868, and later commissions between 1870 and 1875, which suggested certain stand-

ards of purity for British rivers and certain restrictions on the discharge of various wastes. In 1903 the Royal Commission on Sewage Disposal reported that they were "satisfied that, in some cases at least, the purification of the trade effluent by itself would be difficult to accomplish" and suggested that certain trade effluents be discharged into the public sewer systems. At the present time in Great Britain the trend of opinion, as expressed in a recent report of the standing committee of rivers pollution, seems to be that in industrial areas "the utilization of water courses as carriers of liquid wastes represents their most important use until economical methods have been developed for the treatment of such wastes." Meanwhile, the formation of local boards for the enforcement of pollution laws and the cooperation of the industries has resulted in the development of methods for treating some of the more concentrated wastes, so that considerable progress has already been made in the stream-pollution problem.

Similar boards have been formed in Germany, of which the Emscher district board is a noteworthy example. In America the first investigation of importance was authorized in 1872 by the Legislature of Massachusetts and was carried out by the State board of health.

Our early laws, like those of Great Britain, recognized certain prescriptive rights of individuals and industries and were therefore difficult of enforcement. The work done during the investigation at Lawrence has been very valuable and has contributed materially to our knowledge of the scientific problems involved. Much of this research work, however, has been directed toward the treatment of domestic sewage, and studies of industrial waste disposal have progressed so slowly that offensive conditions now exist in some of the large streams in our industrial communities. The importance and magnitude of some of our problems may be understood from the expenditures already made or contemplated for such projects as the industrial waste and sewerage problem at Pittsburgh, the many water-supply problems along the Ohio River, the sewerage for the metropolitan district at Boston, and the sewerage problem of the Chicago Sanitary District.

The present trend of stream-pollution control measures in this country is perhaps best reflected in the following statement by the chairman of the State fish and game commission of Pennsylvania: "There is one way by which stream pollution can be done away with and that is by stopping the wheels of industry; but no sane person would expect the department of fisheries to resort to such a step."

While considerable progress has been made in the past toward solving our stream-pollution problems, much greater attention has been given to the disposal of domestic wastes, and considerable

research is still necessary along the lines of effective treatment for industrial wastes. It is the opinion of the author of this article that while State supervision is necessary, "extensive improvements are more frequently completed through the influence of district boards, representing the municipalities and industries who pay the expense, than by drastic legislation."

United States Government master specification for plumbing fixtures (for land use). Circular No. 310, Bureau of Standards, October 9, 1926. 66 pp. (Abstract by I. W. Mendelsohn.)

General and detailed specifications are given for plumbing fixtures, including many diagrams. These specifications were officially promulgated by the Federal Specifications Board on November 22, 1926, for the use of all branches of the Federal Government in the purchase of plumbing fixtures (for land use).

Water and sewerage systems for Florida rural homes. Frazier Rogers, professor of agricultural engineering, University of Florida. Bulletin 46. June, 1926. 20 pp. (Abstract by I. W. Mendelsohn.)

This bulletin contains detailed designs and descriptions of water and sewerage systems for rural homes in Florida, including list of materials and estimate of their cost.

DEATHS DURING WEEK ENDED MARCH 5, 1927

Summary of information received by telegraph from industrial insurance companies for week ended March 5, 1927, and corresponding week of 1926. (From the Weekly Health Index, March 10, 1927, issued by the Bureau of the Census, Department of Commerce)

	Week ended Mar. 5, 1927	Corresponding week, 1926
Policies in force	66, 911, 607	63, 525, 389
Number of death claims	13, 415	14, 676
Death claims per 1,000 policies in force, annual rate	10. 5	12. 0

Deaths from all causes in certain large cities of the United States during the week ended March 5, 1927, infant mortality, annual death rate, and comparison with corresponding week of 1926. (From the Weekly Health Index, March 10, 1927, issued by the Bureau of the Census, Department of Commerce)

City	Week ended Mar. 5, 1927		Annual death rate per 1,000 corresponding week, 1926	Deaths under 1 year		Infant mortality rate, week ended Mar. 5, 1927 [2]
	Total deaths	Death rate [1]		Week ended Mar. 5, 1927	Corresponding week, 1926	
Total (68 cities)	7,768	13.6	15.9	866	1,029	[3] 73
Akron	37			3	7	32
Albany [4]	37	16.1	22.3	3	2	63
Atlanta	90			12	6	
White	47			5	2	
Colored	43	(5)		7	4	
Baltimore [4]	276	17.6	16.6	26	23	80
White	203		14.7	14	17	54
Colored	73	(5)	28.0	12	6	187
Birmingham	60	14.6	27.2	7	16	
White	24		21.6	1	5	
Colored	36	(5)	35.8	6	11	
Boston	220	14.5	18.2	27	33	75
Bridgeport	43			4	5	74
Buffalo	151	14.3	14.3	20	16	84
Cambridge	40	16.8	16.2	7	4	124
Camden	34	13.3	26.3	8	6	137
Canton	32	14.8	7.6	6	7	142
Chicago [4]	750	12.6	13.7	92	86	80
Cincinnati	124	15.7	16.1	10	4	62
Cleveland	201	10.7	11.8	34	42	90
Columbus	85	15.2	17.2	5	14	47
Dallas	45	11.2	15.4	6	9	
White	38		11.9	5	3	
Colored	7	(5)	38.6	1	6	
Dayton	38	11.0	8.2	4	4	66
Denver	99	17.8	17.0	6	9	
Des Moines	21	7.3	11.8	2	4	33
Detroit	314	12.3	14.8	61	70	96
Duluth	16	7.3	5.1	2	0	43
El Paso	40	18.3	17.2	4	9	
Erie	21			2	4	39
Fall River [4]	34	13.3	13.9	2	10	35
Flint	38	13.9	7.7	7	4	114
Fort Worth	33	10.5	11.5	1	4	
White	29		11.5	1	4	
Colored	4	(5)	11.0	0	0	
Grand Rapids	32	10.5	10.0	4	4	59
Houston	60			8	3	
White	34			5	3	
Colored	26	(5)		3	0	
Indianapolis	98	13.7	15.5	5	16	39
White	85		15.5	4	11	36
Colored	13	(5)	15.4	1	5	61
Jersey City	81	13.1	15.6	11	11	82
Kansas City, Kans	25	11.1	12.9	3	3	58
White	17		10.3	0	1	0
Colored	8	(5)	25.4	3	2	456
Kansas City, Mo	97	13.2	13.8	8	18	
Los Angeles	266			23	16	66
Louisville	97	15.8	14.6	5	7	43
White	62		11.7	3	4	29
Colored	35	(5)	31.1	2	3	140
Lowell	32	15.1	12.3	5	5	96
Lynn	19	9.4	13.0	2	2	53
Memphis	72	21.0	23.3	5	13	
White	33		18.8	3	5	
Colored	39	(5)	31.5	2	8	
Milwaukee	122	12.1	11.7	13	14	61
Minneapolis	113	13.3	10.7	7	8	39
Nashville [4]	51	19.3	24.0	4	9	
White	36		21.8	2	4	
Colored	15	(5)	29.4	2	5	
New Bedford	23	10.0	10.5	7	10	121
New Haven	40	11.3	12.0	2	3	28
New Orleans	169	20.8	20.9	18	18	
White	93		18.0	7	12	
Colored	76	(5)	29.2	11	6	

Footnotes at end of table.

Deaths from all causes in certain large cities of the United States during the week ended March 5, 1927, infant mortality, annual death rate, and comparison with corresponding week of 1926—Continued

City	Week ended Mar. 5, 1927		Annual death rate per 1,000 corresponding week, 1926	Deaths under 1 year		Infant mortality rate, week ended Mar. 5, 1927 [2]
	Total deaths	Death rate [1]		Week ended Mar. 5, 1927	Corresponding week, 1926	
New York	1,517	13.2	16.3	184	201	76
Bronx Borough	149	8.4	14.1	17	15	54
Brooklyn Borough	487	11.2	14.7	62	79	64
Manhattan Borough	648	18.6	21.3	76	87	89
Queens Borough	146	9.4	10.6	24	18	108
Richmond Borough	42	14.9	18.6	4	2	74
Newark, N. J.	99	11.1	15.9	10	20	50
Norfolk	41	11.9	10.8	4	6	81
White	20		4.7	0	0	0
Colored	21	[3]	21.5	4	6	212
Oakland	58	11.3	16.0	5	8	59
Oklahoma City	23			4	1	
Omaha	65	15.5	12.6	3	6	33
Paterson	48	17.4	23.0	4	4	71
Philadelphia	525	13.4	22.6	60	94	80
Pittsburgh	202	16.4	17.8	29	33	101
Portland, Oreg.	62			0	5	0
Providence	78	14.5	11.9	14	7	119
Richmond	46	12.5	20.1	4	5	53
White	25		16.7	2	1	40
Colored	21	[3]	28.4	2	4	76
Rochester	72	11.6	19.8	9	14	76
St. Louis	235	14.6	14.9	15	9	
St. Paul	68	14.2	13.7	5	3	45
Salt Lake City [4]	45	17.3	12.9	3	4	46
San Antonio	23	5.7	16.3	11	12	
San Diego	33	15.0	16.6	2	1	43
San Francisco	109	15.3	12.9	9	4	56
Schenectady	15	8.4	9.0	1	1	30
Seattle	71			1	12	10
Somerville	16	8.2	13.6	0	4	0
Spokane	27	12.9	15.8	3	4	75
Springfield, Mass.	37	13.1	12.6	0	6	0
Syracuse	52	13.8	18.9	6	9	77
Tacoma	26	12.7	18.2	0	11	0
Toledo	87	14.9	11.5	9	6	87
Trenton	42	16.0	21.8	6	2	104
Utica	35	17.7	17.2	4	5	91
Washington, D. C.	185	17.9	19.2	6	10	35
White	109		15.2	2	5	17
Colored	76	[3]	30.8	4	5	73
Waterbury	23			4	10	94
Wilmington, Del.	27	11.2	32.0	1	8	25
Worcester	64	17.1	17.0	6	7	72
Yonkers	29	12.7	13.0	5	5	114
Youngstown	43	13.3	12.6	9	3	126

[1] Annual rate per 1,000 population.
[2] Deaths under 1 year per 1,000 births. Cities left blank are not in the registration area for births.
[3] Data for 64 cities.
[4] Deaths for week ended Friday, Mar. 4, 1927.
[5] In the cities for which deaths are shown by color the colored population in 1920 constituted the following percentages of the total population: Atlanta 31, Baltimore 15, Birmingham 39, Dallas 15, Fort Worth 14, Houston 25, Indianapolis 11, Kansas City, Kans., 14, Louisville 17, Memphis 38, Nashville 30, New Orleans, 26, Norfolk 38, Richmond 32, and Washington, D. C., 25.

PREVALENCE OF DISEASE

No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring

UNITED STATES

CURRENT WEEKLY STATE REPORTS

These reports are preliminary, and the figures are subject to change when later returns are received by the State health officers

Reports for Week Ended March 12, 1927

ALABAMA

	Cases
Cerebrospinal meningitis	2
Chicken pox	51
Diphtheria	39
Influenza	133
Malaria	7
Measles	167
Mumps	95
Ophthalmia neonatorum	1
Pellagra	4
Pneumonia	70
Scarlet fever	21
Smallpox	40
Tetanus	1
Tuberculosis	39
Typhoid fever	16
Whooping cough	30

ARIZONA

Chicken pox	78
Diphtheria	1
Malta fever	1
Measles	139
Mumps	12
Pneumonia	2
Scarlet fever	57
Trachoma	2
Tuberculosis	42
Whooping cough	5

ARKANSAS

Cerebrospinal meningitis	1
Chicken pox	32
Diphtheria	5
Hookworm disease	1
Influenza	93
Malaria	36
Measles	75
Mumps	38
Ophthalmia neonatorum	1
Pellagra	12
Scarlet fever	15
Smallpox	4
Trachoma	2
Tuberculosis	11
Typhoid fever	10
Whooping cough	55

CALIFORNIA

	Cases
Cerebrospinal meningitis:	
Los Angeles	1
Sacramento	1
Chicken pox	711
Diphtheria	127
Influenza	86
Lethargic encephalitis	2
Measles	3,735
Mumps	319
Scarlet fever	246
Smallpox	17
Tuberculosis	204
Typhoid fever	3
Whooping cough	157

COLORADO

Cerebrospinal meningitis	1
Chicken pox	42
Diphtheria	11
German measles	5
Impetigo contagiosa	1
Influenza	1
Measles	402
Mumps	16
Pneumonia	5
Scarlet fever	107
Smallpox	2
Tuberculosis	26
Typhoid fever	1
Whooping cough	17

