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TYPHUS FEVER IN THE UNITED STATES¹

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From time to time, when epidemics raged in Mexico, localized outbreaks of tabardillo have occurred in contiguous American territory, confined largely to the Mexican population living on this side of the border or brought into this country in labor gangs. The last epidemic was associated with the political upheaval and internal strife which racked that country from 1916-1918. Notoriously a disease of armies and refugee populations, tabardillo wrought havoc among the soldiers engaged in operations in the north of Mexico, States of Chihuahua, Coahuila, and Nuevo Leon, and came across the border with refugees to El Paso, Del Rio, and Laredo, Tex. Scattered outbreaks followed labor gangs into Arizona, Colorado, California, and central and eastern Texas.

In 1922 Armstrong investigated an epidemic of typhus among the Indians on the Navajo Reservation in New Mexico. There was no direct evidence but a strong presumption that the infection had been imported from Mexico.

There is a tradition that tabardillo is confined to the highlands of that country; that it rarely occurred and showed no tendency to spread in the low-lying land of the coast and the Rio Grande Valley. In 1925, however, an investigation (Sinclair and Maxcy) of some suspicious cases which had been reported in the vicinity of Rio Grande City and Fort Ringgold, Tex., led to the conclusion that a mild form of typhus was present and probably had been endemic for some years in the lower Rio Grande Valley and the near-by towns of southwestern Texas.

The importation of typhus into the eastern United States is apparently a much more recent affair. The disease was not clearly differentiated from typhoid until Gerhard's description of the fever which had prevailed in Philadelphia during the spring and summer of 1836. During the forties and fifties a considerable number of outbreaks were reported from eastern cities, associated with the arrival of immigrant ships, particularly from Ireland, where typhus was then epidemic. That the disease had gained no permanent

¹ Read at the Twenty-seventh Annual Conference of State and Territorial Health Officers with the United States Public Health Service, Washington, D. C., June 4, 1929.

foothold in this country is evidenced by the fact that during the Civil War it was of no consequence to either army. A few cases were reported among the Federal troops, but such an authority as Woodward (1863) questions the accuracy of the diagnosis in many of these.

The last outbreak of any considerable size on the Atlantic seaboard was that in New York City, 1892-93, when some 434 cases were removed to the reception hospital from the poorer tenements and lodging houses. (Doty, 1897.) Since that time, although occasional cases of typhus fever have come in on ships from European ports, there has been little, if any, secondary spread after arrival.

From 1893 to 1910 the United States was generally considered to be free from typhus fever except for the occasional case imported from Europe or Mexico. At this time Dr. Nathan Brill (1910) called attention to a disease occurring endemically in New York City which was clinically indistinguishable from typhus fever but presented certain epidemiological differences. The work of Anderson and Goldberger in the following two years indicated that in monkeys the virus of "Brill's disease" and that of "tabardillo" were identical and similar in all respects to the published accounts of virus of European and African typhus fever. Following these publications a considerable interest was aroused. Reports of cases similar to those described by Brill were made from several of the eastern cities. The impression still prevailed, however, that these cases were simply a mild form of Old World louse-borne typhus, attributable to imported infection, although their association with recently arrived immigrants could seldom be demonstrated.

Since 1915 there has been a growing appreciation of the fact that cases resembling typhus fever and corresponding to Brill's disease clinically were occurring on the soil of the United States under circumstances where the chances of recent importation of the virus seemed rather remote.

The discovery in 1923 that cases of this type were occurring in the native population of Montgomery, Ala., led to a study of the situation in this city (Maxcy and Havens, 1923), which was later extended to other parts of that State and to the neighboring States by direction of the Surgeon General of the United States Public Health Service.

CLINICAL OBSERVATIONS

The clinical picture of this typhuslike disease in the southwestern United States was carefully observed and analyzed in a large series of cases. (Maxcy, 1925-a.) The syndrome is constant, clear-cut, and easy to differentiate from other eruptive fevers. The uniformity with which the fever lasts just two weeks is remarkable, sometimes a day or two under, more often a day or two over, but always within this range. The eruption, too, is absolutely characteristic in the

irregularity of the size, shape, degree of elevation, intensity of color, and amount of extravasation of individual spots. In a well-developed case the diagnosis may be made with maximum assurance on purely clinical grounds.

While the course is undoubtedly like that of typhus fever, when the physician consults his textbook on medicine he is puzzled because of the relative mildness of the symptoms, the rarity of complications, and the low fatality rate. The textbook descriptions are, however, based upon the severe and highly fatal typhus seen during epidemics.

It is not generally appreciated that the severity of typhus is exceedingly variable in different epidemics and in different localities and that between epidemics the disease is quite mild. (Hach, 1925.) In the Serbian epidemic of 1915 the mortality rate reached 60 per cent or more; in the Russian epidemic of 1919-1922 it was in the neighborhood of 5 to 7 per cent. In the interepidemic periods it would be difficult or impossible to distinguish on clinical grounds alone the disease of the Old World from that seen in the southeastern United States. Here the disease is by no means always mild, though usually so. Especially when old people are attacked, it may run a virulent and rapidly fatal course, with death in the second week. It is difficult to determine the fatality rate with any degree of precision on account of unrecognized and unreported cases, but it is approximately 2 to 4 per cent.

SEROLOGICAL CONFIRMATION

In 1916 Weil and Felix discovered that the serum of typhus-fever patients would agglutinate certain proteuslike organisms which they cultivated from the urine of persons sick with this disease. The most sensitive of their strains was called *Proteus* X₁₉. They demonstrated that agglutinins for this proteus were ordinarily not present in the serum of normal persons except in low dilution. During an infection with typhus fever they appeared to increase toward the end of the first week, to reach maximum titer about the time of convalescence, and then gradually to decline to their former level. In other words, the agglutination paralleled the course of the infection. Sera from patients sick with various febrile diseases did not show this phenomenon. Although an etiologic relationship for *Proteus* X₁₉ has never been demonstrated, the Weil-Felix reaction has been generally accepted to be peculiar to this disease.

Sera from several hundred cases of the endemic typhus of the southeastern United States have now been examined in various laboratories.² The Weil-Felix reaction has been found to be almost

² Particular interest has been taken in this investigation by Dr. L. C. Havens, director Alabama State Laboratories (Havens, 1927); Dr. T. F. Sellers, director Georgia State Laboratories; and Mr. Conrad Kinyoun, director Municipal Laboratory, Savannah, Ga.

invariably positive in the disease where the blood was taken at the proper time or repeated specimens submitted. It has been of great assistance in establishing diagnosis in some cases where typhus was not considered by the attending physician.

REACTION OF EXPERIMENTAL ANIMALS

The susceptibility of the chimpanzee and, later, of the *Macacus rhesus* to the virus of typhus was established by the work of Nicolle and his coworkers in Tunis, 1909-1912, and by Anderson and Goldberger, working with Mexican typhus, 1910-1912. Most of the early researches were made upon the monkey. A little later Nicolle found that the guinea pig was also susceptible, and since that time most of the work in typhus has been done with this readily available species of experimental animal. Consequently the manifestations of typhus in the guinea pig have been thoroughly, even minutely, studied and described.

With the realization that a typhuslike disease was endemic and not uncommon in the southeastern United States, the question arose whether the causative virus was identical with Old World typhus.

Although the work of Anderson and Goldberger had been very convincing, it was thought worth while to repeat the observations on experimental animals, working with strains which were obtained from cases occurring in the southeastern United States where there is less chance of direct importation of infection from abroad.

Accordingly, during the past six years repeated attempts have been made to establish a strain from human cases of this endemic typhus in Alabama, Georgia, North Carolina, and Virginia. Many of these attempts were unsuccessful. In a few the result was apparently positive, but on account of failure, for one reason or another, to propagate the strain, the studies were not sufficiently complete to warrant conclusions. Finally, however, two strains have been carried through a long series of passages and carefully studied. (Maxcy, 1929.)

Briefly, it has been established that the virus of this endemic disease of the southern United States gives manifestations in experimental animals exactly like those of Mexican typhus or tabardillo. The reaction is similar to that of strains of typhus from Old World sources, but shows constant, though slight, differences in guinea pigs. With the endemic and Mexican strains, after intraperitoneal injection, guinea pigs show marked involvement of the scrotum, and it is very difficult to demonstrate the characteristic typhus nodes in sections from the brain, whereas in Old World typhus the involvement of the scrotum is much less marked and nodes can be constantly and easily demonstrated in sections of the brain after the

fourth or fifth day of the fever. Notwithstanding these differences, all three strains immunize against each other. The study has enabled us to conclude, however, that our endemic typhus has common origin with Mexican typhus and is not dependent upon importation from Old World sources.

Incidental to these observations in the guinea pig, there have been found in preparations made from the surface of the tunica vaginalis at the onset of fever some very minute, pleomorphic, Gram negative, intracellular microorganisms which seem to correspond to the *Rickettsia prowazeki* of da Rocha Lima, 1916. They were originally observed in the cells lining the gut wall of lice infected with typhus and much evidence has been accumulated to indicate that they bear an etiological relationship to the disease. The demonstration of these microorganisms constantly in the tissues of guinea pigs infected with typhus has added considerable weight to this evidence.

EPIDEMIOLOGICAL OBSERVATIONS

Having established, then, in experimental animals that the disease belonged to the typhus group, a good deal of concern was felt as to the possibilities of epidemic spread. It became necessary to examine the conditions under which this disease was able to maintain and propagate itself in this country. Earlier observations on its epidemiology (Maxcy, 1925) have been confirmed by more extended experiences during the past six years.

1. *Geographic distribution.*—The data which are available from morbidity reports, from the literature, and from field investigations give only a bare outline of the occurrence of typhuslike cases in the United States. (Maxcy, 1928.) So far as information is available, the disease is rather sharply limited to the Atlantic seaboard and the near-by piedmont sections as far north as Boston. It is present in nearly all of the seaports from New York southward and has attained widest distribution in Alabama, Georgia, and Florida. On the Gulf coast, while it is endemic in Tampa, Pensacola, Mobile, New Orleans, Galveston, and Houston, there is at present no information regarding its occurrence in Mississippi. The lower Rio Grande Valley from Laredo to Mercedes constitutes an important focus. On the Pacific coast only Los Angeles has reported a considerable number of cases. While an occasional case has been reported from the interior of the country, that section has been for the most part strikingly free.

Incidence.—A study of the occurrence of cases emphasizes the fact that they are sporadic—scattered as to place and time. There is an entire absence of focal outbreaks.

In many places the occurrence of a case seems to be a chance happening which may not be repeated again for many years, if ever. For example, in 1928 there was a single case in the suburbs of Wash-

ington, D. C.; one in Laurel, Md.; two, a mother and son, taken sick at the same time, at Alexandria, Va.; one at Concord, N. C., in 1927; two at Rock Hill, S. C., etc. No other cases have been known to have occurred in these places previously or subsequently.

In certain towns in the Southeastern States the disease occurs almost every year, but usually only one or two cases per year. In certain of the larger towns and cities many cases, scattered as to place and time, occur each year.

Seasonal distribution.—Undoubtedly typhus outbreaks can occur at all seasons of the year—modified by latitude, habits of living, and other factors—but it is generally accepted to be chiefly a disease of the cold months. The summer and fall maximum of the endemic typhus of the United States is in direct contrast with the high winter and spring incidence of typhus in the Old World.

Contact.—Several interesting facts developed in the course of the study of the circumstances under which cases were occurring in Montgomery, Ala., Savannah, Ga., and Tampa, Fla.

In the first place, all attempts to trace the origin of one case to contact with a preceding case have been unfruitful. In the same way the disease when once introduced into a family, a boarding house, or a hospital has shown no tendency to spread. Occasionally multiple cases have occurred in the same household, but usually the persons attacked came down about the same time or within a few days of each other, suggesting a common source of infection rather than secondary attack. There have been no localized outbreaks in jails, asylums, or boarding houses. Many cases have been cared for in general hospitals each year without special precaution, and no instance of infection of physicians, nurses, attendants, or fellow patients has come to attention. *The disease does not seem to be communicated directly from man to man.*

Occupation.—An occupational analysis indicated that persons engaged in "trade" (clerks, proprietors, managers, salesmen, dealers, etc.) had a significantly higher attack rate than those employed in manufacturing and mechanical industries. Furthermore, it appeared that one-third of the cases in Montgomery and in Savannah were engaged in handling foods, groceries, meats, produce, feed, and flour. If to this were added those patients who lived in rooms which were adjacent to premises on which food stuffs were stored the correlation is still more striking. This association has been evident in all the cities and towns in which the disease has been studied.

Social status.—It follows that the cases occurred among persons earning a reasonably good livelihood. It occurred among the average rank and file of the community. It did not select the poor and uncleanly; frequently leading citizens were attacked. The relative freedom of the negro from the disease was a remarkable and unexplained fact.

Louse infestation.—In view of the evidence that the disease is typhus, and that typhus, as known in the Old World and in Mexico, is transmitted from man to man by the louse, as careful inquiry as possible was made in each case to detect lice or any evidence suggesting prior infestation with them. This inquiry consisted in asking the physician in attendance and the patient in all cases investigated whether louse infestation had been noticed, or, indeed, whether the patient had noticed insect bites of any kind. In all cases personally investigated by the author search was made for nits or live insects on the hair of the head and body and on the bedclothes and for scratch marks on the skin which might suggest infestation; at the same time other members of the family were inspected and the environment was surveyed with the same purpose in view. With two or three exceptions, the results have been entirely negative; the proportion is no larger than might be encountered in any disease.

While this evidence does not in any single case exclude the possibility that the patient may have been bitten by one or more lice prior to the onset of the disease, or may have had a light infestation which was not discovered, it does suffice to definitely establish that *the disease was not associated with lousiness*. This much is, indeed, sufficiently well established by the geographic and social distribution of the disease, a considerable proportion of the cases having occurred in persons of such habits and living in such an environment that the harboring of lice is not to be suspected.

DISCUSSION

The evidence thus far adduced indicates that there is endemic in the United States a disease which is clinically indistinguishable from the mild typhus occurring during interepidemic periods in the Old World and in Mexico. The relationship of this disease to typhus is further borne out by serological similarities. The Weil-Felix reaction is positive. The value of this observation in establishing the relationship of the disease in this country with that of the Old World has been modified by the recent discovery (Kerlee and Spencer), 1929 that the Weil-Felix reaction is positive in Rocky Mountain spotted fever, a disease which, though it belongs to the typhus group, is immunologically distinct.

Observations in experimental animals are interpreted as meaning that the endemic typhus of the United States has common origin with the "tabardillo" of Mexico. The typhus which has been occurring in our eastern seaports does not depend upon direct importation from across the sea. It belongs to the North American Continent.

In addition to the peculiarities of the virus, the disease in this country manifests certain epidemiological characteristics which are in contrast with those generally attributed to the typhus of the Old

World. They relate principally to the mode of transmission. These considerations have led to a tentative rejection of the human louse as the principal vector and of man as the principal reservoir of the disease in this part of the United States and the search for some other mode of transmission.

In typhus fever it has been shown by Nicolle and others that beside the chimpanzee and the monkey certain small rodents are susceptible to the virus; i. e., guinea pigs, rabbits, rats (white and gray), mice (white), and the gerbille. In a recent publication Nicolle (1926) reports a second series of passages of typhus virus through 12 generations of white rats.

The question arises whether in the endemic typhus of the southeastern United States a reservoir of the disease may not exist other than in man, a rodent reservoir with accidental transmission to man through the bite of some parasitic bloodsucking insect or arachnid. Such a hypothesis is compatible with the epidemiological characteristics which have been presented, namely, (1) the uneven focal distribution of the disease; (2) its sporadic occurrence; (3) its apparent lack of direct communicability from an infected person; (4) its association with the place of business rather than with the home, particularly with those premises upon which foodstuffs are handled or stored; (5) the recurrence of cases on the same premises after considerable intervals of time; and (6) its seasonal incidence.

Obviously, the rodents upon which suspicion immediately falls are rats and mice, and the parasitic intermediaries which are first suspected are fleas, mites, or possibly ticks.

SUMMARY

In summary, there is endemic in the United States a disease which resembles typhus and gives a positive Weil-Felix reaction. The virus of this disease has been identified with that of "tabardillo" in Mexico, and both have been shown to be closely related to the virus of Old World typhus by immunological tests. The North American strain appears to be originally derived from Old World sources.

The epidemiology of the typhus of the United States is not compatible with man-to-man transmission by the louse. It suggests the existence of some other mechanism for the propagation of the virus. From a consideration of what is known of this group of diseases, the "rickettsias," and specifically with regard to the susceptibility of rodents to typhus virus, it seems probable that a reservoir may exist apart from man. A reservoir in rats or mice, with accidental transmission to man through the bite of some bloodsucking parasite, would be consistent with the known facts.

A STUDY OF THE RELATION BETWEEN MENTAL AND PHYSICAL STATUS OF CHILDREN IN TWO COUNTIES OF ILLINOIS¹

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INTRODUCTION

This study is based on results of a joint investigation made by the United States Public Health Service and the Illinois State Department of Public Welfare. By legislative enactment the Illinois State Department of Public Welfare was directed to carry out a survey of the mentally and physically handicapped children of school age in the State. The social investigations, mental tests, and psychiatric examinations were made by the State Institute for Juvenile Research, and the physical examinations by the United States Public Health Service, on invitation of the director of the institute, Dr. Herman M. Adler, as a part of the Service's nation-wide study of the physical and mental status of school children. Approximately 5,000 children were examined both physically and mentally. These examinations were made in X County, Illinois, situated in the extreme southern part of the State bordering on the Mississippi River, and in A County, Illinois, situated in the northern part of the State, west of Chicago. All of the physical examinations were made by medical officers of the United States Public Health Service. The mental examinations were made by psychologists and other trained personnel of the Illinois State Institute for Juvenile Research. The mental tests used were the Otis² primary group test for the first three grades and the Haggerty³ test for grades 4 to 8. For all children who were three or

¹ From Field Investigations in Child Hygiene and the Office of Statistical Investigations, United States Public Health Service, in cooperation with the Illinois State Institute for Juvenile Research.

² Otis, Arthur A.: Otis Group Intelligence Scale—Manual of Directions for Advanced and Primary Examinations, 1921 revision.

³ Haggerty, M. E.: Standard Educational Tests—Manual of Directions.

more years retarded or whose group test indicated an intelligence quotient below 70, an individual Binet-Simon ⁴ test (Stanford Revision) was given and the I. Q. as indicated by this test was substituted for the group test result.

The intelligence quotient, commonly referred to as the I. Q., is the ratio of the mental age (as indicated by the test) to the chronological age of the child. The ratio is usually expressed as a percentage, so the I. Q. may be thought of as the per cent that the mental age is of the chronological age.

The mental tests and the physical examinations in Illinois were not made at the same time, neither examiner knowing the result of the other examination at the time his examination was made. In some cases the dates of the examinations differed as much as a year. In tabulating the data the children were classified according to the age at the time of the mental examination in all tables dealing with mental status alone, and according to the age at the time of the physical examination when physical and mental status were compared, because the intelligence quotient is more or less independent of age. The present report ⁵ deals only with children who had both the mental and the physical examination, disregarding the considerable number who had a physical but not a mental examination, and the very large number who had a mental test but no physical examination. All the data relate to children in the first eight grades of school, no high-school children being included.

I. RELATION OF I. Q. TO SCHOOL PROGRESS AND OTHER SIMILAR FACTORS

If the I. Q. measures the "native" intelligence or that which has been acquired by experience or both, we would in any case expect a definite correlation with school progress, inasmuch as the latter presumably would depend upon intelligence or adaptability gained from any source.

REPEATS AND SKIPS

In the Illinois survey the number of times a child had repeated a grade (in the same grade two or more years) and the number of times he had skipped a grade (made two grades in one year) were both recorded. Table 1 and Figure 1 show the median ⁶ I. Q. and the per-

⁴ Terman, Lewis: *The Measurement of Intelligence: An explanation and complete guide for the use of the Stanford Revision and extension of the Binet-Simon Intelligence Scale.* Houghton Mifflin Co., 1916.

Terman, Lewis: *Condensed Guide for the Stanford Revision of the Binet-Simon Intelligence Tests.* Houghton Mifflin Co., 1920.

⁵ A report on the mental and related tests has already been made by the Illinois Institute for Juvenile Research—*Report of the Survey of the Specially Handicapped Children in the State of Illinois*, published by the Illinois Department of Public Welfare in 1925.

⁶ The median is defined as the value (intelligence quotient) above and below which exactly 50 per cent of the observations fall. In other words, the median item in a series arranged consecutively is the item which divides the distribution into equal parts, half of the items being larger and half smaller than the median item. The median is the value (intelligence quotient) of this median item. The median approximates the mean (arithmetic average), but is less influenced by extreme items.

centage of children whose I. Q. was less than 80, the persons in both instances being classified according to the number of repeats or skips. Intelligence tests had not been given to these children in previous years, and skips, therefore, were not made on the results of such tests.

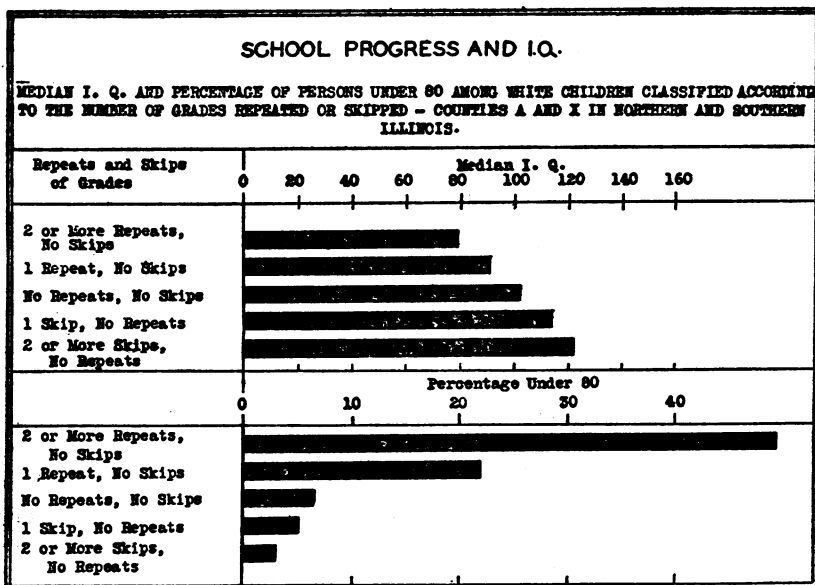


FIGURE 1

TABLE 1.—*Intelligence quotient of white children classified according to the number of grades repeated or skipped—Two Illinois counties*

Number of grades repeated or skipped	Median I. Q.				Percentage under 80				Number of children tested			
	All ages	6-9	10-12	13 and over	All ages	6-9	10-12	13 and over	All ages	6-9	10-12	13 and over
Repeated 2 or more, none skipped.....	80.3	87.8	80.2	78.4	49.1	18.2	49.5	55.6	218	22	97	99
Repeated once, none skipped.....	92.1	94.7	90.2	91.4	21.6	11.6	24.3	29.4	899	292	365	242
None repeated, none skipped.....	103.1	103.4	102.6	102.0	6.4	2.7	7.7	19.2	1,802	929	664	209
Skipped once, none repeated.....	115.4	118.6	117.4	104.4	5.0	-----	3.9	15.3	238	65	127	46
Skipped 2 or more, none repeated.....	123.0	115.0	126.7	94.5	2.9	-----	-----	16.7	34	2	26	6

Considering all ages together, children who had repeated two or more grades but had skipped none had a median I. Q. of 80, as against 123 for those who had skipped two or more grades but had repeated none. The intermediate groups fall quite consistently between these two extreme classes. In the different age groups the correlation is also quite consistent.

TEACHER'S ESTIMATE

The information regarding repeating and skipping of grades was entered on a schedule by the teacher prior to the mental and the physical examination. At the same time, the teacher recorded on this sheet her estimate of the *intelligence* of the child, as "very superior," "superior," "average," "inferior," or "very inferior." We would, of course, expect such estimates to be definitely correlated with I. Q. as indeed they are. Considering all ages together, the very inferior have a median I. Q. of 86 as against 113 for the very superior, the other groups falling between these two extremes in a consistent manner.

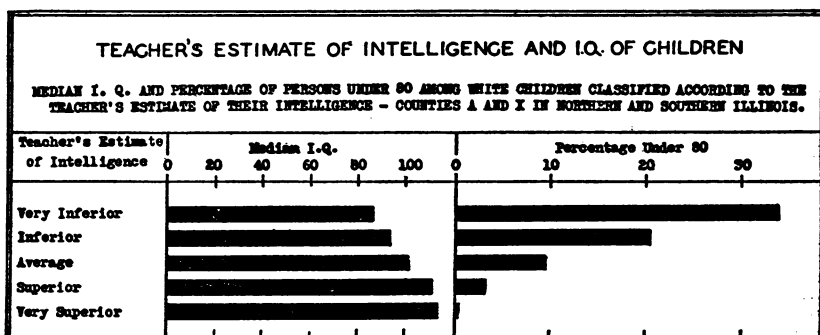


FIGURE 2

TABLE 2.—*Intelligence quotient of white children classified according to the teacher's estimate of their intelligence—Two Illinois counties*

Teacher's estimate of the child's intelligence	Median I. Q.				Percentage under 80				Number of children tested			
	All ages	6-9	10-12	13 and over	All ages	6-9	10-12	13 and over	All ages	6-9	10-12	13 and over
Very superior.....	112.6	110.7	116.8	120.0	0.5	-----	-----	7.1	184	101	69	14
Superior.....	110.7	108.2	115.2	110.5	3.1	1.4	3.8	9.4	1,025	514	415	96
Average.....	101.3	102.4	101.1	96.0	9.4	3.6	10.5	22.9	2,419	1,050	1,003	366
Inferior.....	92.2	96.9	89.0	85.4	20.5	7.6	25.4	38.4	1,112	473	413	226
Very inferior.....	86.2	93.0	81.8	75.0	33.8	12.2	44.0	63.6	296	133	100	63

SCHOOL RATING ON REPORT CARD

In the northern county the teacher also reported the average mark which the child received on the last report card. Table 3 shows the median I. Q. for children classified according to the average school rating.

