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## GROWTH AND THE ECONOMIC DEPRESSION *

### A Study of the Weight of Elementary School Children in 1921–27 and in 1933

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In a recent paper (1) on the growth of school children in Hagerstown, Md., it was shown that the average weight of children of given age and sex did not vary a statistically significant amount from year to year during the period from 1921 through 1927. The study reported here was undertaken for the purpose of determining, insofar as possible on the data available, whether or not the weights of children now living in Hagerstown differ significantly from the weights of children of the same age and sex in that city during the more prosperous years of the previous decade. Reasons for projecting such a study scarcely need be given. It may be recalled that studies (for example, (2) and (3)) on the weight and health of children in certain sections of central Europe during the recent war and post-war period showed clearly the detrimental effects of adverse economic conditions. Obviously, conditions in the United States at the present time are far better than those which obtained in certain of the warring nations during and immediately following the war; but it is believed, at least in some localities, that the effects of undernutrition are becoming noticeable. While it is evident that Hagerstown does not represent the most severely stricken type of community, the city typifies the small urban community which has passed, or is now passing, through a distinct though moderate economic disturbance. Inasmuch as approximately 20 million persons, or nearly 15 percent of the population of the entire country, live in similar communities which are passing through similar disturbances, the determination of possible relationships between the growth of the children and their economic status is of timely interest.

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The social, demographic, and previous economic characteristics of the city of Hagerstown have been reviewed by Sydenstricker (4). It will be sufficient here, therefore, to summarize briefly certain points and to consider changes which have occurred during the past few years.

In population, Hagerstown has increased slowly during the last decade and now includes approximately 32,000 persons. Nearly 90 percent are native white of native parents, about 2 percent are foreign born, and slightly more than 5 percent are Negroes. There is, and has been recently, no considerable amount of migration either to or from the city. In general, the population may be considered to be relatively stable.

Employment in Hagerstown, for the most part, is furnished by the wholesale and retail trades, transportation, and small factories. The largest proportion of the wage-earning group is employed in railroad shops, in a large sand-blast plant, and in shoe, textile, furniture, and clothing factories. During the past 2 years, and especially during the last year, work in these places has been greatly curtailed. In the autumn of 1932 two of the city's five banks closed. After the Nation-wide closing of banks on March 6, 1933, until the present time (July), only 1 bank has opened on a 100 percent withdrawal basis.

The charitable agencies of the city are consolidated in a central organization known as The King's Daughters. Since 1929 welfare work has gradually increased. During 1931 and for a part of 1932, from 250 to 350 families were receiving aid, and since the fall of 1932 this number has increased until, in the spring of 1933, more than 600 families were being supported entirely or in part from welfare funds. Through the efforts of the King's Daughters and with the aid of a few public spirited individuals, it was found possible to give free noonday lunches during the past academic year to all really needy children attending the elementary schools. Eligibility for the lunches is determined on the basis of the economic status of the family. It may be stated, and the fact must be appreciated in interpreting the results of this study, that the charitable work done by this organization is highly competent and efficient. As a result of its work, few families, and certainly few families with children, are being denied the elementary necessities.

## MATERIAL AND METHODS

The material on which this study is based, aside from data already published, was collected at Hagerstown between May 16 and May 25, 1933. At that time the attempt was made to weigh and interrogate all of the white children attending the first six grades in the public schools. Only a few children who were absent when their classmates were weighed, or for some other reason were temporarily unavailable, were missed. Of the records obtained, all of those for children from 6 through 11 years of age, a total of 1,269 girls and 1,245 boys, are used in this paper.

Weighings were made on beam scales, 1 of which was available in each of the 7 school buildings. Each scale was carefully calibrated at the beginning of the investigation. Weights were recorded to the nearest quarter pound and include the regular indoor clothing except shoes, coats, sweaters, and vests. With the exception of approximately 650 children (those attending the Broadway Street School), the actual weighings were made by the writer. At the time of measurement each child was asked whether or not his father (or mother) was regularly employed, and a record was made of the approximate number of days of employment per week. In addition to this information, lists were obtained showing the names of children who received free lunch at school or whose parents were receiving aid from the city charities.

The data with which these observations are to be compared were collected at Hagerstown during the period 1921 through 1927. At that time the United States Public Health Service, assisted by the Washington County Health Department, the School of Hygiene and Public Health of the Johns Hopkins University, and other organizations, carried out extensive studies on the growth and health of school children. Among other things, a large group of children was weighed each year and from the data collected it was possible to prepare sex and age specific frequency distributions of the weights of children for each separate year from 1921 through 1927. The results of the analysis of these distributions are reported in another paper (1), wherein it is shown that the averages for the separate years did not exhibit significant fluctuations about averages based on the entire 7 years' experience. In the present study, therefore, the 1933 observations will be compared with the averages for the entire 7 years, rather than with averages for any one of the individual years between 1921 and 1927.

No detailed discussion is given in this paper concerning the methods used in the statistical reduction of the data. Information relative to the method of analysis of the earlier data will be found in two previous papers (1, 5), and precisely the same methods are employed in the reduction of the 1933 material. It may be mentioned, however, that age is classified, for both the 1921–27 and the 1933 data, as of the birthday nearest January 1 of the school year for which the measurement was made.

## COMPARISON OF AVERAGE WEIGHT IN 1921–27 AND IN 1933

The basic data necessary for the comparison are given in tables 1 and 2, and in the graphic presentation of figure 1. The tables and graph show, separately for boys and girls in yearly age classes, the mean weights in May 1933, and calculated mean weights in May for the combined years from 1921 to 1927. The means for 1933 are derived from the analysis of frequency distributions of weight made in May and the means for the combined years are derived from data (5) [1] previously published. On the basis of these data an attempt is made to answer the specific question, Is the average weight of school children living in Hagerstown today different from the average weight of their older brothers, sisters, cousins, neighbors, and so on, when the latter were of similar age in the previous decade? The analysis shows that for 6 of the 12 age classes, 6-, 7-, 8-, and 9-year-old boys

TABLE 1.—*Constants of frequency distributions of weight, May 1933. Elementary school children, Hagerstown, Md.*

| Age nearest Jan. 1, 1933 (years) | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|
| **BOYS** | | | | | | |
| Number | 121 | 200 | 240 | 231 | 234 | 219 |
| Mean weight (pounds) | 46.23 | 49.73 | 55.65 | 60.66 | 67.98 | 74.05 |
| Standard deviation (pounds) | 5.29 | 5.70 | 7.58 | 7.96 | 10.78 | 10.90 |
| **GIRLS** | | | | | | |
| Number | 114 | 205 | 241 | 236 | 233 | 240 |
| Mean weight (pounds) | 44.91 | 49.19 | 54.39 | 58.38 | 66.20 | 74.80 |
| Standard deviation (pounds) | 5.95 | 7.17 | 9.76 | 10.74 | 11.30 | 15.21 |

TABLE 2.—*Corrected constants of frequency distributions of weight, May 1921–27. Elementary school children, Hagerstown, Md.*

| Age nearest Jan. 1, of school year (years) | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|
| **BOYS** | | | | | | |
| Number | 238 | 596 | 839 | 987 | 992 | 868 |
| Mean weight (pounds) | 46.83 | 50.63 | 55.97 | 61.57 | 67.22 | 73.91 |
| Standard deviation (pounds) | 5.32 | 6.44 | 7.38 | 8.71 | 10.53 | 12.36 |
| **GIRLS** | | | | | | |
| Number | 237 | 573 | 811 | 921 | 925 | 798 |
| Mean weight (pounds) | 45.78 | 49.11 | 54.18 | 59.50 | 66.07 | 74.10 |
| Standard deviation (pounds) | 5.34 | 6.25 | 7.51 | 9.25 | 11.50 | 14.29 |

[1] The method of tabulating the 1921–27 data was such that it is not now possible to obtain actual frequency distributions of weight measured in May. In reference (5), however, the means of frequency distributions of weight measured in October during 1921–27 are tabulated, and in addition there are given mean monthly increments of weight for each month from September through May. Thus the mean weight of children in May is obtained by adding the successive mean monthly increments, from October to May, to the mean October weight.

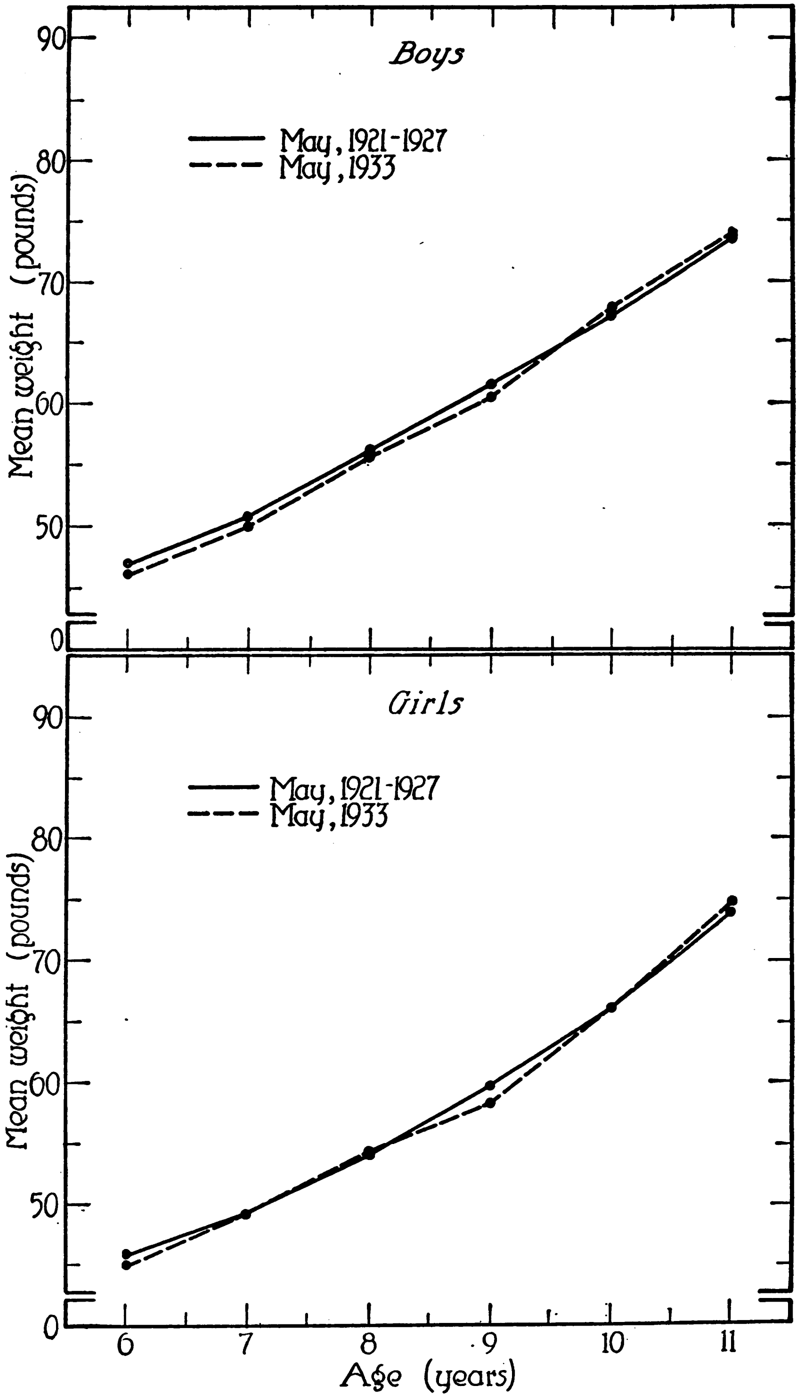


FIGURE 1.—Mean weight of elementary school children from 6 to 11 years of age in 1933 and in 1921–27. (Age at birthday nearest January 1 of school year.)

and 6- and 9-year-old girls, the average size of children is slightly less in 1933 than in 1921–27. However, the lack of consistent differences between the present and former years, together with the small absolute magnitude of these differences, makes it reasonably clear that the average weight of children in Hagerstown has remained fairly constant during the past 12 years. In addition, a test [2] of the statistical significance of the difference between the averages for the present year and those for the previous years shows that differences as great as or greater than those observed might occur once in eight times as the result of the fluctuations of random sampling.