CONNECTICUT

Chicken pox	104
Diphtheria	37
German measles	10
Influenza	27
Measles	77
Mumps	34
Pneumonia (broncho)	41
Pneumonia (lobar)	46
Scarlet fever	109
Septic sore throat	6
Trichinosis	1
Tuberculosis (all forms)	30
Whooping cough	41

DELAWARE	Cases
Chicken pox	1
Diphtheria	2
Measles	9
Ophthalmia neonatorum	1
Pneumonia	3
Scarlet fever	18
Tuberculosis	3
Whooping cough	5

FLORIDA	
Chicken pox	68
Dengue	1
Diphtheria	35
Influenza	68
Lethargic encephalitis	2
Malaria	21
Measles	134
Mumps	9
Pneumonia	99
Poliomyelitis	1
Rabies	1
Scarlet fever	29
Smallpox	32
Tetanus	17
Tuberculosis	119
Typhoid fever	17
Whooping cough	16

GEORGIA	
Cerebrospinal meningitis	2
Chicken pox	45
Conjunctivitis (infectious)	1
Diphtheria	15
Hookworm disease	2
Influenza	374
Malaria	8
Measles	162
Mumps	23
Pellagra	2
Pneumonia	70
Scarlet fever	23
Septic sore throat	4
Smallpox	73
Tuberculosis	26
Typhoid fever	5
Whooping cough	89

IDAHO	
Chicken pox	6
Diphtheria	6
Measles	61
Mumps	2
Scarlet fever	17
Smallpox	5
Tuberculosis	1
Whooping cough	9

INDIANA	
Cerebrospinal meningitis	1
Chicken pox	261
Diphtheria	47
Influenza	41
Measles	243
Mumps	2
Pneumonia	14
Scarlet fever	265
Smallpox	150
Tuberculosis	30

INDIANA—continued	Cases
Typhoid fever	1
Whooping cough	84

KANSAS	
Chicken pox	119
Diphtheria	10
Dysentery	1
German measles	10
Influenza	13
Lethargic encephalitis	1
Measles	938
Mumps	55
Pellagra	1
Pneumonia	53
Poliomyelitis	1
Scarlet fever	196
Smallpox	58
Tuberculosis	39
Typhoid fever	1
Whooping cough	86

LOUISIANA	
Cerebrospinal meningitis	2
Diphtheria	21
Influenza	24
Malaria	6
Measles	164
Pneumonia	23
Poliomyelitis	1
Scarlet fever	19
Smallpox	17
Tuberculosis	38
Typhoid fever	12
Whooping cough	17

MAINE	
Chicken pox	32
Diphtheria	1
German measles	16
Influenza	15
Measles	243
Mumps	32
Pneumonia	22
Scarlet fever	26
Tuberculosis	4
Typhoid fever	2
Vincent's angina	2
Whooping cough	38

MARYLAND [1]	
Chicken pox	176
Diphtheria	43
German measles	5
Impetigo contagiosa	1
Influenza	455
Malaria	1
Measles	51
Mumps	22
Pneumonia (broncho)	77
Pneumonia (lobar)	72
Scarlet fever	64
Septic sore throat	10
Tuberculosis	62
Typhoid fever	4
Whooping cough	86

[1] Week ended Friday.

MASSACHUSETTS

	Cases
Cerebrospinal meningitis	2
Chicken pox	297
Conjunctivitis (suppurative)	15
Diphtheria	98
German measles	6
Influenza	19
Lethargic encephalitis	3
Measles	238
Mumps	521
Ophthalmia neonatorum	32
Pneumonia (lobar)	114
Poliomyelitis	1
Scarlet fever	559
Septic sore throat	1
Tuberculosis (pulmonary)	118
Tuberculosis (other forms)	42
Typhoid fever	9
Whooping cough	184

MICHIGAN

Diphtheria	90
Measles	314
Pneumonia	173
Scarlet fever	391
Smallpox	46
Tuberculosis	60
Typhoid fever	14
Whooping cough	152

MINNESOTA

Cerebrospinal meningitis	1
Chicken pox	192
Diphtheria	30
Influenza	5
Lethargic encephalitis	1
Measles	173
Pneumonia	4
Poliomyelitis	1
Scarlet fever	261
Smallpox	2
Tuberculosis	48
Typhoid fever	5
Whooping cough	31

MISSISSIPPI

Diphtheria	8
Scarlet fever	10
Smallpox	7
Typhoid fever	5

MISSOURI

(Exclusive of Kansas City)

Cerebrospinal meningitis	1
Chicken pox	62
Diphtheria	42
Epidemic sore throat	6
Influenza	2
Measles	195
Mumps	78
Scarlet fever	126
Smallpox	14
Trachoma	18
Tuberculosis	31
Typhoid fever	6
Whooping cough	46

MONTANA

	Cases
Cerebrospinal meningitis	8
Chicken pox	14
Diphtheria	5
German measles	1
Measles	42
Mumps	18
Scarlet fever	93
Smallpox	8
Tuberculosis	3
Typhoid fever	1

NEBRASKA

Chicken pox	44
Diphtheria	7
German measles	66
Influenza	1
Measles	416
Mumps	58
Scarlet fever	85
Smallpox	20
Typhoid fever	2
Whooping cough	18

NEW JERSEY

Cerebrospinal meningitis	3
Chicken pox	349
Diphtheria	92
Influenza	42
Measles	67
Pneumonia	209
Scarlet fever	379
Typhoid fever	6
Whooping cough	234

NEW MEXICO

Chicken pox	19
Conjunctivitis	2
Diphtheria	3
German measles	96
Influenza	3
Measles	32
Mumps	27
Pneumonia	19
Scarlet fever	7
Smallpox	11
Tuberculosis	16
Whooping cough	2

NEW YORK

(Exclusive of New York City)

Chicken pox	424
Diphtheria	83
Dysentery	1
German measles	229
Malaria	1
Measles	633
Mumps	580
Ophthalmia neonatorum	1
Pneumonia	304
Poliomyelitis	1
Scarlet fever	371
Septic sore throat	2
Smallpox	15
Tetanus	1
Typhoid fever	18
Vincent's angina	17
Whooping cough	268

NORTH CAROLINA

	Cases
Chicken pox	213
Diphtheria	22
German measles	12
Measles	386
Scarlet fever	46
Septic sore throat	2
Smallpox	54
Typhoid fever	4
Whooping cough	709

OKLAHOMA

(Exclusive of Oklahoma City and Tulsa)

Chicken pox	17
Diphtheria	18
Influenza	149
Measles	263
Mumps	26
Pneumonia	84
Scarlet fever	71
Smallpox	47
Typhoid fever	20
Whooping cough	10

OREGON

Cerebrospinal meningitis	1
Chicken pox	30
Diphtheria	18
Influenza	210
Malaria	1
Measles	119
Mumps	25
Pneumonia [1]	6
Scarlet fever	58
Septic sore throat	3
Smallpox	37
Tuberculosis	16
Typhoid fever	2
Whooping cough	13

PENNSYLVANIA

Cerebrospinal meningitis—Pittsburgh	1
Chicken pox	782
Diphtheria	163
German measles	175
Impetigo contagiosa	8
Malaria	2
Measles	852
Mumps	490
Ophthalmia neonatorum	1
Pneumonia	227
Scabies	10
Scarlet fever	643
Tetanus	2
Tuberculosis	61
Typhoid fever	10
Whooping cough	277

RHODE ISLAND

Cerebrospinal meningitis—Providence	1
Diphtheria	8
German measles	2
Influenza	1
Measles	2

[1] Deaths.

RHODE ISLAND—continued

	Cases
Mumps	5
Pneumonia	4
Poliomyelitis—Providence	1
Scarlet fever	30
Septic sore throat	1
Tuberculosis	3
Whooping cough	6

SOUTH CAROLINA

Chicken pox	198
Dengue	3
Diphtheria	11
Hookworm disease	25
Influenza	1,352
Malaria	106
Measles	95
Pellagra	47
Poliomyelitis	2
Scarlet fever	13
Smallpox	37
Tuberculosis	51
Typhoid fever	2
Whooping cough	128

SOUTH DAKOTA

Chicken pox	5
Diphtheria	1
Influenza	4
Measles	141
Mumps	6
Pneumonia	3
Scarlet fever	71
Smallpox	9
Tuberculosis	4
Typhoid fever	1
Whooping cough	11

TENNESSEE

Chicken pox	51
Diphtheria	9
Influenza	264
Malaria	3
Measles	173
Mumps	7
Ophthalmia neonatorum	1
Pellagra	3
Pneumonia	51
Scarlet fever	80
Smallpox	11
Tuberculosis	32
Typhoid fever	6
Whooping cough	68

TEXAS

Chicken pox	73
Diphtheria	41
Influenza	389
Measles	183
Mumps	24
Pellagra	2
Pneumonia	22
Scarlet fever	64
Smallpox	62
Tuberculosis	33
Typhoid fever	3
Whooping cough	73

UTAH	Cases
Cerebrospinal meningitis—Salt Lake City	2
Chicken pox	24
Diphtheria	6
Influenza	8
Measles	166
Mumps	13
Pneumonia	6
Scarlet fever	9
Smallpox	2
Whooping cough	38

VERMONT	Cases
Chicken pox	22
Measles	47
Mumps	60
Scarlet fever	4
Whooping cough	25

VIRGINIA	Cases
Smallpox	2

WASHINGTON	Cases
Cerebrospinal meningitis	6
Chicken pox	95
Diphtheria	14
German measles	400
Influenza	1
Measles	282
Mumps	115
Pneumonia	3
Scarlet fever	62
Smallpox	70
Tuberculosis	47
Typhoid fever	1
Whooping cough	38

WEST VIRGINIA	Cases
Chicken pox	76
Diphtheria	12
Influenza	69
Measles	228
Scarlet fever	47
Smallpox	34
Tuberculosis	4
Typhoid fever	15
Whooping cough	165

WISCONSIN	Cases
Milwaukee:	
Cerebrospinal meningitis	5
Chicken pox	130
Diphtheria	20
German measles	1
Measles	42
Mumps	67
Pneumonia	42
Scarlet fever	59
Tuberculosis	8
Whooping cough	40
Scattering:	
Cerebrospinal meningitis	2
Chicken pox	96
Diphtheria	14
German measles	26
Influenza	76
Lethargic encephalitis	1
Measles	542
Mumps	97
Ophthalmia neonatorum	1
Pneumonia	15
Scarlet fever	114
Smallpox	5
Trachoma	1
Tuberculosis	32
Typhoid fever	4
Whooping cough	59

WYOMING	Cases
Chicken pox	11
Diphtheria	1
German measles	26
Measles	41
Mumps	4
Scarlet fever	25
Smallpox	4
Tuberculosis	3

Reports for Week Ended March 5, 1927

DISTRICT OF COLUMBIA	Cases
Chicken pox	59
Diphtheria	36
Influenza	21
Lethargic encephalitis	1
Measles	4
Pneumonia	63
Scarlet fever	20
Smallpox	1
Tuberculosis	32
Typhoid fever	3
Whooping cough	9

NORTH DAKOTA	Cases
Chicken pox	25
Diphtheria	8
Measles	194
Mumps	4
Pneumonia	5
Scarlet fever	106
Smallpox	2
Tuberculosis	2
Whooping cough	5

SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of monthly State reports is published weekly and covers only those States from which reports are received during the current week:

State	Cerebrospinal meningitis	Diphtheria	Influenza	Malaria	Measles	Pellagra	Poliomyelitis	Scarlet fever	Smallpox	Typhoid fever
December, 1926										
California	15	839	151	5	4,206	6	15	1,194	77	81
January, 1927										
Hawaii Territory	2	41	43		154		12	2	0	7
Oklahoma [1]	1	154	1,509	36	378	9	3	236	119	43
South Dakota	0	21	10		572		2	359	34	9
February, 1927										
Connecticut	5	128	49	1	408		1	438	0	4
Florida	5	121	53	8	272	4	0	65	281	31
Massachusetts	3	424	70	1	855	2	2	2,129	0	26
Michigan	0	485	30		956		1	1,424	180	31
Nebraska	1	20	60		676		0	266	65	8

[1] Exclusive of Oklahoma City and Tulsa City

December, 1926

California:	Cases
Beriberi	1
Chicken pox	1,636
Dysentery (amœbic)	18
Dysentery (bacillary)	13
German measles	74
Jaundice (epidemic)	5
Leprosy	5
Lethargic encephalitis	11
Mumps	697
Ophthalmia neonatorum	3
Paratyphoid fever	1
Rabies in animals	29
Tetanus	3
Trachoma	302
Whooping cough	289