¹ The schedule defined the groups as follows: Considering only the intelligence of the child, in which of the following groups would you place him?

- A. Very superior, i. e., capable of doing work of higher grades than his own.
- B. Superior, i. e., capable of doing work of his grade with minimum effort.
- C. Average, i. e., capable of doing work of his grade with little or no assistance.
- D. Inferior, i. e., capable of doing work of his grade but not without assistance.
- E. Very inferior, i. e., incapable of doing work of grade even with assistance.

TABLE 3.—*Intelligence quotient of white children classified according to the average mark on the school report card—County A, Illinois*

Average mark on report card	All ages			6-9			10-12			13 and over		
	Both sexes	Boys	Girls	Both sexes	Boys	Girls	Both sexes	Boys	Girls	Both sexes	Boys	Girls
MEDIAN I. Q.												
60 or less.....	87.1	87.6	86.4	91.0	91.6	90.0	84.2	83.1	85.3	80.7	85.0	77.1
70.....	94.0	94.1	93.8	97.5	96.8	98.5	91.8	92.5	91.0	91.0	91.4	90.4
80.....	102.1	102.1	102.0	102.4	102.2	102.7	103.2	104.2	102.3	97.9	96.5	99.3
90.....	108.1	109.5	107.0	106.9	107.6	106.2	111.6	115.0	109.3	107.3	110.0	105.8
100.....	113.2	113.6	112.8	110.3	108.8	112.1	118.1	125.0	113.8	111.3	110.0	112.5
PERCENTAGE UNDER 80												
60 or less.....	25.1	23.6	27.2	8.3	6.7	11.1	32.1	38.6	23.5	48.9	39.1	59.1
70.....	16.2	16.5	15.8	5.3	6.9	3.1	21.9	22.1	21.0	25.0	22.7	28.9
80.....	6.6	6.7	6.5	4.7	5.0	4.2	6.4	5.4	7.6	12.5	15.2	9.5
90.....	3.5	3.6	3.4	1.3	.4	2.1	5.1	5.5	4.7	9.2	15.0	5.8
100.....	3.3	4.8	1.9	2.5	3.2	1.7	2.7	2.9	2.5	15.4	25.0	-----
NUMBER OF CHILDREN TESTED												
60 or less.....	219	127	92	96	60	36	78	44	34	45	23	22
70.....	604	351	253	228	131	97	256	145	111	120	75	45
80.....	1,568	863	706	645	357	288	675	373	302	248	132	116
90.....	1,146	506	640	605	267	338	432	199	233	109	40	69
100.....	210	105	105	122	62	60	75	35	40	13	8	5

The groups that average low in school marks also have a low median I. Q., as would be expected if the I. Q., as determined from these group tests, is of any value in indicating the child's intelligence.

Although the low school average groups have a low median I. Q., this, of course, does not mean that individual children graded low in school will always test low in the intelligence test. Table 4 indicates the extent to which the two measures of the child's mental equipment are correlated.

TABLE 4.—*Correlation between I. Q. and average mark on the school report card—White children in County A, Illinois*

Average mark on report card	Total	Number of children in each I. Q. group											
		40-49	50-59	60-69	70-79	80-89	90-99	100-109	110-119	120-129	130-139	140-149	150-159
Total.....	3,747	3	10	52	238	528	798	952	690	278	140	52	6
50.....	47	1	5	3	6	11	16	4	-----	1	-----	-----	-----
60.....	172	1	2	6	30	63	35	23	12	-----	-----	-----	-----
70.....	604	-----	2	24	72	133	179	120	50	13	9	2	-----
80.....	1,568	1	1	16	86	233	358	434	277	106	38	18	-----
90.....	1,146	-----	-----	3	37	82	198	312	285	125	74	26	4
100.....	210	-----	-----	-----	7	6	12	59	66	33	19	6	2

The coefficient of correlation between school average and I. Q. is $+0.393 \pm 0.0093$. Such a coefficient indicates definite correlation,

but not of the magnitude to enable us to predict with any degree of accuracy a child's school average from his I. Q., or vice versa. There appear to be important factors influencing the school average other than the child's I. Q. Nevertheless, the correlation between I. Q. and school average is sufficient to indicate that a relatively high I. Q., as determined by a group intelligence test, tends to be associated with a relatively high school average, which average must be some measure of the child's mental equipment or development and adaptability. Whether the I. Q. is an index of "native" mental ability or of the total mental equipment from all sources, including experience and education, is a question which will be considered later.

DISCIPLINARY PROBLEM

The teacher also indicated whether the child was a disciplinary problem. Of the children examined, 8.5 per cent were so indicated, the percentage being slightly larger among the older than among the younger children. Considering all ages together, the median I. Q. of the children who were disciplinary problems was 95, as against 101 for those who were not disciplinary problems. Similar differences existed for children of each of the three age groups.

TABLE 5.—*Intelligence quotient of white children classed by the teacher as disciplinary problems—Two Illinois counties*

Teacher classed child as—	Median I. Q.				Percentage under 80				Number of children tested			
	All ages	6-9	10-12	13 and over	All ages	6-9	10-12	13 and over	All ages	6-9	10-12	13 and over
Disciplinary problem.	94.9	97.3	95.5	86.9	19.3	9.0	19.8	39.1	400	166	152	82
Not a disciplinary problem.....	101.1	102.8	100.2	93.8	11.2	3.9	13.5	27.6	4,288	1,936	1,708	644

II. VARIATIONS IN I. Q. IN DIFFERENT GROUPS

Before comparing the mental and physical status, it seems worth while to examine the variations in intelligence quotient which occur in various groups differing in race, sex, color, occupation of father, place of residence, and other respects.

In the southern county the only town with more than 1,000 population was a small city of about 15,000 inhabitants which comprised 63 per cent of the total population of the county. Seventy-one per cent of the population of this county were native white, 2 per cent were foreign-born white, and 27 per cent were negroes. Of the population of the county, 65 per cent were native white of native parents. The native white stock and the negroes are clearly the predominant elements.

Of the population of this county 10 years old or over in 1920, 6.4 per cent were illiterate. Of the native-white population of these ages, 3.6 per cent were illiterate; of the foreign-born white, 3.1 per cent; and of the negroes, 13.8 per cent.

In the northern county there are no large towns, but the county is, on the whole, more urban than the southern county. According to the 1920 census there were 7 towns of more than 2,500 population, the largest having about 4,500 inhabitants. The total population of the county was about 42,000, and 60 per cent of this number were living in towns of 2,500 or more inhabitants. Of the population of this county, nearly 85 per cent were native white, 15 per cent were foreign-born white, and only 0.4 per cent were negroes. Of the total population, 48 per cent were native white of native parentage. The negro element is negligible, but the foreign element is considerable, less than half of the population being of native parentage.

Of the population of the northern county 10 years of age and over, 0.9 per cent were illiterate. Of the native white population of these ages, 0.2 per cent were illiterate; of the foreign-born white, 3.6 per cent; and of the negroes, 7.6 per cent.⁸

AVERAGE INTELLIGENCE QUOTIENT IN THE TWO COUNTIES

We have seen that the two counties differ considerably as to race stock, literacy, proportion of the population living in urban areas, etc., as indicated by the census returns of 1920. It is of interest to see how the children in the two counties rank in the intelligence test. Table 6 shows the median I. Q. in the two counties.

TABLE 6.—*Intelligence quotient in different sex and age groups of white children in two Illinois counties*

	All ages			6-9 years			10-12 years			13 years and over		
	Both sexes	Boys	Girls	Both sexes	Boys	Girls	Both sexes	Boys	Girls	Both sexes	Boys	Girls
Median I. Q.:												
Both counties.....	100.6	100.2	101.0	102.4	102.0	102.9	99.8	99.9	99.6	93.0	90.8	95.0
County A (northern)....	102.3	102.2	102.4	103.3	103.0	103.6	102.2	102.8	101.6	97.1	95.9	98.2
County X (southern)....	88.0	85.4	90.8	95.7	93.9	97.6	84.9	82.8	87.0	75.1	75.2	74.8
Percentage under 80:												
Both counties.....	11.7	13.0	10.0	4.1	5.0	3.4	13.6	15.1	12.0	28.9	31.2	26.0
County A (northern)....	8.6	9.2	7.9	3.3	3.7	3.0	11.1	11.7	10.4	18.7	20.1	17.1
County X (southern)....	31.4	37.9	24.2	9.9	14.3	5.8	33.6	41.3	24.8	71.3	71.5	71.2
Number of children tested:												
Both counties.....	5,160	2,705	2,455	2,343	1,208	1,135	2,036	1,074	962	781	423	358
County A (northern)....	4,483	2,346	2,137	2,042	1,061	981	1,810	953	857	631	322	299
County X (southern)....	677	359	318	301	147	154	226	121	105	150	91	59

The median I. Q. of all the children from both counties is 101, or just above the average or norm, 100, which the grading presupposes. For the northern county the median is 102, while for the southern

⁸ The data quoted above as to population, race, literacy, etc., are from the United States census of 1920.

county it is only 88. The data are shown by sex and in three age groups, and it may be seen that the median I. Q. in these various groups is consistently higher in the northern than in the southern county.

Before drawing any conclusions as to the superiority or inferiority of the children of one county over those of the other in respect to "native" intelligence, it would be well to examine the variations in I. Q. for groups of children differing as to race, language, character of place of residence, and occupation of the father, to see whether the variations in the I. Q. are such as to suggest differences in opportunity for acquiring the sort of information or practice which helps the child to make a good score on the intelligence test.

SEX AND AGE AND I. Q.

First we might inquire whether there are any differences in the I. Q. of girls and boys to determine whether the sexes need be considered separately in considering the variations in the I. Q. Table 6, already presented, affords a comparison of boys and girls. It may be seen from the median I. Q. in the various groups in both counties that there is no material difference between the sexes in respect to I. Q.

The I. Q. is reputed to be independent of age differences, being the ratio of the child's mental age to his chronological age, the mental age being judged by the score made on the test. In other words, a child makes a certain score which, according to the "norm," represents a certain mental age. If the norms are relatively high for the younger ages, then the mental ages (and the I. Q. based on them) would be relatively low for young children and we would get a rising median I. Q. as age increases. If, on the other hand, the norms for older children are relatively high, the median I. Q. would decrease with age.

In the present study the median I. Q. shows a distinct decrease with age. It appears that this decrease could be accounted for in two ways: (a) The norms may be relatively high for the older ages so that it is increasingly difficult as age increases for a child of a given mental status to measure up to the norm, or (b) the decrease in the median I. Q. as age increases may be due to a selection of individuals. In other words, when children in the grade schools only are examined, the upper grades may contain a disproportionately large number of dull children who should, according to their age and the number of years in school, be in the high school.

The data in Table 6 may be examined in the light of these hypotheses to see which seems to be the more reasonable explanation of the distinct decline in the median I. Q. as age increases. The children included in the study are from grades 1 to 8, but relatively few

are from grade 8, the great majority being from grades 1 to 7, inclusive. A child who started in school at 6 years of age and made a grade a year would be in the seventh grade when 12 years of age; the brighter children may be in the eighth, or even a few in the first year of high school. The fact that relatively few eighth-grade children were included in the present study would operate toward eliminating the brighter children over 12 years of age and might have some effect on the 12-year children also. To avoid errors due to any such age factors, the data are generally considered in three age groups.

URBAN AND RURAL

We may next consider the I. Q. of urban as compared with rural children. Table 7 and Figure 3 show the median I. Q. for urban and rural parts of each county. Urban in this case means towns of 2,500 or more population in 1920, except that five towns in the northern county with a population under 2,500 in 1920 were considered urban because at the time of the survey (1924-25) more or less urban conditions prevailed there. In the southern county there was only one city.

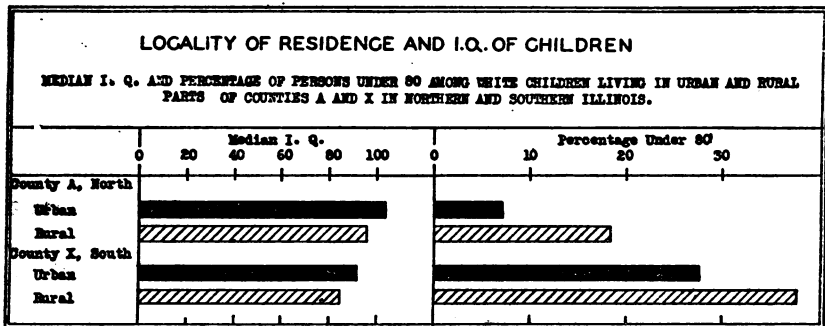


FIGURE 3

TABLE 7.—*Intelligence quotient of white urban and rural children in two Illinois counties*

	County A				County X				Both counties			
	All ages	6-9	10-12	13 and over	All ages	6-9	10-12	13 and over	All ages	6-9	10-12	13 and over
Median I. Q.:												
Urban	103.5	104.3	103.6	98.4	91.2	101.9	87.4	74.1	102.8	104.1	102.4	95.9
Rural	94.7	96.0	93.9	91.4	84.3	88.7	82.8	76.1	90.7	93.4	89.1	84.1
Percentage under 80:												
Urban	6.9	2.1	9.3	16.5	27.4	3.1	25.4	83.4	8.3	2.2	10.3	23.6
Rural	18.2	11.1	21.9	27.6	37.7	22.1	40.8	63.3	25.2	15.1	28.0	42.7
Number of children tested:												
Urban	3,803	1,744	1,551	508	295	129	106	60	4,098	1,873	1,657	568
Rural	680	298	259	123	382	172	120	90	1,062	470	379	213

It may be seen that the median I. Q. for rural children is rather consistently below that of urban children. In fact, this is true of all

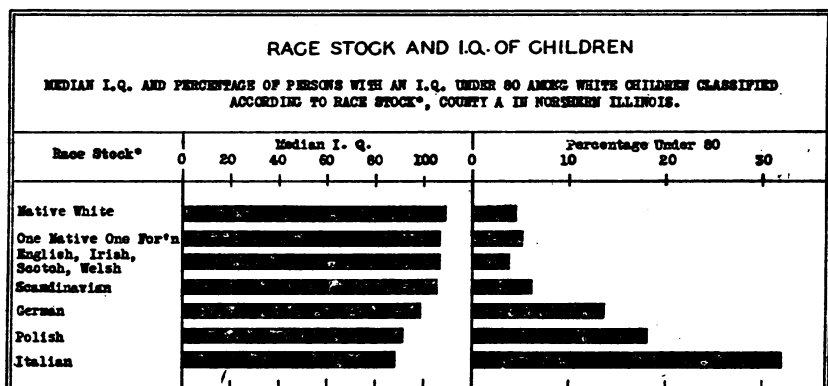
three age groups in the northern county and of two of the three age groups in the southern county.

The data in Table 7 include all white children regardless of race stock. Table 8 affords a comparison of white urban and rural children both of whose parents and all four of whose grandparents were born in the United States.

TABLE 8.—*Intelligence quotient of white urban and rural children of native parents and grandparents—County A, Illinois*

Place of residence	Median I. Q.				Percentage under 80				Number of children tested			
	All ages	6-9	10-12	13 and over	All ages	6-9	10-12	13 and over	All ages	6-9	10-12	13 and over
Urban.....	107.7	107.9	109.1	103.4	3.0	-----	4.4	8.0	954	394	435	125
Rural.....	98.6	99.2	100.0	93.3	16.7	8.3	24.0	12.5	102	36	50	16

It may be seen that the median I. Q. for rural children is consistently below that for urban children, both groups being limited to children of native white parents and grandparents. The differ-



* Including only children all four of whose grandparents were of the same race stock, except the mixed group designated as "One native, one foreign"

FIGURE 4

ence between urban and rural children therefore does not appear to be due to differences in racial composition in the two areas.

RACE STOCK AND LANGUAGE USED IN THE HOME

It would seem to be very important to consider racial differences in I. Q. In the different stocks we have different hereditary characteristics, and if the I. Q. is a test of "native" ability, as has been claimed for it, we would expect racial differences independent of environmental conditions under which they live.

As a first approximation to the problem, we may consider different racial stocks as a whole and then proceed to consider other factors related to race. By racial stock or ancestry in Table 9 and Figure 4

is meant the race as judged by the nativity of the grandparents; both parents of German ancestry, for example, meaning that all four of the grandparents of the child were born in Germany—the parents and the child may have been born in Germany or they may all three have been born in the United States or elsewhere. Data of this kind are limited to the northern county, because the country of birth of the grandparents was not obtained for the southern county children, where nearly all of the inhabitants are of native white stock.

TABLE 9.—*Intelligence quotient of white children of different race stocks in County A, Illinois*

Race stock of parents	Median I. Q.				Percentage under 80				Number of children tested			
	All ages	6-9	10-12	13 and over	All ages	6-9	10-12	13 and over	All ages	6-9	10-12	13 and over
Native white ¹	106.8	107.2	107.6	103.0	4.5	0.7	6.5	8.9	1,079	442	491	146
1 native stock, 1 foreign stock.....	105.1	104.9	107.2	100.9	5.2	1.1	6.9	10.0	767	284	362	121
English, Scotch, Irish, and Welsh ²	105.1	104.5	108.3	98.8	3.7	2.7	4.4	9.5	106	39	46	21
Scandinavian ²	104.2	102.3	109.6	97.9	6.2	6.1	6.1	11.1	113	37	49	27
German ²	97.9	101.0	96.6	91.7	13.6	5.8	14.7	28.6	713	274	320	119
Polish ²	89.5	92.0	85.0	97.5	18.1	8.3	31.3	33	12	16	5	5
Italian ²	86.9	90.0	87.5	78.0	32.2	8.3	36.4	62.5	31	12	11	8

¹ All 4 grandparents born in the United States.

² All 4 grandparents born in the specified countries.

It may be observed that children of native white stock (all four grandparents born in the United States) have the highest median I. Q., 107. Children with one parent of native white stock (two grandparents born in the United States) and one of some foreign stock (two grandparents born in some foreign country) and the group composed of English, Scotch, Irish, and Welsh, both 105, come next and are closely followed by the Scandinavians, with 104. The differences between these various groups are very slight. The median I. Q. for children of German stock, 98, is somewhat lower, and the medians for Polish, 90, and Italians, 87, are considerably less.

Before arriving at any conclusions as to the meaning of these differences, it would be well to analyze the data somewhat further to determine whether any factors associated with race, but not an essential characteristic of race, are causing these differences rather than the constitutional or hereditary factors characteristic of these races. The most important factor which suggests itself is the familiarity or unfamiliarity with the English language, that being the language in which the questions of the test were written or printed and the language in which any additional instructions were given. It may be worth while first to consider the gross effect of language used in the home without regard to race, after which the two factors may be considered simultaneously. Table 10 and Figure 5 show the I. Q.

of white children of native parents and of foreign parents, the latter class being divided into two groups according to whether the language spoken at home was English or some foreign language. In instances where both English and some foreign language were used, the case is classified as using English. Native parents, of course, all spoke English.

TABLE 10.—*Intelligence quotient of white children of native and of foreign parents, the latter being classified according to whether English or a foreign language is used in the home—Two Illinois counties*

Nativity of parents and language used in home	Median I. Q.				Percentage under 80				Number of children tested			
	All ages	6-9	10-12	13 and over	All ages	6-9	10-12	13 and over	All ages	6-9	10-12	13 and over
County A:												
Both native, use English.....	104.2	104.5	105.0	100.2	5.8	2.1	7.2	15.1	3,047	1,443	1,227	377
1 native, 1 foreign, use English.....	101.4	102.1	102.0	97.9	9.3	4.3	13.6	10.6	627	257	257	113
Both foreign, use English.....	98.9	101.3	97.2	96.9	12.2	4.0	16.2	18.0	490	173	217	100
Both foreign, use a foreign language.....	89.5	93.6	85.3	78.8	26.3	11.4	36.0	55.0	160	79	61	20
County X:												
Both native, use English.....	87.8	95.4	85.2	75.5	31.2	9.9	33.1	69.9	552	242	187	123
1 native, 1 foreign, use English.....	82.5	(¹)	(¹)	(¹)	37.5	(¹)	(¹)	(¹)	8	3	3	2
Both foreign, use English.....	91.7	(¹)	(¹)	(¹)	45.5	(¹)	(¹)	(¹)	11	6	-----	5
Both foreign, use a foreign language.....	75.0	(¹)	(¹)	(¹)	66.6	(¹)	(¹)	(¹)	3	1	1	1
Both counties:												
Both native, use English.....	102.2	103.5	101.9	94.3	9.7	3.2	10.6	28.6	3,599	1,685	1,414	500
1 native, 1 foreign, use English.....	101.2	102.0	101.7	97.4	9.7	4.6	13.9	11.3	635	260	260	115
Both foreign, use English.....	98.7	101.2	97.2	96.0	13.0	3.9	16.2	21.9	501	179	217	105
Both foreign, use a foreign language.....	89.4	93.8	85.0	78.1	27.0	11.3	37.0	57.2	163	80	62	21

¹ Not used because of small numbers of children observed.

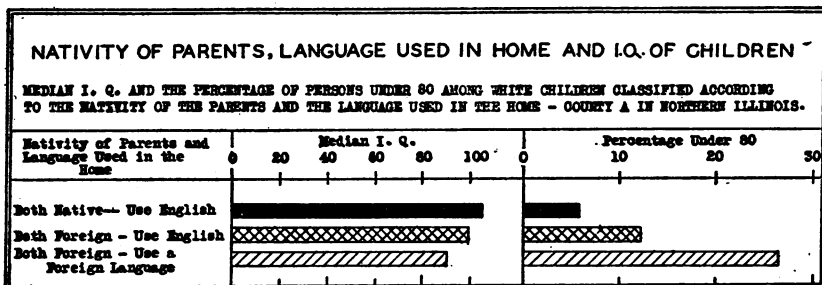


FIGURE 5

An examination of Table 10 reveals the fact that the median I. Q. of children of foreign-born parents who use the English language at home, 99, is not greatly below the median I. Q. of children of native-born parents, 104. The great difference appears between children of foreign-born parents who do not use the English language at home,

I. Q. 89, and those who use English, I. Q. 99. The children in all cases were presumably familiar with the English language, since they were attending the public schools in which English was the only language used. The fact that they heard no English at home apparently was a distinct handicap to them in answering the questions in the test—either they did not know the meaning of the words used or they had failed to acquire the type of information which was required to answer the questions.

But, as noted above, Table 10, on the language used, and Table 9, on racial stock, present only gross results; it may be that the races that do not take up the English language upon coming to America or the races that have only recently come to America, and therefore have not had time to learn the language are of a lower grade of intelligence. We must therefore consider race and language simultaneously in order to see the relative importance of each of the two factors.

The racial groups that were somewhat below the average in I. Q. as shown in Table 9 were the German, Italian, and Polish. As explained above, the racial classification was made on the basis of the place of birth of the grandparents, and, therefore, within any racial group there is a considerable proportion of children whose parents were both born in the United States. In Table 11 the median I. Q. is shown for the different racial groups subdivided according to the nativity of the parents and the language spoken in the home. Inasmuch as considerable difference between urban and rural children was found, these medians are shown for urban children as well as for all children in the racial group. The numbers of these races living in rural areas were so small that they are not shown separately. In fact, the total numbers of children of specific race stocks from homes where a foreign language was used are small, but the results are suggestive. No medians are given for groups containing less than 10 children.

It may be seen from this table that the children of native-born parents in the different race stocks generally rank considerably higher than those of foreign-born parents, and the children of foreign-born parents who do not use English in the home rank particularly low. The Germans (Table 9), considered as a whole, rank well above the Polish and Italians, but German children of foreign-born parents who do not use English in the home rank about the same as the Italians of the same description. It seems probable that racial stock may not be so important a factor as unfamiliarity with the English language by reason of the use of a foreign language in the home. This distinction appears to be very important, because a difference in race would point toward constitutional characteristics—to “native” ability—whereas a difference in the use of language

points rather toward the opportunity to acquire the particular type of knowledge necessary to answer the questions of the test. Of course, the more intelligent persons are the ones who will more readily acquire familiarity with the language, so the group of families who do not use English may be a selected group whose "native" intelligence was low.