## COMPARISON OF STANDARD DEVIATIONS OF WEIGHT IN 1933 AND IN 1921–27

While it appears fairly certain that the average weight of children in Hagerstown in 1933 is substantially the same as that observed for the period between 1921 and 1927, it is not unreasonable to suppose that there may be a difference in the *variability* of weight of children in the two periods. In order to investigate one aspect of this question, tables 1 and 2 and figure 2 give data for the comparison of the standard deviations of the distributions of weight in 1933 with those in 1921–27. Standard deviations for 1933 are calculated directly from distributions of weight measured in May of that year. Comparable standard deviations for the earlier period are obtained, by making slight corrections,[3] from tabulations presented in the previous paper (1).

Study of the data presented shows, certainly so far as boys are concerned, that there are no large or consistent differences between the standard deviations of weight in 1921–27 and in 1933. In no case is the difference between the constants of variability for the separate age groups statistically significant. Comparison of the data for girls is not so conclusive. Except for the 10-year-old group, the standard deviations are larger in 1933 than in the previous years. The differences between the constants for the 7-, 8-, and 9-year-old age groups are fairly large and are statistically significant. There is, therefore, a suggestion that the past few years of economic depression tend to be associated with an increase in the variability of body weight of

[2] The details of the method used to calculate the statistical significance of the difference is given by Wahlund in reference 6.

[3] These corrections are made by arithmetic interpolation from standard deviations of distributions of weight measured in October. Briefly, standard deviations of weight in May are larger than those of the same children in the previous October, due to the dispersing effect of growth. For example, the standard deviation of weight of boys nearest 6 years of age on Jan. 1 and weighed in the previous October (1921–27) is 4.72 pounds while the standard deviation of weight of boys 7 years of age, who may be considered representative of the same boys weighed 1 year later, is 5.63 pounds. Thus, during 1 year of growth, the variability of weight of these boys increased 0.91 pound. A fairly accurate estimation of the standard deviation of weight at any time between the actual dates of weighing, say May, can be obtained by arithmetic interpolation. In the present example, eight twelfths of 0.91 pound plus 4.72 pounds equals 5.32 pounds, the corrected standard deviation of 6-year-old boys in May.

girls. In view of the fact that there is not a consistent difference for girls, and that there are no substantial differences whatever for boys, the evidence must be considered as only mildly suggestive.

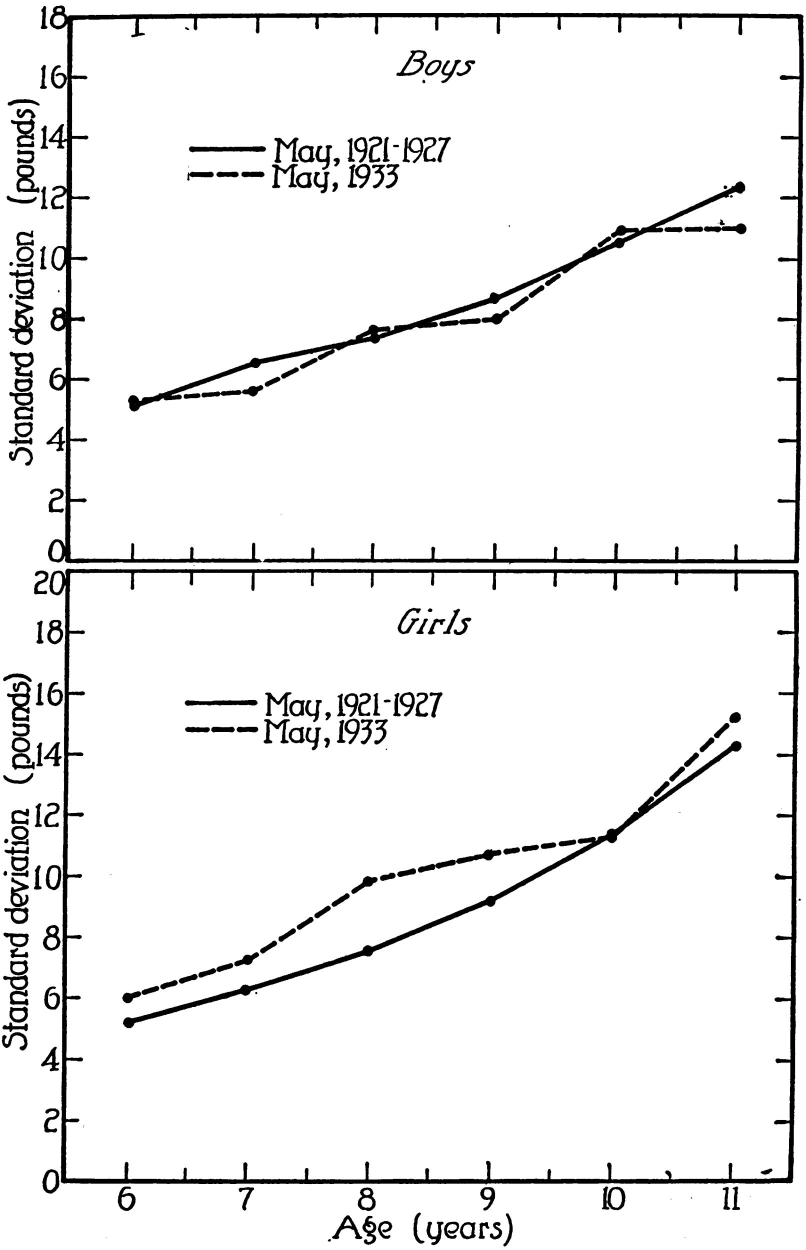


**Figure 2.**—Standard deviations of weight of elementary school children from 6 to 11 years of age in 1933 and in 1921-27. (Age at birthday nearest January 1 of school year.)

### COMPARISON OF THE PERCENT OF CHILDREN UNDERWEIGHT IN 1921-27 AND IN 1933

In connection with the discussion of possible changes in the variability of the weight of children, it also is desirable to determine whether or not there has been any change in the proportion of children who may be considered underweight. For the purpose of the analysis, a child is considered underweight if his weight is 12 percent or more below the average for children of the same age and sex. While it is clear that such a definition of underweight is quite arbitrary and may be highly unsatisfactory as an index of nutrition for the individual child, it is, nevertheless, a fairly adequate criterion for measuring the general nutritional status of a reasonably large *group* of children. Furthermore, a comparison of the proportions of underweight children in the population now and a decade ago may give, actually, the most satisfactory answer to the inquiry of whether or not a particular group of children shows to a measurable degree the effects of malnutrition.

TABLE 3.—*Number of children weighed and the percent that were 12 percent or more below the mean weight of children in 1921–27—comparison between 1933 and 1921–27. Elementary school children, Hagerstown, Md.*

| Age nearest Jan. 1, of school year (years) | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|
| **BOYS** | | | | | | |
| *1933* | | | | | | |
| Number | 121 | 200 | 240 | 231 | 234 | 219 |
| Percent 12 percent or more below mean weight in 1921-27 | 17.4 | 18.0 | 17.9 | 18.2 | 18.8 | 19.6 |
| *1921-27* | | | | | | |
| Number | 238 | 596 | 839 | 987 | 992 | 868 |
| Percent 12 percent or more below mean weight in 1921-27 | 14.5 | 16.0 | 16.9 | 18.5 | 20.8 | 22.7 |
| **GIRLS** | | | | | | |
| *1933* | | | | | | |
| Number | 114 | 205 | 241 | 236 | 233 | 240 |
| Percent 12 percent or more below mean weight in 1921-27 | 23.6 | 17.1 | 22.0 | 23.7 | 21.5 | 27.9 |
| *1921-27* | | | | | | |
| Number | 237 | 573 | 811 | 921 | 925 | 798 |
| Percent 12 percent or more below mean weight in 1921-27 | 11.6 | 13.6 | 15.6 | 19.0 | 23.0 | 27.9 |

TABLE 4.—*Number of children observed in 1933 that were 12 percent or more below the mean weight of children in 1921–27 and number of children expected in 1933, on the basis of the proportions, to be 12 percent or more below the mean weight in 1921–27. Elementary school children, Hagerstown, Md.*

| Age nearest Jan. 1, 1933 (years) | 6 | 7 | 8 | 9 | 10 | 11 | Total |
|---|---|---|---|---|---|---|---|
| **BOYS** | | | | | | | |
| Number observed in 1933 | 21 | 36 | 43 | 42 | 44 | 43 | 229 |
| Number expected in 1933 | 18 | 32 | 41 | 43 | 49 | 50 | 233 |
| **GIRLS** | | | | | | | |
| Number observed in 1933 | 27 | 35 | 53 | 56 | 50 | 67 | 288 |
| Number expected in 1933 | 13 | 30 | 38 | 45 | 54 | 67 | 247 |

Data useful for the study of this problem are assembled in tables 3 and 4 and in figure 3. Table 3 and figure 3 show the percentages of children both in 1921–27 and in 1933 that are 12 percent or more below the average. Percentages for the 1921–27 data are obtained from distributions of weight made in October, corrected [4] for differences due to age changes during the interval between October and May. Percentages of underweight children in 1933 are obtained directly from distributions of weight made in May 1933. Calculation of the latter percentages is based on the average weight of children in 1921–27. Thus, for example, the average weight of 6-year-old boys in 1921–27 is 46.83 pounds; 12 percent below this weight is 41.21 pounds; consequently, all 6-year-old boys weighing less than 41¼ pounds in May 1933, are considered underweight.

Turning to the results of the analysis, it will be noted (fig. 3) that within the age limits considered in this study there is a systematic and regular increase with advancing age in the percent of children in the defined underweight classes in 1921–27. During this period less than 12 percent of the 6-year-old girls are classified as underweight, while nearly 28 percent of the 11-year-old girls are so designated. During the same period, there is a gradual increase in the percent of underweight boys from 14.5 percent at 6 years of age to 22.7 percent at 11 years of age. The most striking characteristic which differentiates the percentages underweight in 1933 from those of the previous period is the general lack, in 1933, of a systematic increase in proportions underweight with increasing age. As a result of this difference, there are relatively more younger boys and relatively fewer older boys underweight in 1933 than in 1921–27. Similar differences between the two periods are noted for girls, except that the differences are more marked for the younger girls and are negligible for the older ones. Detailed comparisons between the 1921–27 and the 1933 series for each sex show, except for girls of 6 and 8 years of age, that the differences are not statistically significant for the separate age classes. Furthermore, if the 6-, 7-, and 8-year-old boys are combined into one group, and the 10- and 11-year-old boys are similarly combined, there are still no significant differences between the 1921–27 and 1933 data. If, however, the 6-, 7-, 8-, and 9-year-old girls are considered together, leaving out the 10- and 11-year-old individuals, there is a significantly higher proportion underweight in 1933.