January, 1927

Chicken pox:	
Hawaii Territory	12
Oklahoma	155
South Dakota	146
Conjunctivitis (follicular):	
Hawaii Territory	235
Dysentery:	
Oklahoma	1
Dysentery (amœbic):	
Hawaii Territory	4
Leprosy:	
Hawaii Territory	6
Mumps:	
Oklahoma	34
South Dakota	30
Ophthalmia neonatorum:	
Oklahoma	1
Paratyphoid fever:	
Hawaii Territory	1
Scabies:	
Oklahoma	4
Tetanus:	
Hawaii Territory	2
Oklahoma	2

January, 1927—Continued

	Cases
Trachoma:	
Hawaii Territory	285
Oklahoma	18
Whooping cough:	
Hawaii Territory	121
Oklahoma	48
South Dakota	61

February, 1927

Chicken pox:	
Connecticut	438
Florida	207
Massachusetts	1,244
Michigan	1,123
Nebraska	254
Conjunctivitis (infectious):	
Connecticut	1
Dengue:	
Florida	1
Dysentery:	
Florida	1
German measles:	
Connecticut	69
Massachusetts	39
Nebraska	164
Hookworm disease:	
Florida	181
Lead poisoning:	
Massachusetts	4
Lethargic encephalitis:	
Connecticut	5
Massachusetts	5
Michigan	6
Mumps:	
Connecticut	120
Florida	48
Massachusetts	1,306
Michigan	461
Nebraska	202
Ophthalmia neonatorum:	
Massachusetts	122

February, 1927—Continued

	Cases
Rabies in man:	
Florida	1
Septic sore throat:	
Connecticut	14
Massachusetts	16
Michigan	19
Nebraska	6
Tetanus:	
Florida	2

February, 1927—Continued

	Cases
Trachoma:	
Connecticut	1
Massachusetts	6
Typhus fever:	
Florida	1
Whooping cough:	
Connecticut	179
Florida	55
Massachusetts	543
Michigan	532
Nebraska	123

Number of Cases of Certain Communicable Diseases Reported for the Month of December, 1926, by State Health Officers

State	Chicken pox	Diphtheria	Measles	Mumps	Scarlet fever	Smallpox	Tuberculosis	Typhoid fever	Whooping cough
Alabama	133	268	45	26	93	184	245	103	79
Arizona	34	20	49	5	39	1	98	4	15
Arkansas [1]									
California	1,636	839	4,206	697	1,194	77	803	81	289
Colorado	181	96	250	12	538	61	137	6	14
Connecticut	566	122	225	61	288	0	101	8	163
Delaware	9	7	3	-------	108	0	[2] 13	5	11
District of Columbia	236	106	5	-------	70	0	103	8	35
Florida [1]									
Georgia	112	172	79	17	103	190	60	28	93
Idaho	80	6	414	11	206	29	[2] 14	4	7
Illinois	2,202	519	2,930	524	1,265	51	1,129	115	838
Indiana	690	320	225	-------	675	553	100	31	346
Iowa	276	133	218	40	280	54	61	5	33
Kansas	704	110	334	43	468	121	232	18	146
Kentucky [3]									
Louisiana	37	104	122	7	92	11	[2] 180	42	7
Maine	311	12	452	37	168	0	23	11	202
Maryland	645	244	128	83	291	0	161	65	344
Massachusetts	1,718	505	358	810	1,539	0	507	94	604
Michigan	1,181	590	412	183	1,212	81	297	24	512
Minnesota	1,260	228	642	-------	1,131	22	166	19	75
Mississippi	641	170	637	265	153	78	242	80	981
Missouri	401	261	556	28	502	8	136	33	161
Montana	81	26	563	23	454	83	68	17	15
Nebraska	277	44	72	93	204	78	6	37	68
Nevada [4]									
New Hampshire [1]									
New Jersey	1,009	680	155	-------	783	0	357	31	731
New Mexico [1]									
New York	3,157	1,295	3,920	1,333	2,019	69	1,436	154	1,335
North Carolina	593	393	265	-------	277	267	-------	28	1,137
North Dakota	139	37	916	37	248	62	11	1	19
Ohio	2,440	1,123	246	301	1,606	121	609	79	823
Oklahoma [5]	101	120	138	12	162	112	53	75	67
Oregon	167	100	175	55	276	137	47	11	20
Pennsylvania	3,683	989	2,818	553	2,290	0	486	165	1,327
Rhode Island	78	67	6	11	82	0	24	1	37
South Carolina	200	434	34	-------	66	20	96	66	166
South Dakota	128	33	328	4	298	39	4	9	61
Tennessee	253	210	83	15	270	32	119	156	251
Texas [1]									
Utah [3]									
Vermont	216	8	490	91	69	0	[2] 8	3	264
Virginia	688	307	285	-------	396	54	[2] 131	73	1,154
Washington	591	172	810	259	496	236	172	24	47
West Virginia	456	159	302	-------	243	32	55	175	258
Wisconsin	1,391	172	2,249	444	296	33	118	28	694
Wyoming	76	10	157	2	102	-------	-------	3	43

[1] Report not received at time of going to press.
[2] Pulmonary tuberculosis.
[3] Reports received weekly.
[4] Reports received annually.
[5] Exclusive of Oklahoma City and Tulsa.

Case Rates per 1,000 Population (Annual Basis) for the Month of December, 1926

State	Chicken pox	Diphtheria	Measles	Mumps	Scarlet fever	Smallpox	Tuberculosis	Typhoid fever	Whooping cough
Alabama	0.63	1.27	0.21	0.12	0.44	0.87	1.16	0.49	0.37
Arizona	.95	.56	1.37	.14	1.09	.03	2.74	.11	.42
Arkansas [1]									
California	4.66	2.39	11.99	1.99	3.40	.22	2.29	.23	.82
Colorado	2.06	1.09	2.85	.14	6.13	.69	1.56	.07	.16
Connecticut	4.28	.92	1.70	.46	2.18	.00	.76	.06	1.23
Delaware	.45	.35	.15	-------	5.37	.00	[2].65	.25	.55
District of Columbia	5.46	2.45	.12	-------	1.62	.00	2.38	.19	.81
Florida [1]									
Georgia	.43	.66	.30	.06	.39	.72	.23	.11	.35
Idaho	1.87	.14	9.69	.26	4.82	.68	[2].33	.09	.16
Illinois	3.68	.87	4.89	.88	2.11	.09	1.89	.19	1.40
Indiana	2.63	1.22	.86	-------	2.58	2.11	.38	.12	1.32
Iowa	1.29	.62	1.02	.19	1.31	.25	.28	.02	.15
Kansas	4.94	.71	2.16	.28	3.02	.78	1.50	.12	.94
Kentucky [3]									
Louisiana	.23	.65	.76	.04	.57	.07	[2]1.12	.26	.04
Maine	4.66	.18	6.78	.55	2.52	.00	.34	.16	3.03
Maryland	4.89	1.85	.97	.63	2.21	.00	1.22	.49	2.61
Massachusetts	4.84	1.42	1.01	2.28	4.34	.00	1.43	.26	1.70
Michigan	3.28	1.64	1.14	.51	3.36	.22	.82	.07	1.42
Minnesota	5.72	1.03	2.91	-------	5.13	.10	.75	.09	.34
Mississippi	4.21	1.12	4.19	1.74	1.01	.51	1.59	.53	5.66
Missouri	1.36	.88	1.88	.09	1.70	.03	.46	.11	.54
Montana	1.43	.46	9.97	.41	8.04	1.47	1.20	.30	.27
Nebraska	2.39	.38	.62	.80	1.76	.67	.05	.32	.59
Nevada [4]									
New Hampshire [1]									
New Jersey	3.53	1.75	.51	-------	2.58	.00	1.28	.10	2.41
New Mexico [1]									
New York	3.31	1.36	4.11	1.40	2.12	.07	1.50	.16	1.40
North Carolina	2.50	1.66	1.12	-------	1.17	1.12	-------	.12	4.79
North Dakota	2.36	.63	15.55	.63	4.21	1.05	.19	.02	.32
Ohio	4.47	2.06	.45	.55	2.94	.22	1.12	.14	1.51
Oklahoma [5]	.59	.70	.80	.07	.94	.65	.31	.43	.39
Oregon	2.29	1.37	2.40	.76	3.79	1.88	.65	.15	.27
Pennsylvania	4.60	1.24	3.52	.69	2.86	.00	.61	.21	1.66
Rhode Island	1.42	1.22	.11	.20	1.50	.00	.44	.02	.67
South Carolina	1.31	3.17	.22	-------	.48	.13	.63	.45	1.09
South Dakota	2.24	.58	5.75	.07	5.22	.68	.07	.16	1.07
Tennessee	1.22	1.01	.40	.07	1.30	.15	.57	.75	1.21
Texas [1]									
Utah [3]									
Vermont	7.22	.27	16.37	3.04	2.00	.00	[2].27	.10	8.15
Virginia	3.27	1.46	1.36	-------	1.88	.26	[2].62	.35	5.49
Washington	4.64	1.35	6.36	2.03	3.91	1.85	1.35	.19	.37
West Virginia	3.30	1.15	2.19	-------	1.76	.23	.40	1.27	1.87
Wisconsin	5.78	.72	9.35	1.85	1.23	.16	.49	.12	2.76
Wyoming	3.94	.52	8.15	.10	5.29	-------	-------	.16	2.23

[1] Report not received at time of going to press.
[2] Pulmonary tuberculosis.
[3] Reports received weekly.
[4] Reports received annually.
[5] Exclusive of Oklahoma City and Tulsa.

GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

The 99 cities reporting cases used in the following table are situated in all parts of the country and have an estimated aggregate population of more than 30,860,000. The estimated population of the 93 cities reporting deaths is more than 30,190,000. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

Weeks ended February 26, 1927, and February 27, 1926

	1926	1927	Estimated expectancy
Cases reported			
Diphtheria:			
41 States	1,477	1,743	
99 cities	783	1,059	961
Measles:			
38 States	20,728	14,192	
99 cities	12,058	5,903	
Poliomyelitis:			
41 States	25	13	
Scarlet fever:			
40 States	4,699	6,086	
99 cities	1,663	2,517	1,318
Smallpox:			
40 States	975	876	
99 cities	238	146	141
Typhoid fever:			
41 States	188	209	
99 cities	29	47	40
Deaths reported			
Influenza and pneumonia:			
93 cities	1,742	1,078	

City reports for week ended February 26, 1927

The "estimated expectancy" given for diphtheria, poliomyelitis, scarlet fever, smallpox, and typhoid fever is the result of an attempt to ascertain from previous occurrence how many cases of the disease under consideration may be expected to occur during a certain week in the absence of epidemics. It is based on reports to the Public Health Service during the past nine years. It is in most instances the median number of cases reported in the corresponding week of the preceding years. When the reports include several epidemics or when for other reasons the median is unsatisfactory, the epidemic periods are excluded and the estimated expectancy is the mean number of cases reported for the week during nonepidemic years.

If reports have not been received for the full nine years, data are used for as many years as possible, but no year earlier than 1918 is included. In obtaining the estimated expectancy the figures are smoothed when necessary to avoid abrupt deviations from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Population July 1, 1925, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND									
Maine:									
Portland	75,333	16	2	0	0	0	0	0	2
New Hampshire:									
Concord	22,546	0	0	0	0	0	27	0	0
Manchester	83,097	0	3	1	0	1	0	0	1
Nashua	29,723	0	1	0	0	0	0	0	0
Vermont:									
Barre	10,008	0	0	0	0	0	8	1	1
Burlington	24,089	1	0	0	0	0	0	1	0
Massachusetts:									
Boston	779,620	85	57	38	4	2	44	76	35
Fall River	128,993	3	4	3	0	0	1	7	8
Springfield	142,065	6	2	2	1	1	2	3	2
Worcester	190,757	10	3	3	0	0	8	4	6
Rhode Island:									
Pawtucket	69,760	0	1	0	0	0	0	0	5
Providence	267,918	0	10	8	0	0	0	0	6
Connecticut:									
Bridgeport	(1)	1	0	0	3	2	7	2	3
Hartford	160,197	10	0	1	6	0	1	2	1
New Haven	178,927	24	3	0	0	0	0	5	10
MIDDLE ATLANTIC									
New York:									
Buffalo	538,016	44	13	9	------	0	7	10	15
New York	5,873,356	334	189	294	135	23	36	383	210
Rochester	316,786	15	11	2	------	0	6	1	5
Syracuse	182,003	12	6	1	------	0	12	2	6
New Jersey:									
Camden	128,642	6	5	8	2	2	1	2	8
Newark	452,513	44	19	6	15	1	3	42	7
Trenton	132,020	1	4	0	3	1	0	1	3

[1] No estimate made.