TABLE 11.—*Intelligence quotient of white children classified according to race stock,¹ nativity of the parents, and language used in the home—County A, Illinois*

Race stock of parents	Urban and rural children				Urban children		
	All children ²	Parents native born and use English in home	Parents foreign born and use English in home	Parents foreign born and use a foreign language in home	Parents native born and use English in home	Parents foreign born and use English in home	Parents foreign born and use a foreign language in home
Median I. Q.:							
Native white ³	106.9	106.9			107.7		
English, Scotch, Irish, and Welsh	105.1	107.8	103.8		108.3	103.3	
Scandinavian	104.2	111.3	102.1	(⁴)	115.0	101.5	(⁴)
German	97.9	100.8	93.2	83.0	102.4	94.1	83.0
Polish	89.5	90.0	80.0	(⁴)	(⁴)	(⁴)	(⁴)
Italian	86.9		92.5	85.0		92.5	85.0
Percentage under 80:							
Native white ³	4.4	4.4			3.0		
English, Scotch, Irish, and Welsh	3.7	2.6	3.9		2.7	4.5	
Scandinavian	6.2		10.0	(⁴)		11.1	(⁴)
German	13.6	10.1	17.4	35.7	7.6	17.1	33.3
Polish	18.1		50.0	(⁴)	(⁴)	(⁴)	(⁴)
Italian	32.2		30.8	37.5		30.8	37.5
Number of children tested:							
Native white ³	1,056	1,056			954		
English, Scotch, Irish, and Welsh	106	38	51		37	44	
Scandinavian	113	21	70	4	18	63	4
German	713	407	132	28	316	117	24
Polish	33	12	10	5	5	7	5
Italian	31		13	16		13	16

¹ Including only children all 4 of whose grandparents were of the same race stock.

² Includes some of mixed or unknown nativity.

³ All 4 grandparents born in the United States.

⁴ Not used because of small numbers of children observed.

With a larger number of foreign-born parents, an analysis according to the time they had lived in the United States would probably be worth while. An examination of the schedules of these children of foreign-born parents who used a foreign language in the home indicates that they are not recent immigrants—in fact, hardly a family among them had lived in America less than 10 years. Such being the case, it can hardly be assumed that a foreign language was used in the home because the parents knew no English. In many cases the foreign tongue must have been a matter of preference rather than the only language spoken.

NEGRO AND WHITE

In a previous study ⁹ by the Public Health Service the intelligence quotients of negroes of Atlanta, Ga., were considered in relation to the Otis norms based on data from a large number of cities. It was pointed out in that study that it would be desirable to compare negroes and whites living in the same localities and, in so far as possible, under the same conditions. We have data for such a comparison in X County in southern Illinois, where 399 colored children were examined physically and mentally in addition to the 677 white persons already considered. Table 12 shows the median I. Q. for colored and white children of three age groups.

TABLE 12.—*Intelligence quotient of white and colored children in County X, Illinois*

Color and occupation of father	Total				Urban				Rural			
	All ages	6-9	10-12	13 and over	All ages	6-9	10-12	13 and over	All ages	6-9	10-12	13 and over
Median I. Q.:												
Total white.....	88.0	95.7	84.9	75.1	91.2	101.9	87.4	74.1	84.3	88.7	82.8	76.1
Total colored.....	71.5	85.2	73.7	65.1	70.6	84.5	73.2	64.9	73.8	86.3	74.7	65.6
White unskilled laborers ¹	86.3	92.1	81.7	76.3	86.1	94.3	83.1	75.0	86.7	91.1	79.2	80.0
White farmers ¹	82.3	90.0	80.6	73.3	(?)	(?)	(?)	(?)	81.8	89.7	80.4	73.0
Percentage under 80:												
Total white.....	31.4	9.9	33.6	71.3	27.4	3.1	25.4	83.4	37.7	22.1	40.8	63.3
Total colored.....	73.7	32.2	74.5	95.8	77.5	34.6	76.8	97.6	65.0	28.6	69.6	90.5
White unskilled laborers ¹	31.3	11.9	44.7	66.7	31.7	3.8	40.0	75.0	30.8	18.2	53.8	50.0
White farmers ¹	43.7	17.9	47.7	73.8	(?)	(?)	(?)	(?)	45.1	18.9	48.7	75.6
Number of children tested:												
Total white.....	677	301	226	150	295	129	106	60	382	172	120	90
Total colored.....	399	90	145	164	276	55	99	122	123	35	46	42
White unskilled laborers ¹	115	59	38	18	63	26	25	12	52	33	13	6
White farmers ¹	142	56	44	42	9	3	5	1	133	53	39	41

¹ Includes only children of native parents.

² Not used because of small number of children observed.

It may be seen that the negroes are consistently below the whites in median I. Q. Considering first the county as a whole, there does not appear to be any tendency for the differences between these white and colored children to increase as age increases. The difference between either of these groups and the norm (100) does increase as age increases; but when we compare the negroes not with the theoretical norm based on whites in many cities but with the median I. Q. of white persons living in the same county, the differences do not appear to increase with age. However, when the urban and rural sections are considered separately, the results are not consistent. The difference between the I. Q. of white and colored children increases with age in the rural group and decreases in the urban group.

⁹ Health Studies of Negro Children. I. Intelligence Studies of Negro Children in Atlanta, Ga. By Virginia Taylor Graham. Pub. Health Rep., vol. 41, No. 49, Dec. 3, 1926, pp. 2759-2783. Reprint No. 1127.

It would be well to compare the I. Q. of negro children with that of white children of unskilled laborers in order to compare the negroes with a group of white persons with living conditions perhaps approaching, to a certain degree, those of the colored people. Even in this group the white children may have many more economic and social advantages than colored children. Table 12 gives the data for this comparison. It may be seen that the median I. Q. for the colored children is considerably lower than that for children of white unskilled laborers in both the urban and rural parts of the county.

It may be seen from Table 12 that the median I. Q. for rural negroes is slightly above that for urban negroes, the medians being 74 for the rural and 71 for urban, or an average of 72 for 399 negroes

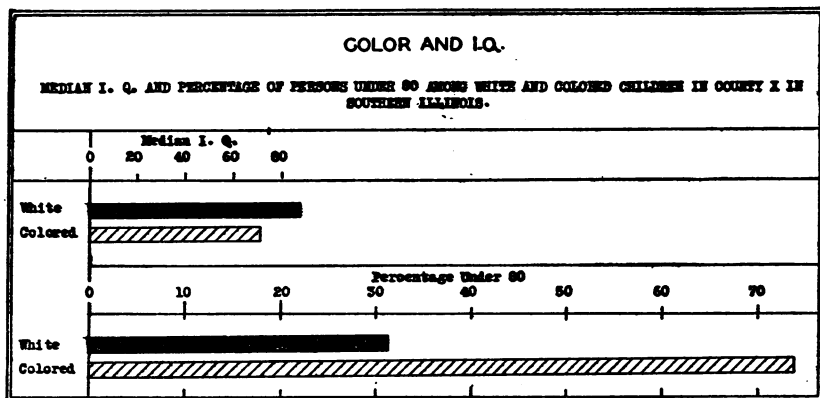


FIGURE 6

tested in the southern county. Only 16 negroes were tested in the northern county; the median I. Q. was 88, or considerably higher than in the southern county.

It has been suggested that the negroes who were coming into Illinois from the Southern States were a less intelligent type than the native and northern-born negroes. To test this hypothesis the negro children of County X in southern Illinois were classified according to whether their parents were northern born or southern born. Table 13 shows the median I. Q. for a group whose parents were both born in the North and another group whose parents were both born in the South.¹⁰

The southern-born do not appear to be inferior in I. Q. to the northern-born negroes, no consistent differences being evident.

The number of negroes in County A in northern Illinois was too few for a similar comparison.

¹⁰ States south of the northern boundary of Delaware and Maryland, the Ohio River, and the southern boundary of Missouri, Kansas, Colorado, and Utah were classified as southern; all others as northern.

TABLE 13.—*Intelligence quotient of children of northern and southern born negroes in County X, Illinois*

Nativity of parents	All ages			6-9 years			10-12 years			13 years and over		
	Total	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural
Median I. Q.:												
Both northern.....	74.5	74.7	74.0	82.0	78.8	92.5	76.0	77.5	73.8	68.1	69.2	65.0
Both southern.....	71.7	70.2	77.0	85.0	82.8	89.0	74.5	73.4	78.0	64.8	63.9	67.5
Percentage under 80:												
Both northern.....	70.2	69.8	71.4	43.8	53.8	-----	68.2	60.0	85.7	94.7	93.3	100.0
Both southern.....	72.3	76.9	57.9	26.7	38.1	-----	68.9	72.3	57.1	95.6	96.2	93.3
Number of children tested:												
Both northern.....	57	43	14	16	13	3	22	15	7	19	15	4
Both southern.....	150	121	38	30	21	9	61	47	14	68	53	15

OCCUPATION OF THE FATHER

Another factor which may have considerable influence on the I. Q. of the child is the character of the home environment—the things he learns at home, etc. In the absence of any better indicator of the social status of the family we may take the occupation of the father, classified into broad groups, to indicate very roughly the home conditions. Table 14 and Figure 7 show the I. Q. of children of unskilled laborers, of skilled laborers, and of professional and salaried people.

TABLE 14.—*Intelligence quotient of white children classified according to the occupation of the father—Two Illinois counties*

Occupation of father	Median I. Q.				Percentage under 80				Number of children tested			
	All ages	6-9	10-12	13 and over	All ages	6-9	10-12	13 and over	All ages	6-9	10-12	13 and over
Unskilled labor.....	92.1	97.1	88.0	81.3	21.0	8.3	27.6	47.5	505	253	174	78
Skilled labor.....	100.3	102.0	99.4	94.7	9.7	2.9	11.6	23.5	1,838	800	753	285
Professional, salaried, and merchant class.....	107.3	106.5	110.9	103.4	4.1	.9	4.5	15.5	1,741	850	678	213

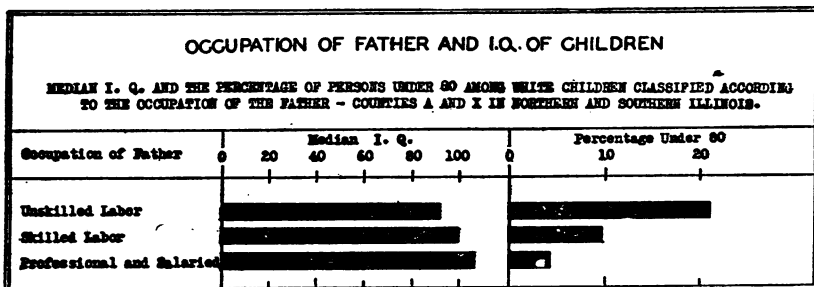


FIGURE 7

The median I. Q. of the children of professional and salaried people is considerably higher than that of children of laborers, the children of unskilled laborers being the lowest of the three groups.

Inasmuch as these differences may be due to other factors associated with the social status, it is important to consider race and such other factors as are available in the present study. Table 15 shows data for children of native white race stock (all four grandparents born in the United States) for County A in northern Illinois and children of native white parents in County X in southern Illinois.

TABLE 15.—*Intelligence quotient of children of native white race stock classified according to the occupation of the father—Two Illinois counties*

Occupation of father and race stock of parents	Total				Urban				Rural			
	All ages	6-9	10-12	13 and over	All ages	6-9	10-12	13 and over	All ages	6-9	10-12	13 and over
MEDIAN I. Q.												
Native white parents and grandparents, County A (northern):												
Unskilled labor.....	96.8	104.3	91.0	85.0	97.0	105.0	91.0	80.0	95.0	102.5	-----	90.0
Skilled labor.....	104.4	105.3	103.1	103.9	104.4	105.9	102.7	103.1	104.4	101.0	106.7	115.0
Professional and salaried class.....	110.6	109.0	114.3	106.4	111.0	109.3	114.8	107.3	104.0	104.0	106.3	85.0
Native white parents, County X (southern):												
Unskilled labor.....	86.3	92.1	81.7	76.3	86.1	94.3	83.1	75.0	86.7	91.1	79.2	80.0
Skilled labor.....	92.6	102.0	88.1	76.8	94.8	104.8	89.0	75.7	88.9	93.6	86.7	80.0
Professional and salaried class.....	94.0	99.0	91.9	76.4	96.9	105.0	96.3	73.3	91.2	93.3	88.0	91.7
PERCENTAGE UNDER 80												
Native white parents and grandparents, County A (northern):												
Unskilled labor.....	12.2	-----	19.0	33.3	13.6	-----	19.0	50.0	-----	-----	-----	-----
Skilled labor.....	4.7	-----	7.5	7.7	4.9	-----	7.5	8.8	3.6	-----	7.1	-----
Professional and salaried class.....	1.9	-----	2.0	7.9	1.7	-----	1.7	6.8	8.3	-----	9.1	33.3
Native white parents, County X (southern):												
Unskilled labor.....	31.3	11.9	44.7	66.7	31.7	3.8	40.0	75.0	30.8	18.2	53.8	50.0
Skilled labor.....	25.0	3.1	25.0	68.8	25.3	2.2	23.5	80.0	24.5	5.3	27.8	50.0
Professional and salaried class.....	19.2	5.9	16.1	64.7	19.4	2.9	11.8	90.0	18.9	12.5	21.4	23.6
NUMBER OF CHILDREN TESTED												
Native white parents and grandparents, County A (northern):												
Unskilled labor.....	49	22	21	6	44	19	21	4	5	3	-----	2
Skilled labor.....	296	110	147	39	268	101	133	34	28	9	14	5
Professional and salaried class.....	567	243	248	76	543	233	237	73	24	10	11	3
Native white parents, County X (southern):												
Unskilled labor.....	115	59	38	18	63	26	25	12	52	33	13	6
Skilled labor.....	148	64	52	32	99	45	34	20	49	19	18	12
Professional and salaried class.....	99	51	31	17	62	35	17	10	37	16	14	7

While the differences between the different occupational groups are perhaps not quite so large as in the preceding data, the professional and salaried group generally is distinctly above the laboring groups.

It must not be forgotten that intelligence or lack of intelligence is frequently an inherited characteristic. If unskilled laborers tend to

be recruited from the less intelligent elements of each generation, then it might be expected that their children, on the average, would tend to be of the less intelligent type, apart from any influence of their training or surroundings. On the other hand, children of intelligent parents would tend to be intelligent regardless of the father's occupation or the home surroundings.

III. RELATION OF I. Q. TO PHYSICAL DEFECTS

Whether the I. Q. is a measure of "native" ability or of the total mental equipment from all sources, it is a matter of interest to see whether there is any correlation between the mental and physical status of these children. In other words, we would like to know whether children of low I. Q. are in poor physical condition also. The physical examinations afford a record of the physical defects found for each child, and the presence or absence of physical defects may be taken as a rough indication of the child's physical condition.

Inasmuch as diagnostic standards vary even among physicians working in close cooperation, the data on physical defects will be considered for each of the three physicians separately. By comparing in this way the prevalence of physical defects among children of low I. Q. with the prevalence among those of high I. Q., both the low and the high groups being examined by the same physician, we may be sure that any difference that may appear is not due to varying diagnostic standards of the different physicians who made the examinations.

The defects may first be considered as a whole by computing the average number of physical defects per child for different I. Q. groups. Following this, individual consideration may be given the defects by computing the percentage of children of different I. Q. groups who have specific defects.

AVERAGE NUMBER OF DEFECTS PER CHILD

Table 16 shows the average number of physical defects per child among children classified according to I. Q. The first section considers all defects, including many of a very minor character, such as slightly enlarged glands, one or two carious teeth, etc. The second section of the table considers only defects of some significance, such as markedly enlarged tonsils or glands, defective hearing, three or more decayed teeth, heart conditions, etc. A complete list of the conditions included in this second category of defects is appended to Table 16. Figure 8 shows graphically these averages for the various groups examined by two of the physicians.

TABLE 16.—Average number of physical defects per child as found by three physicians—White children in two Illinois counties

I. Q.	Average number of all physical defects per child				Average number of significant physical defects ¹ per child				Number of children examined			
	All ages	6-9	10-12	13 and over	All ages	6-9	10-12	13 and over	All ages	6-9	10-12	13 and over
WHITE BOYS, COUNTY A, ILLINOIS (examined by Doctor Kempf)												
Under 80.....	3.58	4.47	3.70	3.14	1.61	2.07	1.74	1.32	106	15	47	44
80-89.....	3.39	3.60	3.43	3.11	1.45	1.47	1.54	1.27	179	47	87	45
90-99.....	3.35	3.78	3.30	2.54	1.33	1.51	1.36	.86	284	110	124	50
100-109.....	2.98	3.01	3.20	2.46	1.20	1.25	1.36	.76	321	166	101	54
110-119.....	2.85	2.88	3.09	2.35	1.11	1.18	1.22	.72	241	105	90	46
120 and over.....	2.61	2.73	2.57	2.68	.91	.83	.92	.92	203	30	136	37
WHITE GIRLS, COUNTY A, ILLINOIS (examined by Doctor Elfeld)												
Under 80.....	4.32	3.90	4.18	4.65	1.62	1.30	1.57	1.81	85	10	44	31
80-89.....	3.76	4.42	3.82	2.85	1.21	1.74	1.13	.82	160	38	88	34
90-99.....	3.81	4.20	3.65	3.14	1.39	1.51	1.37	1.09	280	122	114	44
100-109.....	3.28	3.72	2.96	2.87	1.14	1.33	.91	1.11	335	151	121	63
110-119.....	3.11	3.28	2.95	3.18	1.10	1.18	1.01	1.18	222	85	104	33
120 and over.....	2.95	3.06	2.75	3.46	.89	1.00	.89	.75	140	35	81	24
WHITE CHILDREN (BOTH SEXES), COUNTY A, ILLINOIS (examined by Doctor Sterling)												
Under 80.....	5.26	5.55	5.44	5.02	2.29	2.41	2.45	2.11	195	22	85	88
80-89.....	4.72	5.26	4.43	4.60	2.17	2.83	1.85	1.95	286	89	140	57
90-99.....	4.46	4.66	4.31	4.38	2.00	2.14	1.82	2.09	406	158	159	89
100-109.....	4.41	4.44	4.45	4.27	1.94	2.02	1.94	1.71	487	262	148	77
110-119.....	4.00	4.13	3.91	3.83	1.58	1.66	1.50	1.56	336	157	127	52
120 and over.....	3.78	3.70	4.06	3.35	1.47	1.67	1.47	1.30	217	46	108	63
WHITE BOYS, COUNTY A, ILLINOIS (examined by Doctor Sterling)												
Under 80.....	5.37	5.90	5.78	4.88	2.32	2.70	2.67	1.92	111	10	49	52
80-89.....	4.58	5.12	4.32	4.39	1.99	2.66	1.75	1.58	163	50	77	36
90-99.....	4.53	4.73	4.45	4.24	1.98	2.13	1.92	1.76	207	83	87	37
100-109.....	4.48	4.52	4.41	4.46	2.03	2.11	2.03	1.70	248	141	70	37
110-119.....	3.84	3.94	3.79	3.67	1.49	1.62	1.36	1.42	168	78	66	24
120 and over.....	3.74	3.59	4.10	3.17	1.42	1.65	1.44	1.26	115	17	63	35
WHITE GIRLS, COUNTY A, ILLINOIS (examined by Doctor Sterling)												
Under 80.....	5.12	5.25	4.97	5.22	2.25	2.17	2.14	2.39	84	12	36	36
80-89.....	4.90	5.44	4.56	4.95	2.41	3.03	1.98	2.57	123	39	63	21
90-99.....	4.39	4.57	4.14	4.48	2.04	2.15	1.71	2.33	199	75	72	52
100-109.....	4.34	4.32	4.50	4.10	1.86	1.90	1.86	1.73	239	121	78	40
110-119.....	4.16	4.33	4.03	3.96	1.68	1.71	1.64	1.68	168	79	61	28
120 and over.....	3.82	3.76	4.02	3.57	1.52	1.69	1.51	1.36	102	29	45	28
WHITE BOYS OF NATIVE PARENTS, COUNTY A, ILLINOIS (examined by Doctor Kempf)												
Under 90.....	3.24	3.34	3.32	3.08	1.50	1.49	1.62	1.35	153	35	66	52
90-99.....	3.30	3.78	3.33	2.24	1.34	1.52	1.42	.76	195	69	92	34
100-109.....	2.98	2.83	3.57	2.42	1.20	1.18	1.46	.82	222	119	65	38
110 and over.....	2.69	2.76	2.67	2.63	1.01	1.10	.98	.92	342	109	170	63

¹ Including defective hearing, defective vision, 3 or more decayed teeth, poor or very poor nutrition, poor or very poor posture, otitis media, adenoids, diseased tonsils, tonsils markedly enlarged (2+ or 3+), cervical glands markedly enlarged (2+ or 3+), thyroid markedly enlarged (2+ or 3+), scoliosis, gingivitis or pyorrhea, marked malocclusion, speech defect, deviated septum or other nasal obstruction, exophthalmic or toxic goiter, all heart conditions, trachoma, hernia (all forms), nervousness, tic or mannerism, nail biting, tuberculosis or suspected, chronic bronchitis, asthma, anemia, and suspected syphilis.

TABLE 16.—Average number of physical defects per child as found by three physicians—White children in two Illinois counties—Continued

I. Q.	Average number of all physical defects per child				Average number of significant physical defects per child				Number of children examined			
	All ages	6-9	10-12	13 and over	All ages	6-9	10-12	13 and over	All ages	6-9	10-12	13 and over
WHITE CHILDREN (BOTH SEXES) OF NATIVE PARENTS, COUNTY A, ILLINOIS (examined by Doctor Sterling)												
Under 90.....	4.79	5.21	4.65	4.63	2.26	2.75	2.06	2.14	260	68	127	65
90-99.....	4.19	4.39	3.99	4.17	1.95	2.04	1.76	2.17	260	109	103	48
100-109.....	4.14	4.13	4.12	4.20	1.95	1.99	1.91	1.88	344	196	99	49
110 and over.....	3.62	3.77	3.63	3.34	1.51	1.65	1.44	1.41	437	167	183	87
WHITE BOYS OF NATIVE PARENTS AND GRANDPARENTS, COUNTY A, ILLINOIS (examined by Doctor Kempf)												
Under 90.....	2.87	2.50	3.04	2.70	1.24	1.50	1.35	1.10	45	2	23	20
90-99.....	3.05	3.77	3.28	2.05	1.32	1.62	1.53	.71	62	13	32	17
100-109.....	3.21	2.97	3.76	2.64	1.21	1.12	1.48	.86	77	34	29	14
110 and over.....	2.57	2.71	2.54	2.43	.89	1.10	.79	.90	152	42	80	30
WHITE CHILDREN (BOTH SEXES) OF NATIVE PARENTS AND GRANDPARENTS, COUNTY A, ILLINOIS (examined by Doctor Sterling)												
Under 90.....	4.89	5.32	4.89	4.38	2.47	3.16	2.35	1.94	72	19	37	16
90-99.....	4.15	4.72	3.71	4.06	1.89	2.10	1.62	2.06	81	29	34	18
100-109.....	4.06	3.98	4.00	4.39	1.81	1.78	1.77	1.94	108	60	30	18
110 and over.....	3.55	3.76	3.54	3.25	1.46	1.68	1.33	1.35	169	62	67	40
WHITE BOYS, COUNTY X, ILLINOIS (examined by Doctor Kempf)												
Under 80.....	4.01	5.72	4.31	3.35	1.45	2.33	1.55	1.14	136	18	49	69
80-89.....	4.38	4.79	4.08	4.38	1.64	1.90	1.44	1.69	81	29	39	13
90-99.....	4.56	4.53	4.87	4.14	1.82	1.82	2.00	1.43	73	51	15	7
100-109.....	4.26	4.65	4.53	1.83	1.64	1.85	1.53	1.00	47	26	15	6
110 and over.....	4.41	4.00	4.57	6.00	1.73	1.45	2.11	1.50	22	11	9	2
WHITE GIRLS, COUNTY X, ILLINOIS (examined by Doctor Elfeld)												
Under 80.....	3.86	5.29	4.38	3.37	1.14	1.00	1.33	1.07	77	7	24	46
80-89.....	4.17	4.31	4.13	3.88	1.25	1.14	1.35	1.14	77	29	40	8
90-99.....	4.03	4.58	3.38	3.88	1.21	1.38	1.03	1.13	80	40	32	8
100-109.....	3.77	3.77	3.50	4.40	1.15	1.09	1.25	1.40	52	35	12	5
110 and over.....	3.06	3.28	2.29	3.00	.79	.80	.71	1.00	33	25	7	1

Considering all white children in the northern county, it may be seen from Figure 8 that the data for both physicians show a gradual decrease in the average number of defects per child as the I. Q. increases. The average number of significant defects per child for those with an I. Q. under 80 is more than 50 per cent greater than the average for children who ranked 120 or over in I. Q. Reference to Table 16 shows that the above statements also hold true for the findings of Dr. Persis Elfeld, which are not shown in the graph. In the same table, averages for each physician's data are shown for children in three age groups. In some cases the averages are based on rather small numbers, which fact gives rise to considerable irregu-

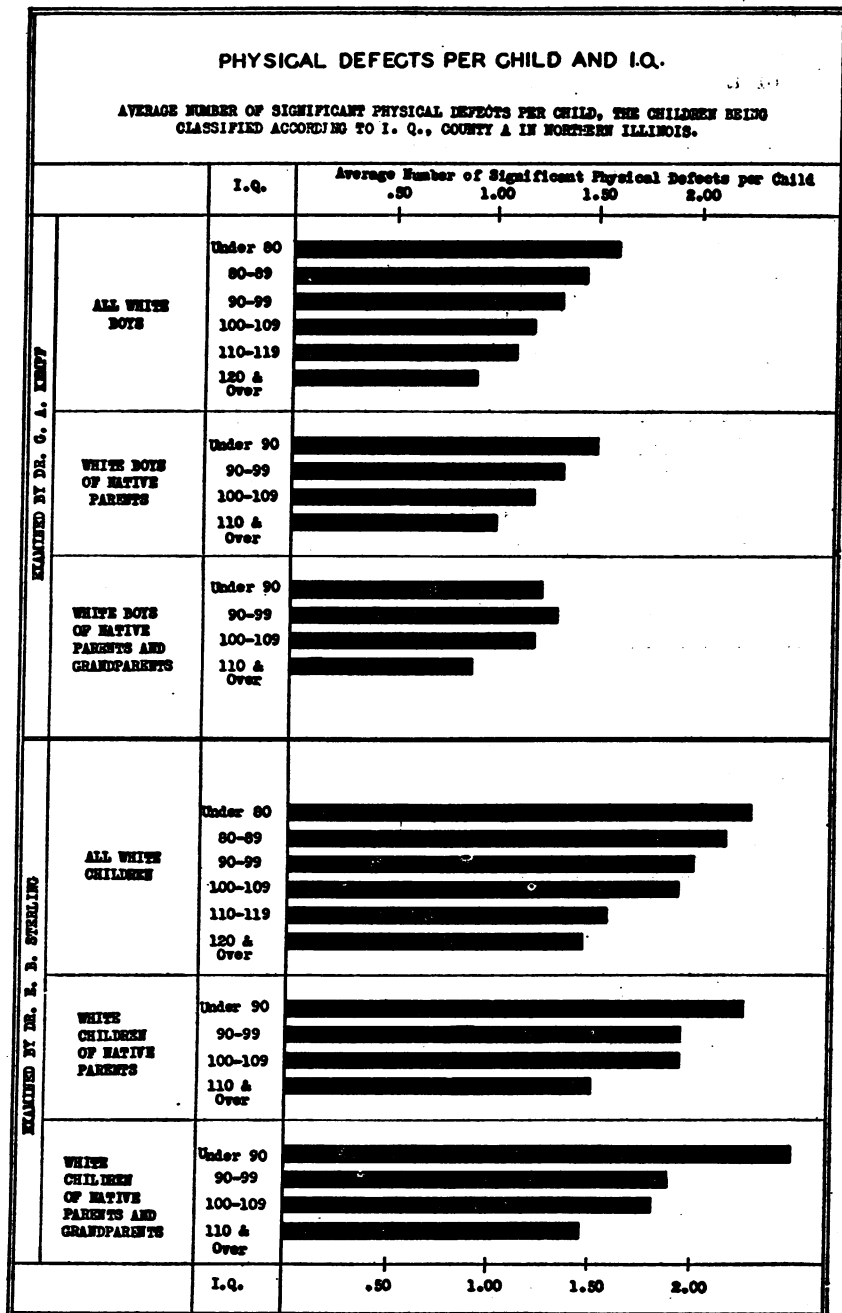


FIGURE 8

larity; but in general each age group of white children in the northern county shows a decreasing average number of defects as I. Q. increases.