In order to view these results in a slightly different manner, table 4 records the actual number of children observed in the underweight classes in 1933 and the number that would have been observed had the same *proportions* been underweight in the various age-sex groups as

[4] Corrections must be made for these percentages for the same reason that they are made for the standard deviations discussed in the preceding section. Precisely the same method of making the corrections is used in both instances; the method is explained in footnote 3.

were underweight in the 1921–27 period. A total of 229 underweight boys are found in 1933, while 233 would be so classified if the 1921–27 percentages had prevailed in 1933. Since it is clear that no simple method of analyzing the data reveals differences between the two periods that *may* not be accounted for by the fluctuations of random sampling, it must be concluded that the proportions of underweight boys between 6 and 11 years of age is probably the same in 1933 as in 1921–27. The total number of girls found underweight in 1933 is

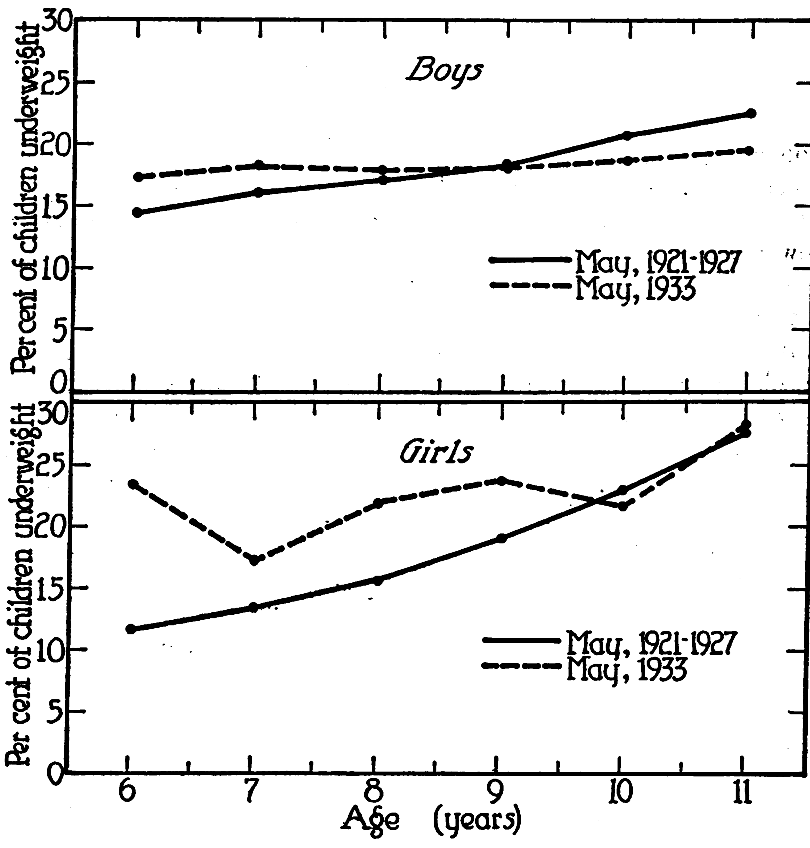


FIGURE 3.—Percentages of elementary school children weighed in 1933 and in 1921–27 that were 12 percent or more below the average weight of children of the same age and sex in 1921–27. (Age at birthday nearest January 1 of school year.)

288, while the total number expected on the basis of the proportions underweight in 1921–27 is 247—an excess of observed over expected of 41 individuals. While the excess is not strikingly great, it is statistically significant, and it may be concluded that the present economic depression is associated with an increase in the proportion of underweight elementary school girls. Taking the boys and girls together and expressing the results in percentages, 20.6 percent of the children are underweight in 1933 while 19.1 percent would have been so designated had the same age and sex specific proportions been underweight as were observed in 1921–27. The total evidence at hand points to the fact, therefore, that the number of children that are 12 percent or more below the average weight of children in 1921–27 has increased 1.5 percent.

## DISCUSSION

Viewing broadly the details so far presented, and taking Hagerstown as more or less typical of the small urban community, which it fairly represents, it is clear that the only unequivocal evidence of a change in weight of elementary school children during the last few years consists of a slight increase in the variability of weight, together with a moderate increase in the proportions underweight, of the younger school girls. Inasmuch as body weight of the young and growing child is usually affected by severe nutritional deficiencies, it may be inferred that the nutritional status of children now is certainly not markedly below that which obtained during the preceding decade. There are, it may be supposed, several obvious reasons why this may be so. First, a well-organized and highly efficient welfare agency, such as exists at Hagerstown, does, in fact, provide the deserving and distressed families with substantial aid. Second, it seems reasonable to believe that in times of stress more attention may be given by the poorer families themselves to dietary matters. Less money, perhaps, is more efficiently spent and more nutritious and wholesome food is purchased.

Although the results of the investigation are fairly conclusive, it is not unreasonable to add that measurements of body weight are perhaps too crude to indicate the effects of malnutrition. It is possible that the true physical status of children must be estimated by more comprehensive and more subtle methods.

## COMPARISON OF WEIGHT OF CHILDREN IN DIFFERENT ECONOMIC CLASSES IN 1933

The results of many studies (see a review in reference 7) have shown that the weight of children from families in the poorer economic classes is, on the average, less than the weight of children in other families. Due to the effects of the present depression, it may be supposed that the differences usually observed have materially changed. From one, *a priori*, point of view it is not unlikely that the depression has accentuated the differences and has tended to produce more physically divergent classes. From another point of view it may be supposed that present conditions have rearranged previous economic classifications so that no differences are now observable. Unfortunately no data for Hagerstown, or any similar community, are available which show quantitatively the differences among the several economic classes in the past decade. Thus, although it is impossible to study the question in great detail, it seems worth while to present such evidence as is available.

**Table 5.**—*Number of children and mean weight, children grouped according to 3 classifications of parents' employment, May 1933. Elementary school children, Hagerstown, Md.*

BOTH SEXES

| Age nearest Jan. 1, 1933 (years) | | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|
| Children, neither of whose parents is employed more than 2 days per week. | Number | 26 | 65 | 92 | 89 | 84 | 64 |
| | Mean weight (pounds) | 43.41 | 48.05 | 54.05 | 57.66 | 63.85 | 73.44 |
| Children, 1 of whose parents is employed more than 2 days but less than 4 days per week. | Number | 24 | 33 | 46 | 43 | 52 | 57 |
| | Mean weight (pounds) | 45.38 | 48.09 | 52.14 | 58.55 | 64.76 | 70.03 |
| Children, 1 of whose parents is employed more than 4 days per week. | Number | 185 | 307 | 343 | 335 | 331 | 338 |
| | Mean weight (pounds) | 45.92 | 49.90 | 55.67 | 60.12 | 68.28 | 75.38 |

Table 5 and figure 4 show, accordingly, the mean weight of children from three groups of families: First, families in which the principal wage earner or earners are unemployed, or, when employed, none

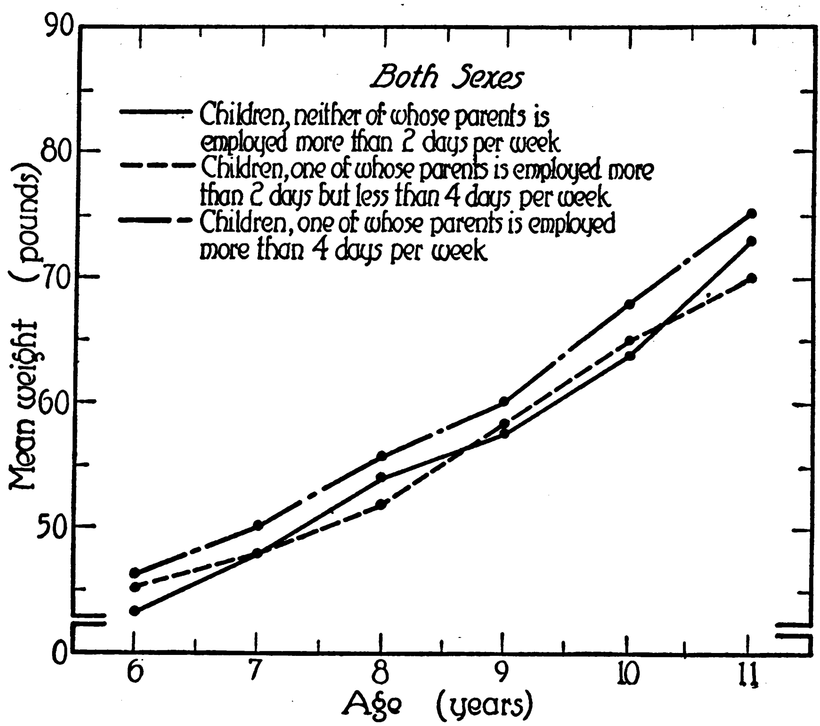


**Figure 4.**—Mean weight of elementary school children from 6 to 11 years of age in 1933, grouped according to three classifications of parents' employment. (Age at birthday nearest January 1, 1933.)

works regularly more than 2 days per week; second, families in which 1 adult person has part-time employment of more than 2 days but less than 4 days of work per week; and third, families in which at least 1 adult member is regularly employed more than 4 days per week. The number of cases which fall into the first and second groups is small, generally, and because approximately the same number of girls as boys is included in each group it seems justifiable to combine the sexes for this analysis.

Aside from slight irregular fluctuations, it may be seen that the averge weight is greater for children from families of the regularly employed. No consistent differences are shown between the mean weight of children from families of the unemployed and the partially employed. This latter finding, although unexpected, may indicate only that the criterion of selection does not definitely differentiate the two groups. It may be argued that unemployed families are generally receiving aid from the welfare agency and that such aid places them on an equal economic level with families in which some person has part-time employment. Taking groups 1 and 2 together, therefore, it is seen that the weights of children in families of the regularly employed are from 1.5 to 4 pounds, on the average, heavier than children in families less fortunately situated. In general, this is approximately the same difference which is usually found between higher and lower economic classes (7), and it may be concluded that present economic conditions have tended neither to produce striking class differences nor to obliterate the differences previously observed.

## COMPARISON OF THE WEIGHT OF CHILDREN RECEIVING AND NOT RECEIVING WELFARE AID

Further study of the records collected in 1933 leads to interesting results concerning the dispensation of welfare funds and consists of the comparison of the weight of children separated into two groups: First, those children who either receive free lunches at school or whose families are receiving welfare aid; second, those children who are not eligible for free lunches and whose families do not receive aid. Data for the comparison of the two groups are recorded in table 6 and are shown graphically in figure 5. At each age the average weight is less for children who, directly or indirectly, are receiving aid. The differences between the two groups range from 2.5 to 9 pounds, and in general these differences are statistically significant for the individual age and sex classes. Since it is generally accepted that children in the lower economic classes are smaller, on the average, than children in the higher economic classes, it may be concluded that a welfare agency which gives its funds toward the support of children who average from 2.5 to 9 pounds below the weight of other children in the same community is, in fact, probably giving aid to those children who are actually most in need of it.

TABLE 6.—*Number of children and mean weight, children classified according to whether or not they received aid from the welfare society. Elementary school children, Hagerstown, Md.*

| Age nearest Jan. 1, 1933 (years) | | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|
| BOYS | | | | | | | |
| Children receiving free lunch or whose families receive aid. | Number | 26 | 70 | 44 | 61 | 49 | 48 |
| | Mean weight (pounds) | 43.65 | 47.56 | 52.60 | 57.96 | 63.24 | 69.71 |
| Children not receiving free lunch or whose families do not receive aid. | Number | 95 | 130 | 196 | 170 | 185 | 171 |
| | Mean weight (pounds) | 46.94 | 50.89 | 56.34 | 61.63 | 69.23 | 75.27 |
| GIRLS | | | | | | | |
| Children receiving free lunch or whose families receive aid. | Number | 28 | 51 | 67 | 65 | 54 | 50 |
| | Mean weight (pounds) | 41.88 | 47.35 | 52.64 | 55.37 | 63.25 | 67.80 |
| Children not receiving free lunch or whose families do not receive aid. | Number | 86 | 154 | 174 | 171 | 179 | 190 |
| | Mean weight (pounds) | 45.90 | 49.80 | 55.07 | 59.53 | 67.09 | 76.64 |

## SUMMARY


The study reported in this paper was undertaken for the explicit purpose of determining whether or not the weight of elementary school children in Hagerstown, Md., differs today in significant particulars from the weight of children of the same sex and age and living in the same city during the past decade. Data for the study were collected at Hagerstown during two periods; first, each year during the interval between 1921 and 1927, and second, in May 1933. Analysis of these data in sex and age specific distributions and comparisons of the statistical constants derived show the following:

1. Average weight of children in the two periods presents no consistent or statistically significant differences.

2. The variability of body weight (measured by the standard deviation) is not, for boys, consistently different for the two periods. For girls, body weight is slightly more variable in 1933 than in 1921–27.

3. In the totals of 1,245 boys and 1,269 girls weighed in 1933, there are 4 fewer boys and 41 more girls who are 12 percent or more below average weight than would be expected had the same proportions been underweight as were found in the 1921–27 period.

From these findings it may be concluded that there is substantially no change in the weight of boys, and a slight increase in the number of underweight girls, during the last few years of the economic depression.