City reports for week ended February 26, 1927—Continued

Division, State, and city	Population July 1, 1925, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
MIDDLE ATLANTIC—con.									
Pennsylvania:									
Philadelphia	1,979,364	98	77	62	-------	11	28	93	66
Pittsburgh	631,563	80	21	22	-------	6	57	1	26
Reading	112,707	13	3	1	-------	0	3	28	2
EAST NORTH CENTRAL									
Ohio:									
Cincinnati	409,333	9	9	10	0	0	1	14	14
Cleveland	936,485	165	30	84	16	0	6	38	31
Columbus	279,836	18	4	8	0	2	4	2	7
Toledo	287,380	53	6	20	4	4	12	0	6
Indiana:									
Fort Wayne	97,846	7	3	2	0	0	46	0	4
Indianapolis	358,819	88	8	7	0	2	5	16	9
South Bend	80,091	0	1	2	0	0	40	0	3
Terre Haute	71,071	4	1	0	0	0	7	0	0
Illinois:									
Chicago	2,995,239	106	93	93	20	11	1,010	114	88
Peoria	81,564	11	1	0	0	0	52	12	3
Springfield	63,923	8	1	2	2	2	195	0	2
Michigan:									
Detroit	1,245,824	112	58	71	6	6	16	84	33
Flint	130,316	21	5	2	0	1	10	0	7
Grand Rapids	153,698	10	3	0	0	0	1	0	3
Wisconsin:									
Kenosha	50,891	7	2	0	0	0	133	33	0
Madison	46,385	29	1	0	0	0	3	1	2
Milwaukee	509,192	89	16	13	1	1	32	40	14
Racine	67,707	20	2	3	0	0	11	18	2
Superior	39,671	0	0	0	0	0	5	0	0
WEST NORTH CENTRAL									
Minnesota:									
Duluth	110,502	5	1	0	0	0	39	0	2
Minneapolis	425,435	101	16	13	0	1	5	0	7
St. Paul	246,001	80	16	5	0	1	13	1	9
Iowa:									
Davenport	52,469	0	1	1	0	-------	9	0	-------
Des Moines	141,441	1	3	1	0	-------	30	1	-------
Sioux City	76,411	13	2	0	0	-------	90	2	-------
Waterloo	36,771	6	1	-------	0	-------	144	1	-------
Missouri:									
Kansas City	367,481	56	8	1	0	2	60	1	16
St. Joseph	78,342	2	2	0	0	1	0	0	0
St. Louis	821,543	33	48	33	0	0	18	30	-------
North Dakota:									
Fargo	26,403	3	0	0	0	0	26	12	0
South Dakota:									
Aberdeen	15,036	13	0	0	0	-------	61	0	-------
Sioux Falls	30,127	0	0	0	0	-------	0	0	-------
Nebraska:									
Lincoln	60,941	9	1	0	0	1	45	5	0
Omaha	211,768	12	5	1	0	0	75	22	8
Kansas:									
Topeka	55,411	11	2	0	0	0	13	0	1
Wichita	88,367	34	3	2	0	0	2	1	1
SOUTH ATLANTIC									
Delaware:									
Wilmington	122,049	8	2	2	0	0	0	0	7
Maryland:									
Baltimore	796,296	155	27	51	135	9	3	9	54
Cumberland	33,741	1	0	3	2	1	0	2	3
Frederick	12,035	0	0	0	0	0	0	0	0
District of Columbia:									
Washington	497,906	62	15	25	7	1	7	0	35
Virginia:									
Lynchburg	30,395	18	0	5	0	0	11	1	0
Norfolk	(1)	31	1	1	1	0	42	2	6
Richmond	186,403	4	3	3	0	0	151	1	7
Roanoke	58,208	2	1	0	0	2	0	1	4
West Virginia:									
Charleston	49,019	9	1	0	0	0	2	0	1
Wheeling	56,208	11	1	0	0	1	1	0	4

[1] No estimate made.

City reports for week ended February 26, 1927—Continued

Division, State, and city	Population July 1, 1925, estimated	Chicken pox, cases reported	Diphtheria: Cases, estimated expectancy	Diphtheria: Cases reported	Influenza: Cases reported	Influenza: Deaths reported	Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
SOUTH ATLANTIC—con.									
North Carolina:									
Raleigh	30,371	49	0	0	0	0	1	0	1
Wilmington	37,061		0						
Winston-Salem	69,031	19	0	0	0	0	1	33	4
South Carolina:									
Charleston	73,125	8	0	0	43	0	8	0	2
Columbia	41,225	2	1	0	0		0	0	
Greenville	27,311	1	0	3	0	0	0	0	0
Georgia:									
Atlanta	(1)	12	3	7	82	4	72	4	6
Brunswick	16,809	0	0	0	0	1	0	3	0
Savannah	93,134	1	0	0	20	2	0	1	2
Florida:									
Miami	69,754	14	3	2	1	0	0	2	0
St. Petersburg	26,847		0			0			0
Tampa	94,743	3	2	4	1	2	62	0	4
EAST SOUTH CENTRAL									
Kentucky:									
Covington	58,309		0						
Louisville	305,935	11	5	4	4	1	1	1	7
Tennessee:									
Memphis	174,583	27	4	2	0	4	5	0	3
Nashville	136,220	9	1	1	0	0	0	0	6
Alabama:									
Birmingham	205,670	20	2	11	9	3	29	3	3
Mobile	65,955	5	1	3	2	0	46	2	1
Montgomery	46,481	2	1	0	0	0	10	1	0
WEST SOUTH CENTRAL									
Arkansas:									
Fort Smith	31,643	6	0	0	0		9	3	2
Little Rock	74,216	5	1	0	1	0	0	0	1
Louisiana:									
New Orleans	414,493	4	12	14	6	5	99	0	16
Shreveport	57,857	7	0	1	0	0	0	26	2
Oklahoma:									
Oklahoma City	(1)	5	1	2	17	2	0	0	4
Texas:									
Dallas	194,450	19	5	7	0	0	35	4	5
Galveston	48,375	0	0	3	0	0	0	1	1
Houston	164,954	1	3	13	0	1	0	7	7
San Antonio	198,069	0	2	9	0	0	0	0	6
MOUNTAIN									
Montana:									
Billings	17,971	2	0	1	0	0	5	0	2
Great Falls	29,883	6	0	0	0	0	18	0	1
Helena	12,037	3	0	0	0	0	1	0	1
Missoula	12,668	0	1	0	1	1	0	11	0
Idaho:									
Boise	23,042	2	1	0	0	0	14	1	0
Colorado:									
Denver	280,911	27	10	5		4	1,028	1	5
Pueblo	43,787	3	1	0	0	0	13	0	1
New Mexico:									
Albuquerque	21,000	2	1	0	0	0	47	13	4
Arizona:									
Phoenix	38,669	0	0	0	0	0	1	0	3
Utah:									
Salt Lake City	130,948	15	2	2	0	1	106	2	5
Nevada:									
Reno	12,665	0	0	0	0	0	0	0	0
PACIFIC									
Washington:									
Seattle	(1)	35	6	3	0		23	46	
Spokane	108,897	2	3	1	0		60	0	
Tacoma	104,455	10	2	0	0	0	12	0	4
Oregon:									
Portland	282,383	22	7	6	21	5	41	6	20
California:									
Los Angeles	(1)	135	32	42	27	4	830	24	23
Sacramento	72,260	10	1	2	1	1	49	14	5
San Francisco	557,530	35	21	10	7	0	123	67	6

[1] No estimate made.

City reports for week ended February 26, 1927—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
NEW ENGLAND											
Maine:											
Portland	3	0	0	0	0	2	0	0	0	8	30
New Hampshire:											
Concord	0	6	0	0	0	0	0	0	0	0	9
Manchester	3	4	0	0	0	1	0	0	0	0	16
Nashua	1	0	0	0	0	0	0	0	0	0	12
Vermont:											
Barre	1	0	0	0	0	0	0	0	0	1	5
Burlington	1	0	0	0	0	0	0	0	0	3	12
Massachusetts:											
Boston	71	162	0	0	0	16	2	4	0	30	245
Fall River	3	3	0	0	0	1	0	0	0	0	44
Springfield	8	10	0	0	0	6	1	0	0	4	36
Worcester	9	10	0	0	0	4	0	0	0	5	61
Rhode Island:											
Pawtucket	1	2	0	0	0	1	0	0	0	2	30
Providence	8	11	0	0	0	2	0	0	0	8	55
Connecticut:											
Bridgeport	11	18	0	0	0	3	0	0	0	1	38
Hartford	6	8	0	0	0	2	0	0	0	4	36
New Haven	11	3	0	0	0	1	1	0	0	0	46
MIDDLE ATLANTIC											
New York:											
Buffalo	23	39	1	0	0	0	1	0	0	8	139
New York	251	772	1	0	0	[1] 116	6	2	0	120	1,565
Rochester	15	26	0	0	0	2	1	0	0	17	76
Syracuse	16	11	0	0	0	3	0	1	0	4	64
New Jersey:											
Camden	5	10	0	0	0	1	0	0	0	2	42
Newark	25	48	0	0	0	9	0	0	0	34	110
Trenton	5	0	0	0	0	3	0	0	0	0	49
Pennsylvania:											
Philadelphia	84	135	0	0	0	43	2	0	1	39	539
Pittsburgh	33	33	0	0	0	7	1	0	0	12	212
Reading	3	4	0	0	0	1	0	0	0	2	26
EAST NORTH CENTRAL											
Ohio:											
Cincinnati	14	42	2	0	0	7	0	0	0	1	145
Cleveland	46	64	0	0	0	17	1	0	0	17	225
Columbus	12	6	3	0	0	3	1	0	0	9	94
Toledo	14	7	3	0	0	6	0	0	0	30	80
Indiana:											
Fort Wayne	5	0	1	0	0	0	0	0	0	2	33
Indianapolis	12	24	14	17	0	7	1	3	0	20	107
South Bend	3	5	1	1	0	0	0	0	0	1	18
Terre Haute	2	3	1	0	0	3	0	0	0	3	18
Illinois:											
Chicago	133	164	4	1	0	58	3	4	0	61	766
Peoria	5	3	0	0	0	1	0	0	0	4	20
Springfield	1	2	0	0	0	0	0	0	0	0	30
Michigan:											
Detroit	93	110	3	1	0	33	1	0	0	47	338
Flint	6	36	1	3	0	2	0	1	0	1	27
Grand Rapids	9	10	1	0	0	0	0	0	0	1	29
Wisconsin:											
Kenosha	2	13	0	0	0	0	0	0	0	5	6
Madison	3	10	0	0	0	1	0	0	0	19	14
Milwaukee	29	56	2	0	0	10	0	1	0	42	111
Racine	4	5	0	0	0	0	0	0	0	22	11
Superior	3	9	4	0	0	1	0	0	0	0	6

[1] Pulmonary tuberculosis only.

City reports for week ended February 26, 1927—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
WEST NORTH CENTRAL											
Minnesota:											
Duluth	7	6	1	0	0	1	0	0	0	0	21
Minneapolis	52	70	11	0	0	7	1	2	1	6	99
St. Paul	34	33	6	4	0	2	0	1	0	2	70
Iowa:											
Davenport	2	3	2	0	----	----	0	0	----	0	----
Des Moines	7	4	2	0	----	----	0	0	----	0	----
Sioux City	2	10	2	3	----	----	0	0	----	6	----
Waterloo	2	1	0	0	----	----	0	0	----	3	----
Missouri:											
Kansas City	11	36	2	13	0	8	0	0	0	10	120
St. Joseph	3	6	0	1	0	1	0	0	0	5	22
St. Louis	32	30	4	2	0	12	1	0	0	22	208
North Dakota:											
Fargo	2	8	0	0	0	0	0	0	0	0	6
South Dakota:											
Aberdeen	3	8	0	0	----	----	0	0	----	0	----
Sioux Falls	3	1	0	0	----	----	0	0	----	0	----
Nebraska:											
Lincoln	2	2	0	0	0	0	0	0	0	1	17
Omaha	5	20	10	5	0	2	0	0	0	0	----
Kansas:											
Topeka	2	3	0	4	0	0	0	1	0	13	6
Wichita	3	2	1	0	0	0	0	0	0	3	26
SOUTH ATLANTIC											
Delaware:											
Wilmington	3	27	0	0	0	1	0	0	0	2	31
Maryland:											
Baltimore	42	32	0	0	0	16	2	1	0	80	251
Cumberland	1	0	0	0	0	1	0	0	0	1	13
Frederick	0	9	0	0	0	0	0	0	0	0	2
District of Columbia:											
Washington	27	17	1	0	0	14	0	1	1	20	187
Virginia:											
Lynchburg	0	0	0	0	0	0	0	0	0	0	9
Norfolk	2	9	0	0	0	3	0	0	0	27	----
Richmond	4	7	0	0	0	3	0	0	0	3	48
Roanoke	1	4	0	0	0	1	1	0	0	0	24
West Virginia:											
Charleston	0	5	0	2	0	0	1	8	0	3	16
Wheeling	2	2	0	0	0	1	0	2	0	1	21
North Carolina:											
Raleigh	0	1	0	0	0	0	0	0	0	44	12
Wilmington	0	----	0	----	----	----	0	----	----	----	----
Winston-Salem	0	0	3	0	0	2	0	0	0	42	16
South Carolina:											
Charleston	0	1	0	0	0	1	0	1	0	1	21
Columbia	0	0	0	1	----	----	0	0	----	11	----
Greenville	0	0	0	0	0	0	0	0	0	1	8
Georgia:											
Atlanta	4	4	3	20	0	4	0	1	0	6	75
Brunswick	0	0	0	0	0	0	0	0	0	0	3
Savannah	1	0	0	2	0	2	1	1	1	11	28
Florida:											
Miami	1	1	----	0	0	3	1	0	0	6	43
St. Petersburg	0	----	0	----	0	1	0	----	0	----	18
Tampa	1	1	0	0	0	3	1	1	0	2	34
EAST SOUTH CENTRAL											
Kentucky:											
Covington	2	----	0	----	----	----	0	----	----	----	----
Louisville	5	7	1	2	0	1	0	2	0	54	82
Tennessee:											
Memphis	3	17	2	7	0	3	1	0	1	30	78
Nashville	4	5	1	0	0	2	0	0	0	1	41
Alabama:											
Birmingham	2	4	8	4	0	2	1	1	0	8	59
Mobile	1	2	1	0	0	0	1	1	0	0	17
Montgomery	0	0	1	1	0	0	0	1	0	1	5