It may be recalled that the children of certain racial stocks tend to rank lower in I. Q. than the native white children. If the race stocks of a lower I. Q. have more physical defects also, then the increasing number of physical defects as I. Q. decreases may be associated with the presence of certain race stocks in the low I. Q. groups. In view of this fact, the same comparison of the average number of defects among children of low and of high I. Q. was made for a smaller group of white children both of whose parents were native born. As a still further refinement the comparison was made for a group of white children both of whose parents and all four of whose grandparents were native born. The results for both of these groups are shown in Table 16 and Figure 8 for two of the examiners. It may be seen that in both instances the average number of defects per child decreases as I. Q. increases.

It should be stated that the group of children of native white grandparents are largely urban dwellers, whose fathers are of the skilled labor, salaried, or professional classes, 89 per cent of them being in those occupational groups and 90 per cent of them living in the urban part of the county. Fifty-eight per cent of the fathers were of the professional and salaried class, 31 per cent were skilled laborers, and only 5 per cent were unskilled laborers, the other 6 per cent being farmers. This group is therefore largely urban and contains few families of very low social or economic status.

Table 16 also shows the average number of defects per child for a group of white children in County X in southern Illinois. As may be seen in that table, the data, particularly for boys, do not show any clear tendency toward a decrease in the number of defects as I. Q. increases. The number of children examined in this county was smaller and the variation in the results in the two counties may be due to that fact.

PERCENTAGE OF CHILDREN WITH SPECIFIC DEFECTS

The data presented on the average number of physical defects per child indicate that the children of lower I. Q. have more defects than those of a higher I. Q. Whatever this may mean, it is important to find which specific defects increase as I. Q. decreases and which, if any, show the opposite tendency. In table 17 the children examined by Surgeon Kempf have been divided into three I. Q. groups (under 90, 90-109, and 110 and over), and the percentage of each group who have certain defects has been computed. In addition to the data for all ages, the rates are shown for three age groups. Tables 18 and 19 show similar data for the other two examiners. Figures 9A and 9B show graphically the rates for the more important defects,

TABLE 17.—Physical defects and I. Q.—Percentage of persons who have certain physical defects among white children classified according to I. Q. and age in County A, Illinois

[All physical examinations made by Dr. G. A. Kempf]

Defect	All ages			6-9 years			10-12 years			13 years and over		
	I. Q. under 90	I. Q. 90-109	I. Q. 110 or over	I. Q. under 90	I. Q. 90-109	I. Q. 110 or over	I. Q. under 90	I. Q. 90-109	I. Q. 110 or over	I. Q. under 90	I. Q. 90-109	I. Q. 110 or over
Teeth:												
One or more decayed.....	70.3	71.7	62.0	91.9	83.1	73.9	73.9	67.9	60.7	49.4	50.0	47.0
None decayed, none filled.....	14.5	14.5	16.9	8.1	11.4	11.5	11.9	16.1	20.1	23.0	19.2	16.9
One or more filled.....	26.9	27.0	37.5	4.8	16.9	24.6	28.4	28.1	38.8	40.2	51.0	54.2
Gingivitis.....	1.4	.5	.2	—	—	—	.8	.9	—	3.4	1.0	1.2
Tonsils:												
Defective (enlarged or diseased).....	31.9	36.2	27.9	40.3	40.6	31.1	28.4	35.6	29.7	31.5	26.0	18.1
Diseased.....	10.2	7.3	2.7	16.1	8.3	4.4	9.0	8.0	2.2	7.9	2.9	1.2
Removed.....	21.4	22.3	31.3	11.3	22.8	31.1	26.9	22.2	34.5	20.2	21.2	22.9
Adenoids.....	3.2	6.5	3.4	8.1	8.7	5.9	2.2	5.8	3.1	1.1	1.9	—
Other nasal obstruction.....	3.5	2.6	2.9	3.2	2.2	3.0	2.2	2.2	2.2	5.6	4.8	4.8
Enlarged glands:												
Anterior cervical.....	35.8	31.4	22.3	51.6	40.9	28.9	32.8	27.6	21.7	29.2	14.4	13.3
Posterior cervical.....	2.1	2.8	1.1	3.2	4.0	2.2	2.2	1.8	.9	1.1	1.9	—
Submaxillary.....	9.8	6.3	2.5	17.7	8.0	4.4	9.0	6.7	1.8	5.6	1.0	1.2
Thyroid.....	16.8	12.9	14.4	21.0	9.8	15.6	14.9	14.2	13.3	16.9	18.3	15.7
Defective hearing (voice test)												
One or both ears.....	7.4	4.1	3.1	9.7	4.0	3.4	5.7	5.2	2.5	9.0	2.2	4.6
Both ears.....	2.0	1.4	1.0	—	1.5	—	1.9	1.6	1.5	3.0	1.1	1.3
Otitis media.....	.7	1.8	.5	—	1.1	—	1.5	2.7	.4	—	1.9	1.2
Defective eardrum.....	5.3	6.6	3.4	4.8	6.2	4.4	3.7	7.1	3.1	7.9	6.7	2.4
Mastoidectomy (scar).....	—	.2	.5	—	—	—	—	—	—	—	1.0	2.4
Vision (Snellen test):												
Defective (any degree).....	27.6	20.4	17.0	25.8	20.3	13.0	32.3	25.8	17.1	21.7	8.9	23.4
6/10 or worse in one or both eyes.....	19.6	10.7	9.8	16.1	9.0	6.9	23.9	14.0	9.5	15.7	7.9	15.6
6/10 or worse in both eyes.....	10.2	7.3	6.1	6.5	6.8	3.1	12.3	9.1	5.0	9.6	5.0	14.3
Conjunctivitis.....	2.1	2.3	1.4	3.2	2.2	.7	.8	2.7	1.3	3.4	1.9	2.4
Strabismus.....	3.5	.8	1.6	4.8	—	1.5	4.5	1.8	1.8	1.1	1.0	1.2
Speech defects.....	3.5	2.2	.9	3.2	3.6	2.2	4.5	.4	.4	2.3	1.9	—
All heart defects.....	6.3	4.3	3.8	8.1	5.4	4.4	6.7	3.6	3.5	4.5	2.9	3.6
Nutrition: Poor or very poor.....	17.3	10.1	9.5	4.8	8.0	8.9	21.6	14.7	10.7	19.3	5.8	7.3
Posture: Poor or very poor.....	6.9	4.6	5.5	5.2	3.0	3.7	9.2	6.5	7.7	4.7	5.0	2.5
Finger-nail biting.....	1.4	2.6	2.5	—	2.5	.7	1.5	2.7	3.5	2.3	2.9	2.4
Evidences of rickets.....	7.0	6.3	6.3	8.1	6.5	8.2	5.2	6.2	5.8	9.0	5.8	4.8
Scoliosis.....	6.0	4.1	4.7	3.2	2.5	3.0	7.5	5.8	6.2	5.6	4.8	3.6
High-arched palate.....	2.1	1.2	1.4	—	1.5	1.5	1.5	.9	1.8	4.5	1.0	—
Malocclusion (total).....	13.7	15.7	20.3	11.3	14.1	19.3	17.9	14.7	20.8	9.0	22.1	20.5
Marked malocclusion.....	4.9	4.6	4.1	3.2	4.4	2.2	4.5	4.4	4.9	6.7	5.8	4.8
All skin diseases.....	1.8	3.1	2.0	1.6	3.3	1.5	1.5	3.6	1.3	2.3	1.9	4.8
Number of children ex- amined¹.....	285	605	444	62	276	135	134	225	226	89	104	83

¹ The numbers considered for hearing, vision, teeth, nutrition and posture are somewhat smaller than those considered for other conditions, because of the deduction of unknowns.

TABLE 18.—Physical defects and I. Q.—Percentage of persons who have certain physical defects among white children classified according to I. Q. and age in County A, Illinois

[All physical examinations made by Dr. E. B. Sterling]

Defect	All ages			6-9 years			10-12 years			13 years and over		
	I. Q. under 90	I. Q. 90-109	I. Q. 110 or over	I. Q. under 90	I. Q. 90-109	I. Q. 110 or over	I. Q. under 90	I. Q. 90-109	I. Q. 110 or over	I. Q. under 90	I. Q. 90-109	I. Q. 110 or over
Teeth:												
One or more decayed.....	76.3	71.7	60.6	93.6	80.6	74.8	79.6	71.7	60.3	57.9	49.1	36.0
None decayed, none filled.....	12.7	14.3	19.3	5.5	13.6	14.4	12.0	14.7	20.1	19.3	15.2	26.3
One or more filled.....	26.3	35.2	43.6	17.3	24.9	35.6	21.3	36.8	44.0	40.7	58.2	57.0
Gingivitis.....	.8	1.0	.7	.9	.5	.5	1.3	1.6	.9	-----	1.2	.9
Tonsils:												
Defective (enlarged or diseased).....	44.7	40.7	36.5	51.4	41.9	40.9	44.0	41.7	36.2	40.7	35.5	29.6
Diseased.....	4.2	4.3	4.2	.9	3.1	4.4	6.2	3.6	4.7	3.5	8.4	2.6
Removed.....	15.6	21.3	28.6	10.8	17.6	23.2	19.1	20.5	28.1	13.8	31.9	39.1
Adenoids.....	18.3	16.6	9.2	32.4	19.5	10.3	16.9	16.6	11.1	9.7	9.0	3.5
Other nasal obstruction.....	8.9	6.7	8.0	8.1	6.7	6.9	7.6	5.9	8.9	11.7	8.4	7.8
Enlarged glands:												
Anterior cervical.....	43.5	39.4	35.4	47.8	42.6	34.5	43.6	38.8	40.9	40.0	32.5	26.1
Posterior cervical.....	7.3	7.6	5.8	9.0	9.8	10.8	7.6	7.5	3.4	5.5	2.4	1.7
Submaxillary.....	.6	.6	.4	-----	.7	.5	1.3	.7	.4	-----	-----	-----
Thyroid.....	43.0	35.4	35.4	31.5	28.1	28.1	43.1	36.8	34.9	51.7	51.2	49.6
Defective hearing (voice test):												
One or both ears.....	4.0	2.6	1.1	4.5	2.4	2.0	4.5	3.0	.9	2.8	2.4	-----
Both ears.....	3.3	1.6	.9	3.6	1.7	1.5	3.6	1.3	.9	2.8	1.8	-----
Otitis media.....	1.5	.7	.4	2.7	.2	.5	.9	1.0	-----	1.4	1.2	.9
Defective eardrum.....	1.5	.9	.4	-----	.7	1.0	1.8	1.6	-----	2.1	-----	-----
Mastoidectomy (scar).....	-----	.2	.5	-----	-----	.5	-----	.3	.4	-----	.6	.9
Vision (Snellen test):												
Defective (any degree).....	47.8	42.3	33.6	66.1	52.0	41.6	41.3	34.6	27.2	44.1	31.9	32.5
6/10 or worse in one or both eyes.....	21.4	17.4	13.4	24.8	19.8	13.4	17.5	15.4	10.6	24.8	15.1	19.3
6/10 or worse in both eyes.....	12.2	10.2	8.0	13.8	11.2	6.4	11.2	10.8	7.2	12.4	6.6	12.3
Conjunctivitis.....	3.1	1.8	2.9	2.7	2.4	3.0	4.4	1.3	3.0	1.4	1.2	2.6
Strabismus.....	1.0	1.0	.9	-----	1.0	2.0	1.8	1.3	.4	.7	.6	-----
Speech defects.....	1.9	.9	.7	3.6	1.2	1.5	1.8	.3	.4	.7	1.2	-----
All heart defects.....	3.3	3.0	3.1	3.6	1.2	1.0	2.2	3.6	4.3	4.8	6.6	4.4
Nutrition: Poor or very poor:												
Poor.....	10.4	12.2	8.5	11.7	13.1	9.4	12.4	12.7	9.4	6.3	9.0	5.2
Posture: Poor or very poor.....	28.6	20.5	19.7	20.2	13.8	13.6	23.5	19.4	20.9	42.8	39.6	27.8
Finger-nail biting.....	10.8	8.5	7.4	9.9	6.4	5.9	12.9	10.8	8.1	8.3	9.6	8.7
Evidences of rickets.....	2.1	2.4	2.7	4.5	3.3	3.0	1.8	1.6	3.0	.7	1.2	1.7
Scoliosis.....	2.5	2.6	.9	2.7	2.1	.5	2.2	2.6	.4	2.8	3.6	2.6
High-arched palate.....	1.3	2.0	2.4	1.8	3.3	3.5	.9	.3	2.1	1.4	1.8	.9
Malocclusion (total).....	9.6	9.4	8.7	8.1	7.4	7.9	9.3	11.1	12.3	11.0	11.5	2.6
Malocclusion (marked).....	3.7	4.6	3.6	1.8	2.9	3.0	3.1	5.9	4.7	6.2	6.6	2.6
All skin diseases.....	6.0	2.7	2.4	5.4	2.4	3.0	6.2	2.9	2.1	6.2	3.0	1.7
Number of children examined¹.....	481	893	553	111	420	203	225	307	235	145	166	115

¹ The numbers considered for hearing, vision, teeth, nutrition, and posture are somewhat smaller than those considered for other conditions because of the deduction of unknowns.

TABLE 19.—Physical defects and I. Q.—Percentage of persons who have certain physical defects among white children classified according to I. Q. and age in County A, Illinois

[All physical examinations made by Dr. P. F. Efeld]

Defect	All ages			6-9 years			10-12 years			13 years and over		
	I. Q. under 90	I. Q. 90-109	I. Q. 110 or over	I. Q. under 90	I. Q. 90-109	I. Q. 110 or over	I. Q. under 90	I. Q. 90-109	I. Q. 110 or over	I. Q. under 90	I. Q. 90-109	I. Q. 110 or over
Teeth:												
One or more decayed.....	63.3	63.3	45.0	77.1	76.8	58.3	63.6	58.7	43.8	52.3	38.7	21.1
None decayed, none filled.....	24.1	18.8	25.7	20.8	14.0	26.7	24.2	19.6	25.4	20.2	29.3	24.6
One or more filled.....	22.9	31.3	40.1	4.2	21.0	26.7	23.5	38.3	42.7	35.4	42.5	59.7
Gingivitis.....	.4	.5	.3	2.1	.4	.....	.....	.9	.....	.....	.....	1.8
Tonsils:												
Defective (enlarged or diseased).....	20.8	25.0	19.6	41.7	31.5	26.7	25.8	20.4	13.5	29.2	18.7	24.6
Diseased.....	10.2	10.1	7.7	18.8	13.2	10.8	7.6	8.5	6.5	9.2	5.6	5.3
Removed.....	19.2	17.6	17.7	14.6	15.0	15.0	18.2	19.6	21.1	24.6	19.6	12.3
Adenoids.....	7.8	6.0	3.9	16.7	8.8	5.8	7.6	4.7	1.6	1.5	1.9	7.0
Other nasal obstruction.....	1.6	1.6	.6	2.1	1.1	.8	.8	1.7	.....	3.1	2.8	1.7
Enlarged glands:												
Anterior cervical.....	36.3	43.6	32.0	56.3	58.2	47.5	37.9	37.5	27.6	18.5	19.6	14.0
Posterior cervical.....	.....	.8	.....	.....	1.5	1.7	.....	.4	.5	.....	.....	.....
Submaxillary.....	17.6	17.7	10.5	20.8	23.1	13.3	22.7	14.9	8.7	4.6	10.3	10.5
Thyroid.....	36.7	31.7	24.9	33.3	24.5	14.2	37.9	37.0	27.6	36.9	38.3	38.6
Defective hearing (voice test):												
One or both ears.....	7.0	1.8	2.4	7.1	.4	2.8	6.4	3.1	2.3	8.1	2.0	1.8
Both ears.....	1.8	.9	.6	.....	.4	.9	2.4	1.3	.....	1.6	1.0	1.8
Otitis media.....	2.0	1.1	.6	2.1	1.1	.8	2.3	1.7	.5	1.5	.....	.....
Defective eardrum.....	9.8	3.4	4.4	10.4	3.3	4.2	9.1	3.0	4.9	10.8	4.7	3.5
Mastoidectomy (scar).....	.4	.5	.....	.....	.4	.....	.....	.....	.....	1.5	1.9	.....
Vision (Snellen test):												
Defective (any degree).....	36.5	33.7	31.8	40.5	36.0	28.5	33.1	29.6	35.2	40.6	36.9	28.1
6/10 or worse in one or both eyes.....	21.7	20.8	18.6	23.8	22.7	10.3	19.4	17.4	23.1	25.0	23.3	21.1
6/10 or worse in both eyes.....	14.8	13.4	13.5	16.7	17.1	8.6	13.7	9.1	18.1	15.6	13.6	8.8
Conjunctivitis.....	3.7	3.6	5.5	2.1	3.3	8.3	5.3	4.7	4.3	1.5	1.9	3.5
Strabismus.....	1.6	2.9	1.7	2.1	3.3	1.7	2.3	3.4	1.1	.....	.9	3.4
Speech defects.....	.4	1.1	.....	.....	1.5	.....	.....	.4	.....	1.5	1.9	.....
All heart defects.....	4.1	4.4	2.2	.....	3.7	2.5	3.8	4.3	2.2	7.7	6.5	1.7
Nutrition: Poor or very poor.....	7.4	9.2	6.6	4.2	10.3	5.0	9.1	7.7	6.5	6.2	9.5	10.5
Posture: Poor or very poor.....	4.9	2.4	4.6	6.7	2.0	6.0	3.3	2.7	3.9	6.7	3.1	3.8
Finger-nail biting.....	6.1	5.7	7.5	6.3	4.4	2.5	6.8	6.8	10.3	4.6	6.5	8.8
Evidences of rickets.....	13.9	13.5	13.5	8.3	16.1	15.0	15.9	11.5	9.7	13.9	11.2	22.0
Scoliosis.....	1.2	1.3	2.2	2.1	1.1	4.2	.8	1.3	.5	1.5	1.9	3.4
High-arched palate.....	3.7	2.9	1.4	8.3	3.7	1.7	3.8	1.3	1.1	.....	4.7	1.7
Malocclusion (total).....	4.9	4.4	4.7	4.2	5.9	.8	4.6	3.8	6.0	6.2	1.9	8.5
Malocclusion (marked).....	2.0	1.0	1.1	2.1	1.5	.....	1.5	.4	1.6	3.1	.9	1.7
All skin diseases.....	2.0	.8	1.7	2.1	.4	1.7	1.5	1.3	1.1	3.1	.9	3.4
Number of children exam- ined.....	245	615	362	48	273	120	132	235	185	65	107	57

¹ The numbers considered for hearing, vision, teeth, nutrition, and posture are somewhat smaller than those considered for other conditions, because of the deduction of unknowns.

A method was sought by which the data for all three examiners could be combined. The best way to do this appeared to be on a relative or index basis. This was accomplished by computing for each defect the ratio of the rate for the group with an I. Q. less than 90 and for the group with an I. Q. 110 or over to the rate for the large average group with I. Q. 90-109. In other words, the rates for the group under 90 and the group 110 and over were all divided by the rate for the average group, the computation being made for each examiner separately and the ratios for the three examiners then being averaged for each defect and I. Q. group. These ratios were computed for children of all ages only; but to eliminate the effect of age, an adjusted rate was used, the adjustment being accomplished by averaging (simple) the rates for the three age groups. The adjusted rate eliminates the effect of differences in age distribution in the different I. Q. groups, but in nearly all cases the results were only slightly different from the crude rates shown in Figures 9A and 9B.

Table 20 and Figure 10 show the ratios (averages for the three examiners) computed as described above. The middle bar for the group 90-109 is always 100, and the length of the other two bars indicates the *relative* variation with I. Q. for the specific defect regardless of the size of its actual rate.

PHYSICAL DEFECT RATES AND I.Q.

PERCENTAGE OF PERSONS WHO HAVE CERTAIN PHYSICAL DEFECTS AMONG WHITE CHILDREN OF ALL AGES CLASSIFIED ACCORDING TO I.Q. AND MISSING EXAMINER - COUNT A IS MISSING EXAMINER.