Classification of the children weighed in 1933 into three groups, (*a*) those from families of the unemployed, (*b*) from families of the part-time employed, and (*c*) from families of the regularly employed, with subsequent analysis of the weight of children in these groups, shows approximately the same differences as are generally found between children from different socio-economic classes. It is concluded

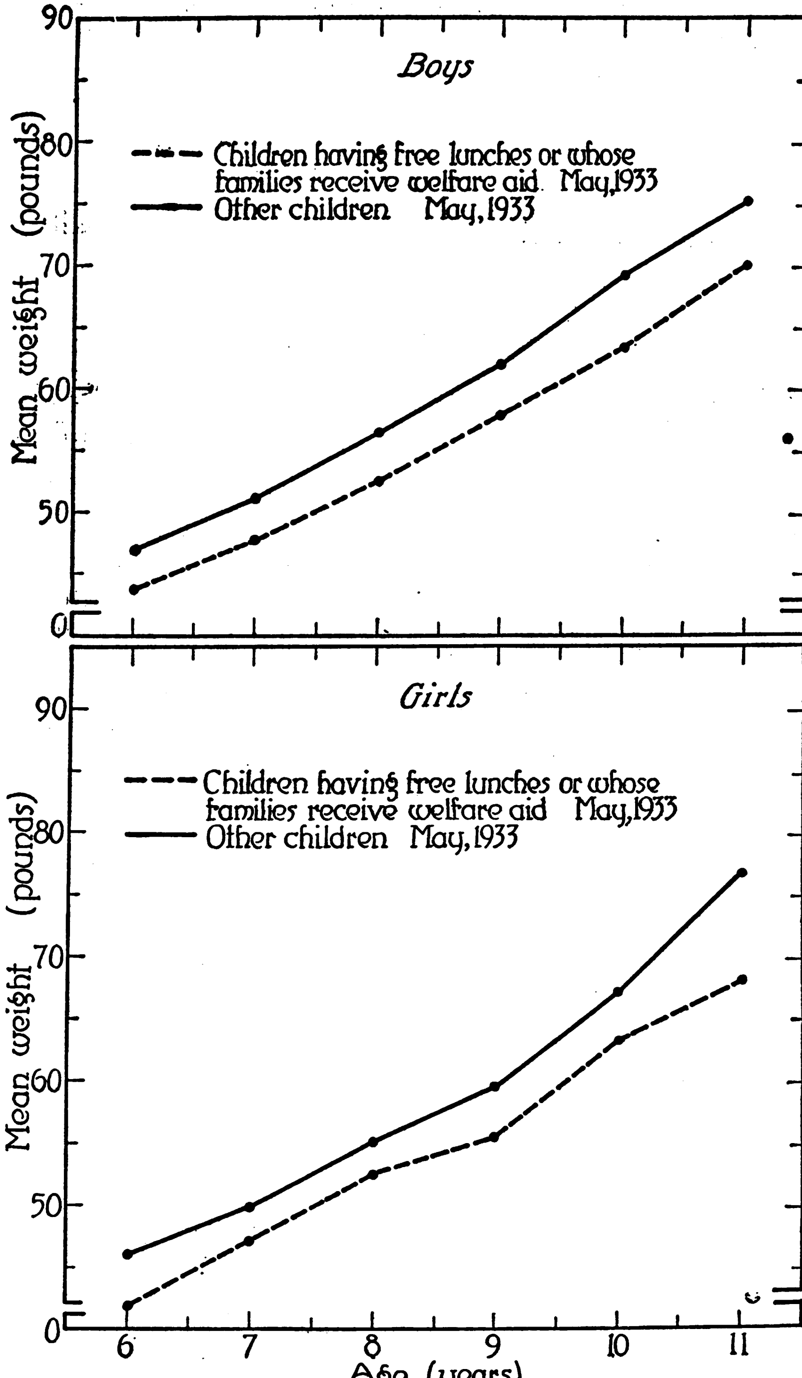


FIGURE 5.—Mean weight of elementary school children from 6 to 11 years of age in 1933, classified according to whether or not the child received aid from the welfare society. (Age at birthday nearest January 1, 1933.)

therefore, that there has been no obliteration nor widening of class differences during the period of the depression. A separate classification of the children into two groups, one, those who are directly or indirectly receiving aid from charity funds, and the other, those not receiving such aid, shows that children in the first group are from 2.5 to 9 pounds lighter, on the average, than those in the latter. Thus it is inferred that those children who are most in need of supplementary aid are probably receiving it.

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# COMPARISON OF THE ENUMERATION OF BACTERIA BY MEANS OF SOLID AND LIQUID MEDIA

By C. T. Butterfield, *Principal Bacteriologist, Stream Pollution Investigations, United States Public Health Service, Cincinnati, Ohio*

In conducting bacteriological researches both qualitative and quantitative methods are essential. Quantitative methods inherently require a greater attention to detail and a consideration of the various factors which might affect the numerical accuracy of the results obtained. When more than one method is used for making the same quantitative determination, or when one method is substituted for another, carefully controlled comparative studies should be made to determine the relative accuracy of the different methods.

There are in use three general methods for the quantitative determination of bacteria. These fundamental procedures may be described as the direct count, the plate colony count, and the dilution method. Several variations of each of these procedures are in common use. Each method has certain features which make it a desirable procedure for a particular type of determination. Similarly, each method is subject to certain limitations and errors which limit its use and the value of the results obtained.

In the direct counting procedure the individual bacterial cells in portions of the sample are actually counted. This procedure has the following advantages: (1) It gives an exact count of the organisms in a sample regardless of their ability to grow in a given media or under fixed conditions of incubation, and (2) the count can be obtained immediately following the collection of the sample rather than after a delay of 24 hours or longer. Limitations which affect this procedure are as follows: (1) There is no satisfactory method applicable to this direct examination for differentiating between living and dead bacteria; (2) the procedure is applicable only to samples which contain fairly large numbers of bacteria, as the portion of a sample examined is very small; (3) samples are not suitable for examination which contain any foreign material that might appear as confusing artifact simulating bacteria; and (4) where the bacteria have a tendency to clump or grow in masses, it is exceedingly difficult to make accurate estimations.

With the plate colony count procedure, counts are made of the bacterial colonies which develop on some solid plating media under standard conditions of incubation. With this procedure, estimations can be made on samples with a very low bacterial content, as any amount of a sample can be planted. Only living bacterial cells will produce colonies. At least two limitations on its accuracy must be considered: (1) Only bacteria which are able to grow on the media selected and under the conditions of incubation will produce visible colonies, and (2) the presumption that each colony represents an individual in the sample cannot be true when the bacteria occur in the sample in clumps of two or more.

The dilution procedure, in which a series of portions of a sample varying in size are planted in tubes of liquid media, depends for its interpretation on having the series of portions sufficiently extended so that positive results will be obtained in the lower dilutions and negative results in the higher dilutions. Any test which does not satisfy this condition is indeterminate. This procedure offers certain advantages which have made it a favorite for particular tests. It supplies the bacteria with a liquid media which is probably the ideal for bacterial growth; it is used in tubes which are easily handled and readily protected from contamination; and it makes some provision for simultaneous qualitative tests, such as acid, gas, or nitrite production. The chief limitation of this procedure is the questionable accuracy of the quantitative interpretation of the results.

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In bacteriological work the plate colony count and the dilution method are the procedures usually employed for quantitative determinations. Frequently the results obtained by each method are used comparatively and in relation to some established standard. While it is generally recognized that the colony count procedure should be the more accurate method of enumeration, it is possible that the results obtained with it may deviate consistently from those obtained with the other procedure. Such deviations, if they were of sufficient magnitude, might affect the significance of the results which were being compared with established standards.

To investigate the possible relationship existing between the results of bacteriological analyses made by these two methods for the quantitative determination of bacteria, a series of tests has been made on suspensions of *Bact. coli* and of *Bact. aerogenes* under standardized conditions.

Suspensions of *Bact. coli* and of *Bact. aerogenes*, each in pure culture, were prepared by making appropriate dilutions of cultures with sterile dilution water. Effort was made to adjust these dilutions so that the suspensions used in each test would contain from 50 to 200 living bacteria per cubic centimeter. These suspensions were shaken vigorously each time before a portion was removed for planting. During this period of examination the suspensions were kept at room temperature which ranged from 21° to 24° C.

Nutrient agar for the plate count procedure and lactose broth for the dilution method were the media employed. They were prepared in accordance with the instructions given in Standard Methods (1925) (1). All inoculated plates were incubated for 24 hours at 37° C. before counting, and broth tubes were incubated for 48 hours at 37° C., with examinations for confirmation at the 24- and 48-hour periods.

One-cc portions of the suspensions were used for each plate inoculated, while for the tubes of liquid media, portions of one tenth, one hundredth, and one thousandth of a cubic centimeter of the suspensions were employed. Fifty plates were planted from each suspension for the plate colony count and 50 tubes were inoculated from each dilution for the estimate by the dilution method. In actual practice in carrying out the tests, 25 plates were inoculated and poured first; then all the broth tubes were inoculated, and finally the second set of 25 plates was prepared. It was thought that by inoculating plates before and after the broth tubes were inoculated, a measure would be obtained of the accuracy of the method and of any change in the number of living bacterial cells in the suspensions that might occur during the examination interval.

Arithmetical averages were computed of the plate colony count results. These averages include, in addition to the final average, separate averages for the 25 plates planted before, and the 25 plates planted after the broth tubes were inoculated. The most probable number figures, with results from 50 tubes at each dilution, were calculated according to the theory of probability, using the tables and procedure given by Hoskins (2). It is believed that, with the use of 50 plates for the colony counts and 50 tubes at each dilution with the dilution method, the results are sufficiently accurate to warrant their use for comparative purposes. The average results for the plate colony counts of the *Bact. coli* and the *Bact. aerogenes* suspensions are presented in table 1.

TABLE 1.—*Average colony counts of Bact. coli and Bact. aerogenes obtained from standard nutrient agar plates, showing (1) averages of 25 plates made before broth tubes were inoculated, (2) averages of 25 plates made after broth tubes were inoculated, and (3) grand average of both sets of plates*

| Test no. | Bact. coli results | | | Test no. | Bact. aerogenes results | | |
|---|---|---|---|---|---|---|---|
| | (1) Before | (2) After | (3) Final | | (1) Before | (2) After | (3) Final |
| 1 | 103.5 | 102.9 | 103.2 | 8 | 58.1 | 50.1 | 54.1 |
| 2 | 226.5 | 209.9 | 218.2 | 9 | 63.4 | 59.7 | 61.6 |
| 3 | 157.2 | 161.0 | 159.1 | 10 | 66.2 | 62.8 | 64.5 |
| 4 | 76.5 | 80.9 | 78.7 | 11 | 74.4 | 68.7 | 71.6 |
| 5 | 76.1 | 75.7 | 75.9 | 12 | 57.5 | 58.8 | 58.2 |
| 6 | 62.9 | 63.4 | 63.2 | 13 | 66.9 | 67.2 | 67.0 |
| 7 | 65.8 | 65.7 | 65.8 | 14 | 106.2 | 103.6 | 104.9 |
| Average | 109.8 | 108.5 | 109.2 | Average | 70.4 | 67.3 | 68.8 |

Differences between the averages for the plates planted before and after the broth tubes were inoculated are so small that it is safe to assume that no appreciable change in bacterial numbers occurred in the suspensions during the examination period. In fact, in 5 of the 14 tests, the average counts of the 25 plates planted after the broth tubes were inoculated were slightly greater than the corresponding average for the first set of plates. The differences observed were of a magnitude of 10 percent in only one case (test no. 8 with *Bact. aerogenes*). This agreement between the averages for the two sets of counts would indicate a fair degree of accuracy for the final average, which includes the results from both sets.

The results obtained from the broth tubes inoculated from the *Bact. coli* suspensions are presented in table 2, and those from the *Bact. aerogenes* suspensions in table 3. These tables also contain (1) the most probable number figures obtained by calculation from the broth tube results; (2) the average plate counts obtained from the same suspensions; and (3) the ratio of the most probable number results to the corresponding average plate count results.