City reports for week ended February 26, 1927—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
WEST SOUTH CENTRAL											
Arkansas:											
Fort Smith	0	0	0	0	-------	2	0	0	-------	5	11
Little Rock	1	3	0	0	0	1	0	0	0	1	-------
Louisiana:											
New Orleans	6	9	2	0	0	16	2	0	0	6	157
Shreveport	1	0	1	0	0	0	0	0	0	0	32
Oklahoma:											
Oklahoma City	2	4	3	3	0	2	0	0	0	0	33
Texas:											
Dallas	2	13	4	5	0	3	1	0	0	1	51
Galveston	0	0	1	1	0	1	0	1	0	0	9
Houston	1	3	3	6	0	8	0	0	0	0	54
San Antonio	1	0	0	0	0	11	0	0	0	0	70
MOUNTAIN											
Montana:											
Billings	1	0	0	0	0	0	0	0	0	0	8
Great Falls	2	8	2	0	0	0	0	0	0	0	9
Helena	0	3	0	0	0	1	0	0	0	0	7
Missoula	0	21	0	0	0	0	0	0	0	0	10
Idaho:											
Boise	0	1	1	0	0	0	0	0	0	0	4
Colorado:											
Denver	14	86	2	0	0	13	0	1	0	0	102
Pueblo	1	5	1	0	0	0	0	0	0	0	6
New Mexico:											
Albuquerque	2	1	0	0	0	1	0	0	0	2	10
Arizona:											
Phoenix	1	3	0	1	0	6	0	0	0	0	24
Utah:											
Salt Lake City	3	9	2	0	0	2	0	1	0	5	36
Nevada:											
Reno	0	0	0	0	0	0	0	0	0	0	3
PACIFIC											
Washington:											
Seattle	10	15	4	2	-------	-------	1	0	-------	6	-------
Spokane	4	27	5	19	-------	-------	0	0	-------	2	-------
Tacoma	3	9	3	18	0	0	1	0	0	2	27
Oregon:											
Portland	6	9	10	5	0	2	1	0	0	5	116
California:											
Los Angeles	26	54	7	0	0	20	2	3	0	13	259
Sacramento	1	2	1	0	0	5	0	0	0	0	37
San Francisco	14	13	5	1	0	15	0	0	0	19	158

Division, State, and city	Cerebrospinal meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths
NEW ENGLAND									
Massachusetts:									
Boston	1	0	0	0	0	0	0	0	0
Rhode Island:									
Providence	1	0	0	0	0	0	0	0	0
Connecticut:									
Bridgeport	1	1	0	0	0	0	0	0	0
Hartford	0	1	0	0	0	0	0	0	0

City reports for week ended February 26, 1927—Continued

Division, State, and city	Cerebrospinal meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths
MIDDLE ATLANTIC									
New York:									
New York	3	5	5	4	0	0	1	0	0
Pennsylvania:									
Philadelphia	1	0	0	0	0	0	1	0	0
Pittsburgh	0	0	1	1	0	0	0	0	0
EAST NORTH CENTRAL									
Ohio:									
Cincinnati	2	3	0	0	0	0	0	0	0
Cleveland	1	1	1	0	0	0	0	1	0
Columbus	2	0	0	0	0	0	0	0	0
Illinois:									
Chicago	3	0	0	0	0	0	0	0	0
Michigan:									
Detroit	0	2	0	1	0	0	0	0	0
Wisconsin:									
Milwaukee	1	0	0	0	0	0	0	0	0
WEST NORTH CENTRAL									
Minnesota:									
Duluth	1	0	0	0	0	0	0	0	0
Minneapolis	1	1	0	0	0	0	0	0	0
St. Paul	0	1	0	0	0	0	0	0	0
Missouri:									
Kansas City	0	0	0	0	0	0	0	1	2
St. Louis	2	1	0	0	0	0	0	0	0
North Dakota:									
Fargo	1	1	0	0	0	0	0	0	0
SOUTH ATLANTIC [1]									
Maryland:									
Baltimore	0	0	4	0	0	0	0	0	0
Virginia:									
Richmond	1	1	0	0	0	0	0	0	0
South Carolina:									
Charleston	0	0	0	0	1	0	0	0	0
Florida:									
Miami	0	0	0	0	0	0	0	1	0
Tampa [1 2]	0	0	0	0	1	0	0	0	0
EAST SOUTH CENTRAL									
Tennessee:									
Nashville	2	0	0	0	0	0	0	0	0
WEST SOUTH CENTRAL									
Louisiana:									
Shreveport	0	0	0	0	0	1	0	0	0
Texas:									
San Antonio	0	0	0	0	0	1	0	0	0
MOUNTAIN									
Montana:									
Helena	0	1	0	0	0	0	0	0	0
Colorado:									
Pueblo	1	0	0	1	0	0	0	0	0
Utah:									
Salt Lake City	0	1	0	0	0	0	0	0	0
Nevada:									
Reno	0	1	0	0	0	0	0	0	0
PACIFIC									
Washington:									
Spokane	1	-------	0	-------	0	-------	0	0	-------
Oregon:									
Portland	2	1	0	1	0	0	0	0	0
California:									
Los Angeles	1	0	0	0	0	0	0	0	0
Sacramento	1	2	0	0	0	0	0	0	0

[1] Rabies (human): 1 case at Atlanta Ga., and 1 case and 1 death at Tampa, Fla.
[2] Typhus fever: 1 case at Tampa, Fla.

The following table gives the rates per 100,000 population for 101 cities for the five-week period ended February 26, 1927, compared with those for a like period ended February 27, 1926. The population figures used in computing the rates are approximate estimates as of July 1, 1926 and 1927, respectively, authoritative figures for many of the cities not being available. The 101 cities reporting cases had estimated aggregate populations of approximately 30,440,000 in 1926 and 30,960,000 in 1927. The 95 cities reporting deaths had nearly 29,780,000 estimated population in 1926 and nearly 30,290,000 in 1927. The number of cities included in each group and the estimated aggregate populations are shown in a separate table below.

Summary of weekly reports from cities, January 23 to February 26, 1927—Annual rates per 100,000 population, compared with rates for the corresponding period of 1926 [1]

DIPHTHERIA CASE RATES

	Week ended—									
	Jan. 30, 1926	Jan. 29, 1927	Feb. 6, 1926	Feb. 5, 1927	Feb. 13, 1926	Feb. 12, 1927	Feb. 20, 1926	Feb. 19, 1927	Feb. 27, 1926	Feb. 26, 1927
101 cities	142	178	134	195	[2] 136	[3] 177	137	204	134	[4] 179
New England	118	163	97	146	123	[3] 168	116	132	101	149
Middle Atlantic	130	194	129	229	141	188	132	277	119	200
East North Central	138	175	119	202	[2] 132	179	134	169	141	198
West North Central	250	127	222	123	171	155	206	165	246	199
South Atlantic	115	199	132	143	134	223	104	192	73	[5] 191
East South Central	41	102	41	127	47	61	57	87	52	[6] 113
West South Central	142	206	137	235	116	151	90	172	116	197
Mountain	264	198	128	189	173	153	219	162	210	72
Pacific	166	168	188	217	139	168	204	188	214	152

MEASLES CASE RATES

101 cities	1,385	417	1,481	560	[2] 1,719	[3] 645	1,995	784	2,066	[4] 845
New England	2,745	323	2,403	378	2,342	[3] 364	2,703	181	2,184	228
Middle Atlantic	1,187	46	1,350	41	1,514	45	1,917	69	2,044	75
East North Central	2,091	500	2,155	647	[2] 2,637	738	2,933	899	3,084	930
West North Central	280	298	395	455	551	685	676	566	901	963
South Atlantic	2,261	257	2,557	538	3,086	361	3,248	795	3,269	[5] 663
East South Central	393	188	708	270	729	453	957	469	1,231	[6] 492
West South Central	26	382	34	570	13	457	9	570	9	600
Mountain	100	4,459	91	7,237	109	7,866	137	9,691	82	10,653
Pacific	72	1,508	104	1,542	166	2,225	201	2,780	161	2,872

SCARLET FEVER CASE RATES

101 cities	287	386	298	402	[2] 298	[3] 391	309	439	285	[4] 425
New England	377	539	401	508	361	[3] 544	361	469	354	541
Middle Atlantic	235	379	209	434	197	424	208	582	187	532
East North Central	300	342	338	319	[2] 359	327	372	323	340	365
West North Central	666	488	754	522	782	500	782	542	706	447
South Atlantic	153	254	162	246	169	259	149	250	199	[5] 219
East South Central	109	321	119	245	114	224	243	245	171	[6] 189
West South Central	69	113	137	126	107	75	107	67	112	117
Mountain	255	1,609	155	1,519	219	1,250	237	1,250	100	1,196
Pacific	332	327	324	437	308	390	330	340	311	314

[1] The figures given in this table are rates per 100,000 population, annual basis, and not the number of cases reported. Populations used are estimated as of July 1, 1926 and 1927, respectively.
[2] Madison, Wis., not included.
[3] Worcester, Mass., not included.
[4] Wilmington, N. C., and Covington, Ky., not included.
[5] Wilmington, N. C., not included.
[6] Covington, Ky., not included.

Summary of weekly reports from cities, January 23 to February 26, 1927—Annual rates per 100,000 population, compared with rates for the corresponding period of 1926—Continued

SMALLPOX CASE RATES

	Week ended—									
	Jan. 30, 1926	Jan. 29, 1927	Feb. 6, 1926	Feb. 5, 1927	Feb. 13, 1926	Feb. 12, 1927	Feb. 20, 1926	Feb. 19, 1927	Feb. 27, 1926	Feb. 26, 1927
101 cities	40	26	47	25	[2] 53	[3] 26	41	33	41	[4] 25
New England	0	0	0	0	0	[3] 0	0	0	0	0
Middle Atlantic	1	0	0	0	1	0	0	0	0	0
East North Central	43	17	16	22	[2] 23	15	33	28	18	15
West North Central	54	79	52	54	32	71	65	81	79	64
South Atlantic	58	60	101	43	80	63	50	60	65	[5] 46
East South Central	21	87	41	102	52	82	103	132	52	[6] 76
West South Central	125	42	155	80	112	67	142	63	133	50
Mountain	18	9	73	9	73	18	36	27	46	0
Pacific	204	71	321	63	458	76	193	94	244	105

TYPHOID FEVER CASE RATES

101 cities	8	7	7	7	[2] 6	[3] 7	7	9	5	[4] 8
New England	9	5	14	9	5	[3] 5	7	2	5	9
Middle Atlantic	9	4	3	9	6	5	4	10	2	1
East North Central	4	2	3	5	[2] 4	2	5	4	1	6
West North Central	2	8	6	4	4	6	6	10	2	8
South Atlantic	9	18	13	5	15	18	4	24	11	[5] 29
East South Central	10	36	21	5	10	10	5	31	10	[6] 27
West South Central	17	0	4	17	0	13	21	8	30	4
Mountain	18	18	36	0	0	0	18	0	18	18
Pacific	11	21	16	8	13	18	16	3	8	8

INFLUENZA DEATH RATES

95 cities	29	25	34	19	[2] 33	[3] 24	50	23	46	[4] 22
New England	17	9	12	5	19	[3] 3	2	9	19	12
Middle Atlantic	18	22	20	21	15	28	27	25	39	22
East North Central	12	21	12	9	[2] 11	22	11	19	14	17
West North Central	13	4	19	12	4	15	19	23	23	10
South Atlantic	36	50	68	28	64	24	138	31	96	[5] 43
East South Central	72	31	103	56	62	36	160	41	134	[6] 43
West South Central	141	73	168	65	282	39	278	39	212	26
Mountain	73	72	109	45	128	72	109	27	100	54
Pacific	78	14	67	7	35	21	95	17	35	17

PNEUMONIA DEATH RATES

95 cities	201	159	206	168	[2] 212	[3] 147	259	146	259	[4] 164
New England	144	158	200	188	156	[3] 155	175	102	165	183
Middle Atlantic	218	174	213	197	212	174	290	149	317	177
East North Central	166	132	145	122	[2] 161	128	181	120	179	146
West North Central	110	127	125	135	78	96	127	91	108	91
South Atlantic	286	193	346	226	408	171	490	239	454	[5] 261
East South Central	207	204	248	199	222	112	295	168	300	[6] 108
West South Central	415	202	362	151	516	146	516	207	353	164
Mountain	164	171	228	144	328	144	173	189	410	135
Pacific	173	107	184	121	110	114	173	176	141	131

[2] Madison, Wis., not included.
[3] Worcester, Mass., not included.
[4] Wilmington, N. C., and Covington, Ky., not included.
[5] Wilmington, N. C., not included.
[6] Covington, Ky., not included.