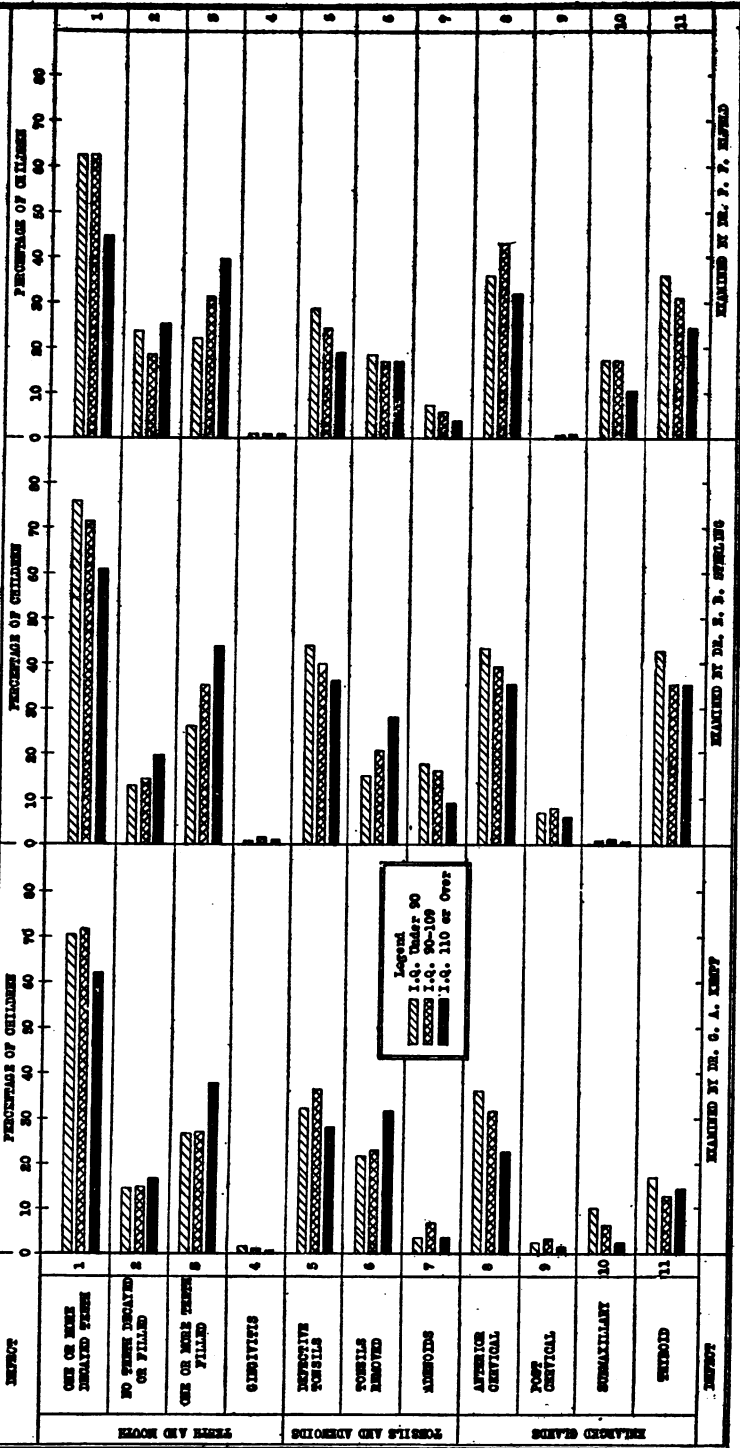


FIGURE 9A

PERCENTAGE OF PERSONS WHO HAVE CERTAIN PHYSICAL DEFECTS AMONG WHITE CHILDREN OF AGE 10-14, AND PHYSICAL DEFECTS - COUNTY A IN NORTHERN ILLINOIS



TABLE 20.—*Relative variation in the prevalence of certain physical defects in the different I. Q. groups—Ratio of the defect rate in a low and in a high I. Q. group to the rate for the group with I. Q. 90–109, based on adjusted¹ rates for white children in County A, Illinois*

[Rate in group with I. Q. 90–109=100]

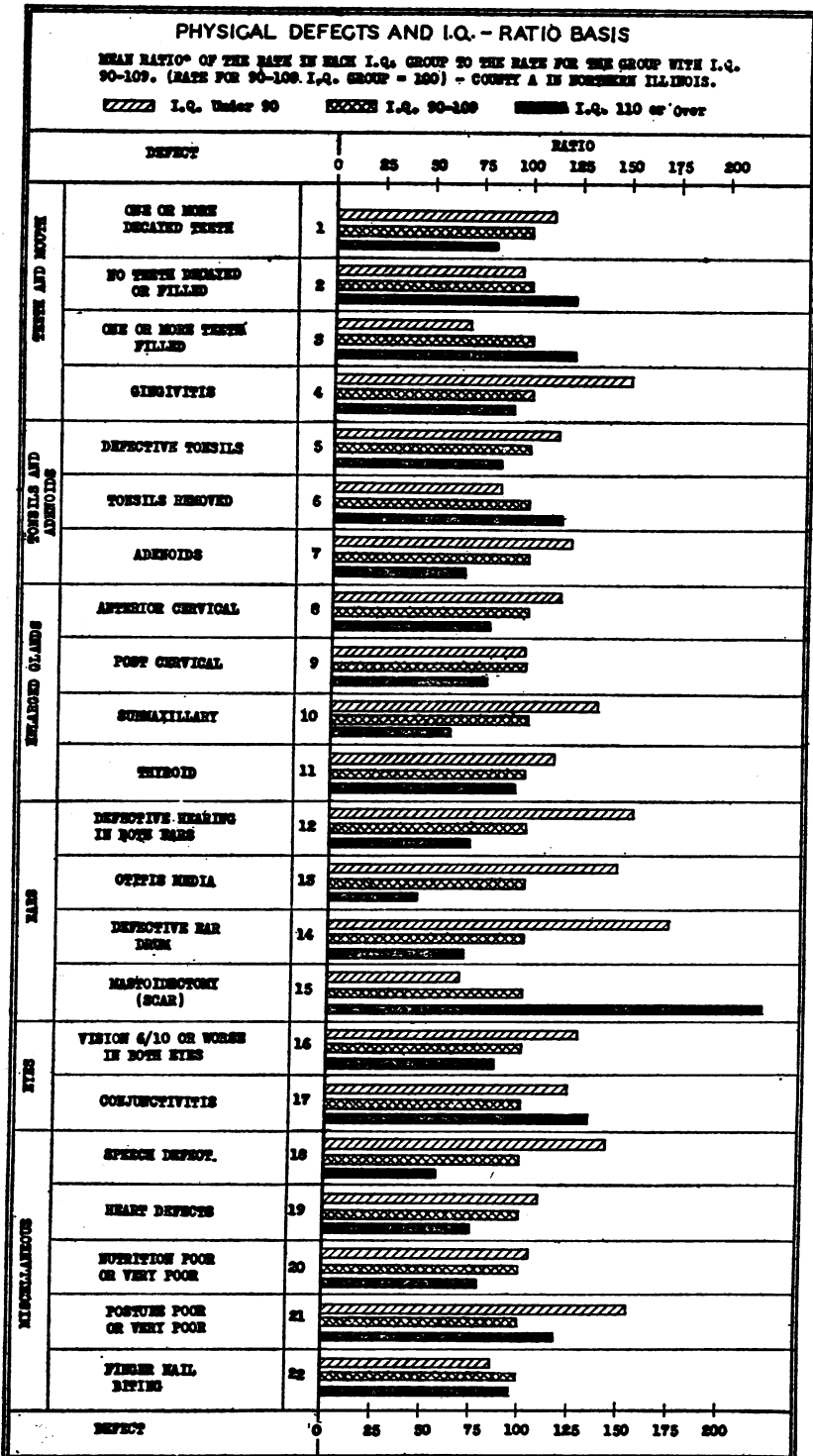
Defect	Average of the ratios for the three examiners		Ratios based on children examined by Dr. G. A. Kempf		Ratios based on children examined by Dr. E. B. Sterling		Ratios based on children examined by Dr. P. F. Elfeld	
	I. Q. under 90	I. Q. 110 or over	I. Q. under 90	I. Q. 110 or over	I. Q. under 90	I. Q. 110 or over	I. Q. under 90	I. Q. 110 or over
Teeth:								
One or more decayed.....	111	82	107	90	115	85	111	71
None decayed, none filled.....	97	122	92	104	85	140	113	122
One or more filled.....	68	121	77	123	66	114	62	127
Gingivitis.....	152	91	220	65	67	67	168	141
Tonsils:								
Defective (enlarged or diseased).....	116	86	98	77	114	89	137	91
Diseased.....	124	67	172	41	70	78	130	83
Removed.....	85	117	88	134	62	129	106	89
Adenoids.....	123	68	70	55	131	55	168	94
Other nasal obstruction.....	119	89	121	108	131	113	105	45
Enlarged glands:								
Anterior cervical.....	117	81	137	77	115	89	98	78
Posterior cervical.....	99	79	86	40	112	81	100	117
Submaxillary.....	135	61	207	48	98	69	100	67
Thyroid.....	114	94	125	105	109	97	108	80
Defective hearing (voice test):								
One or both ears.....	251	83	215	88	150	36	389	124
Both ears.....	157	72	118	68	206	48	146	100
Otitis media.....	147	45	26	29	205	56	211	49
Defective eardrum.....	174	69	82	50	164	42	276	115
Mastoidectomy (scar).....	68	222	250	194	68	111	89	81
Vision (Snellen test):								
Defective (any degree).....	128	90	145	97	128	85	111	89
6/10 or worse in one or both eyes.....	140	92	180	103	134	86	107	86
6/10 or worse in both eyes.....	128	87	137	107	131	91	116	64
Conjunctivitis.....	125	135	109	66	174	175	91	164
Strabismus.....	175	109	382	163	86	84	57	81
Speech defects.....	143	58	167	45	222	70	40	44
All heart defects.....	111	75	162	97	93	84	79	80
Nutrition: Poor or very poor.....	106	81	160	94	87	69	71	121
Posture: Poor or very poor.....	156	120	132	96	119	86	216	178
Finger-nail biting.....	87	96	46	83	116	85	100	121
Evidences of rickets.....	110	115	120	101	113	125	98	120
Scoliosis.....	106	110	124	97	92	42	103	190
High-arched palate.....	127	87	181	98	75	118	126	46
Malocclusion (total).....	100	109	75	119	95	76	129	132
Marked malocclusion.....	136	89	99	82	72	67	237	117
All skin diseases.....	178	136	61	87	215	82	259	238

¹ Adjusted for differences in age distribution.

It may be seen from the graph that, possibly aside from ear defects, no particular type of defect stands out as showing larger differences than the numerous defects which show slight differences with I. Q. The association of physical defects with I. Q., therefore, does not seem to be of a specific character which shows up in any specific group of defects, but rather of a general nature which expresses itself in a slightly higher rate for a number of different defects.

IV. RELATION OF I. Q. TO PHYSICAL GROWTH

At the time of the physical examination of the children in Illinois a number of physical measurements were made—weight, standing and sitting heights, vital capacity, transverse and antero-posterior chest



* The ratios are the means of ratios computed separately for each of the three physicians, in each instance the rates being first adjusted for differences in the age distribution of the three I. Q. groups

FIGURE 10

diameters, and the length, breadth, and height of the head. The vital capacity measurements were all made on the Sanborn wet spirometer, being recorded to the nearest tenth liter. The chest diameters were taken with the large spreading compasses of Hrdlička, and the head measurements with the small calipers of Hrdlička. The procedure followed was according to the standard methods described by Hrdlička.¹¹ The head and chest measurements were recorded to the nearest millimeter. Standing and sitting heights were recorded to the nearest quarter centimeter, the standing height being taken with the child standing against the wall and the sitting height, or trunk length, being taken according to the method described by Dreyer,¹² that is, with the child sitting on the floor with the knees flexed and the back against the wall. Weight was recorded to the nearest quarter pound, but in tabulating it was reduced to the nearest tenth kilogram in order that all the measurements might be shown in the metric system.

⁸ Table 21 shows the average measurements for three I. Q. groups of boys and girls of each year of age from 8 to 14 years.¹³ Figures 11A and 11B show graphically the average measurements of children with an I. Q. under 90 and of children with an I. Q. of 110 or over. The averages for the middle groups, with I. Q. 90-109, are not shown on the graph, but are given in the table.

TABLE 21.—*Physical measurements and intelligence quotient—Average physical measurements of white children of native parents, the children being classified according to intelligence quotient, sex, and age—County A, Illinois*

	Age nearest birthday						
	8	9	10	11	12	13	14
	Weight (kilograms)						
Boys:							
I. Q. under 90.....	23.63	28.48	28.66	32.39	35.14	39.21	41.31
I. Q. 90-109.....	25.35	27.69	30.15	32.31	37.43	39.70	45.54
I. Q. 110 or over.....	26.18	28.53	31.23	34.96	37.48	41.03	47.13
Girls:							
I. Q. under 90.....	23.08	24.24	29.61	32.25	34.43	41.77	43.31
I. Q. 90-109.....	24.33	27.34	29.56	34.79	37.34	41.58	45.02
I. Q. 110 or over.....	24.36	28.26	31.41	35.15	38.70	42.83	48.07
	Standing height (centimeters)						
	8	9	10	11	12	13	14
	Weight (kilograms)						
Boys:							
I. Q. under 90.....	121.94	129.28	132.88	138.47	143.13	149.05	150.91
I. Q. 90-109.....	124.61	129.92	134.63	138.71	145.09	149.04	150.80
I. Q. 110 or over.....	126.60	131.16	135.67	142.16	146.32	150.80	156.97
Girls:							
I. Q. under 90.....	120.15	125.26	133.69	138.52	141.32	147.82	151.93
I. Q. 90-109.....	123.86	129.71	133.12	140.25	145.72	150.21	153.88
I. Q. 110 or over.....	124.60	130.58	136.57	141.67	147.60	152.87	157.03

¹¹ Anthropometry, by Aleš Hrdlička. Journ. Phys. Anthropology, Vol. II, No. 3 (July-September, 1919), pp. 283-319.

¹² Dreyer, G., and Hanson, G. F.: The Assessment of Physical Fitness. Cassell & Co. (Ltd.), London, 1920.

¹³ A considerable number of 6, 7, and 15 year old children were included in the study, but the numbers in certain I. Q. groups of these ages were too few for comparison to be worth while.

TABLE 21.—Physical measurements and intelligence quotient—Average physical measurements of white children of native parents, the children being classified according to intelligence quotient, sex, and age—County A, Illinois—Continued

		Age nearest birthday						
		8	9	10	11	12	13	14
		Sitting height (centimeters)						
Boys:								
I. Q. under 90.....		65.63	68.12	69.00	71.67	73.11	75.51	75.95
I. Q. 90-109.....		66.01	67.90	70.07	71.72	74.11	75.54	79.20
I. Q. 110 or over.....		67.03	68.76	70.62	72.69	74.60	76.95	79.64
Girls:								
I. Q. under 90.....		64.35	65.82	69.44	71.25	72.84	76.76	77.79
I. Q. 90-109.....		65.50	67.86	69.38	72.22	74.17	76.88	79.29
I. Q. 110 or over.....		65.51	68.00	70.13	73.05	75.66	78.60	81.06
		Vital capacity ¹ (cubic centimeters)						
Boys:								
I. Q. under 90.....		1,238	1,598	1,682	1,910	2,057	2,240	2,409
I. Q. 90-109.....		1,436	1,621	1,797	1,968	2,171	2,355	2,741
I. Q. 110 or over.....		1,521	1,614	1,880	2,069	2,247	2,555	2,764
Girls:								
I. Q. under 90.....		1,170	1,350	1,566	1,777	1,843	2,200	2,400
I. Q. 90-109.....		1,319	1,536	1,639	1,864	2,036	2,277	2,456
I. Q. 110 or over.....		1,362	1,565	1,758	1,953	2,168	2,448	2,682
		Traverse chest diameter (centimeters)						
Boys:								
I. Q. under 90.....		19.75	21.11	21.40	21.98	22.60	23.16	24.00
I. Q. 90-109.....		20.35	20.97	21.37	21.92	22.93	23.54	24.48
I. Q. 110 or over.....		20.52	20.69	21.55	22.57	23.00	23.68	24.97
Girls:								
I. Q. under 90.....		19.35	20.00	21.06	21.67	21.97	23.32	23.71
I. Q. 90-109.....		19.66	20.38	21.01	22.12	22.64	23.41	24.05
I. Q. 110 or over.....		19.76	20.53	21.35	22.15	22.81	23.56	24.67
		Antero-posterior chest diameter (centimeters)						
Boys:								
I. Q. under 90.....		14.38	15.52	15.29	16.02	16.46	17.07	17.34
I. Q. 90-109.....		14.93	15.17	15.58	15.90	16.54	16.66	17.85
I. Q. 110 or over.....		15.15	15.44	15.84	16.27	16.50	17.22	17.79
Girls:								
I. Q. under 90.....		14.80	14.57	15.36	15.65	15.98	17.12	17.32
I. Q. 90-109.....		14.47	14.93	15.19	15.82	16.39	17.16	17.66
I. Q. 110 or over.....		14.54	14.90	15.34	16.01	16.51	17.09	18.09
		Cephalic index of the head						
Boys:								
I. Q. under 90.....		80.00	81.47	81.32	80.61	80.65	80.88	80.05
I. Q. 90-109.....		81.04	80.68	80.72	81.27	80.49	80.29	80.15
I. Q. 110 or over.....		80.20	79.83	80.48	78.90	79.58	79.12	79.58
Girls:								
I. Q. under 90.....		80.60	81.35	80.78	80.77	80.23	80.06	80.50
I. Q. 90-109.....		80.56	80.36	80.88	79.30	79.89	80.36	79.10
I. Q. 110 or over.....		79.76	79.47	80.04	79.79	79.85	79.71	80.85
		Head module ² (centimeters)						
Boys:								
I. Q. under 90.....		15.17	15.33	15.23	15.50	15.49	15.57	15.51
I. Q. 90-109.....		15.25	15.29	15.38	15.38	15.49	15.58	15.73
I. Q. 110 or over.....		15.35	16.37	15.43	15.59	15.62	15.68	15.87
Girls:								
I. Q. under 90.....		14.68	14.78	14.92	15.05	14.99	15.07	15.17
I. Q. 90-109.....		14.86	14.96	14.97	15.12	15.14	15.23	15.34
I. Q. 110 or over.....		14.91	15.01	15.08	15.14	15.23	15.34	15.54
		Number of children						
Boys:								
I. Q. under 90.....		16	43	34	64	46	41	22
I. Q. 90-109.....		135	127	112	93	55	52	41
I. Q. 110 or over.....		86	70	61	81	122	66	33
Girls:								
I. Q. under 90.....		20	34	32	48	44	17	14
I. Q. 90-109.....		130	129	111	88	76	58	41
I. Q. 110 or over.....		89	60	68	75	88	52	33

¹ Sanborn wet spirometer used for measuring vital capacity.

² Module is average of length, breadth, and height of head.

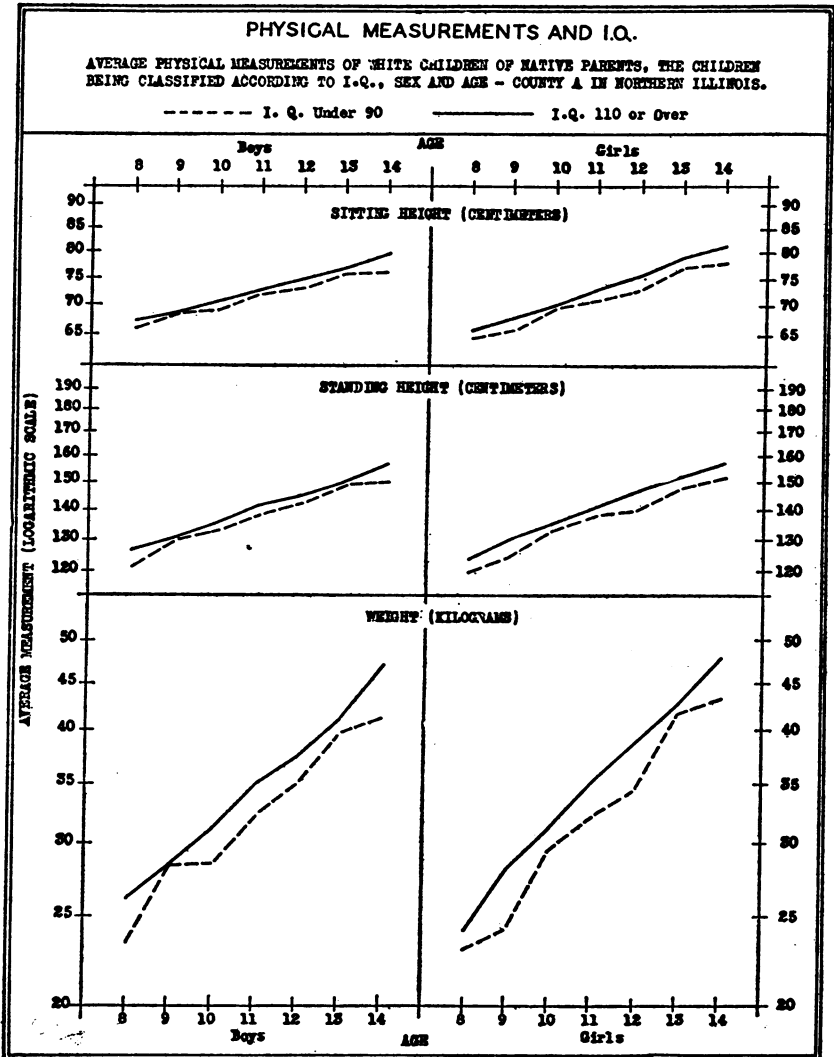


FIGURE 11A

PHYSICAL MEASUREMENTS AND I.Q. - CONTINUED

AVERAGE PHYSICAL MEASUREMENTS OF WHITE CHILDREN OF NATIVE PARENTS, THE CHILDREN BEING CLASSIFIED ACCORDING TO I. Q., SEX AND AGE - COUNTY A IN NORTHERN ILLINOIS.

----- I.Q. Under 90

———— I.Q. 110 or Over

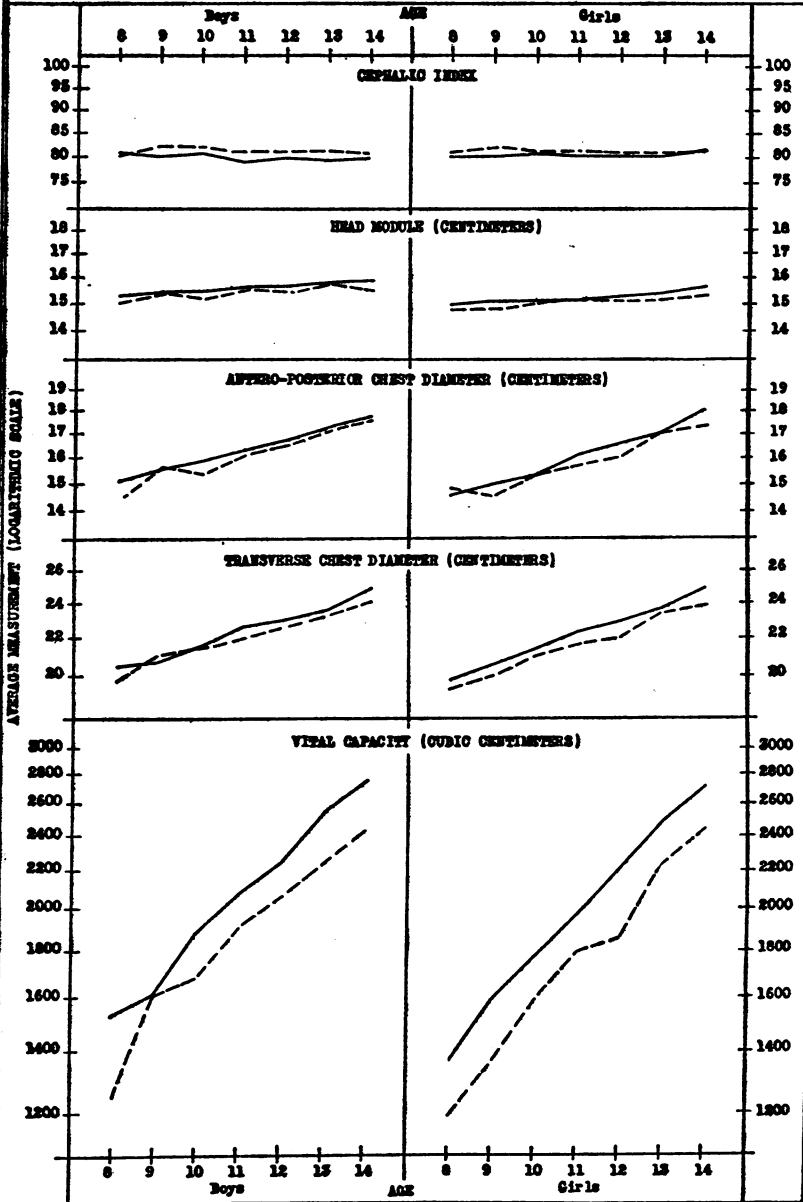


FIGURE 11B

It may be seen from the graphs that in the case of weight, vital capacity, and standing and sitting height, the average measurements of children of high I. Q. are rather consistently larger than the average measurements of children of the same age but with an I. Q. of less than 90. The differences are slight, particularly in the case of the sitting and standing height.

In the case of the chest diameters the differences are very slight and are not consistent in the different age groups; but in so far as any differences are suggested the chest diameters run parallel to the cases already discussed, the higher I. Q. group averaging slightly more than the children of lower I. Q.

The cephalic index is the ratio of the breadth to the length of the head or, as expressed in the table, the percentage that the breadth is of the length of the head. In so far as any difference is suggested, the cephalic index tends to be greater for children of low I. Q. than for those of high I. Q. The larger the cephalic index the more nearly equal is the breadth and length of the head—the more round-headed, or brachycephalic, is the person. The lower the cephalic index the greater is the difference between the breadth and the length of the head—the more long-headed, or dolichocephalic, is the individual. The higher I. Q. group, having the lower cephalic index, is therefore slightly more dolichocephalic than the lower I. Q. group.

The shape of the head is largely a racial characteristic, northern European races generally being more dolichocephalic, or long-headed, than the races of southern Europe. The children considered in Table 21 and Figures 11A and 11B are all of native white parentage—a fact which would largely eliminate the lower I. Q. resulting from unfamiliarity with the English language, etc., but would not, of course, entirely eliminate racial differences from the group. Even in the case of second-generation Americans, certain racial stocks may be living under conditions which would handicap the children in so far as concerns the acquiring of the type of experience or knowledge which would enable the child to rank high in an intelligence test. It does not appear possible from the data at hand to say whether race stock per se is really a factor in the slightly higher average cephalic index of children of lower I. Q.

The head module is the arithmetic average of the length, breadth, and height of the head. It is said to be a good index of cranial capacity and about the only one that can be applied to skulls of the living.¹⁴ It may be seen that the differences between the average head module for the different I. Q. groups are not consistent, but indicate some tendency toward a slightly higher module for the higher I. Q. group. It should be noted, however, that since nearly all of the bodily measurements show a tendency toward slightly

¹⁴ Hrdlička, A.: *Old Americans*. Williams & Wilkins, Baltimore. 1925.

higher averages for the higher I. Q. groups, it can not be said that the slight difference in the head module means any more than a head of a size consistent with the size of other bodily measurements.

Inasmuch as the module of the head is an index to cranial capacity, it may be worth while to consider the measurement in a little more detail. The head module varies somewhat with height. By computing the per cent that the head module is of the height we may secure an index of the size of the head relative to the stature. Table 22 shows an average index of this type computed by sex and age for the three I. Q. groups.