TABLE 2.—*Comparison of the numbers of Bact. coli as determined by the plate colony count procedure, using standard nutrient agar and by the dilution method using standard lactose broth*

| Test no. | Portions in lactose broth | | | | | | Most probable number (M.P.N.) | Average plate count (P.C.) | Ratio, M.P.N./P.C. |
|---|---|---|---|---|---|---|---|---|---|
| | 0.1 cc | | 0.01 cc | | 0.001 cc | | | | |
| | + | − | + | − | + | − | | | |
| 1 | 50 | 0 | 32 | 18 | 8 | 42 | 112 | 103 | 1.08 |
| 2 | 50 | 0 | 44 | 6 | 8 | 42 | 203 | 218 | 0.93 |
| 3 | 50 | 0 | 41 | 9 | 6 | 44 | 163 | 159 | 1.02 |
| 4 | 50 | 0 | 35 | 15 | 9 | 41 | 132 | 79 | 1.67 |
| 5 | 50 | 0 | 28 | 22 | 1 | 49 | 74 | 76 | 0.97 |
| 6 | 50 | 0 | 24 | 26 | 5 | 45 | 71 | 63 | 1.12 |
| 7 | 49 | 1 | 27 | 23 | 6 | 44 | 67 | 66 | 1.01 |
| Total | | | | | | | 822 | 764 | 7.80 |
| Average | | | | | | | 117 | 109 | 1.11 |

TABLE 3.—*Comparison of the numbers of Bact. aerogenes as determined by the plate colony count procedure using standard nutrient agar and by the dilution method using standard lactose broth*

| Test no. | Portions in lactose broth | | | | | | Most probable number (M.P.N.) | Average plate count (P.C.) | Ratio, M.P.N./P.C. |
|---|---|---|---|---|---|---|---|---|---|
| | 0.1 cc | | 0.01 cc | | 0.001 cc | | | | |
| | + | − | + | − | + | − | | | |
| 8 | 50 | 0 | 30 | 20 | 5 | 45 | 94 | 54 | 1.74 |
| 9 | 50 | 0 | 30 | 20 | 4 | 46 | 91 | 62 | 1.47 |
| 10 | 50 | 0 | 38 | 12 | 1 | 49 | 121 | 65 | 1.86 |
| 11 | 50 | 0 | 22 | 28 | 6 | 44 | 67 | 72 | 0.93 |
| 12 | 50 | 0 | 19 | 31 | 4 | 46 | 55 | 58 | 0.95 |
| 13 | 50 | 0 | 31 | 19 | 2 | 48 | 89 | 67 | 1.33 |
| 14 | 50 | 0 | 37 | 13 | 6 | 44 | 134 | 105 | 1.28 |
| Total | | | | | | | 651 | 483 | 9.56 |
| Average | | | | | | | 93 | 69 | 1.37 |

The most probable number figures obtained by calculation from these results, where 50 tubes were employed at each dilution, were very sharply defined, indicating a decided accuracy for this procedure. In comparing the counts obtained from the *Bact. coli* suspensions by the two methods under examination, very excellent agreement is noted in six of the seven tests. In only one test (no. 4) was a marked difference observed. Consequently, although the results obtained by the dilution method in five of the seven tests exceeded the corresponding plate colony counts, the average ratio of the most probable number estimations to the plate colony counts was 1.11. This figure indicates a very excellent agreement between these two methods under the conditions of these tests for the determination of *Bact. coli*.

When the counts obtained with the *Bact. aerogenes* suspensions (table 3) are studied, the agreement observed between the results secured by the two methods, while fair, is not nearly as satisfac tory as in the case of the *Bact. coli* determinations. In two tests (no. 11 and no. 12) the agreement is almost perfect. However, in the other five tests the average plate counts are less than the most probable number figures by from 22 to 46 percent. The average ratio of the most probable number figures to the plate counts for the seven tests with *Bact. aerogenes* is 1.37.

The reason for this greater divergence in the results obtained for *Bact. aerogenes* with the two methods is not known. It is possible that there is a greater tendency for the aerogenes cells to clump, owing to the presence of mucoid substances which they frequently produce, and that the greater dilution required to obtain quantitative results by the dilution method tends to loosen and disintegrate the cells which make up these clumps.

Under the standardized conditions of these tests, the plate colony counts and the most probable numbers computed from the dilution method are in excellent agreement for the quantitative determination of *Bact. coli,* and are in fair agreement for *Bact. aerogenes.* This would indicate that, under the conditions of these tests, the two methods could be interchanged without interfering materially with the numerical value of the results. Moreover, the procedures followed in these comparative tests have proved so satisfactory that their use is suggested in future studies to determine the relative accuracy of other media.

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## COURT DECISION RELATING TO PUBLIC HEALTH

*Beauty culture law upheld and construed.*—(Minnesota Supreme Court; *Luzier Special Formula Laboratories* v. *Minnesota State Board of Hairdressing and Beauty Culture Examiners et al.*, 248 N.W. 664; decided May 19, 1933.) The plaintiff, a Missouri corporation, manufactured cosmetic preparations in that State and sold them in Minnesota. Its salesmen promoted sales through demonstrating the use of such goods by applying the same to the upper parts of the bodies of prospective customers, the salesmen being compensated only by the plaintiff. The plaintiff sought to enjoin the prosecution of its salesmen, such prosecutions being based on the ground that the salesmen, not being licensed under the statute requiring the licensing of hairdressers and beauty culturists, were violating such statute. The decision of the supreme court was to the effect that such conduct on the part of the salesmen constituted a violation of the law in question. Other points decided by the court may be summarized as follows:

(1) While hairdressing and beauty culture was a lawful occupation, it was subject to regulation under the police power.

(2) The statute involved was not aimed at more than one vocation and, hence, was not objectionable on the ground of prohibiting a person from engaging in one of several occupations unless he qualified to engage in all.

(3) The law did not embrace more than one subject.

(4) The law did not interfere with the interstate commerce which the plaintiff carried on in Minnesota, as it was free to sell its goods everywhere but could not carry on the occupation of beauty culturist by its salesmen unless they were licensed.

## DEATHS DURING WEEK ENDED SEPT. 30, 1933

[From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce]

| | Week ended Sept. 30, 1933 | Corresponding week 1932 |
|---|---|---|
| Data from 85 large cities of the United States: | | |
| Total deaths | 7,118 | 6,589 |
| Deaths per 1,000 population, annual basis | 10.0 | 9.4 |
| Deaths under 1 year of age | 532 | 561 |
| Deaths under 1 year of age per 1,000 estimated live births (81 cities) | 47 | 47 |
| Deaths per 1,000 population, annual basis, first 39 weeks of year | 10.9 | 11.2 |
| Data from industrial insurance companies: | | |
| Policies in force | 67,661,518 | 70,415,889 |
| Number of death claims | 11,704 | 11,909 |
| Death claims per 1,000 policies in force, annual rate | 9.0 | 8.8 |
| Death claims per 1,000 policies, first 39 weeks of year, annual rate | 9.8 | 9.6 |

# 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 Weeks Ended October 7, 1933, and October 8, 1932

*Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended Oct. 7, 1933, and Oct. 8, 1932*

| Division and State | Diphtheria | | Influenza | | Measles | | Meningococcus meningitis | |
|---|---|---|---|---|---|---|---|---|
| | Week ended Oct. 7, 1933 | Week ended Oct. 8, 1932 | Week ended Oct. 7, 1933 | Week ended Oct. 8, 1932 | Week ended Oct. 7, 1933 | Week ended Oct. 8, 1932 | Week ended Oct. 7, 1933 | Week ended Oct. 8, 1932 |
| New England States: | | | | | | | | |
| Maine | 1 | 2 | | 5 | 3 | 2 | 0 | 0 |
| New Hampshire | 1 | 2 | | | | 1 | 0 | 0 |
| Vermont | | 1 | | | | 1 | 0 | 0 |
| Massachusetts | 24 | 29 | | 4 | 34 | 22 | 1 | 3 |
| Rhode Island | 3 | 5 | | | | | 0 | 0 |
| Connecticut | | 5 | | 5 | 5 | 5 | 0 | 0 |
| Middle Atlantic States: | | | | | | | | |
| New York | 30 | 63 | [1] 10 | [1] 9 | 82 | 125 | 2 | 4 |
| New Jersey | 9 | 26 | 8 | 13 | 19 | 58 | 0 | 1 |
| Pennsylvania | 51 | 76 | | | 34 | 41 | 4 | 2 |
| East North Central States: | | | | | | | | |
| Ohio | 50 | 82 | 4 | 5 | 7 | 19 | 0 | 0 |
| Indiana | 65 | 42 | 31 | 23 | 5 | 22 | 2 | 12 |
| Illinois | 38 | 138 | 13 | 12 | 6 | 21 | 2 | 6 |
| Michigan | 17 | 12 | 4 | 3 | 8 | 38 | 0 | 2 |
| Wisconsin | 9 | 19 | 34 | 23 | 16 | 39 | 1 | 1 |
| West North Central States: | | | | | | | | |
| Minnesota | 14 | 16 | 2 | | 2 | 60 | 0 | 0 |
| Iowa [2] | 14 | 11 | | | 2 | 1 | 0 | 1 |
| Missouri [2] | 80 | 54 | 3 | 2 | | 8 | 1 | 4 |
| North Dakota | 3 | | | | 3 | 6 | 0 | 0 |
| South Dakota | 3 | 2 | | 1 | 10 | | 0 | 0 |
| Nebraska | 6 | 32 | 7 | 3 | 1 | 14 | 1 | 0 |
| Kansas | 21 | 35 | | 2 | 5 | 2 | 0 | 0 |
| South Atlantic States: | | | | | | | | |
| Delaware | | 1 | | | | | 0 | 0 |
| Maryland [2] | 8 | 26 | 12 | 8 | 1 | | 0 | 0 |
| District of Columbia | 8 | 8 | 1 | | 1 | 1 | 0 | 0 |
| Virginia | 94 | 65 | | | 5 | 45 | 1 | 2 |
| West Virginia | 90 | 67 | 25 | 4 | 4 | 7 | 0 | 0 |
| North Carolina | 127 | 84 | 12 | 17 | 18 | 22 | 0 | 1 |
| South Carolina [3] | 34 | 24 | 192 | 285 | 14 | 23 | 0 | 0 |
| Georgia [3] | 60 | 73 | | 19 | 15 | 2 | 0 | 1 |
| Florida [3] | 10 | 17 | | 2 | | 1 | 0 | 0 |

See footnotes at end of table.

*Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended Oct. 7, 1933, and Oct. 8, 1932*—Continued

| Division and State | Diphtheria | | Influenza | | Measles | | Meningococcus meningitis | |
|---|---|---|---|---|---|---|---|---|
| | Week ended Oct. 7, 1933 | Week ended Oct. 8, 1932 | Week ended Oct. 7, 1933 | Week ended Oct. 8, 1932 | Week ended Oct. 7, 1933 | Week ended Oct. 8, 1932 | Week ended Oct. 7, 1933 | Week ended Oct. 8, 1932 |
| **East South Central States:** | | | | | | | | |
| Kentucky | 116 | 81 | 23 | | | | 0 | 1 |
| Tennessee | 95 | 112 | 13 | 15 | 26 | 1 | 1 | 2 |
| Alabama [3] | 78 | 119 | 28 | 14 | 4 | 1 | 0 | 0 |
| Mississippi [2] | 42 | 40 | | | | | 0 | 1 |
| West South Central States: | | | | | | | | |
| Arkansas | 36 | 42 | 1 | 10 | 16 | 4 | 0 | 0 |
| Louisiana | 32 | 37 | 2 | 14 | 2 | 2 | 0 | 0 |
| Oklahoma [4] | 76 | 95 | 19 | 26 | | 1 | 0 | 1 |
| Texas [3] | 110 | 151 | 109 | 59 | 12 | | 5 | 0 |
| Mountain States: | | | | | | | | |
| Montana | 1 | | | 2 | 1 | 93 | 1 | 0 |
| Idaho | | 1 | 1 | | | | 0 | 1 |
| Wyoming | | | | | 1 | | 0 | 0 |
| Colorado | 7 | 10 | | | 2 | 2 | 1 | 0 |
| New Mexico | 12 | 8 | 3 | 9 | 8 | | 0 | 0 |
| Arizona | 2 | 3 | | 1 | 2 | 1 | 0 | 0 |
| Utah [2] | 3 | 1 | | 1 | 4 | 4 | 0 | 0 |
| Pacific States: | | | | | | | | |
| Washington | 11 | 11 | | | 42 | 2 | 0 | 0 |
| Oregon | | 2 | 19 | 141 | 8 | 28 | 0 | 0 |
| California | 18 | 58 | 38 | 166 | 134 | 29 | 1 | 1 |
| Total | 1,509 | 1,788 | 614 | 903 | 562 | 759 | 24 | 47 |