Number of cities included in summary of weekly reports, and aggregate population of cities in each group, approximated as of July 1, 1926 and 1927, respectively

Group of cities	Number of cities reporting cases	Number of cities reporting deaths	Aggregate population of cities reporting cases		Aggregate population of cities reporting deaths	
			1926	1927	1926	1927
Total	101	95	30,438,500	30,960,600	29,778,400	30,289,800
New England	12	12	2,211,000	2,245,900	2,211,000	2,245,900
Middle Atlantic	10	10	10,457,000	10,567,000	10,457,000	10,567,000
East North Central	16	16	7,644,900	7,804,500	7,644,900	7,804,500
West North Central	12	10	2,585,500	2,626,600	2,470,600	2,510,000
South Atlantic	21	20	2,799,500	2,878,100	2,757,700	2,835,700
East South Central	7	7	1,008,300	1,023,500	1,008,300	1,023,500
West South Central	8	7	1,213,800	1,243,300	1,181,500	1,210,400
Mountain	9	9	572,100	580,000	572,100	580,000
Pacific	6	4	1,946,400	1,991,700	1,475,300	1,512,800

FOREIGN AND INSULAR

THE FAR EAST

Report for week ended February 19, 1927.—The following report for the week ended February 19, 1927, was transmitted by the eastern bureau of the secretariat of the health section of the League of Nations, located at Singapore, to the headquarters at Geneva:

Maritime towns	Plague		Cholera		Smallpox		Maritime towns	Plague		Cholera		Smallpox	
	Cases	Deaths	Cases	Deaths	Cases	Deaths		Cases	Deaths	Cases	Deaths	Cases	Deaths
Ceylon: Colombo	3	3	0	0	0	0	Siam: Bangkok	0	0	6	5	3	1
British India:							French Indo-China:						
Bombay	----	2	----	1	35	19	Saigon	1	1	0	0	1	0
Calcutta	----	0	----	36	208	162	Hongkong	0	0	0	0	11	7
Rangoon	----	5	----	12	16	8	U. S. S. R.: Vladivostok	0	0	0	0	10	----
Vizagapatam	----	0	----	0	3	1	Manchuria: Mukden	0	0	0	0	2	----
Dutch East Indies:													
Surabaya	1	1	0	0	0	0							

Telegraphic reports from the following maritime towns indicated that no case of plague, cholera, or smallpox was reported during the week:

ASIA

Arabia.—Aden, Jeddah, Kamaran, Perim.

Iraq.—Basrah.

Persia.—Mohammerah, Bender-Abbas, Bushire, Lingah.

British India.—Chittagong, Cochin, Tuticorin, Negapatam, Karachi.

Portuguese India.—Nova Goa.

Federated Malay States.—Port Swettenham.

Straits Settlements.—Penang, Singapore.

Dutch East Indies.—Batavia, Sabang, Samarinda, Makassar, Belawan-Deli, Pontianak, Semarang, Menado, Bangjermasin, Cheribon, Padang, Palembang, Tarakan, Samarinda, Balikpapan.

Sarawak.—Kuching.

British North Borneo.—Sandakan, Jesselton, Kudat, Tawao.

Portuguese Timor.—Dilly.

French Indo-China.—Haiphong, Turane.

Philippine Islands.—Manila, Iloilo, Jolo, Cebu, Zamboanga.

China.—Amoy, Shanghai (International Settlement).

Macao.

Formosa.—Keelung.

Chosen.—Chemulpo, Fusan.

Manchuria. Harbin, Antung, Yingkow, Changchun.

Kwantung.—Port Arthur, Dairen.

Japan.—Yokohama, Nagasaki, Niigata, Hakodate, Shimonoseki, Moji, Tsuruga, Osaka, Kobe.

AUSTRALASIA AND OCEANIA

Australia.—Adelaide, Melbourne, Sydney, Brisbane, Rockhampton, Townsville, Port Darwin, Broome, Fremantle, Carnarvon, Thursday Island, Cairns.

New Guinea.—Port Moresby.

New Britain Mandated Territory.—Rabaul and Kokopo.

New Zealand.—Auckland, Wellington, Christchurch, Invercargill, Dunedin.

New Caledonia.—Noumea.

Fiji.—Suva.

Hawaii.—Honolulu.

Society Islands.—Papeete.

AFRICA

Egypt.—Port Said, Suez, Alexandria.

Anglo-Egyptian Sudan.—Port Sudan, Suakin.

Eritrea.—Massaua.

French Somaliland.—Jibuti.

British Somaliland.—Berbera.

Italian Somaliland.—Mogadiscio.

Kenya.—Mombasa.

Zanzibar.—Zanzibar.

Tanganyika.—Dar-es-Salaam.

Seychelles.—Victoria.

Portuguese East Africa.—Mozambique, Beira, Lourenco Marques.

Union of South Africa.—East London, Port Elizabeth, Cape Town, Durban.

Reunion.—St. Denis.

Mauritius.—Port Louis.

Madayascar.—Tamatave, Majunga.

Reports had not been received in time for distribution from:

British India—Madras.

Correction for the week ended February 12th:

British India—Calcutta: 27 deaths from cholera instead of 2.

INFLUENZA IN FOREIGN COUNTRIES

A telegram from the health section of the secretariat of the League of Nations, received March 11, 1927, stated that the influenza epidemic was decreasing in all European areas still affected except Scotland, Ireland, and the Union of Soviet Socialist Republics. In these countries the disease is benign. During the first week of March, 898 deaths from influenza were reported in the great towns of England. Influenza deaths were reported in Bulgaria as follows: Last week of February, 526 deaths; first week of March, 338. In Yugoslavia, 154 deaths from influenza were reported during the third week of February.

ANGLO-EGYPTIAN SUDAN

Relapsing fever.—The following item is taken from the Weekly Record dated February 18, 1927, issued by the health section of the secretariat of the League of Nations. An earlier report was published in the Public Health Reports, February 11, 1927, page 446.

The Sudan Medical Service gives the following particulars regarding the epidemic in Darfur: (1) The Zalingei district is the main center of the disease. It is estimated that 10,000 persons, of a total population of 45,000, have died. The disease appears to have died down in the northwest but is active elsewhere, and the southeastern part of the district is very heavily infected. (2) The Kebkebia area has been heavily infected but the disease appears to be dying down. (3) Nyala district, 45 villages in the Kas area and several villages of Koleikli and others immediately south of Nyala are or have been infected. (4) Some villages of the eastern slope of Gebel Marra in El Fasher district are infected.

CANADA

Communicable diseases—Week ended February 26, 1927.—The Canadian ministry of health reports cases of certain communicable diseases in seven Provinces of Canada for the week ended February 26, 1927, as follows:

Disease	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	Total
Cerebrospinal fever			1	2				3
Influenza	32				6	1		39
Lethargic encephalitis				1				1
Smallpox		1		32		3	18	54
Typhoid fever	2	1	23	17	2	1		46

CUBA

Communicable diseases—Provinces—January 1–February 19, 1927.—Cases of disease were notified in the Provinces of Cuba for seven weeks ended February 19, 1927, as follows:

Disease	Pinar del Rio	Habana	Matanzas	Santa Clara	Camaguey	Oriente	Total
Cerebrospinal meningitis			1			4	5
Chicken pox	6	54	11	14	11	15	111
Diphtheria	3	34	13	5	10	5	70
Malaria	17	146	19	15	1,228	1,794	3,219
Measles	31	153	82	39		6	311
Paratyphoid fever	5	2	2	9	2	1	21
Scarlet fever		13	26	3			42
Tetanus (infantile)	1	1	2		3		7
Typhoid fever	12	72	8	15	11	38	156

Communicable diseases—Habana—February 1–28, 1927.—During the month of February, 1927, communicable diseases were reported in Habana, Cuba, as follows:

Disease	New cases	Deaths	Remaining under treatment Feb. 28, 1927
Beri-beri			2
Chicken pox	34		25
Diphtheria	6	4	5
Leprosy			11
Malaria [1]	43		40
Measles	36	1	23
Paratyphoid fever			1
Scarlet fever	8		5
Typhoid fever [1]	14	2	19

[1] Many of these cases from the interior.

LATVIA

Communicable diseases—December, 1926.—During the month of December, 1926, communicable diseases were reported in the Republic of Latvia as follows:

Disease	Cases	Disease	Cases
Chicken pox	2	Puerperal fever	1
Diphtheria	63	Scarlet fever	505
Erysipelas	20	Tetanus	4
Leprosy	3	Trachoma	24
Measles	236	Typhoid fever	49
Mumps	28	Whooping cough	160
Paratyphoid fever	2		

Population (estimated) 1,900,000.

MALTA

Communicable diseases—January, 1927.—During the month of January, 1927, communicable diseases were reported in the island of Malta as follows:

Disease	Cases	Diseases	Cases
Bronchopneumonia	11	Pneumonia	3
Cerebrospinal meningitis	1	Puerperal fever	3
Chicken pox	3	Scarlet fever	3
Erysipelas	4	Trachoma	54
Influenza	9	Tuberculosis	19
Lethargic encephalitis	1	Typhoid fever	20
Malta (undulant) fever	20	Whooping cough	45
Measles	3		

Population: Civil (estimated), 225,242.

MEXICO

Smallpox—Manzanillo—March 5, 1927.—Under date of March 5, 1927, six cases of smallpox were reported at Manzanillo, Mexico.

PERU

Plague—January, 1927.—During the month of January, 1927, 47 cases of plague with 10 deaths were reported in Peru, occurring in the departments of Ancash, Lambayeque, Libertad, and Lima.

UNION OF SOUTH AFRICA

Plague—typhoid fever—typhus fever—January 16–22, 1927.—During the week ended January 22, 1927, one case of plague, occurring in a native, was reported in the Orange Free State, on a farm in the Hoopstad district.

During the same period 20 cases of typhoid fever, occurring in Europeans, were reported in the Lichtenburg District, Transvaal.

Outbreaks of typhus fever were reported in two districts of the Cape Province and in Vredefort District, Orange Free State. The occurrence was on farms.

Typhus fever—December, 1926.—During the month of December, 1926, 162 cases of typhus fever with 22 deaths were reported in the native population, distributed by provinces as follows: Cape Province—cases, 153; deaths, 21; Orange Free State—cases, 9; deaths, 1.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER

The reports contained in the following tables must not be considered as complete or final as regards either the lists of countries included or the figures for the particular countries for which reports are given.

Reports Received During Week Ended March 18, 1927 [1]

CHOLERA

Place	Date	Cases	Deaths	Remarks
India	Dec. 26-Jan. 1			Cases, 2,349; deaths, 1,338.
Do	Jan. 2-8			Cases, 3,080; deaths, 1,757
Bombay	Jan. 23-29	1		
Calcutta	Jan. 16-22	69	58	
Rangoon	do	1	1	
Siam	Jan. 9-22	44	32	Apr. 1, 1926-Jan. 22, 1927: Cases, 7,911; deaths, 5,211.
Bangkok	do	5	1	

PLAGUE

British East Africa:				
Kenya—				
Kisumu	Jan. 16-22	1	1	
Uganda	Oct. 1-31	45	42	
India	Dec. 26-Jan. 1			Cases, 897; deaths, 609.
Do	Jan. 2-8			Cases, 1,766; deaths, 1,200.
Madras, Presidency	Jan. 9-15	123	66	
Rangoon	Jan. 16-22	7	7	
Java:				
Batavia	do	30	27	Province.
East Java and Madura	Jan. 2-8	2	2	
Peru				January, 1927: Cases, 47; deaths, 10.
Departments—				
Ancash—				
Bolognesi Province	Jan. 1-31			Present.
Lambayeque—				
Chiclayo Province	do	2		At Chiclayo.
Libertad—				
Trujillo	do	1		At Trujillo.
Lima—				
Callao	do	2		Country estates.
Canete Province	do	9	1	Do.
Chancay Province	do	7		Huacho districts.
Lima Province	do	26	9	City cases, 15; deaths, 6. Country estates cases, 11; deaths, 3.
Union of South Africa:				
Orange Free State—				
Hoopstad district	Jan. 16-22	1		On farm; native.