TABLE 22.—*Head module-stature index¹ and I. Q.—Per cent that the head module is of the standing height—White children of native parents, the children being classified according to I. Q., sex, and age, County A, Illinois*

	Age, nearest birthday						
	8	9	10	11	12	13	14
Boys:							
I. Q. under 90.....	12.44	11.86	11.46	11.19	10.82	10.45	10.28
I. Q. 90-109.....	12.24	11.77	11.42	11.09	10.68	10.45	10.03
I. Q. 110 or over.....	12.12	11.72	11.37	10.97	10.68	10.40	10.11
Girls:							
I. Q. under 90.....	12.22	11.80	11.16	10.86	10.61	10.19	9.98
I. Q. 90-109.....	12.00	11.53	11.25	10.78	10.39	10.14	*9.97
I. Q. 110 or over.....	11.97	11.49	11.04	10.69	10.32	10.03	9.90

¹ Head module-stature index = $\frac{100 (\text{mean head module})}{\text{Mean standing height}}$. This index is used extensively by Dr. Aleš Hrdlička in his book on Old Americans, referred to above.

Although the differences are not consistent for every age group, the general tendency is toward a smaller index for the higher I. Q. groups. A similar index based on the sitting height shows the same tendency but with smaller and less consistent differences.

One further tabulation was made in connection with the head module. Girls 10, 11, and 12 years of age, of native white parents, were classified according to I. Q. and height. The average head module and the percentage that this average is of the standing height were computed for girls of each centimeter of height for the three I. Q. groups. No consistent difference between the different I. Q. groups appeared in the data.

Nothing has been said about the probable errors of the differences in these measurements. The differences are so slight as compared to the individual variation in the measurements that probable errors need not be worked to know that they are not significant for any one age group. However, the slight differences that do occur are for some of the measurements consistent in the different age and sex groups; and this test of their significance is about as important as the test of the probable error.

The problems discussed above might have been attacked by the method of correlation, each physical measurement being correlated with I. Q. No coefficients of correlation were computed; but from the slight differences in the average measurements for the different I. Q. groups, we may be sure that the coefficients would have been very low.

To get some idea of the percentage difference in the average measurements in the different I. Q. groups, ratios were computed from the averages in Table 21 by dividing the average for the group with an I. Q. 90-109 into the average for the under 90 and also for the 110 or over groups, such ratios being computed for each measurement for children of each year of age for each sex. As these ratios did not appear to vary with age, an average of the seven ratios (8 to 14 years of age) was computed in each case. These average ratios are shown in Table 23.

TABLE 23.—*Ratio of the physical measurements of a low and of a high I. Q. group to those of the group with I. Q. 90-109, the ratios being computed for each year of age and averaged for the ages 8-14—White children of native parents in County A, Illinois*

[Group with I. Q. 90-109=100]

	Weight	Stand- ing height	Sitting height	Vital capac- ity	Trans- verse chest diam- eter	Antero- posterior chest diam- eter	Ce- phalic index of head	Head module	Num- ber of children 8 to 14 years ¹
Boys:									
I. Q. under 90.....	96.4	98.9	98.9	93.3	99.0	99.4	100.1	99.7	266
I. Q. 110 or over.....	103.4	101.1	101.3	104.0	101.0	101.4	98.9	100.9	519
Girls:									
I. Q. under 90.....	95.0	98.1	98.6	93.3	98.6	99.3	100.7	99.3	209
I. Q. 110 or over.....	103.4	101.6	101.1	105.6	101.3	100.7	99.9	100.6	465

¹ Number of children 8 to 14 years, I. Q. 90-109: Boys, 615; girls, 633.

It may be seen from this table that the average weight of children with I. Q. under 90 is about 4 or 5 per cent less than that of children of the same age and sex but with I. Q. 90-109. Similarly, the average weight of those with I. Q. 110 or over is about 3 per cent above the average weight of the 90-109 I. Q. group.

The only other measurement which shows a difference of more than 1 or 2 per cent above or below the average measurement of the 90-109 I. Q. group is vital capacity. For this measurement, the group with I. Q. under 90 averages 7 per cent less than children of 90-109 I. Q., and the group with I. Q. 110 or over averages 4 or 5 per cent above the 90-109 I. Q. group.

HEIGHTS AND WEIGHTS OF A GROUP OF CHILDREN IN THE EASTERN STATES

In 1916 and 1917 a considerable number of children in certain eastern communities were given individual mental tests (Binet-Simon) by medical officers of the Public Health Service. At the

same time the children were examined physically and certain physical measurements were made. Table 24 shows average heights and weights of the children classified according to retardation as measured by the difference between the mental and the chronological age.

It may be seen from Figure 12 that, in agreement with the Illinois results, the averages for the normal or advanced children are consistently higher than those for retarded children of the same chronological age.

TABLE 24.—*Physical measurements and mental age—Average heights and weights of white children of native mothers, the children being classified according to retardation,¹ sex, and age—Frederick County, Md., Nassau County, N. Y., New Castle County, Del., and Spartanburg, S. C.*

Retardation ¹	Age nearest birthday—							
	7	8	9	10	11	12	13	14
Weight (pounds):								
Boys—								
Retarded.....	51.88	53.79	58.07	63.08	68.21	73.80	78.87	91.22
Slightly retarded.....	48.55	52.53	60.10	64.60	70.94	78.66	84.28	98.33
Normal or advanced.....	51.39	55.42	61.06	66.64	74.46	79.31	88.59	96.63
Girls—								
Retarded.....	45.70	49.10	53.69	61.29	66.27	72.48	86.17	92.09
Slightly retarded.....	47.42	51.31	57.08	62.62	68.82	79.72	83.98	98.83
Normal or advanced.....	49.20	53.77	59.08	65.75	74.72	82.64	90.22	100.00
Height (inches):								
Boys—								
Retarded.....	46.63	48.04	49.92	51.97	53.80	55.24	56.42	59.31
Slightly retarded.....	45.68	48.22	50.62	52.53	54.14	55.87	57.15	60.30
Normal or advanced.....	47.28	49.34	51.25	53.22	55.26	56.81	58.54	60.75
Girls—								
Retarded.....	42.70	47.15	48.77	51.66	54.00	55.03	58.59	59.30
Slightly retarded.....	45.85	47.66	50.16	52.41	54.31	56.53	58.03	60.60
Normal or advanced.....	46.72	49.07	51.16	53.17	55.64	57.74	59.31	61.11
Number of children:								
Boys—								
Retarded.....	8	29	45	73	97	60	42	18
Slightly retarded.....	56	88	97	126	128	87	59	36
Normal or advanced.....	264	280	220	223	141	190	186	146
Girls—								
Retarded.....	5	10	32	66	83	54	19	14
Slightly retarded.....	44	69	86	96	110	62	52	29
Normal or advanced.....	206	235	261	179	159	186	194	169

¹ For children 7 to 11 years of chronological age, inclusive, "retarded" means mental age (nearest birthday) was 2 or more years less than the chronological age (nearest birthday); "slightly retarded" means mental age was 1 year less than the chronological age; "normal or advanced" means the mental age was equal to or greater than the chronological age. For chronological ages 12 to 14, inclusive, "retarded" means mental age was 9 years or younger; "slightly retarded" means mental age was 10 years; "normal or advanced" means mental age was 11 years or older.

V. SUMMARY

A group of school children in two counties of Illinois were examined physically by medical officers of the United States Public Health Service and were given mental tests by psychologists and other trained personnel of the Illinois State Institute for Juvenile Research. Neither examiner knew the results of the other test at the time the examination was made.

The mental examination was a group test, supplemented by an individual test for children who made a low score on the group test. A comparison of the group test result with indications of school progress, such as grades repeated or skipped, average rating on the

school report card, and the teacher's estimate of the child's intelligence, reveals considerable correlation between the intelligence quotient and these factors. In this study the I. Q. was therefore taken as the indicator of the child's mental status in considering the relation of the mental and physical status of the children.

An examination of the variation in the I. Q. for different groups of children indicates that each of the following factors has some relation to I. Q.: Race, color, nativity, language used in the home, occupation of the father, age, and place of residence of the child. An analysis

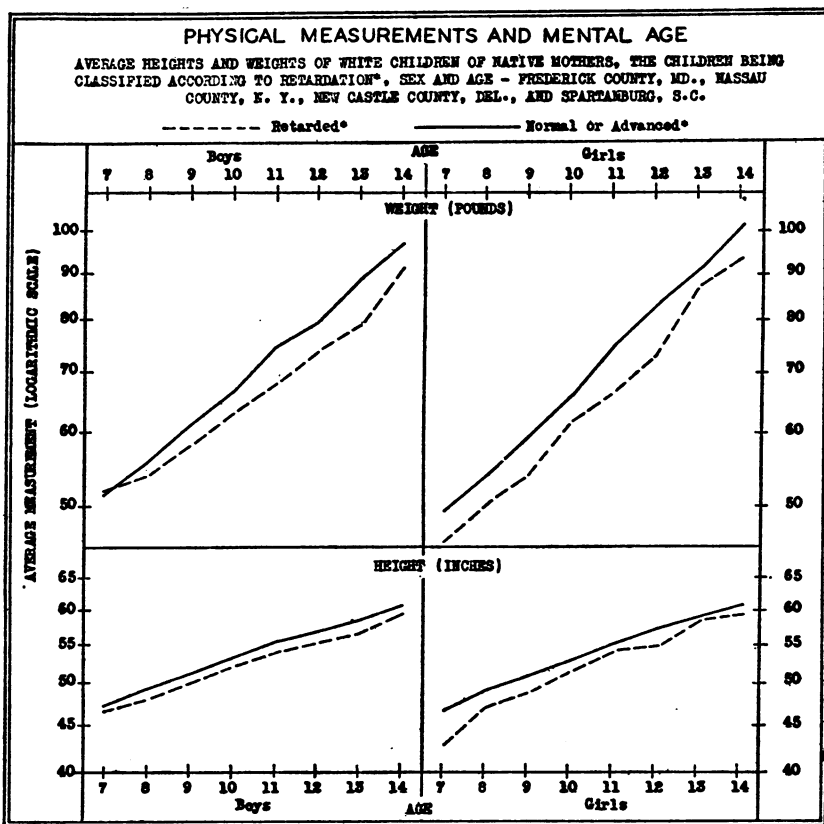


FIGURE 12

of the I. Q. of children classified according to these various factors suggests that the I. Q. is definitely influenced by the child's experience, training, and other environmental conditions including his home surroundings. Under these circumstances it appears from this study that the I. Q. is an indicator of the child's total present mental equipment rather than of his "native" intelligence, apart from his training and experience.

The prevalence of physical defects among children of low I. Q. was compared with that among children of average and high I. Q. The average number of physical defects decreases as the I. Q. in-

creases. This tendency seems to be independent of race, language, and other similar factors.

Children of native white parents were classified into three I. Q. groups, viz, below average (under 90), average (90 to 109), and above average (110 and over). For each of these groups there was computed the percentage of children who were found, on physical examination, to have certain physical defects. For a large number of defects the prevalence among children below average I. Q. was slightly greater than among children above average I. Q., the prevalence among children of average I. Q. usually falling between the other two rates. No particular defect, with the possible exception of defective hearing, stands out as having a particularly close relation to the I. Q. The relationship between I. Q. and physical defects appears to be of a general rather than a specific nature.

The mean measurements of children in these same three I. Q. groups were compared. The mean measurements of the group of children with I. Q. above average are slightly greater than the mean measurements of those below average. Although slight, the differences are fairly consistent in the various age groups for each sex, and are true of nearly all of the physical measurements that were taken in this study.

In view of the fact that the intelligence tests used in this study appear to be indicators of total mental equipment rather than "native" ability alone, the slight tendency for higher I. Q. to be associated with better physical condition and development might be interpreted in several ways: (a) The handicap due to physical defects may result in slower mental development; (b) the children who are low in mental development may tend to come from families whose innate or constitutional physical characteristics are also below average; (c) the slower physical and mental developments may both be the result of other factors with which both are correlated, such as adverse conditions of various kinds. From the data at hand it is impossible to say which if any of these interpretations is correct, but it is possible that each of them may contain some truth.

ACKNOWLEDGMENTS

This study was undertaken by the United States Public Health Service in response to an invitation from Dr. Herman M. Adler, director of the Illinois State Institute for Juvenile Research. The plans and preliminary arrangements for the study were made under the direction of Dr. Taliaferro Clark. The physical examinations were made by Dr. G. A. Kempf, Dr. E. Blanche Sterling, and Dr. Persis F. Elfeld, with the assistance of Special Nurses Sallie Jeffries and Eugenia Kleinfelter, all of the United States Public Health Service. The mental examinations were made by psychologists and

other personnel of the field force of the Illinois State Institute for Juvenile Research. The names and titles of the field force follow:

Miss Phyllis Bartelme, psychologist; Mrs. Dora Keen Mohlman, psychologist; Miss Olga E. Nilson, assistant psychologist; Miss Constance Parsons, assistant psychologist; Mr. Simon H. Tulchin, psychologist; Dr. Frank N. Freeman, psychologist; Miss Irene Boller, clinic manager; Dr. Walter B. Martin, psychiatrist; Dr. C. W. Olson, physician; Dr. Grace S. Wightman, statistician; Mrs. El Rene C. Hubbard, public health nurse; Miss Mary Louise Whitehead, social service field worker; Miss Alice D. Taggart, social service field worker; and Miss Florence Sytz, social service field worker.

COURT DECISION RELATING TO PUBLIC HEALTH

Garbage-removal ordinance upheld and refusal of garbage-removal permit sustained.—(Ohio Supreme Court; *State ex rel. Mooch v. City of Cincinnati et al.*; *Mooch v. Same*, 166 N. E. 583; decided May 1, 1929.) An ordinance of the city of Cincinnati provided as follows:

That no person shall remove or carry in or through any of the streets, squares, courts, lanes, avenues, places, or alleys * * * any house dirt or house offal, animal or vegetable, or any refuse substance, from any of the dwelling houses or other places of the city, * * * unless the owner of the same shall have procured a permit so to do * * * prescribing the terms and conditions as may be deemed essential to the health and interests of the city. Provided, however, the provisions hereof shall not apply to any contractor with the city in relation to garbage.

The city contracted with a company for the collection and disposal of the garbage of the city for a 5-year period. The relator, who had contracts with various hotels, restaurants, and eating places to remove their garbage, was refused a permit to remove such garbage through the city. The relator owned a stock farm and utilized the garbage as food for animals. In actions instituted by him to compel the issuance of a permit and to enjoin interference with his removal of garbage through the city streets he attacked the above ordinance as being violative of both the State and Federal constitutions. The objections raised against the ordinance were that it denied the right of individual contract and conferred special privileges upon the contractor with the city, thereby creating a monopoly with respect to the garbage contract; that it permitted property to be taken without compensation; and that the relator was denied the equal protection of the laws. The action of the city manager in refusing a permit to relator was challenged on the ground that his refusal was arbitrary and based upon mere whim and caprice, and it was contended that the city, having prescribed no conditions upon which permits should be granted, left their determination to the city manager and thereby invested him with legislative power. The supreme court decided that no rights of the relator, under either the State or Federal constitution, were violated by the ordinance or by the city manager's refusal to issue a permit thereunder.

DEATHS DURING WEEK ENDED JULY 6, 1929

Summary of information received by telegraph from industrial insurance companies for the week ended July 6, 1929, and corresponding week of 1928. (From the Weekly Health Index, July 10, 1929, issued by the Bureau of the Census, Department of Commerce)

	Week ended July 6, 1929	Corresponding week, 1928
Policies in force.....	74, 490, 653	71, 527, 838
Number of death claims.....	10, 158	9, 874
Death claims per 1,000 policies in force, annual rate.....	7. 1	7. 2

Deaths from all causes in certain large cities of the United States during the week ended July 6, 1929, infant mortality, annual death rate, and comparison with corresponding week of 1928. (From the Weekly Health Index, July 10, 1929, issued by the Bureau of the Census, Department of Commerce)

City	Week ended July 6, 1929		Annual death rate per 1,000, corresponding week, 1928	Death under 1 year		Infant mortality rate, week ended July 6, 1929 ¹
	Total deaths	Death rate ¹		Week ended July 6, 1929	Corresponding week, 1928	
Total (61 cities).....	5, 713	10. 2	11. 7	542	644	46
Akron.....	28			4	3	41
Albany ⁴	30	13. 0	16. 1	3	0	59
Atlanta.....	74	15. 2	13. 9	12	9	125
White.....	38			7	4	
Colored.....	36	(9)	(9)	5	5	
Baltimore ⁴	152	9. 6	12. 0	11	15	35
White.....	120			7	7	28
Colored.....	32	(9)	(9)	4	8	63
Birmingham.....	76	17. 9	20. 0	8	11	72
White.....	47			5	6	75
Colored.....	29	(9)	(9)	3	5	69
Boston.....	161	10. 5	12. 9	22	22	61
Bridgeport.....	19			1	5	17
Buffalo.....	127	11. 9	13. 0	13	14	56
Cambridge.....	22	9. 1	9. 6	2	1	36
Camden.....	22	8. 5	11. 6	3	4	52
Canton.....	20	9. 0	10. 3	4	5	95
Chicago ⁴	613	10. 2	10. 8	36	64	32
Cincinnati.....	114			12	14	70
Cleveland.....	149	7. 7	9. 1	9	17	27
Columbus.....	63	11. 0	12. 9	4	9	37
Dallas.....	59	14. 2	12. 2	7	4	
White.....	41			7	2	
Colored.....	18	(9)	(9)	0	2	
Dayton.....	42	11. 9	10. 2	3	5	48
Denver.....	74	13. 2	13. 5	6	6	58
Des Moines.....	29	10. 0	10. 3	2	3	36
Detroit.....	258	9. 8	10. 4	27	40	43
Duluth.....	16	7. 2	12. 1	1	4	24
Erie.....	21			1	1	20
Fall River ⁴	21	8. 2	10. 9	0	5	0
Flint.....	21	7. 4	8. 4	3	3	36
Fort Worth.....	36	11. 0	13. 8	11	3	
White.....	28			9	2	
Colored.....	8	(9)	(9)	2	1	
Grand Rapids.....	30	9. 6	7. 6	7	1	106
Houston.....	48			3	11	
White.....	32			3	6	
Colored.....	16	(9)	(9)	0	5	
Indianapolis.....	80	10. 9	14. 1	5	6	40
White.....	61			3	6	28
Colored.....	19	(9)	(9)	2	0	119
Jersey City.....	41	6. 6	9. 2	8	9	63

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 70 cities.

⁴ Deaths for week ended Friday.

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; Knoxville, 15; Louisville, 17; Memphis, 38; Nashville, 30; New Orleans, 26; Richmond, 32; and Washington, D. C., 25.

Deaths from all causes in certain large cities of the United States during the week ended July 6, 1929, infant mortality, annual death rate, and comparison with corresponding week of 1928—Continued

City	Week ended July 6, 1929		Annual death rate per 1,000, corresponding week, 1928	Death under 1 year		Infant mortality rate, week ended July 6, 1929
	Total deaths	Death rate		Week ended July 6, 1929	Corresponding week, 1928	
Kansas City, Kans.	29	12.8	16.8	5	2	111
White	17			4	2	101
Colored	12	(^a)	(^a)	1	0	179
Kansas City, Mo.	99	13.2	16.7	13	8	110
Knoxville	30	14.9	17.9	2	8	44
White	26			2	7	49
Colored	4	(^a)	(^a)	0	1	0
Los Angeles	194			11	20	32
Louisville	49	7.8	12.4	3	5	24
White	36			1	5	9
Colored	13	(^a)	(^a)	2	0	126
Lewell	18			1	4	23
Lynn	16	7.9	11.9	2	1	55
Memphis	65	17.9	18.7	8	7	94
White	30			4	1	76
Colored	35	(^a)	(^a)	4	6	125
Milwaukee	91	8.7	10.4	15	18	66
Minneapolis	69	7.9	9.5	4	9	25
Nashville	44	16.5	13.5	10	7	161
White	29			8	7	174
Colored	15	(^a)	(^a)	2	0	126
New Bedford	15			0	2	0
New Haven	40	11.1	11.1	1	2	15
New Orleans	139	16.9	16.7	15	16	74
White	70			5	8	35
Colored	69	(^a)	(^a)	10	8	168
New York	1,161	10.1	11.1	106	129	43
Bronx Borough	174	9.6	8.3	16	11	47
Brooklyn Borough	378	8.6	9.6	47	47	48
Manhattan Borough	435	13.0	15.8	29	56	35
Queens Borough	128	7.8	7.8	11	11	45
Richmond Borough	46	16.0	16.3	3	1	54
Newark, N. J.	67	7.4	11.2	2	15	11
Oklahoma City	30			3	2	60
Omaha	48	11.3	13.6	4	6	47
Paterson	30	10.8	13.7	4	4	71
Philadelphia	319	8.1	10.1	13	37	18
Pittsburgh	132	10.2	11.8	15	22	52
Portland, Oreg.	63			4	3	46
Providence	43	7.9	11.7	10	10	88
Richmond	39	10.5	12.4	6	4	84
White	22			3	0	64
Colored	17	(^a)	(^a)	3	4	123
Rochester	48	7.6	9.2	3	6	25
St. Louis	216	13.3	15.0	24	13	81
St. Paul	50			5	5	51
Salt Lake City	30	11.4	9.9	2	3	31
San Antonio	59	14.1	15.3	17	12	0
San Diego	44			0	1	0
San Francisco	142	12.7	14.0	9	8	57
Schenectady	16	9.0	7.3	2	2	64
Seattle	68	9.3	7.9	2	2	21
Somerville	12	6.1	7.1	1	1	36
Spokane	30	14.4	18.2	1	0	26
Springfield, Mass.	30	10.5	13.3	0	4	0
Syracuse	36	9.4	11.5	5	3	60
Toledo	55	9.2	11.5	7	5	65
Trenton	28	10.5	12.0	4	2	72
Washington, D. C.	114	10.8	13.2	12	6	70
White	65			4	5	34
Colored	49	(^a)	(^a)	8	1	162
Waterbury	26			4	1	102
Wilmington, Del.	17	6.9	10.6	2	2	52
Worcester	49	11.1	11.4	4	3	50
Yonkers	16	6.9	7.8	0	1	0
Youngstown	28	8.4	12.0	2	3	29

^a Deaths for week ended Friday.

^b 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, 16; Birmingham, 39; Dallas, 16; Fort Worth, 14; Houston, 25; Indianapolis, 11; Kansas City, Kans. 14; Knoxville, 15; Louisville, 17; Memphis, 38; Nashville, 30; New Orleans, 24; 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 Weeks Ended July 6, 1929, and July 7, 1928

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended July 6, 1929, and July 7, 1928

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended July 6, 1929	Week ended July 7, 1928	Week ended July 6, 1929	Week ended July 7, 1928	Week ended July 6, 1929	Week ended July 7, 1928	Week ended July 6, 1929	Week ended July 7, 1928
New England States:								
Maine.....		1	2	3	48	45	0	0
New Hampshire.....	1			4	20	33	0	0
Vermont.....	1				3	16	0	0
Massachusetts.....	49	63	1	3	282	429	4	2
Rhode Island.....	5	2			24	165	0	1
Connecticut.....	10	9		1	49	294	1	1
Middle Atlantic States:								
New York.....	169	259	10	40	458	1,407	23	11
New Jersey.....	63	115		1	101	515	1	2
Pennsylvania.....	126	101			747	1,079	6	4
East North Central States:								
Ohio.....	28	33	9	24	486	477	1	4
Indiana.....	12	20		14	83	116	1	0
Illinois.....	156	77	8	57	654	123	4	6
Michigan.....	87	66	4	5	324	427	40	5
Wisconsin.....	16	11	10	47	676	32	5	3
West North Central States:								
Minnesota.....	18	21		3	101	27	1	5
Iowa.....	4	5			27	6	1	0
Missouri.....	29	16		4	36	72	8	0
North Dakota.....	6	2		4	21	8	3	0
South Dakota.....					7	72	0	0
Nebraska.....	7		2		181	3	1	0
Kansas.....	9	3	1		206	33	1	1
South Atlantic States:								
Delaware.....					2	6	0	0
Maryland.....	14	9	1	5	25	81	1	0
District of Columbia.....	4	20			6	83	0	0
Virginia.....								
West Virginia.....	7	5	6	32	63	23	0	1
North Carolina.....	14	9			9	106	3	1
South Carolina.....	7	14	91	257		54	0	0
Georgia.....	4	1	6	20		47	0	0
Florida.....	3	5	29	41	12	47	2	1
East South Central States:								
Kentucky.....		1				38	1	1
Tennessee.....	4	3	2	10	5	31	2	1
Alabama.....	8	10	5	31	26	45	1	1
Mississippi.....	6	7					0	0
West South Central States:								
Arkansas.....	1		2	10	10	17	0	0
Louisiana.....	10	1	2	32	13	83	2	1
Oklahoma.....	10	6	14	14	14	30	0	1
Texas.....	15	16	20	27	61	45	1	0
Mountain States:								
Montana.....	3	2			26	15	0	3
Idaho.....	1	1	2		8	2	1	0
Wyoming.....		1			2	1	0	0
Colorado.....	3	29			6	47	4	2
New Mexico.....	2	2				4	0	0
Arizona.....	2	2		2	1	1	1	1
Utah.....	2		2	3	4		1	2

¹ New York City only.

² Week ended Friday.

³ Figures for 1929 are exclusive of Oklahoma City and Tulsa.