| Division and State | Poliomyelitis | | Scarlet fever | | Smallpox | | Typhoid fever | |
|---|---|---|---|---|---|---|---|---|
| | Week ended Oct. 7, 1933 | Week ended Oct. 8, 1932 | Week ended Oct. 7, 1933 | Week ended Oct. 8, 1932 | Week ended Oct. 7, 1933 | Week ended Oct. 8, 1932 | Week ended Oct. 7, 1933 | Week ended Oct. 8, 1932 |
| New England States: | | | | | | | | |
| Maine | 3 | 12 | 11 | 17 | 0 | 0 | 2 | 3 |
| New Hampshire | 1 | 0 | 19 | 7 | 0 | 0 | 0 | 0 |
| Vermont | 1 | 0 | 6 | 8 | 0 | 0 | 0 | 0 |
| Massachusetts | 8 | 3 | 99 | 158 | 0 | 0 | 6 | 5 |
| Rhode Island | 1 | 0 | 9 | 31 | 0 | 0 | 3 | 2 |
| Connecticut | 5 | 0 | 26 | 38 | 0 | 0 | 2 | 3 |
| Middle Atlantic States: | | | | | | | | |
| New York | 59 | 17 | 140 | 210 | 0 | 0 | 37 | 55 |
| New Jersey | 20 | 23 | 50 | 99 | 0 | 0 | 7 | 18 |
| Pennsylvania | 28 | 61 | 226 | 161 | 0 | 0 | 59 | 71 |
| East North Central States: | | | | | | | | |
| Ohio | 10 | 2 | 229 | 276 | 0 | 1 | 27 | 69 |
| Indiana | 4 | 3 | 99 | 78 | 0 | 0 | 17 | 30 |
| Illinois | 12 | 7 | 161 | 201 | 1 | 3 | 21 | 44 |
| Michigan | 4 | 3 | 125 | 146 | 0 | 1 | 17 | 22 |
| Wisconsin | 3 | 2 | 36 | 32 | 2 | 3 | 6 | 6 |
| West North Central States: | | | | | | | | |
| Minnesota | 27 | 5 | 39 | 48 | 0 | 1 | 7 | 6 |
| Iowa [2] | 4 | 3 | 48 | 34 | 0 | 1 | 5 | 13 |
| Missouri [2] | 2 | 0 | 71 | 102 | 0 | 0 | 22 | 39 |
| North Dakota | 1 | 2 | 8 | 1 | 0 | 2 | 5 | 6 |
| South Dakota | 3 | 0 | 11 | 14 | 0 | 0 | 5 | 0 |
| Nebraska | 0 | 1 | 7 | 34 | 0 | 3 | 1 | 1 |
| Kansas | 1 | 2 | 77 | 63 | 0 | 1 | 12 | 7 |
| South Atlantic States: | | | | | | | | |
| Delaware | 1 | 0 | 6 | 6 | 0 | 0 | 1 | 4 |
| Maryland [2] | 5 | 1 | 45 | 50 | 0 | 0 | 31 | 36 |
| District of Columbia | 2 | 3 | 5 | 4 | 0 | 0 | 2 | 2 |
| Virginia | 4 | 1 | 108 | 62 | 0 | 0 | 21 | 21 |
| West Virginia | 5 | 1 | 132 | 72 | 1 | 0 | 66 | 74 |
| North Carolina | 0 | 2 | 84 | 71 | 0 | 1 | 22 | 8 |
| South Carolina [3] | 0 | 0 | 9 | 4 | 0 | 0 | 35 | 20 |
| Georgia [3] | 0 | 0 | 16 | 37 | 0 | 0 | 11 | 22 |
| Florida [3] | 0 | 0 | 1 | 7 | 0 | 0 | 1 | 2 |

See footnotes at end of table.

*Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended Oct. 7, 1933, and Oct. 8, 1932*—Continued

| Division and State | Poliomyelitis | | Scarlet fever | | Smallpox | | Typhoid fever | |
|---|---|---|---|---|---|---|---|---|
| | Week ended Oct. 7, 1933 | Week ended Oct. 8, 1932 | Week ended Oct. 7, 1933 | Week ended Oct. 8, 1932 | Week ended Oct. 7, 1933 | Week ended Oct. 8, 1932 | Week ended Oct. 7, 1933 | Week ended Oct. 8, 1932 |
| East South Central States: | | | | | | | | |
| Kentucky | 5 | 3 | 105 | 81 | 0 | 0 | 37 | 29 |
| Tennessee | 6 | 5 | 101 | 75 | 0 | 1 | 30 | 31 |
| Alabama [3] | 0 | 2 | 38 | 66 | 0 | 0 | 13 | 22 |
| Mississippi [2] | 0 | 5 | 18 | 30 | 0 | 0 | 4 | 6 |
| West South Central States: | | | | | | | | |
| Arkansas | 0 | 0 | 17 | 22 | 1 | 0 | 15 | 21 |
| Louisiana | 1 | 6 | 8 | 10 | 0 | 2 | 11 | 9 |
| Oklahoma [4] | 2 | 0 | 7 | 36 | 2 | 2 | 46 | 30 |
| Texas [3] | 1 | 4 | 33 | 46 | 12 | 3 | 70 | 20 |
| Mountain States: | | | | | | | | |
| Montana | 0 | 0 | 19 | 4 | 0 | 0 | 11 | 1 |
| Idaho | 0 | 0 | 5 | 1 | 0 | 0 | 3 | 10 |
| Wyoming | 2 | 0 | 5 | 6 | 1 | 0 | 0 | 1 |
| Colorado | 0 | 0 | 8 | 26 | 8 | 0 | 8 | 12 |
| New Mexico | 0 | 1 | 14 | 13 | 1 | 0 | 31 | 15 |
| Arizona | 0 | 0 | 4 | 7 | 0 | 0 | 2 | 2 |
| Utah [2] | 0 | 0 | 6 | 1 | 0 | 0 | 2 | 2 |
| Pacific States: | | | | | | | | |
| Washington | 5 | 3 | 22 | 33 | 2 | 7 | 8 | 8 |
| Oregon | 4 | 0 | 21 | 18 | 4 | 2 | 14 | 9 |
| California | 4 | 5 | 128 | 88 | 6 | 4 | 22 | 13 |
| Total | 244 | 188 | 2,462 | 2,634 | 41 | 38 | 778 | 839 |

[1] New York City only.
[2] Week ended earlier than Saturday.
[3] Typhus fever, week ended Oct. 7, 1933, 40 cases, as follows: South Carolina, 3; Georgia, 18; Florida, 1; Alabama, 12; Texas, 6.
[4] Exclusive of Oklahoma City and Tulsa.

## SUMMARY OF MONTHLY REPORTS FROM STATES

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

| State | Meningococcus meningitis | Diphtheria | Influenza | Malaria | Measles | Pellagra | Poliomyelitis | Scarlet fever | Smallpox | Typhoid fever |
|---|---|---|---|---|---|---|---|---|---|---|
| *July 1933* | | | | | | | | | | |
| Massachusetts | 8 | 66 | -------- | 4 | 1,164 | 1 | 78 | 418 | 0 | 20 |
| *August 1933* | | | | | | | | | | |
| Florida | 1 | 48 | 3 | 265 | 91 | 9 | 0 | 5 | 0 | 23 |
| Massachusetts | 7 | 63 | -------- | 4 | 240 | 1 | 148 | 271 | 0 | 25 |
| Mississippi | -------- | 107 | 608 | 12,832 | 188 | 642 | 1 | 36 | 6 | 98 |
| New Hampshire | -------- | 1 | -------- | -------- | -------- | -------- | 1 | 19 | 0 | 0 |
| Nevada | -------- | 1 | -------- | -------- | -------- | -------- | 1 | -------- | 0 | 2 |
| South Carolina | -------- | 138 | 289 | 1,173 | 126 | 235 | 3 | 12 | 8 | 129 |
| *September 1933* | | | | | | | | | | |
| Arkansas | -------- | 81 | 7 | 755 | 39 | 17 | 1 | 25 | 1 | 42 |
| Connecticut | 2 | 11 | 5 | 2 | 17 | -------- | 35 | 57 | 0 | 12 |
| District of Columbia | 1 | 35 | -------- | -------- | 7 | -------- | 5 | 30 | 0 | 17 |
| Massachusetts | 1 | 58 | -------- | 4 | 80 | -------- | 83 | 292 | 0 | 23 |
| Missouri | 3 | 163 | 29 | 95 | 40 | -------- | 10 | 209 | 8 | 82 |
| New Jersey | 4 | 51 | 23 | -------- | 54 | 1 | 100 | 158 | 0 | 27 |
| North Dakota | 1 | 17 | 3 | -------- | 36 | -------- | 28 | 33 | 1 | 8 |
| Vermont | -------- | 1 | -------- | -------- | 14 | -------- | 9 | 23 | 0 | 1 |

*July 1933*

| | Cases |
|---|---|
| Massachusetts: | |
| Chicken pox | 342 |
| German measles | 35 |
| Lead poisoning | 2 |
| Lethargic encephalitis | 4 |
| Mumps | 208 |
| Ophthalmia neonatorum | 67 |
| Paratyphoid fever | 2 |
| Septic sore throat | 17 |
| Tetanus | 4 |
| Trachoma | 4 |
| Undulant fever | 1 |
| Whooping cough | 654 |

*August 1933*

| | Cases |
|---|---|
| Chicken pox: | |
| Florida | 2 |
| Massachusetts | 125 |
| Mississippi | 159 |
| South Carolina | 12 |
| Dengue: | |
| Mississippi | 28 |
| South Carolina | 3 |
| Diarrhea: | |
| South Carolina | 613 |
| Dysentery: | |
| Florida | 1 |
| Massachusetts | 3 |
| Mississippi (amebic) | 88 |
| German measles: | |
| Massachusetts | 25 |
| Hookworm disease: | |
| Mississippi | 723 |
| South Carolina | 86 |
| Lead poisoning: | |
| Massachusetts | 2 |
| Lethargic encephalitis: | |
| Florida | 1 |
| Massachusetts | 3 |
| South Carolina | 3 |
| Mumps: | |
| Florida | 7 |
| Massachusetts | 103 |
| Mississippi | 48 |
| South Carolina | 13 |
| Ophthalmia neonatorum: | |
| Massachusetts | 27 |
| South Carolina | 6 |
| Paratyphoid fever: | |
| Massachusetts | 2 |
| South Carolina | 8 |
| Puerperal septicemia: | |
| Mississippi | 24 |
| Rabies in animals: | |
| Mississippi | 1 |
| South Carolina | 7 |
| Rocky Mountain spotted fever: | |
| Nevada | 1 |

*August 1933—Continued*

| | Cases |
|---|---|
| Septic sore throat: | |
| Massachusetts | 18 |
| Tetanus: | |
| Massachusetts | 3 |
| Trachoma: | |
| Massachusetts | 2 |
| Mississippi | 1 |
| Trichinosis: | |
| Massachusetts | 2 |
| Tularaemia: | |
| South Carolina | 1 |
| Typhus fever: | |
| Florida | 9 |
| South Carolina | 9 |
| Undulant fever: | |
| Florida | 2 |
| Massachusetts | 2 |
| Mississippi | 3 |
| South Carolina | 1 |
| Vincent's angina: | |
| South Carolina | 7 |
| Whooping cough: | |
| Florida | 44 |
| Massachusetts | 686 |
| Mississippi | 577 |
| South Carolina | 182 |

*September 1933*

| | Cases |
|---|---|
| Anthrax: | |
| Missouri | 1 |
| New Jersey | 1 |
| Chicken pox: | |
| Arkansas | 16 |
| Connecticut | 33 |
| District of Columbia | 1 |
| Massachusetts | 81 |
| Missouri | 10 |
| New Jersey | 72 |
| North Dakota | 22 |
| Vermont | 21 |
| Conjunctivitis: | |
| Connecticut | 1 |
| Dysentery: | |
| Connecticut (bacillary) | 5 |
| Massachusetts | 5 |
| Missouri | 1 |
| New Jersey | 5 |
| North Dakota | 1 |
| German measles: | |
| Connecticut | 2 |
| Massachusetts | 10 |
| New Jersey | 16 |
| North Dakota | 1 |
| Impetigo contagiosa: | |
| North Dakota | 14 |
| Lead poisoning: | |
| Connecticut | 3 |
| Massachusetts | 3 |
| New Jersey | 1 |
| Leprosy: | |
| New Jersey | 1 |