SMALLPOX

Brazil:				
Para	Feb. 5-12		1	
British East Africa:				
Tanganyika	Jan. 2-15	34	7	
Canada				Feb. 20-26, 1927: Cases, 54.
Alberta	Feb. 20-26	18		
British Columbia—				
Vancouver	Feb. 21-27	3		
Manitoba—				
Winnipeg	Feb. 27-Mar. 5	1		
New Brunswick	Feb. 20-26	1		
Ontario	do	32		
Toronto	do	6		
Saskatchewan	do	3		
Great Britain:				
England and Wales—				
Cardiff	Feb. 13-19	1		
Newcastle-on-Tyne	do	1		Outbreaks at South Shields, 10 miles from Newcastle-on-Tyne.
Sheffield	Feb. 5-19	60		
India				Dec. 26, 1926-Jan. 1, 1927: Cases, 3,649; deaths, 1,037. Jan. 2-8, 1927: Cases, 4,270; deaths, 1,028.
Bombay	Jan. 23-29	19	10	
Calcutta	Jan. 16-22	101	82	
Karachi	Jan. 24-Feb. 5	3	2	
Madras	Jan. 30-Feb. 5	20	2	
Rangoon	Jan. 16-22	4	4	

[1] From medical officers of the Public Health Service, American consuls, and other sources.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received During Week Ended March 18, 1927—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Indo-China:				
Saigon	Dec. 26-Jan. 1	3		
Japan:				
Kobe	Jan. 30-Feb. 5	1		
Java:				
East Java and Madura	Jan. 2-8	1	2	
Mexico:				
Manzanillo	Mar. 5	6		
Mazatlan	Feb. 14-20		2	
Mexico City	Feb. 13-19	1		Including municipalities in the Federal District.
San Luis Potosi	Feb. 20-26		1	
Torreon	Feb. 12-26		4	
Poland	Dec. 19-25	2		
Portugal:				
Lisbon	Jan. 23-Feb. 5	5		
Siam				Jan. 9-22, 1927: Cases, 719; deaths 275.
Bangkok	Jan. 9-22	5	5	
Spain:				
Valencia	Feb. 8-14	1		

TYPHUS FEVER

Chile:				
Concepcion	Jan. 23-29		1	
Greece:				
Patras	do		1	
Mexico:				
Mexico City	Feb. 13-19	7		Including municipalities in Federal district.
Palestine:				
Haifa	Jan. 31-Feb. 7	1		
Ramleh district	do	1		
Poland				Dec. 19-25, 1926: Cases, 27.
Tunisia:				
Tunis	Jan. 21-31	1		
Union of South Africa				December, 1926: Cases, 162; deaths, 22. Native.
Cape Province	Dec. 1-31			Cases, 153; deaths, 21.
Do	Jan. 16-22			Outbreaks. On farms.
Orange Free State	Dec. 1-31			Cases, 9; deaths, 1.
Do	Jan. 16-22			Outbreak. On farm.

Reports Received from January 1 to March 11, 1927 [1]

CHOLERA

Place	Date	Cases	Deaths	Remarks
China:				
Canton	Nov. 1-30	10	3	
Chungking	Nov. 14-20			Present.
Do	Jan. 2-8			Do.
Tsingtao	Nov. 14-Dec. 11			Do.
Chosen	Sept. 1-Oct. 31	252	159	
French Settlements in India	Aug. 29-Dec. 4	130	96	
India	Oct. 10-Dec. 25			Cases, 17,949; deaths, 2,169.
Bombay	Jan. 9-15	1	1	
Calcutta	Oct. 31-Jan. 1	385	313	
Do	Jan. 2-15	167	119	
Madras	Dec. 26-Jan. 1	2	2	
Do	Jan. 2-8	8	6	
Rangoon	Nov. 21-Jan. 1	11	7	
Do	Jan. 2-8	1	1	

[1] From medical officers of the Public Health Service, American consuls, and other sources.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from January 1 to March 11, 1927—Continued

CHOLERA—Continued

Place	Date	Cases	Deaths	Remarks
Indo-China	July 1-31			Cases, 2,204; deaths, 1,350. European, 1.
Saigon	Oct. 31-Nov. 13	2	2	
Province—				
Annam	July, 1926	215	178	July, 1925: Cases, none.
Cambodia	do	571	352	1 European, fatal. July, 1925: Cases, 3.
Cochin-China	do	390	317	July, 1925: Cases, 6; deaths, 2.
Kwang-Chow-Wan	do	220		July, 1925: Cases, 22; deaths, 15.
Laos	do	24	21	July, 1925: Case, 1.
Tonkin	do	784	482	July, 1925: Cases, 3; deaths, 1.
Japan:				
Hiogo	Nov. 14-20	3		
Philippine Islands:				
Manila	Oct. 31-Nov. 6	1		
Russia	Aug. 1-Sept. 30	8		
Siam	Apr. 1-Jan. 1			Cases, 7,847; deaths, 5,164.
Do	Jan. 2-8	20	15	
Bangkok	Oct. 31-Jan. 1	16	5	
Straits Settlements	July 25-Oct. 16		60	
Singapore	Nov. 21-Jan. 1	14	8	

PLAGUE

Algeria:				
Algiers	Reported Nov. 16	1		
Bona	Jan. 11-19	3	2	
Oran	Nov. 21-Dec. 10	32	22	
Tarafaraoui	Nov. 1-Dec. 9	10	9	Near Oran.
Angola:				
Benguela district	Oct. 16-31	8	4	
Do	Nov. 16-Dec. 31	9	6	
Cuanza Norte district	Dec. 1-31	18	10	
Mossamedes district	Dec. 16-31	10		
Azores:				
St. Michael's Island—				
Furnas	Nov. 3-17	4	1	27 miles distant from port.
Brazil:				
Rio de Janeiro	Nov. 28-Dec. 4	2	2	
Do	Dec. 26-Jan. 1	1	1	On vessel in harbor.
Do	Jan. 2-8	1		
Sao Paulo	Nov. 1-14	1	1	
British East Africa:				
Tanganyika Territory	Nov. 21-Dec. 18		12	
Uganda	Sept. 1-30	117	110	
Canary Islands:				
Atarfe	Dec. 20	1	1	Vicinity of Las Palmas.
Las Palmas	Jan. 8	1		
San Miguel	do	1		Vicinity of Santa Cruz de Tenerife.
Celebes:				
Macassar	Dec. 22			Outbreak.
Ceylon:				
Colombo	Nov. 14-Dec. 11	3	1	2 plague rodents
Do	Jan. 2-22	18	7	5 plague rodents.
China:				
Mongolia	Reported Dec. 21	500		
Nanking	Oct. 31-Dec. 18			Prevalent.
Ecuador:				
Guayaquil	Nov. 1-Dec. 31	26	8	Rats taken, 50,615; found infected, 184.
Do	Jan. 1-15	5	3	Rats taken, 10,261; found infected, 53.
Egypt	Jan. 1-Dec. 9			Cases, 149.
Do	Jan. 1-28			Cases, 13.
Alexandria	Nov. 19-Dec. 2	2		
Charkia Province	Jan. 5	1	1	At Zagazig (Tel el Kebir).
Gharbia Province	Jan. 4	1	1	
Kafr el Sheikh	Dec. 3-9	2		
Marsa Matrah	Dec. 23-29	10		
Do	Jan. 27	1		
Tanta district	Nov. 19-Dec. 20	3		
Greece	Nov. 1-30	10	1	Athens and Piræus.
Athens	Nov. 1-Dec. 31	9	4	
Patras	Nov. 28-Dec. 4		1	
Pravi	Nov. 27	1	1	Province of Drama-Kavalla.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from January 1 to March 11, 1927—Continued

PLAGUE—Continued

Place	Date	Cases	Deaths	Remarks
India	Oct. 10–Dec. 25			Cases, 15,265; deaths, 9,296.
Bombay	Nov. 21–27	1	1	
Do	Jan. 16–22	2	2	
Madras	Oct. 31–Jan. 1	581	324	
Do	Jan. 2–8	91	59	
Rangoon	Nov. 14–Dec. 25	11	9	
Do	Jan. 2–8	3	2	
Indo-China	July 1–31			Cases, 24; deaths, 10.
Province—				
Cambodia	July, 1926	6	6	July, 1925: Cases, 16; deaths, 13.
Cochin-China	do	8	4	July, 1925: No cases.
Kwang-Chow-Wan	do	10		July, 1925: Cases, 22; deaths, 15.
Java:				
Batavia	Nov. 7–Jan. 1	91	90	Province.
Do	Jan. 2–15	36	35	
East Java and Madura	Dec. 19–Jan. 1	3	3	
Surabaya	Oct. 24–Dec. 18	14	14	
Madagascar:				
Province—				
Analalava	Oct. 16–31	1	1	Bubonic.
Itasy	Oct. 16–Dec. 15	25	25	
Maevatanana	Oct. 16–31	10	10	
Moramanga	Oct. 16–Dec. 15	74	53	
Tamatave	Oct. 16–Nov. 30	14	1	
Tananarive	Oct. 16–Dec. 15			Cases, 429; deaths, 398.
Town—				
Tamatave	Nov. 16–30	2		
Tananarive	Oct. 16–Dec. 15	44	30	
Mauritius:				
Plaines Wilhems	Oct. 1–Nov. 30	3	3	
Port Louis	do	20	18	
Nigeria	Aug. 1–Oct. 31	865	775	
Peru	Nov. 1–Dec. 31			Cases, 90; deaths, 26.
Departments—				
Ancash	Dec. 1–31	6	6	
Cajamarca	do	36	6	
Ica—				
Chincha	Nov. 1–30	1		
Lambayeque	do			Present in Province.
Chiclayo	do	3		
Libertad	Dec. 1–31	2		
Lima	Nov. 1–Dec. 31	42	14	
Canete Province	do	16	9	
Chancay Province	do	14	1	
Lima Province	do	12	4	
Portugal:				
Lisbon	Nov. 23–26	3	2	In suburb of Balem.
Russia	May 1–June 30	44		
Do	July 1–Sept. 30	64		
Senegal	July 1–31	178	162	
Diourbel	Nov. 20–30	12	1	
Tivaouane	Dec. 19–25	6	2	In interior.
Siam	Apr. 1–Dec. 18			Cases, 26; deaths, 21.
Do	Jan. 2–8			Cases, 30; deaths, 22.
Syria:				
Beirut	Nov. 11–Dec. 20	4		
Tunisia	Dec. 1–31			Cases, 43.
Do	Jan. 12–26			Cases, 34.
Bousse	do	8		
Djeneniana	do	8		
Kairouan	do	3		
Mahares	do	15		
Sfax	Oct. 1–Dec. 31	304	128	
Turkey:				
Constantinople	Dec. 15–25	1		
Union of South Africa:				
Cape Province—				
De Aar district	Nov. 21–27	1		Native.
Craddock district	Jan. 2–8	2	1	
Hanover district	Nov. 14–Jan. 1	3	2	
Do	Jan. 2–8	1	1	
Middleburg district	Dec. 5–11	1	1	Do.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from January 1 to March 11, 1927—Continued

PLAGUE—Continued

Place	Date	Cases	Deaths	Remarks
Union of South Africa—Contd.				
Orange Free State	Dec. 5-11			Cases, 12; deaths, 2.
Bothaville district	Dec. 5-18	2	1	
Hoopstad district	Nov. 7-13	1	1	Native.
Do	Dec. 5-25	2	1	Do.
Do	Jan. 2-8	2		
Vredefort district	Dec. 19-25	10	5	First case occurred Dec. 1, 1926. Reported Dec. 17.