*Cases of certain communicable diseases reported by telegraph by State health officers
for weeks ended July 6, 1929, and July 7, 1928—Continued*

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended July 6, 1929	Week ended July 7, 1928	Week ended July 6, 1929	Week ended July 7, 1928	Week ended July 6, 1929	Week ended July 7, 1928	Week ended July 6, 1929	Week ended July 7, 1928
Pacific States:								
Washington.....	11	11	1	4	39	24	1	2
Oregon.....	4	5	5	4	62	23	2	0
California.....	37	52	9	19	73	28	13	1
Poliomyelitis	Scarlet fever		Smallpox		Typhoid fever			
Division and State	Week ended July 6, 1929	Week ended July 7, 1928	Week ended July 6, 1929	Week ended July 7, 1928	Week ended July 6, 1929	Week ended July 7, 1928	Week ended July 6, 1929	Week ended July 7, 1928
New England States:								
Maine.....	0	0	20	5	1	0	2	6
New Hampshire.....	0	1	1	4	0	0	0	0
Vermont.....	0	1	—	4	3	0	0	0
Massachusetts.....	1	3	77	96	1	0	5	5
Rhode Island.....	0	0	6	12	0	0	0	0
Connecticut.....	0	1	18	18	0	0	3	0
Middle Atlantic States:								
New York.....	4	3	109	164	0	0	20	17
New Jersey.....	0	2	40	45	0	1	8	6
Pennsylvania.....	0	0	203	135	0	0	18	20
East North Central States:								
Ohio.....	1	1	70	85	67	12	3	13
Indiana.....	1	0	36	45	55	26	3	2
Illinois.....	1	0	164	106	76	16	9	13
Michigan.....	1	0	162	114	80	14	5	7
Wisconsin.....	1	1	61	78	21	19	2	2
West North Central States:								
Minnesota.....	2	1	20	43	0	4	7	0
Iowa.....	0	1	33	22	55	9	4	5
Missouri.....	0	0	11	29	9	4	19	6
North Dakota.....	0	0	8	24	3	1	0	1
South Dakota.....	0	0	7	17	11	5	1	0
Nebraska.....	0	0	15	16	18	25	0	0
Kansas.....	0	0	24	35	44	63	2	3
South Atlantic States:								
Delaware.....	0	0	—	—	0	0	0	1
Maryland ¹	1	2	31	11	0	0	19	11
District of Columbia.....	0	0	7	20	0	0	1	0
Virginia.....	0	4	7	4	12	22	11	3
West Virginia.....	4	3	13	13	9	13	25	35
North Carolina.....	4	1	3	7	2	19	79	118
South Carolina.....	1	0	7	4	0	0	34	8
Georgia.....	1	0	2	2	0	0	13	8
Florida.....	0	0	—	—	—	—	—	—
East South Central States:								
Kentucky.....	0	0	—	14	3	16	20	3
Tennessee.....	3	0	7	14	1	15	27	28
Alabama.....	2	2	16	5	0	4	37	45
Mississippi.....	0	1	6	3	0	0	32	31
West South Central States:								
Arkansas.....	0	1	2	2	6	4	10	20
Louisiana.....	0	0	7	—	0	4	18	32
Oklahoma ¹	0	0	13	14	23	37	27	26
Texas.....	0	0	7	8	12	59	21	5
Mountain States:								
Montana.....	0	0	10	1	11	12	0	5
Idaho.....	0	0	1	4	5	5	0	0
Wyoming.....	0	0	1	10	18	0	1	2
Colorado.....	0	0	6	38	18	2	4	8
New Mexico.....	0	1	4	2	0	1	8	—
Arizona.....	0	0	4	1	9	4	3	1
Utah ²	0	0	—	4	4	4	0	0
Pacific States:								
Washington.....	0	0	12	11	21	16	5	7
Oregon.....	1	2	8	9	17	33	1	5
California.....	4	6	124	60	32	20	8	17

¹ Week ended Friday.² Figures for 1929 are exclusive of Oklahoma City and Tulsa.

Report for Week Ended May 18, 1929

NEW HAMPSHIRE

	Cases		Cases
Diphtheria.....	1	Scarlet fever.....	15
Influenza.....	2	Smallpox.....	1
Measles.....	66	Typhoid fever.....	1
Meningococcus meningitis.....	1		

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	Menin- gococ- cus menin- gitis	Diph- theria	Influ- enza	Malaria	Measles	Pella- gra	Polio- mye- litis	Scarlet fever	Small- pox	Ty- phoid fever
<i>June, 1929</i>										
Arkansas.....	5	18	40	711	17	304	0	39	9	43
Connecticut.....	6	93	13	1	611		2	145	0	4
Nebraska.....	1	29			708		1	123	127	4
North Dakota.....	11	55			408		4	82	49	1
Porto Rico.....		54	46	947	384	6	1	0	0	91
Wyoming.....		1			88		0	11	45	13

<i>June, 1929</i>		<i>June, 1929—Continued</i>	
Chicken pox:	Cases	Paratyphoid fever:	Cases
Arkansas.....	30	Connecticut.....	1
Connecticut.....	316	Puerperal fever:	
Nebraska.....	76	Porto Rico.....	26
North Dakota.....	72	Rabies in animals:	
Wyoming.....	22	Connecticut.....	4
Colibacillosis:		Rocky Mountain spotted or tick fever:	
Porto Rico.....	7	Wyoming.....	24
Conjunctivitis:		Scabies:	
Connecticut.....	2	North Dakota.....	7
Dengue:		Septic sore throat:	
Porto Rico.....	3	Connecticut.....	4
Dysentery:		Tetanus:	
Connecticut (amebic).....	1	Connecticut.....	1
Porto Rico.....	128	Porto Rico.....	23
Filariasis:		Tetanus (infantile):	
Porto Rico.....	4	Porto Rico.....	46
German measles:		Trachoma:	
Connecticut.....	354	Arkansas.....	34
Nebraska.....	10	North Dakota.....	5
Hookworm disease:		Porto Rico.....	1
Arkansas.....	1	Tularaemia:	
Lethargic encephalitis:		Wyoming.....	4
Connecticut.....	3	Undulant fever:	
Wyoming.....	1	North Dakota.....	1
Mumps:		Vincent's angina:	
Arkansas.....	69	North Dakota.....	15
Connecticut.....	149	Whooping cough:	
Nebraska.....	44	Arkansas.....	84
North Dakota.....	13	Connecticut.....	130
Porto Rico.....	6	Nebraska.....	92
Wyoming.....	27	North Dakota.....	21
Ophthalmia neonatorum:		Porto Rico.....	58
Arkansas.....	5	Wyoming.....	4
Porto Rico.....	4		

PLAGUE-INFECTED GROUND SQUIRRELS IN CALIFORNIA

The director of public health of the State of California reports that plague infection has been proved in ground squirrels as follows:

On July 1, 1929, in a lot of six ground squirrels, four from a ranch 6 miles south of Hollister, San Benito County, Calif., the other two from a ranch 12 miles from Hollister.

On July 3, 1929, in two ground squirrels from a ranch 7 miles north-east of Hollister, San Benito County, Calif.

GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

The 96 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 31,475,000. The estimated population of the 89 cities reporting deaths is more than 29,900,000. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

Weeks ended June 29, 1929, and June 30, 1928

	1929	1928	Estimated expectancy
<i>Cases reported</i>			
Diphtheria:			
46 States.....	1, 232	1, 214	
96 cities.....	669	682	669
Measles:			
45 States.....	6, 818	8, 794	
96 cities.....	1, 618	2, 965	
Meningococcus meningitis:			
45 States.....	151	87	
96 cities.....	88	51	
Poliomyelitis:			
46 States.....	26	43	
Scarlet fever:			
46 States.....	1, 786	1, 853	
96 cities.....	681	615	583
Smallpox:			
46 States.....	616	568	
96 cities.....	92	58	50
Typhoid fever:			
46 States.....	549	461	
96 cities.....	74	95	85
<i>Deaths reported</i>			
Influenza and pneumonia:			
89 cities.....	395	476	
Smallpox:			
89 cities.....	0	0	

City reports for week ended June 29, 1929

The "estimated expectancy" given for diphtheria, poliomyelitis, scarlet fever, smallpox, and typhoid fever is the result of an attempt to ascertain from previous occurrence the number of cases of the disease under consideration that 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 weeks 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 the reports have not been received for the full nine years, data are used for as many years as possible, but no year earlier than 1920 is included. In obtaining the estimated expectancy, the figures are smoothed when necessary to avoid abrupt deviation 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.

City reports for week ended June 23, 1929—Continued

Division, State, and city	Population, July 1, 1928, 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.....	78,000	3	1	0		0	5	0	2
New Hampshire:									
Concord.....	(1)	0	0	0		0	9	0	1
Nashua.....	(1)	0	0	0		0	0	0	0
Vermont:									
Barre.....	(1)	2	0	0		0	0	3	0
Massachusetts:									
Boston.....	799,200	82	39	20		1	44	45	11
Fall River.....	124,300	2	3	1		0	1	0	0
Springfield.....	140,800	4	2	4		0	3	0	1
Worcester.....	197,600	8	2	3		0	6	0	0
Rhode Island:									
Pawtucket.....	73,100	0	0	1		0	0	0	0
Providence.....	286,300	0	4	4		0	19	0	4
Connecticut:									
Bridgeport.....	(1)	2	4	2		0	0	1	2
Hartford.....	172,300	2	3	7		0	2	4	3
New Haven.....	187,900	16	1	0		0	5	0	2
MIDDLE ATLANTIC									
New York:									
Buffalo.....	555,800	28	9	8		0	28	3	11
New York.....	6,017,500	267	205	223	7	3	61	215	75
Rochester.....	328,200	7	7	1		0	7	2	2
Syracuse.....	199,300	57	4	0		0	0	5	4
New Jersey:									
Camden.....	135,400	0	5	8		0	0	0	0
Newark.....	473,600	88	9	29		0	1	52	5
Trenton.....	139,000	0	2	0		0	13	0	2
Pennsylvania:									
Philadelphia.....	2,064,200	113	52	9	2	5	35	17	20
Pittsburgh.....	673,800	28	13	19		0	60	5	14
Reading.....	115,400	5	2	1		0	0	0	1
EAST NORTH CENTRAL									
Ohio:									
Cincinnati.....	413,700	9	5	5		0	1	0	8
Cleveland.....	1,010,300	106	22	17	1	2	112	4	5
Columbus.....	299,000	10	2	1	1	1	31	0	4
Toledo.....	313,200	36	4	0		0	99	8	0
Indiana:									
Fort Wayne.....	105,300	2	2	2		0	4	0	3
Indianapolis.....	382,100	7	3	1		0	33	1	5
South Bend.....	86,100	0	1	0		0	3	0	1
Terre Haute.....	73,500	1	0	1		1	3	0	1
Illinois:									
Chicago.....	3,157,400	128	62	129	3	2	458	18	44
Springfield.....	67,200	3	1	0		0	16	0	0
Michigan:									
Detroit.....	1,378,900	52	37	41	3	1	121	9	26
Flint.....	148,800	25	2	3		0	9	1	4
Grand Rapids.....	164,200	3	1	1		0	14	1	2
Wisconsin:									
Kenosha.....	56,500	7	0	0		0	47	1	0
Milwaukee.....	544,200	54	11	5		0	116	9	3
Racine.....	74,400	7	1	0		0	3	0	1
Superior.....	(1)	3	0	0		0	1	0	1
WEST NORTH CENTRAL									
Minnesota:									
Duluth.....	116,800	1	0	0		0	14	3	1
Minneapolis.....	455,900	43	11	4		0	13	2	0
St. Paul.....	(1)	10	8	0		0	18	9	5
Iowa:									
Davenport.....	(1)	0	0	3			0	1	
Des Moines.....	151,900	0	1	1			0	0	
Sioux City.....	80,000	1	0	0			0	0	
Waterloo.....	37,100	6	0	0			2	1	

1 No estimate of population made.

City reports for week ended June 29, 1929—Continued

Division, State, and city	Population, July 1, 1928, estimated	Chick- en pox, cases re- ported	Diphtheria		Influenza		Meas- les, cases re- ported	Mumps, cases re- ported	Pneu- monia, deaths re- ported
			Cases, esti- mated expect- ancy	Cases re- ported	Cases re- ported	Deaths re- ported			
WEST NORTH CEN- TRAL—continued									
Missouri:									
Kansas City.....	391,000	3	3	0	-----	0	1	0	7
St. Joseph.....	78,500	0	0	3	-----	0	9	0	0
St. Louis.....	848,100	19	23	32	-----	-----	15	6	-----
North Dakota:									
Fargo.....	(1)	5	0	0	-----	0	3	0	0
Grand Forks.....	(1)	1	0	0	-----	-----	0	0	-----
South Dakota:									
Aberdeen.....	(1)	0	0	0	0	-----	0	11	-----
Sioux Falls.....	(1)	0	0	0	0	-----	0	0	-----
Nebraska:									
Omaha.....	222,800	3	2	4	-----	0	17	0	2
Kansas:									
Topeka.....	62,800	13	1	0	-----	0	26	6	0
Wichita.....	99,300	0	0	1	-----	0	15	3	1
SOUTH ATLANTIC									
Delaware:									
Wilmington.....	128,500	4	1	1	-----	0	8	0	1
Maryland:									
Baltimore.....	830,400	43	13	12	4	0	4	72	15
Cumberland.....	(1)	0	0	0	1	0	0	0	1
Frederick.....	(1)	0	1	0	-----	0	0	0	0
District of Columbia:									
Washington.....	552,000	15	6	3	1	1	13	0	2
Virginia:									
Lynchburg.....	38,600	2	0	0	-----	0	2	25	0
Norfolk.....	184,200	0	0	0	-----	0	2	0	7
Richmond.....	194,400	2	1	0	-----	0	26	4	2
Roanoke.....	64,600	1	0	0	-----	0	0	0	0
West Virginia:									
Charleston.....	55,200	-----	0	-----	-----	-----	-----	-----	-----
Wheeling.....	(1)	4	0	0	-----	0	9	1	1
North Carolina:									
Raleigh.....	(1)	1	0	0	-----	0	1	0	0
Wilmington.....	39,100	5	0	0	-----	0	0	0	0
Winston-Salem.....	80,000	3	0	0	-----	0	0	0	0
South Carolina:									
Charleston.....	75,900	4	0	0	1	0	0	0	3
Columbia.....	50,600	1	0	0	-----	0	0	3	1
Georgia:									
Atlanta.....	255,100	1	1	0	1	0	6	0	6
Brunswick.....	(1)	0	0	0	-----	0	0	0	1
Savannah.....	99,900	1	1	0	-----	0	2	0	0
Florida:									
Miami.....	156,700	4	0	1	-----	0	7	0	1
St. Petersburg.....	53,300	-----	0	-----	-----	0	-----	-----	0
Tampa.....	113,400	0	0	2	-----	1	1	3	0
EAST SOUTH CENTRAL									
Kentucky:									
Covington.....	59,000	0	0	0	-----	0	0	0	0
Tennessee:									
Memphis.....	190,200	7	1	1	-----	0	0	0	1
Nashville.....	139,600	0	0	0	-----	0	0	0	3
Alabama:									
Birmingham.....	222,400	1	1	2	-----	2	0	0	6
Mobile.....	69,600	0	0	2	-----	0	1	0	0
Montgomery.....	63,100	0	0	0	-----	-----	0	0	-----
WEST SOUTH CENTRAL									
Arkansas:									
Fort Smith.....	(1)	0	0	0	-----	-----	0	2	-----
Little Rock.....	79,200	1	0	0	-----	0	1	1	3
Louisiana:									
New Orleans.....	429,400	0	4	7	2	0	3	0	5
Shreveport.....	81,300	1	0	0	-----	0	2	0	1
Oklahoma:									
Oklahoma City.....	(1)	0	0	3	-----	0	0	0	3
Tulsa.....	170,500	2	0	0	-----	-----	10	0	-----

1 No estimate of population made.

City reports for week ended June 29, 1920—Continued

Division, State, and city	Population, July 1, 1920, 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			
WEST SOUTH CENTRAL—continued									
Texas:									
Dallas.....	217,800	0	3	5	1	1	26	0	0
Fort Worth.....	170,600	0	1	1	—	0	1	0	2
Galveston.....	50,600	0	0	0	—	0	1	0	0
Houston.....	(1)	0	2	2	—	0	8	1	2
San Antonio.....	218,100	0	2	4	—	0	0	0	6
MOUNTAIN									
Montana:									
Billings.....	(1)	1	0	0	—	0	1	0	1
Great Falls.....	(1)	—	0	—	—	—	—	—	—
Helena.....	(1)	0	0	0	—	0	0	0	0
Missoula.....	(1)	0	0	0	—	0	0	0	0
Idaho:									
Boise.....	(1)	0	0	0	—	0	3	0	0
Colorado:									
Denver.....	294,200	25	8	1	—	3	7	9	7
Pueblo.....	44,200	5	1	0	—	0	0	0	0
New Mexico:									
Utah:									
Albuquerque.....	(1)	3	1	0	—	0	0	0	0
Salt Lake City.....	138,000	39	3	2	—	2	3	60	4
Nevada:									
Reno.....	(1)	0	0	0	—	0	0	0	0
PACIFIC									
Washington:									
Seattle.....	383,200	25	3	1	—	—	12	23	—
Spokane.....	109,100	3	1	3	—	—	37	0	—
Tacoma.....	110,500	10	2	3	—	0	2	0	0
Oregon:									
Portland.....	(1)	3	5	2	—	0	22	8	6
Salem.....	(1)	2	0	0	—	0	9	1	0
California:									
Los Angeles.....	(1)	64	36	23	9	0	27	38	7
Sacramento.....	75,700	7	2	1	—	1	3	0	1
San Francisco.....	585,300	17	11	4	—	0	5	5	4

Division, State, and city	Scarlet fever		Smallpox			Tuber- culo- sis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
NEW ENGLAND											
Maine:											
Portland.....	1	5	0	0	0	1	1	1	0	1	16
New Hampshire:											
Concord.....	0	2	0	0	0	0	0	0	0	0	7
Nashua.....	1	0	0	0	0	0	0	0	0	0	7
Vermont:											
Barre.....	0	0	0	0	0	0	0	0	0	2	1
Massachusetts:											
Boston.....	38	32	0	0	0	12	2	0	0	46	182
Fall River.....	2	0	0	0	0	3	0	2	0	1	17
Springfield.....	3	3	0	0	0	1	0	0	0	3	30
Worcester.....	6	2	0	0	0	2	0	0	0	4	40
Rhode Island:											
Pawtucket.....	1	0	0	0	0	0	0	0	0	0	16
Providence.....	5	5	0	0	0	2	0	0	0	4	43
Connecticut:											
Bridgeport.....	4	0	0	0	0	2	1	1	0	0	27
Hartford.....	2	4	0	0	0	4	0	0	0	10	36
New Haven.....	2	0	0	0	0	1	0	0	0	0	37

1 No estimate of population made,

City reports for week ended June 29, 1929—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- culo- sis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
MIDDLE ATLANTIC											
New York:											
Buffalo.....	14	18	0	0	0	13	0	0	0	23	147
New York.....	114	56	0	0	0	84	15	13	3	72	1,206
Rochester.....	7	5	0	1	0	1	0	0	0	7	58
Syracuse.....	3	4	0	0	0	2	0	0	0	20	50
New Jersey:											
Camden.....	3	1	0	0	0	0	0	0	0	6	24
Newark.....	13	7	0	0	0	6	1	0	0	48	75
Trenton.....	2	0	0	0	0	2	0	0	0	1	27
Pennsylvania:											
Philadelphia....	47	28	0	0	0	38	4	1	0	73	417
Phittsburgh....	17	28	0	0	0	9	1	0	0	32	131
Reading.....	1	3	0	0	0	0	0	0	0	3	31
EAST NORTH CENTRAL											
Ohio:											
Cincinnati....	7	20	1	5	0	7	1	0	0	15	131
Cleveland.....	20	32	1	2	0	16	2	0	0	75	153
Columbus.....	4	0	1	1	0	5	0	0	0	36	77
Toledo.....	7	2	0	0	0	5	1	0	0	39	50
Indiana:											
Fort Wayne....	1	1	1	5	0	2	0	0	0	0	31
Indianapolis....	3	11	5	4	0	7	1	1	1	16	90
South Bend....	0	0	0	0	0	1	0	0	0	0	8
Terre Haute....	1	2	0	0	0	0	0	0	0	1	18
Illinois:											
Chicago.....	63	128	1	1	0	68	3	4	0	55	616
Springfield....	1	2	0	4	0	1	0	0	0	1	16
Michigan:											
Detroit.....	45	72	2	0	0	18	3	0	0	91	317
Flint.....	3	9	1	34	0	1	1	0	0	10	35
Grand Rapids....	5	0	0	2	0	1	1	0	0	17	22
Wisconsin:											
Kenosha.....	0	1	0	1	0	0	0	0	0	5	3
Milwaukee.....	14	18	2	0	0	4	0	0	0	103	82
Racine.....	3	2	0	0	0	0	0	0	0	5	19
Superior.....	2	2	1	0	0	0	0	0	0	2	2
WEST NORTH CENTRAL											
Minnesota:											
Duluth.....	4	3	1	0	0	1	0	0	0	2	25
Minneapolis....	17	15	3	0	0	3	0	2	0	6	73
St. Paul.....	9	12	1	0	0	6	0	0	0	30	42
Iowa:											
Davenport.....	0	0	0	3	-----	-----	0	0	-----	0	-----
Des Moines.....	2	12	2	-----	-----	-----	0	0	-----	0	32
Sioux City.....	1	1	1	0	-----	-----	0	0	-----	8	-----
Waterloo.....	0	1	0	7	-----	-----	0	0	-----	11	-----
Missouri:											
Kansas City....	3	4	0	1	0	6	1	1	0	12	96
St. Joseph.....	0	0	2	0	0	1	0	1	0	1	14
St. Louis.....	12	4	1	2	0	9	3	4	1	64	192
North Dakota:											
Fargo.....	1	3	0	0	0	0	0	0	0	0	7
Grand Forks....	0	2	0	0	-----	-----	0	0	-----	0	-----
South Dakota:											
Aberdeen.....	0	0	0	0	-----	-----	0	0	-----	0	-----
Sioux Falls....	0	0	0	13	-----	-----	0	0	-----	0	4
Nebraska:											
Omaha.....	1	1	2	0	0	1	0	0	0	2	42
Kansas:											
Topeka.....	1	2	0	0	0	0	1	0	0	12	11
Wichita.....	1	8	1	0	0	1	0	0	0	9	23
SOUTH ATLANTIC											
Delaware:											
Wilmington....	2	0	0	0	0	1	0	0	0	3	29
Maryland:											
Baltimore.....	12	21	0	0	0	19	3	2	0	90	182
Cumberland....	0	0	0	0	0	0	0	0	0	0	6
Frederick.....	0	0	0	0	0	0	0	0	0	0	5

City reports for week ended June 29, 1929—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- culosis, Deaths reported	Typhoid fever			Whoop- ing cough, cases reported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths reported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths reported		
SOUTH ATLANTIC— continued:											
District of Col.: Washington.....	9	8	0	0	0	12	2	1	0	22	101
Virginia:											
Lynchburg.....	0	0	0	0	0	0	0	0	0	11	6
Norfolk.....	1	3	0	0	0	1	0	0	0	0	—
Richmond.....	1	2	0	0	0	2	1	2	0	13	54
Roanoke.....	0	0	0	0	0	0	0	2	0	2	16
West Virginia:											
Charleston.....	0	—	0	—	—	—	0	—	—	—	—
Wheeling.....	2	0	0	0	0	0	0	0	0	9	13
North Carolina:											
Raleigh.....	0	0	0	0	0	0	0	3	0	4	12
Wilmington.....	0	1	0	0	0	1	0	1	0	2	8
Winston-Salem.....	0	1	0	0	0	5	1	1	0	32	17
South Carolina:											
Charleston.....	0	0	0	0	0	1	2	1	0	1	26
Columbia.....	0	0	0	0	0	0	1	0	0	38	19
Georgia:											
Atlanta.....	2	3	2	0	0	6	4	1	0	41	72
Brunswick.....	0	0	0	0	0	0	0	0	0	0	5
Savannah.....	0	0	0	0	0	3	1	2	1	2	29
Florida:											
Miami.....	0	0	0	0	0	1	0	1	0	1	15
St. Petersburg.....	0	—	0	—	—	0	0	1	1	11	—
Tampa.....	0	0	0	0	0	3	0	0	0	1	22
EAST SOUTH CENTRAL											
Kentucky:											
Covington.....	0	1	0	1	0	1	0	0	0	0	22
Tennessee:											
Memphis.....	2	2	1	0	0	7	4	2	0	19	88
Nashville.....	0	0	0	0	0	12	4	2	1	2	59
Alabama:											
Birmingham.....	1	2	2	0	0	4	3	0	0	6	57
Mobile.....	0	0	0	0	0	0	1	1	0	0	19
Montgomery.....	0	0	0	0	—	—	1	0	—	0	—
WEST SOUTH CENTRAL											
Arkansas:											
Fort Smith.....	0	0	0	0	—	—	0	0	—	2	—
Little Rock.....	0	0	0	0	0	1	1	1	0	0	—
Louisiana:											
New Orleans.....	2	8	0	0	0	11	3	2	0	1	136
Shreveport.....	1	0	0	0	0	0	0	0	0	2	25
Oklahoma:											
Oklahoma City.....	0	0	2	4	0	1	1	2	1	2	33
Tulsa.....	1	2	0	5	—	—	2	0	—	9	—
Texas:											
Dallas.....	2	2	1	0	0	6	2	2	1	5	45
Fort Worth.....	0	2	1	1	0	2	1	1	0	0	30
Galveston.....	0	0	0	0	0	1	1	0	0	0	16
Houston.....	1	1	1	0	0	5	1	3	0	0	84
San Antonio.....	1	0	2	1	0	11	1	1	0	0	59
MOUNTAIN											
Montana:											
Billings.....	0	0	0	0	0	0	0	0	0	0	9
Great Falls.....	0	—	0	—	—	—	0	—	—	0	—
Helena.....	0	1	0	0	0	0	0	0	0	0	4
Missoula.....	0	0	0	0	0	0	0	5	0	0	5
Idaho:											
Boise.....	0	0	0	1	0	0	0	0	0	1	2
Colorado:											
Denver.....	6	2	0	0	0	8	0	0	0	21	87
Pueblo.....	0	0	1	0	0	1	0	0	0	0	13
New Mexico:											
Albuquerque.....	0	0	0	0	0	1	0	0	0	0	—
Utah:											
Salt Lake City.....	1	4	1	12	0	1	0	0	0	17	35
Nevada:											
Reno.....	0	0	0	0	0	0	0	0	0	0	4