*September 1933—Continued*

| | Cases |
|---|---|
| Lethargic encephalitis: | |
| Arkansas | 1 |
| Connecticut | 6 |
| District of Columbia | 1 |
| Missouri | 1,132 |
| New Jersey | 6 |
| North Dakota | 2 |
| Mumps: | |
| Arkansas | 7 |
| Connecticut | 50 |
| Massachusetts | 98 |
| Missouri | 26 |
| New Jersey | 61 |
| North Dakota | 2 |
| Vermont | 29 |
| Ophthalmia neonatorum: | |
| Massachusetts | 127 |
| North Dakota | 1 |
| Paratyphoid fever: | |
| Arkansas | 1 |
| Massachusetts | 3 |
| New Jersey | 1 |
| Rabies in animals: | |
| Connecticut | 6 |
| Missouri | 14 |
| New Jersey | 12 |
| Rabies in man: | |
| Massachusetss | 1 |
| Missouri | 1 |
| Scabies: | |
| North Dakota | 4 |
| Septic sore throat: | |
| Connecticut | 12 |
| Massachusetts | 9 |
| Missouri | 15 |
| Tetanus: | |
| Connecticut | 3 |
| Massachusetts | 5 |
| New Jersey | 4 |
| Trachoma: | |
| Arkansas | 2 |
| Massachusetts | 2 |
| North Dakota | 1 |
| Trichinosis: | |
| Connecticut | 1 |
| New Jersey | 1 |
| Tularaemia: | |
| Arkansas | 1 |
| Undulant fever: | |
| Connecticut | 6 |
| Missouri | 2 |
| Vermont | 1 |
| Vincent's angina: | |
| North Dakota | 6 |
| Whooping cough: | |
| Arkansas | 16 |
| Connecticut | 126 |
| District of Columbia | 25 |
| Massachusetts | 500 |
| Missouri | 126 |
| New Jersey | 415 |
| North Dakota | 31 |

## WEEKLY REPORTS FROM CITIES

*City reports for week ended Sept. 30, 1933*

| State and city | Diphtheria cases | Influenza | | Measles cases | Pneumonia deaths | Scarlet fever cases | Smallpox cases | Tuberculosis deaths | Typhoid fever cases | Whooping cough cases | Deaths, all causes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Cases | Deaths | | | | | | | | |
| Maine: | | | | | | | | | | | |
| Portland | 0 | | 0 | 2 | 1 | 0 | 0 | 0 | 1 | 12 | 24 |
| New Hampshire: | | | | | | | | | | | |
| Concord | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 |
| Nashua | 0 | | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | |
| Vermont: | | | | | | | | | | | |
| Barre | 0 | | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 3 |
| Burlington | 0 | | 0 | 1 | 0 | 3 | 0 | 0 | 0 | 0 | 13 |
| Massachusetts: | | | | | | | | | | | |
| Boston | 6 | | 0 | 4 | 11 | 27 | 0 | 7 | 1 | 31 | 205 |
| Fall River | 2 | | 0 | 0 | 1 | 0 | 0 | 4 | 0 | 3 | 25 |
| Springfield | 0 | | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 28 |
| Worcester | 0 | | 0 | 8 | 1 | 2 | 0 | 1 | 0 | 17 | 43 |

*City reports for week ended Sept. 30, 1933*—Continued

| State and city | Diphtheria cases | Influenza Cases | Influenza Deaths | Measles cases | Pneumonia deaths | Scarlet fever cases | Smallpox cases | Tuberculosis deaths | Typhoid fever cases | Whooping cough cases | Deaths, all causes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Rhode Island: | | | | | | | | | | | |
| Pawtucket | 3 | | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 22 |
| Providence | 0 | | 0 | 2 | 4 | 9 | 0 | 2 | 0 | 28 | 46 |
| Connecticut: | | | | | | | | | | | |
| Bridgeport | 0 | | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 23 |
| Hartford | 3 | | 0 | 0 | 2 | 3 | 0 | 0 | 0 | 1 | 33 |
| New Haven | 0 | | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 2 | 28 |
| New York: | | | | | | | | | | | |
| Buffalo | 1 | | 0 | 2 | 2 | 13 | 0 | 5 | 3 | 28 | 113 |
| New York | 28 | 7 | 3 | 6 | 90 | 52 | 0 | 80 | 18 | 129 | 1,341 |
| Syracuse | 0 | | 0 | 0 | 3 | 1 | 0 | 3 | 0 | 28 | 47 |
| New Jersey: | | | | | | | | | | | |
| Camden | 4 | | 0 | 0 | 2 | 2 | 0 | 0 | 1 | 0 | 24 |
| Newark | 0 | 3 | 0 | 0 | 4 | 4 | 0 | 3 | 0 | 38 | 88 |
| Trenton | 0 | | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 5 | 37 |
| Pennsylvania: | | | | | | | | | | | |
| Philadelphia | 1 | 4 | 2 | 2 | 16 | 31 | 0 | 18 | 4 | 23 | 403 |
| Pittsburgh | 0 | | 0 | 1 | 7 | 13 | 0 | 3 | 0 | 28 | 116 |
| Reading | 1 | | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 3 | 21 |
| Ohio: | | | | | | | | | | | |
| Cincinnati | 3 | 1 | 0 | 2 | 2 | 29 | 0 | 6 | 5 | 2 | 104 |
| Cleveland | 5 | 22 | 1 | 1 | 6 | 29 | 0 | 7 | 0 | 39 | 156 |
| Columbus | 6 | | 0 | 0 | 3 | 14 | 0 | 1 | 1 | 5 | 75 |
| Toledo | 1 | | 0 | 0 | 0 | 15 | 0 | 4 | 0 | 4 | 61 |
| Indiana: | | | | | | | | | | | |
| Fort Wayne | 4 | | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 23 |
| Indianapolis | 0 | | 0 | 0 | 12 | 7 | 0 | 1 | 0 | 8 | 83 |
| South Bend | 0 | | 0 | 2 | 0 | 3 | 0 | 0 | 0 | 1 | 16 |
| Terre Haute | 0 | | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 15 |
| Illinois: | | | | | | | | | | | |
| Chicago | 13 | 1 | 2 | 4 | 25 | 29 | 0 | 29 | 4 | 57 | 571 |
| Springfield | 1 | | 0 | 0 | 1 | 3 | 0 | 0 | 1 | 0 | 21 |
| Michigan: | | | | | | | | | | | |
| Detroit | 9 | 4 | 1 | 4 | 8 | 27 | 0 | 14 | 3 | 79 | 206 |
| Flint | 1 | | 0 | 1 | 1 | 6 | 0 | 0 | 0 | 7 | 21 |
| Grand Rapids | 0 | | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 26 |
| Wisconsin: | | | | | | | | | | | |
| Kenosha | 0 | | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 8 |
| Madison | [1] 2 | | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 22 |
| Milwaukee | 2 | 1 | 1 | 1 | 4 | 7 | 0 | 4 | 1 | 75 | 96 |
| Racine | 0 | | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 7 | 11 |
| Superior | 0 | | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 10 |
| Minnesota: | | | | | | | | | | | |
| Duluth | 0 | | 0 | 1 | 1 | 0 | 0 | 2 | 0 | 0 | 21 |
| Minneapolis | 1 | | 0 | 1 | 5 | 3 | 0 | 0 | 0 | 9 | 92 |
| St. Paul | 1 | | 0 | 0 | 4 | 1 | 0 | 1 | 0 | 17 | 58 |
| Iowa: | | | | | | | | | | | |
| Des Moines | 0 | | 0 | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 27 |
| Sioux City | 0 | | 0 | 1 | 0 | [1] 5 | 0 | 0 | 0 | 4 | |
| Waterloo | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | |
| Missouri: | | | | | | | | | | | |
| Kansas City | 3 | | 0 | 0 | 6 | 7 | 0 | 4 | 2 | 4 | 101 |
| St. Joseph | 6 | | 0 | 0 | 2 | 1 | 0 | 2 | 0 | 0 | 21 |
| St. Louis | 5 | | 0 | 1 | 3 | 5 | 0 | 15 | 3 | 4 | 212 |
| North Dakota: | | | | | | | | | | | |
| Fargo | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 |
| South Dakota: | | | | | | | | | | | |
| Aberdeen | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Nebraska: | | | | | | | | | | | |
| Omaha | 3 | | 0 | 0 | 3 | 4 | 0 | 1 | 0 | 0 | 56 |
| Kansas: | | | | | | | | | | | |
| Topeka | 0 | 1 | 1 | 0 | 2 | 0 | 0 | 1 | 0 | 5 | 14 |
| Wichita | 1 | | 0 | 1 | 3 | 1 | 0 | 1 | 1 | 0 | 27 |
| Delaware: | | | | | | | | | | | |
| Wilmington | 1 | | 0 | 0 | 2 | 1 | 0 | 1 | 0 | 2 | 33 |
| Maryland: | | | | | | | | | | | |
| Baltimore | 1 | 4 | 0 | 0 | 11 | 21 | 0 | 11 | 2 | 43 | 189 |
| Cumberland | 0 | | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 0 | 10 |
| Frederick | 0 | | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 2 |
| District of Columbia: | | | | | | | | | | | |
| Washington | 6 | | 0 | 1 | 7 | 15 | 0 | 7 | 7 | 2 | 123 |
| Virginia: | | | | | | | | | | | |
| Lynchburg | 8 | | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 1 | 15 |
| Richmond | 3 | | 1 | 0 | 2 | 2 | 0 | 3 | 1 | 0 | 58 |
| Roanoke | 3 | | 0 | 0 | 3 | 4 | 0 | 1 | 0 | 0 | 20 |

[1] 2 nonresidents.