SMALLPOX

Algeria	Sept. 21-Dec. 20			Cases, 698.
Algiers	Dec. 11-31	4		
Do	Jan. 1-10	1		
Angola	Oct. 1-15			Present in Congo district.
Cuanza Norte	Nov. 1-15			Present.
Arabia:				
Aden	Dec. 12-18	1		Imported.
Belgium	Oct. 1-10	1		
Brazil:				
Bahia	Oct. 30-Dec. 18	12	8	
Para	Oct. 31-Nov. 6		1	
Pernambuco	Oct. 17-Dec. 25	58	4	
Rio de Janeiro	Year 1926			Cases, 4,083; deaths, 2,180.
Do	Jan. 2-Feb. 5	48	22	
Sao Paulo	Aug. 23-Dec. 5	34	18	
British East Africa:				
Tanganyika Territory	Oct. 31-Nov. 20	2		
Zanzibar	Oct. 1-31	28	12	
British South Africa:				
Northern Rhodesia	Nov. 27-Dec. 3			Cases, 200. In natives.
Bulgaria	Nov. 1-30	1		
Canada	Dec. 5-Jan. 1			Cases, 155.
Do	Jan. 2-Feb. 19			Cases, 307.
Alberta	Dec. 5-Jan. 1	132		
Do	Jan. 2-Feb. 19	66		
Calgary	Nov. 28-Dec. 25	12		
Do	Jan. 2-29	12		
Edmonton	Dec. 1-31	4		
Do	Jan. 1-31	5		
British Columbia				
Vancouver	Jan. 31-Feb. 6	2		
Manitoba	Dec. 5-Jan. 1	9		
Do	Jan. 2-Feb. 19	18		
Winnipeg	Dec. 19-25	1		
Do	Jan. 2-Feb. 12	6		
New Brunswick	Feb. 13-19	1		
Ontario	Dec. 5-Jan. 1	96		
Do	Jan. 2-Feb. 19	185		
Kingston	Jan. 1-Feb. 19	3		
Ottawa	Dec. 12-31	5		
Do	Jan. 9-29	4		
Toronto	Dec. 14-25	14		
Do	Jan. 1-Feb. 19	51	1	
Saskatchewan	Dec. 5-Jan. 1	18		
Do	Jan. 2-Feb. 19	37		
Regina	Jan. 16-22	1		
Chile:				
Concepcion	Dec. 26-Jan. 1		5	
China:				
Amoy	Jan. 1-15	1		
Canton	Nov. 1-30	1		
Chungking	Nov. 7-Dec. 25			Present.
Do	Jan. 2-31			Do.
Foochow	Nov. 7-Dec. 25			Do.
Hankow	Nov. 6-30			Do.
Hongkong	Feb. 19-25	11	7	
Manchuria—				
Harbin	Dec. 16-31	3		
Mukden	Dec. 5-11	1		
Nanking	Dec. 12-25			Do.
Do	Jan. 2-15			Do.
Shanghai	Dec. 12-18		1	
Swatow	Nov. 21-27			Do.
Tientsin	Jan. 16-22	2		

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from January 1 to March 11, 1927—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Chosen	Aug. 1-Oct. 31	47	16	
Seoul	Nov. 1-30	2		
Egypt:				
Alexandria	Jan. 8-14	1		
Cairo	June 11-Aug. 26	27	4	
Estonia	Oct. 1-30	2		
France	Sept. 1-Nov. 30	214		
Paris	Dec. 1-31	10	3	
Do	Jan. 1-31	10	2	
French Settlements in India	Aug. 29-Dec. 4	108	108	
Germany:				
Stuttgart	Nov. 28-Dec. 4	7		
Gold Coast	Aug. 1-Oct. 31	57	14	
Great Britain:				
England and Wales	Nov. 14-Jan. 4			Cases, 2,262.
Do	Jan. 2-Feb. 5			Cases, 2,724.
Bradford	Jan. 9-22	2		
Monmouthshire	Feb. 25	22		
Newcastle-on-Tyne	Dec. 5-13	2		
Do	Jan. 2-Feb. 12	14		
Normanton	Dec. 30	1		9 miles from Leeds.
Sheffield	Nov. 28-Jan. 1	60		
Do	Jan. 2-Feb. 5	361		
Wakefield	Jan. 30-Feb. 2	2		
Greece	Nov. 1-Dec. 31	25		
Athens	Dec. 1-31	14	2	
Guatemala:				
Guatemala City	Nov. 1-Dec. 31		15	
India	Oct. 10-Dec. 25			Cases, 19,297; deaths, 4,972
Bombay	Nov. 7-Jan. 1	37	26	
Do	Jan. 2-22	51	35	
Calcutta	Oct. 31-Jan. 1	449	311	
Do	Jan. 2-15	248	176	
Karachi	Dec. 19-25	1	1	
Do	Jan. 2-22	23	21	
Madras	Nov. 21-Jan. 1	32	2	
Do	Jan. 2-29	42	4	
Rangoon	Nov. 28-Jan. 1	2	2	
Do	Jan. 2-8	1		
Indo-China	July 1-31			Cases, 29; deaths, 10.
Province—				
Annam	July, 1926	6	3	July, 1925: Cases, 39; deaths, 7.
Cambodia	do	11	4	July, 1925: Cases, 62; deaths, 18.
Cochin-China	do	6	1	July, 1925: Cases, 12; deaths, 7.
Laos	do	3	1	July, 1925: Cases, none.
Tonkin	do	3	1	July, 1925: Cases, 31; deaths, 3.
Iraq:				
Baghdad	Oct. 31-Dec. 4	7	4	
Basra	Nov. 7-13	1	1	
Italy	Aug. 29-Nov. 13	16		
Genoa	Dec. 20-31	1		
Do	Jan. 1-10	2		
Jamaica	Nov. 26-Jan. 1	37		Reported as alastrim.
Do	Jan. 2-Feb. 5	45		
Japan	Oct. 24-Dec. 4	6		
Kobe	Nov. 14-20	1		
Do	Jan. 23-29	1		
Yokohama	Nov. 27-Dec. 3	2		
Java:				
Batavia	do	2		Province.
East Java and Madura	Dec. 17-25	1		
Surabaya	Oct. 24-Nov. 27	10	1	
Lithuania	Nov. 1-30	2		
Luxemburg	Nov. 1-Dec. 31	2		
Mexico	July 1-Sept. 30		413	
Chihuahua	Dec. 31			Several cases; mild.
Do	Jan. 31-Feb. 6			Present.
Ciudad Juarez	Dec. 14-27		2	
Mexico City	Nov. 23-Dec. 25	6		Including municipalities in Federal district.
Do	Dec. 26-Feb. 12	3		Do.
Nuevo Leon State:				
Montemorelos	Feb. 24			Reported present.
Monterey	do			About 60 cases reported in one hospital; other cases stated to exist.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from January 1 to March 11, 1927—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Mexico—Continued.				
Parral	Jan. 31–Feb. 6			Cases, 25. Unofficially reported
Piedras Negras	Feb. 25	68		
Saltillo	Feb. 6–12		1	
San Luis Potosi	Nov 12–Dec. 18		3	
Do	Jan. 9–Feb. 12		14	
Tampico	Jan. 21–31	1		
Torreon	Nov. 28–Jan. 1		12	
Do	Jan. 2–22		5	
Victoria	Feb. 24			Present.
Netherlands East Indies	Dec. 14			Island of Borneo; epidemic in two villages.
Nigeria	Aug. 1–Oct. 31	73	4	
Peru:				
Arequipa	Dec. 1–31		1	
Laredo	Dec. 1			Severe outbreak; vicinity of Trujillo.
Poland	Oct. 11–Dec. 18			Cases, 56; deaths, 1.
Portugal:				
Lisbon	Nov. 22–Jan. 1	43	4	
Do	Jan. 2–15	5		
Rumania	Jan. 1–Sept. 30	7	1	
Russia	May 1–June 30	705		
Do	July 1–Sept. 30	884		
Senegal:				
Dakar	Jan. 9–15	1		
Siam	Apr.–Jan. 1			Cases, 711; deaths, 268.
Bangkok	Oct. 31–Jan. 1	28	10	
Do	Jan. 2–8	3	2	
Sierra Leone:				
Nanowa	Dec. 1–15	1		Pendembu district.
Spain	July 1–Sept. 30		9	
Straits Settlements:				
Singapore	Oct. 31–Jan. 1	12	2	
Tunisia	Oct. 1–Dec. 31	9		
Union of South Africa:				
Cape Province—				
Caledon district	Dec. 5–11			Outbreaks.
Steynsburg district	——do			Do.
Stutterheim district	Nov. 21–27			Do.
Natal—				
Durban district	Nov. 7–27	9		Including Durban municipality. Total from date of outbreak; cases 62; deaths, 16.
Orange Free State	Nov. 14–27			Outbreaks.
Bothaville district	Nov. 21–27			Do.
Transvaal	Nov. 7–20	2		Europeans.
Johannesburg	Nov. 14–20	1		
Yugoslavia	Nov. 1–Dec. 31	4	1	
Do	Jan. 1–31	3		

TYPHUS FEVER

Algeria	Sept. 21–Dec. 20	59	2	
Argentina:				
Rosario	Dec. 1–31		1	
Bulgaria	July 1–Nov. 30	33	5	
Chile:				
Valparaiso	Nov. 21–Dec. 25	6		
Do	Jan. 2–22	3	1	
China:				
Antung	Nov. 22–Dec. 5	4		
Chefoo	Oct. 24–Nov. 6			Present.
Chungking	Dec. 25–31			Do.
Chosen	Aug. 1–Oct. 30	17	2	
Seoul	Nov. 1–30	1		
Czechoslovakia	Oct. 1–Dec. 31	10		
Egypt:				
Alexandria	Dec. 3–9		1	
Cairo	Oct. 29–Nov. 4	1	1	
France	Nov. 1–30	1		
Gold Coast	Sept. 1–30	1	1	

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from January 1 to March 11, 1927—Continued

TYPHUS FEVER—Continued

Place	Date	Cases	Deaths	Remarks
Greece	Nov. 1-30			Cases, 12.
Athens	Nov. 1-Dec. 31	19	2	
Drama	Dec. 1-31	2		
Kavalla	do	2		
Ravokan	do	1		
Saloniki	Jan. 25-31	1		
Ireland:				
Clare County—				
Tulla district	Jan. 9-15	1		Suspect.
Italy	Aug. 29-Sept. 23	3		
Japan:				
Tokio Prefecture	Dec. 5-25	9		
Tokio city	do	5	1	
Lithuania	Sept. 1-Nov. 30	24	3	
Mexico	July 1-Aug. 31			Deaths, 46.
Aguascalientes	Jan. 9-Feb. 5	2		
Durango	Jan. 1-31		1	
Guadalajara	Jan. 25-31		1	
Mexico City	Dec. 5-11	3		Including municipalities in Federal district.
Do	Jan. 2-Feb. 12	46		Do.
Parral	Jan. 30-Feb. 5	1		
Nigeria	Sept. 1-30	1		
Palestine:				
Acre	Dec. 29-Jan. 3	1		
Beisan	Dec. 21-27	1		
Haifa	Nov. 23-Dec. 13	5		
Do	Dec. 28-Jan. 31	6		
Jaffa	Nov. 23-Dec. 20	6		
Do	Jan. 11-31	2		
Jerusalem	Sept. 1-Oct. 30	19		
Majdal	Dec. 28-Jan. 3	1		
Nazareth	Nov. 16-Jan. 3	10		
Safad	Dec. 28-Jan. 3	1		
Peru:				
Arequipa	Dec. 1-31		2	
Poland	Oct. 11-Dec. 18			Cases, 314; deaths, 30.
District—				
Bialystok	Oct. 31-Nov. 27	16	1	
Kielce	Nov. 28-Dec. 4	30	3	
Stanislawow	Oct. 31-Nov. 27	52	4	
Warsaw	do	45	5	
Rumania	Aug. 1-Nov. 30	255	11	
Russia	May 1-June 30	6,043		
Do	July 1-Aug. 31	3,060		
Spain	July 1-Sept. 30		4	
Tunisia	Oct. 1-Dec. 27	30		
Turkey:				
Constantinople	Dec. 12-25	3		
Do	Jan. 16-22			1 death reported by press.
Union of South Africa	Oct. 1-30			Cases, 71; deaths, 8.
Cape Province	do	47	7	
Do	Nov. 14-Dec. 18			Outbreaks.
Do	Jan. 2-8			Do.
East London	Nov. 21-27	1		Native. Imported.
Port St. Johns district	Dec. 5-11			Outbreaks. On farm.
Natal	Oct. 1-31	1		
Orange Free State	do	22	1	
Transvaal	do	1		
Yugoslavia	Nov. 1-Dec. 31	30	2	
Do	Jan. 1-31	43	3	

YELLOW FEVER

French Sudan	Dec. 19-25	1	1	
Gold Coast	Aug. 1-Sept. 30	8	3	
Nigeria	Sept. 1-30	1		
Senegal	Dec. 19-25	3	3	
Diourbel	Dec. 6	1	1	
Do	Jan. 1-20	1	1	At N'Bake.
Guinguineo	Dec. 7	1	1	
Rufisque	Nov. 27-Dec. 29	2	1	In European.
Do	Jan. 2-8	3	3	
Upper Volta:				
Gaoua district	Oct. 25	2		

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