*City reports for week ended Sept. 30, 1933*—Continued

| State and city | Diphtheria cases | Influenza | | Measles cases | Pneumonia deaths | Scarlet fever cases | Smallpox cases | Tuberculosis deaths | Typhoid fever cases | Whooping cough cases | Deaths, all causes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Cases | Deaths | | | | | | | | |
| **West Virginia:** | | | | | | | | | | | |
| Charleston | 4 | ------ | 0 | 0 | 1 | 7 | 0 | 1 | 3 | 4 | 13 |
| Huntington | 2 | ------ | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | ------ |
| Wheeling | 0 | ------ | 0 | 2 | 1 | 0 | 0 | 1 | 0 | 4 | 19 |
| **North Carolina:** | | | | | | | | | | | |
| Raleigh | 1 | ------ | 0 | 0 | 2 | 3 | 0 | 0 | 0 | 0 | 15 |
| Wilmington | 2 | ------ | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 14 |
| Winston-Salem | 18 | 1 | 1 | 1 | 0 | 4 | 0 | 1 | 0 | 1 | 20 |
| **South Carolina:** | | | | | | | | | | | |
| Charleston | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 27 |
| Columbia | 0 | ------ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 |
| Greenville | 0 | ------ | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 1 | 27 |
| **Georgia:** | | | | | | | | | | | |
| Atlanta | 11 | 10 | 0 | 0 | 3 | 4 | 0 | 2 | 4 | 1 | 74 |
| Brunswick | 0 | ------ | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 5 |
| Savannah | 0 | ------ | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 30 |
| **Florida:** | | | | | | | | | | | |
| Miami | 0 | ------ | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 24 |
| Tampa | 1 | ------ | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 23 |
| **Kentucky:** | | | | | | | | | | | |
| Ashland | 1 | ------ | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 |
| Lexington | 2 | ------ | 0 | 0 | 0 | 2 | 0 | 3 | 0 | 0 | 17 |
| Louisville | 5 | ------ | 0 | 1 | 8 | 9 | 0 | 2 | 6 | 1 | 64 |
| **Tennessee:** | | | | | | | | | | | |
| Memphis | 5 | ------ | 0 | 0 | 2 | 7 | 0 | 5 | 4 | 7 | 74 |
| Nashville | 0 | ------ | 0 | 0 | 3 | 8 | 0 | 4 | 1 | 0 | 37 |
| **Alabama:** | | | | | | | | | | | |
| Birmingham | 10 | 1 | 1 | 1 | 1 | 5 | 0 | 2 | 3 | 0 | 60 |
| Mobile | 1 | ------ | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 21 |
| Montgomery | 2 | ------ | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 |
| **Arkansas:** | | | | | | | | | | | |
| Fort Smith | ------ | ------ | ------ | ------ | ------ | ------ | ------ | ------ | ------ | ------ | ------ |
| Little Rock | 4 | ------ | 0 | 1 | 2 | 1 | 0 | 3 | 0 | 1 | 6 |
| **Louisiana:** | | | | | | | | | | | |
| New Orleans | 11 | 1 | 1 | 0 | 7 | 4 | 0 | 12 | 2 | 3 | 135 |
| Shreveport | 1 | ------ | 0 | 0 | 1 | 2 | 0 | 4 | 1 | 2 | 37 |
| **Oklahoma:** | | | | | | | | | | | |
| Oklahoma City | 2 | 4 | 0 | 0 | 2 | 1 | 0 | 0 | 1 | 0 | 30 |
| **Texas:** | | | | | | | | | | | |
| Dallas | 13 | ------ | 0 | 0 | 4 | 6 | 9 | 5 | 1 | 2 | 50 |
| Fort Worth | 2 | ------ | 1 | 0 | 1 | 3 | 0 | 0 | 5 | 0 | 24 |
| Galveston | 0 | ------ | 0 | 0 | 1 | 2 | 0 | 2 | 0 | 0 | 17 |
| Houston | 19 | ------ | 0 | 0 | 5 | 0 | 0 | 2 | 1 | 0 | 68 |
| San Antonio | 3 | ------ | 0 | 0 | 10 | 1 | 0 | 6 | 1 | 0 | 56 |
| **Montana:** | | | | | | | | | | | |
| Billings | 0 | ------ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| Great Falls | 0 | ------ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| Helena | 0 | ------ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Missoula | 0 | ------ | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 5 |
| **Idaho:** | | | | | | | | | | | |
| Boise | 0 | ------ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 6 |
| **Colorado:** | | | | | | | | | | | |
| Denver | 0 | 19 | 0 | 3 | 7 | 9 | 0 | 2 | 3 | 17 | 69 |
| Pueblo | 0 | ------ | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 2 |
| **New Mexico:** | | | | | | | | | | | |
| Albuquerque | 0 | ------ | 0 | 0 | 2 | 0 | 0 | 4 | 5 | 2 | 15 |
| **Utah:** | | | | | | | | | | | |
| Salt Lake City | 0 | ------ | 0 | 6 | 4 | 5 | 0 | 1 | 1 | 1 | 23 |
| **Nevada:** | | | | | | | | | | | |
| Reno | 0 | ------ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 |
| **Washington:** | | | | | | | | | | | |
| Seattle | 1 | ------ | 2 | 1 | 6 | 4 | 0 | 8 | 1 | 4 | 99 |
| Spokane | 0 | ------ | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 16 |
| Tacoma | 1 | ------ | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 2 | 27 |
| **Oregon:** | | | | | | | | | | | |
| Portland | 3 | ------ | 0 | 0 | 2 | 9 | 0 | 2 | 1 | 1 | 80 |
| Salem | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | ------ |
| **California:** | | | | | | | | | | | |
| Los Angeles | 12 | 24 | 2 | 5 | 11 | 29 | 11 | 20 | 1 | 47 | 273 |
| Sacramento | 2 | ------ | 0 | 0 | 3 | 0 | 0 | 2 | 0 | 3 | 21 |
| San Francisco | 1 | 2 | 0 | 2 | 2 | 5 | 0 | 9 | 0 | 2 | 131 |

*City reports for week ended Sept. 30, 1933*—Continued

| State and city | Meningococcus meningitis | | Polio-myelitis cases |
|---|---|---|---|
| | Cases | Deaths | |
| Maine: | | | |
| Portland | 0 | 0 | 2 |
| Massachusetts: | | | |
| Boston | 0 | 0 | 5 |
| Springfield | 0 | 0 | 1 |
| Rhode Island: | | | |
| Pawtucket | 0 | 0 | 1 |
| Providence | 0 | 0 | 1 |
| Connecticut: | | | |
| Hartford | 0 | 0 | 1 |
| New York: | | | |
| Buffalo | 0 | 0 | 2 |
| New York | 3 | 0 | 33 |
| Syracuse | 0 | 0 | 2 |
| New Jersey: | | | |
| Newark | 0 | 0 | 4 |
| Pennsylvania: | | | |
| Pittsburgh | 0 | 0 | 4 |
| Ohio: | | | |
| Cincinnati | 0 | 0 | 1 |
| Cleveland | 0 | 0 | 2 |
| Indiana: | | | |
| Indianapolis | 3 | 0 | 0 |
| Illinois: | | | |
| Chicago | 1 | 1 | 12 |
| Michigan: | | | |
| Detroit | 1 | 0 | 1 |
| Wisconsin: | | | |
| Milwaukee | 1 | 0 | 0 |
| Minnesota: | | | |
| Duluth | 0 | 0 | 3 |
| Minneapolis | 0 | 0 | 9 |
| Minnesota—Continued. | | | |
| St. Paul | 0 | 0 | 2 |
| Iowa: | | | |
| Des Moines | 0 | 0 | 1 |
| Missouri: | | | |
| Kansas City | 1 | 1 | 0 |
| South Dakota: | | | |
| Aberdeen | 0 | 0 | 1 |
| Nebraska: | | | |
| Omaha | 0 | 0 | 1 |
| Kansas: | | | |
| Topeka | 1 | 0 | 0 |
| Maryland: | | | |
| Baltimore | 0 | 0 | 1 |
| Cumberland | 0 | 0 | 1 |
| District of Columbia: | | | |
| Washington | 0 | 0 | 1 |
| Virginia: | | | |
| Richmond | 0 | 0 | 1 |
| Georgia: | | | |
| Atlanta | 1 | 1 | 0 |
| Kentucky: | | | |
| Louisville | 0 | 0 | 1 |
| Louisiana: | | | |
| New Orleans | 1 | 1 | 0 |
| Washington: | | | |
| Seattle | 0 | 0 | 1 |
| Tacoma | 0 | 0 | 2 |
| California: | | | |
| Los Angeles | 0 | 0 | 1 |
| Sacramento | 0 | 0 | [1] 1 |

[1] Imported.

*Lethargic encephalitis.*—Cases: Philadelphia, 1; Cleveland, 3; Chicago, 1; Grand Rapids, Mich., 3; Kansas City, Mo., 10; St. Joseph, Mo., 3; St. Louis, 60; Omaha, 4; Lexington, Ky., 1; Louisville, 3; Dallas, Tex., 1; Houston, Tex., 1.

*Pellagra.*—Cases: Philadelphia, 1; Raleigh, N.C., 1; Charleston, S.C., 2; Miami, 1; Memphis, 1; Mobile, 1.

*Typhus fever.*—Cases: Charleston, S.C., 2; Atlanta, 8; Savannah, 5; Tampa, 1; Montgomery, Ala., 3. Deaths: Winston-Salem, 1.

# FOREIGN AND INSULAR

## CANADA

*Provinces—Communicable diseases—2 weeks ended September 23, 1933.*—The Department of Pensions and National Health of Canada reports cases of certain communicable diseases for the 2 weeks ended September 23, 1933, as follows:

| Disease | Prince Edward Island | Nova Scotia | New Brunswick | Quebec | Ontario | Manitoba | Saskatchewan | Alberta | British Columbia | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| Cerebrospinal meningitis |  |  |  | 1 | 1 | 1 |  |  |  | 3 |
| Chicken pox |  |  |  | 28 | 56 | 12 | 33 | 5 | 24 | 158 |
| Diphtheria |  | 3 | 8 | 32 | 14 | 16 | 4 | 3 | 1 | 81 |
| Dysentery |  |  |  |  | 12 |  |  |  |  | 12 |
| Erysipelas |  |  |  | 7 | 1 | 2 |  | 2 | 7 | 19 |
| Influenza |  |  |  |  | 15 |  | 6 |  | 13 | 34 |
| Lethargic encephalitis |  |  |  |  |  |  | 1 | 1 |  | 2 |
| Measles |  | 1 |  | 47 | 4 | 3 |  | 1 | 7 | 63 |
| Mumps |  |  | 2 |  | 45 | 2 | 2 | 3 | 17 | 71 |
| Paratyphoid fever |  |  |  |  | 6 |  |  | 2 |  | 8 |
| Pneumonia |  | 2 |  |  | 10 |  | 11 |  | 7 | 30 |
| Poliomyelitis |  |  |  | 13 | 2 |  | 5 | 4 |  | 24 |
| Scarlet fever |  | 17 | 2 | 75 | 59 | 33 | 17 | 7 | 24 | 234 |
| Trachoma |  |  |  |  |  |  | 9 |  | 3 | 12 |
| Tuberculosis |  |  | 17 | 158 | 98 | 10 | 24 | 4 | 36 | 347 |
| Typhoid fever | 3 |  | 6 | 92 | 50 | 6 | 4 | 4 | 5 | 170 |
| Undulant fever |  |  |  |  | 14 |  |  | 1 |  | 15 |
| Whooping cough |  | 10 | 2 | 126 | 178 | 116 | 46 | 18 | 14 | 510 |

## CUBA

*Provinces—Communicable diseases—5 weeks ended July 29, 1933.*—During the 5 weeks ended July 29, 1933, cases of certain communicable diseases were reported in the provinces of Cuba as follows:

| Disease | Pinar del Rio | Habana | Matanzas | Santa Clara | Camaguey | Oriente | Total |
|---|---|---|---|---|---|---|---|
| Chicken pox |  |  |  |  |  | 2 | 2 |
| Diphtheria | 1 | 2 | 3 | 7 | 13 | 4 | 30 |
| Malaria | 33 | 3 | 2 | 29 | 10 | 24 | 101 |
| Measles | 4 | 3 | 3 | 9 | 1 | 2 | 22 |
| Scarlet fever | 4 |  |  | 3 |  |  | 7 |
| Tuberculosis | 12 | 127 | 65 | 51 | 56 | 28 | 339 |
| Typhoid fever | 9 | 6 | 19 | 18 | 27 | 27 | 106 |

## DENMARK

*Communicable diseases—July 1933.*—During the month of July 1933, cases of certain communicable diseases were reported in Denmark as follows:

| Disease | Cases | Disease | Cases |
|---|---|---|---|
| Cerebrospinal meningitis | 5 | Mumps | 245 |
| Chicken pox | 7 | Paratyphoid fever | 15 |
| Diphtheria and croup | 108 | Poliomyelitis | 16 |
| Dysentery (amebic) | 110 | Puerperal fever | 9 |
| Erysipelas | 184 | Scabies | 412 |
| German measles | 29 | Scarlet fever | 164 |
| Gonorrhea | 875 | Syphilis | 61 |
| Influenza | 1, 594 | Tetanus | 2 |
| Lethargic encephalitis | 2 | Typhoid fever | 4 |
| Malaria | 5 | Undulant fever (Bact. abort. Bang) | 52 |
| Measles | 423 | Whooping cough | 826 |

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

(NOTE.—A table giving current information of the world prevalence of quarantinable diseases appeared in the PUBLIC HEALTH REPORTS for Sept. 29, 1933, pp. 1206–1217. A similar cumulative table will appear in the PUBLIC HEALTH REPORTS to be issued Oct. 27, 1933, and thereafter, at least for the time being, in the issue published on the last Friday of each month.)

### Cholera

*Philippine Islands.*—During the week ended October 7, 1933, cholera was reported in parts of the Philippine Islands as follows: Bohol Province, Banacon, 1 case; Nasingan Island, 1 death; Cebu Province, Argao, 9 cases, 7 deaths; Cebu city, 6 cases, 2 deaths; Minglanilla, 4 cases, 2 deaths; Talisay, 1 case, 1 death; and Toledo, 2 cases, 2 deaths. During the period September 10 to 25, 1933, cholera was reported in Samar Province, Philippine Islands, as follows: Calbayog, 1 case; Gandara, 26 cases, 15 deaths; Santa Margarita, 5 cases, 5 deaths.

### Plague

*Ecuador—San Antonio.*—During the month of September 1933, 3 cases of plague with 2 deaths were reported in San Antonio, Chimborazo Province, Ecuador.

*Egypt—Gharbiya Province—Tanta.*—During the week ended September 30, 1933, 3 cases of plague with 2 deaths were reported in Tanta, Gharbiya Province, Egypt.

*Libya—Tripolitania—Gheran.*—During the week ended September 30, 1933, 1 case of plague was reported in Gheran, near Zanzur, Tripolitania, Libya.

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