City reports for week ended June 29, 1929—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		
PACIFIC											
Washington:											
Seattle.....	4	3	2	2	-----	0	2	-----	28	-----	-----
Spokane.....	2	2	3	0	-----	0	0	-----	26	-----	-----
Tacoma.....	1	1	2	4	0	0	0	0	9	-----	33
Oregon:											
Portland.....	3	6	7	14	0	0	0	0	1	-----	69
Salem.....	0	1	1	0	0	0	0	0	0	-----	-----
California:											
Los Angeles....	16	33	4	0	0	28	3	4	60	-----	280
Sacramento....	1	5	0	0	0	3	2	2	4	-----	28
San Francisco..	8	24	1	0	0	7	1	0	12	-----	154
Division, State, and city	Meningococcus meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)				
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths		
NEW ENGLAND											
Massachusetts:											
Boston.....	5	1	0	0	0	0	0	1	0		
Worcester.....	2	0	0	0	0	0	0	0	0		
MIDDLE ATLANTIC											
New York:											
New York 1.....	17	7	7	0	0	0	2	1	0		
New Jersey:											
Newark.....	1	0	0	0	0	0	1	0	0		
Pennsylvania:											
Philadelphia....	1	0	2	0	0	0	0	0	0		
EAST NORTH CENTRAL											
Ohio:											
Columbus.....	0	0	1	1	0	0	0	0	0		
Indiana:											
Indianapolis....	0	4	0	0	0	0	0	0	0		
Illinois:											
Chicago.....	6	5	0	0	0	0	0	1	0		
Michigan:											
Detroit.....	23	7	1	0	0	0	0	0	0		
Flint.....	4	3	0	0	0	0	0	0	0		
Wisconsin:											
Milwaukee.....	4	1	0	0	0	0	0	0	0		
Racine.....	0	1	0	0	0	0	0	0	0		
WEST NORTH CENTRAL											
Minnesota:											
St. Paul.....	1	0	0	0	0	0	0	0	0		
Missouri:											
Kansas City....	3	0	0	0	0	0	0	0	0		
St. Joseph.....	0	0	0	0	0	0	0	1	0		
St. Louis.....	8	1	0	0	0	0	0	0	0		
SOUTH ATLANTIC 2											
Maryland:											
Baltimore 2.....	0	0	1	2	0	0	1	0	0		
North Carolina:											
Winston-Salem....	0	0	0	0	3	1	0	0	0		
South Carolina:											
Charleston.....	0	0	0	0	0	1	0	0	0		
Georgia:											
Atlanta.....	1	0	0	0	0	2	0	0	0		

1 Dengue: 2 deaths at New York City, N. Y.

2 Typhus fever: 1 case at Baltimore, Md., and 1 death at Washington, D. C.

City reports for week ended June 29, 1929—Continued

Division, State, and city	Meningococcus meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths
EAST SOUTH CENTRAL									
Tennessee:									
Memphis.....	1	1	0	0	0	0	0	1	0
Nashville.....	0	0	0	0	1	0	0	0	0
Alabama:									
Mobile.....	0	0	0	0	1	1	0	0	0
WEST SOUTH CENTRAL									
Louisiana:									
New Orleans.....	2	2	0	0	4	2	1	0	0
Texas:									
Dallas.....	1	0	0	0	0	0	1	0	0
Fort Worth.....	0	0	0	0	0	1	0	0	0
Houston.....	0	0	0	0	0	1	0	0	0
San Antonio.....	0	0	0	0	0	1	0	0	0
MOUNTAIN									
Montana:									
Helena.....	0	1	0	0	0	0	0	0	0
Colorado:									
Denver.....	1	1	0	0	0	0	0	0	0
Utah:									
Salt Lake City.....	1	1	0	0	0	0	0	0	0
PACIFIC									
Washington:									
Seattle.....	3	0	0	0	0	0	0	0	0
California:									
Los Angeles.....	3	3	0	0	1	1	1	0	0

The following table gives the rates per 100,000 population for 98 cities for the 5-week period ended June 29, 1929, compared with those for a like period ended June 30, 1928. The population figures used in computing the rates are approximate estimates, authoritative figures for many of the cities not being available. The 98 cities reporting cases have estimated aggregate populations of more than 31,000,000. The 91 cities reporting deaths have nearly 30,000,000 estimated population. 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, May 26 to June 29, 1929—Annual rates per 100,000 population, compared with rates for the corresponding period of 1928¹

DIPHTHERIA CASE RATES

	Week ended—									
	June 1, 1929	June 2, 1928	June 8, 1929	June 9, 1928	June 15, 1929	June 16, 1928	June 22, 1929	June 23, 1928	June 29, 1929	June 30, 1928
98 cities.....	125	124	110	136	107	146	112	119	² 111	115
New England.....	90	99	72	97	79	115	72	78	95	64
Middle Atlantic.....	168	178	148	221	131	242	125	185	144	187
East North Central.....	155	105	123	108	145	123	164	118	131	116
West North Central.....	110	84	96	53	65	68	87	63	85	53
South Atlantic.....	41	101	54	107	64	67	64	61	³ 34	40
East South Central.....	7	63	20	28	41	28	34	14	34	7
West South Central.....	59	57	91	61	87	53	67	53	71	49
Mountain.....	35	71	61	35	35	44	26	35	⁴ 28	35
Pacific.....	60	107	57	115	35	110	60	72	87	74

MEASLES CASE RATES

98 cities.....	661	1,218	737	1,026	484	866	424	663	² 268	500
New England.....	366	1,129	606	952	339	996	391	934	213	911
Middle Atlantic.....	183	2,170	169	1,771	143	1,403	123	1,106	99	655
East North Central.....	1,595	660	1,825	687	1,151	677	1,009	423	619	473
West North Central.....	1,032	755	1,059	597	581	534	504	342	256	383
South Atlantic.....	298	1,112	238	892	241	606	129	513	³ 138	375
East South Central.....	54	596	41	435	41	442	41	512	7	175
West South Central.....	245	178	415	61	217	113	190	45	162	32
Mountain.....	253	992	192	735	261	682	218	337	⁴ 129	399
Pacific.....	412	217	422	174	397	110	364	143	214	95

SCARLET FEVER CASE RATES

98 cities.....	271	209	209	193	189	167	149	144	² 113	104
New England.....	271	248	192	290	206	223	158	170	120	189
Middle Atlantic.....	196	201	135	191	129	162	100	146	72	100
East North Central.....	446	227	321	237	321	220	260	181	191	116
West North Central.....	179	233	165	164	110	155	77	139	104	113
South Atlantic.....	274	191	300	157	133	109	73	98	³ 63	73
East South Central.....	122	365	95	49	75	77	88	49	34	21
West South Central.....	166	146	79	93	111	45	91	45	43	41
Mountain.....	96	71	78	106	70	71	96	27	⁴ 65	71
Pacific.....	254	148	279	156	259	156	217	161	170	87

SMALLPOX CASE RATES

98 cities.....	9	12	8	11	16	10	9	7	² 15	10
New England.....	0	0	0	0	0	0	0	0	0	0
Middle Atlantic.....	0	0	0	0	0	0	0	0	0	0
East North Central.....	15	10	17	9	28	11	18	8	38	8
West North Central.....	15	29	12	22	12	23	6	23	19	31
South Atlantic.....	0	10	2	31	4	13	6	4	³ 0	2
East South Central.....	7	56	14	35	54	56	0	28	7	14
West South Central.....	20	24	8	24	43	20	4	24	4	8
Mountain.....	52	53	52	71	44	44	61	9	⁴ 120	142
Pacific.....	27	49	15	13	47	18	32	15	15	20

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, 1929 and 1928, respectively.

² Charleston, W. Va., and Great Falls, Mont., not included.

³ Charleston, W. Va., not included.

⁴ Great Falls, Mont., not included.

Summary of weekly reports from cities, May 26 to June 29, 1929—Annual rates per 100,000 population, compared with rates for the corresponding period of 1928—Continued

TYPHOID FEVER CASE RATES

	Week ended—									
	June 1, 1929	June 2, 1928	June 8, 1929	June 9, 1928	June 15, 1929	June 16, 1928	June 22, 1929	June 23, 1928	June 29, 1929	June 30, 1923
98 cities.....	7	12	8	9	9	7	8	7	¹ 12	16
New England.....	2	57	7	2	11	2	5	9	9	28
Middle Atlantic.....	3	1	5	10	3	2	2	1	7	8
East North Central.....	3	3	3	7	4	3	4	2	3	6
West North Central.....	17	4	8	4	17	4	19	4	15	12
South Atlantic.....	19	17	17	11	11	17	13	13	¹ 31	34
East South Central.....	34	91	27	14	34	42	54	49	34	140
West South Central.....	20	32	28	32	20	36	36	28	36	41
Mountain.....	0	0	0	9	9	9	9	0	⁴ 46	27
Pacific.....	2	18	12	10	20	20	5	15	20	8

INFLUENZA DEATH RATES

91 cities.....	7	21	7	18	6	12	6	6	¹ 5	7
New England.....	7	16	2	14	7	14	2	5	2	5
Middle Atlantic.....	4	24	5	19	4	11	3	9	4	6
East North Central.....	9	21	6	17	8	14	8	6	4	5
West North Central.....	3	21	3	21	9	6	6	0	0	12
South Atlantic.....	6	10	7	10	2	8	6	8	¹ 4	6
East South Central.....	0	38	22	77	7	31	15	0	15	54
West South Central.....	12	25	16	33	12	17	16	4	4	12
Mountain.....	17	44	35	0	0	9	0	0	⁴ 46	18
Pacific.....	16	7	16	7	7	7	7	3	3	3

PNEUMONIA DEATH RATES

91 cities.....	105	147	91	130	86	115	82	87	¹ 64	77
New England.....	106	172	66	168	86	136	54	90	59	71
Middle Atlantic.....	113	183	105	148	98	132	89	110	65	89
East North Central.....	101	129	96	115	82	111	76	59	69	63
West North Central.....	120	89	81	95	54	129	48	64	48	70
South Atlantic.....	112	136	67	132	88	80	84	94	¹ 63	71
East South Central.....	111	153	59	161	104	115	118	46	74	123
West South Central.....	69	129	93	108	65	75	85	87	69	71
Mountain.....	113	106	61	89	113	53	78	115	¹ 111	71
Pacific.....	66	71	72	81	62	88	108	84	39	81

¹ Charleston, W. Va., and Great Falls, Mont., not included.

² Charleston, W. Va., not included.

⁴ Great Falls, Mont., not included.

Number of cities included in summary of weekly reports and aggregate population of cities of each group, approximated as of July 1, 1929 and 1928, 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	
			1929	1928	1929	1923
Total.....	98	91	31,568,400	31,052,700	29,995,100	29,498,600
New England.....	12	12	2,305,100	2,273,900	2,305,100	2,273,900
Middle Atlantic.....	10	10	10,809,700	10,702,200	10,809,700	10,702,200
East North Central.....	16	16	8,181,900	8,001,300	8,181,900	8,001,300
West North Central.....	12	9	2,712,100	2,673,300	1,736,900	1,708,100
South Atlantic.....	19	19	2,783,200	2,732,900	2,783,200	2,732,900
East South Central.....	6	5	767,900	745,500	704,200	682,400
West South Central.....	8	7	1,319,000	1,239,900	1,285,000	1,256,400
Mountain.....	9	9	598,800	590,200	598,800	590,200
Pacific.....	6	4	2,090,600	2,043,500	1,590,300	1,551,200

FOREIGN AND INSULAR

CANADA

Quebec province—Communicable diseases—Week ended June 29, 1929.—The Bureau of Health reports cases of certain communicable diseases in the Province of Quebec for the week ended June 29, 1929, as follows:

Disease	Cases	Disease	Cases
Chicken pox.....	47	Scarlet fever.....	10
Diphtheria.....	26	Smallpox.....	1
German measles.....	5	Tuberculosis.....	33
Measles.....	70	Typhoid fever.....	9
Mumps.....	15	Whooping cough.....	33

CHINA

Meningitis.—During the week ended June 22, 1929, 21 cases of meningitis, with 21 deaths, were reported at Canton, China. During the same week 2 cases of meningitis, with 1 death, occurred at Hong Kong, and 3 admissions to the hospital and 8 deaths from meningitis were reported at Shanghai. During the week ended June 29, 15 cases, with 14 deaths, were reported at Hong Kong, and 1 admission to the hospital and 5 deaths at Shanghai.

COLOMBIA

Socorro—Yellow fever.—According to telegraphic information dated July 8, 1929, yellow fever was reported in Socorro, Colombia, June 19. The number of cases reported to date of telegram was 41, deaths 23, 2 doubtful. Socorro is an isolated town in the interior of the country. Active preventive measures had been taken and the cases were diminishing. The mosquito index was falling rapidly and the danger of spread of the disease was believed to be slight.

CUBA

Habana—Communicable diseases—June, 1929.—During the month of June, 1929, certain communicable diseases were reported in Habana, Cuba, as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Chicken pox.....	5	—	Measles.....	34	—
Diphtheria.....	18	2	Scarlet fever.....	6	—
Leprosy.....	2	—	Typhoid fever.....	31	2
Malaria.....	22	1			

DENMARK

Communicable diseases—December, 1928.—During the month of December, 1928, communicable diseases were reported in Denmark as follows:

Disease	Cases	Disease	Cases
Bronchopneumonia.....	1,519	Paratyphoid fever.....	11
Cerebrospinal meningitis.....	6	Pneumonia.....	291
Chicken pox.....	44	Poliomylitis.....	10
Diphtheria.....	653	Puerperal fever.....	19
Erysipelas.....	269	Recurrent fever.....	5
German measles.....	5	Scabies.....	919
Influenza.....	4,166	Scarlet fever.....	168
Jaundice.....	106	Tuberculosis.....	183
Lethargic encephalitis.....	3	Typhoid fever.....	12
Measles.....	819	Undulant fever ¹	36
Mumps.....	1,041	Whooping cough.....	1,511

¹ Reported from the State Serum Institute.

Population 3,537,805.

ITALY

Communicable diseases—Four weeks ended May 12, 1929.—During the four weeks ended May 12, 1929, communicable diseases were reported in the Kingdom of Italy as follows:

Disease	April 15-21		April 22-28		April 29-May 5		May 6-12	
	Cases	Com-munes affected	Cases	Com-munes affected	Cases	Com-munes affected	Cases	Com-munes affected
Anthrax.....	12	11	13	13	16	14	13	13
Cerebrospinal meningitis.....	27	15	24	16	25	18	12	10
Chicken pox.....	159	78	222	90	283	100	225	105
Diphtheria.....	353	222	415	216	280	174	354	210
Dysentery.....	5	4	1	1	1	1	1	1
Lethargic encephalitis.....	6	6	4	4	4	4	7	7
Measles.....	2,115	312	2,383	296	2,065	281	2,070	335
Poliomylitis.....	2	2	5	5	9	9	7	6
Rabies.....							1	1
Scarlet fever.....	245	106	286	125	259	105	258	121
Smallpox.....							1	1
Typhoid fever.....	215	104	262	132	167	97	162	123

JAMAICA

Communicable diseases—Four weeks ended June 22, 1929.—During the four weeks ended June 22, 1929, cases of certain communicable diseases were reported in Kingston, Jamaica, and in the island of Jamaica outside of Kingston, as follows:

Disease	King-ston	Other local-ities	Disease	King-ston	Other local-ities
Cerebrospinal meningitis.....		2	Puerperal fever.....		1
Chicken pox.....	6	32	Tuberculosis.....	34	46
Dysentery.....	1	2	Typhoid fever.....	25	65
Paratyphoid fever.....		2			

LIBERIA

Monrovia—Yellow fever.—The first reports of yellow fever in the 1929 epidemic at Monrovia, Liberia, were made on January 21, 1929, by a physician employed on the governmental hospital staff in Monrovia. He reported the death of a native from yellow fever and the occurrence of another case in a Liberian. On January 24, 1929, an American missionary died from a disease which was later ascertained to be yellow fever. On February 23 another American contracted the disease, but subsequently recovered.

During the period of the epidemic two Americans (both colored) have died from yellow fever, one has recovered, and another, a trained nurse in the government hospital, is still suffering from the disease. The death of 2 foreigners was reported on June 28. Some Liberians, and it is thought many natives, have suffered from the disease with a number of fatalities in both, although several have recovered. A physician, on April 15, estimated the number of deaths, based upon the cases he had either seen or had knowledge of, at about 25.

Serum has been sent to Monrovia, and foreigners have been warned to exercise proper precautions. The Liberian Government has issued a notice relative to the cleaning up and removal of mosquito breeding places.

MEXICO

Tampico—Communicable diseases—June, 1929.—During the month of June, 1929, certain communicable diseases were reported in Tampico, Mexico, as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Diphtheria.....	1		Malaria.....	42	7
Enteritis (various).....		80	Tuberculosis.....	26	30
Influenza.....		1	Typhoid fever.....	1	

PHILIPPINE ISLANDS

Meningitis.—Two cases of meningitis, with 1 death, occurred at Manila during the week ended June 29, 1929.

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

From medical officers of the Public Health Service, American consuls, health section of the League of Nations, and other sources. The reports contained in the following table must not be considered as complete or final as regards either the list of countries included or the figures for the particular countries for which reports are given.

CHOLERA

[O indicates cases; D, deaths; P, present]

Place	Week ended—									
	April, 1929			May, 1929			June, 1929			
	13	20	27	4	11	18	25	1	8	22
Ceylon.....	7	—	—	—	—	—	—	—	—	—
Colombo.....	4	—	—	—	2	1	—	—	—	—
China:	3	—	—	—	—	—	—	—	—	—
Amoy.....	—	—	—	—	—	—	—	—	—	—
Canton.....	1	—	—	1	1	—	—	1	1	—
Swatow.....	—	—	—	—	—	—	—	—	—	—
India.....	17,038	12,566	7,627	9,046	5,107	6,073	6,979	—	—	—
Bassett.....	10,807	7,912	4,425	4,997	2,562	3,853	4,469	—	—	—
Bombay.....	—	—	—	—	—	—	—	—	—	—
Calcutta.....	103	129	261	552	184	278	274	103	65	53
Madras.....	61	85	144	307	97	109	175	171	103	7
Moulmein.....	17	5	4	—	—	—	—	—	—	—
Negapatam.....	—	—	—	—	—	—	—	—	—	—
Rangoon.....	6	18	13	15	4	1	6	11	14	5
Tuticorin.....	6	15	13	15	1	2	4	3	1	2
India (French):	5	9	6	37	2	2	2	1	1	2
Chandernagor.....	115	85	6	—	—	—	—	—	—	—
Karikal.....	61	52	4	—	—	—	—	—	—	—
Pondicherry Provinces.....	4	—	—	3	1	2	—	1	1	1
	54	150	88	20	3	—	—	1	1	—
	71	128	71	15	3	—	—	—	—	—
	92	129	86	46	—	—	—	1	1	1
	55	104	74	38	—	—	—	1	1	—

CHOLERA—Continued

[C indicates cases; D, deaths; P, present]

[illegible]

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

PLAGUE—Continued

[O indicates cases; D, deaths; P, present]

Place	Dec. 16, 1928— Jan. 12, 1929	Jan. 13— Feb. 9, 1929	Feb. 10— Mar. 9, 1929	Mar. 10— Apr. 6, 1929	Week ended—												July 6, 1929
					April, 1929					May, 1929					June, 1929		
					13	20	27	4	11	18	25	1	8	15	22	29	
British East Africa (see also table below):																	
Uganda.....	155	152	112	130	59			90	82	87	86						
Canary Islands: Laguna.....	123	149	108	124	57			80	82	81	86						
Ceylon: Colombo.....	8	6	4	4	2	2	1	1		2	1	1	3	1	1		
Plague-infected rats.....	8	6	3	1	1	2	1	1		2	1	1	2	1	1		
China:																	
Hainan.....		P	1														
Suyuan Province.....		P	1														
Dutch East Indies:																	
Celebes—Makassar.....	1																
Plague-infected rats.....																	
Java—																	
Batavia and West Java.....	64	74	70	64	14	20	14	15		16	20						
Plague-infected rats.....	53	73	69	65	14	20	14	15		18	19						
East Java and Madura.....			4	5	5	3											
Surabaya.....				3													
Kediri Residency.....		6															
Ecuador (see table below).		P															
Egypt:																	
Alexandria.....		3								1							2
Beni Suef.....		3	4	2	1	5		1	1					1		1	1
Daqahliya.....		3	1	2		1					3	4	2	1			
Port Said.....													1	1	1	1	1
Suez.....																	
Greece (see table below).																	
Hawaii: Hamakua—Kukuihaele—Plague-infected rats.....				2				1	1	1	1						

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

PLAGUE—Continued

[C indicates cases; D, deaths; P, present]

Place	Dec. 16, 1928— Jan. 12, 1929	Jan. 13— Feb. 9, 1929	Feb. 10— Mar. 9, 1929	Mar. 10— Apr. 6, 1929	Week ended—												July 6 1929
					April, 1929				May, 1929				June, 1929				
					13	20	27	4	11	18	25	1	8	15	22	29	
Union of South Africa																	
Cape Province.....	4			1	1				1								
Orange Free State.....	1	6	2	3	3	1			1								
Transvaal.....	3	1		2		1											
Uruguay:				8													
Montevideo.....				4													
On vessel:	1																
S. S. Chenonceaux, at Singapore, from Colombo.					1												
S. S. Ganzanaru, at Osaka, from Haiphong.....										1							
S. S. Haiydan, at Bangkok, from Singapore.....																	
S. S. Selyo Maru, at Osaka, from Bombay—	1																
Plague-infected rats.....										1							
S. S. Soudades, at Hamburg, from Rosario, Ar-																	
gentina—Plague-infected rats.....																	
S. S. Stomand, at Alexandria, from Batoum.....		1			2												
S. S. Sumatra, at Osaka, from Bombay.....						1				1							

Place	De- cem- ber, 1928	Janu- ary, 1929	Feb- ru- ary, 1929	March, 1929	April, 1929	May, 1929	Place	De- cem- ber, 1928	Janu- ary, 1929	Feb- ru- ary, 1929	March, 1929	April, 1929	May, 1929
British East Africa (see also table above):													
Kenya.....	15	7	4	10	4	22	Madagascar—Continued.						
Uganda.....				121			Tamatave.....	2	4				
				113				2	4				
Ecuador: Guayaquil.....	20	26	54	26	19	2	Tananarive Province.....	158	208	146	120		
	7	12	22	4	5	1		144	192	136	119		
Plague-infected rats.....	75	20	27	14	13	3	Petu.....	20	37	16	35		
Greece.....	2	3	1		1		Senegal:	6	9	13	13		
	1	1					Baol ¹	4			6	1	21
Indo-China (see also table above).....	232	11		3	13			2			3	1	6
Madagascar (see also table above).....	263	224	348	196			Cayor ¹	14					
	79	169	335	194				10				6	17
Amboisitra Province.....	74	159	164	90			Dakar ¹					4	11
	4	15	21	13							4	20	6
Antistrabe Province.....	4	15	21	13			Thies ¹			8	3	20	3
	4	15	21	13						7			
Itasy Province.....	11	3	10	8			Tivaouane ¹			12			22
	11	3	10	7						2			10
Moramanga Province.....	28	22	7	5									
	27	21	4	5									

¹ Reports incomplete.

[C indicates cases; D, deaths; P, present]

Place	Dec. 16, 1928- Jan. 12, 1929	Jan. 13- Feb. 9, 1929	Feb. 10- Mar. 9, 1929	Mar. 10- Apr. 6, 1929	Week ended—												
					April, 1929			May, 1929				June, 1929				July 6, 1929	
					13	20	27	4	11	18	25	1	8	15	22		29
Algeria:																	
Algiers.....																	
Cherchell.....			21	42													
Oran.....			1	1													
Arabia: Aden.....	1	2		30	17	19	5	3	10	20	7	20	25	10			
				8	6	4	6	4	3	1	9	7	2	6	6		
Bermuda: Hamilton.....																	
Brazil: Rio de Janeiro.....																	
British East Africa (see also table below):																	
Kenya—Mombasa.....																	
Tanganyika.....																	
British South Africa:	3	13	3			1		2	3	1							
Northern Rhodesia.....																	
	173																
Southern Rhodesia.....	23	1	17	69		13				12							
Canada:																	
Alberta.....	3	3	5	7		5		3									
Calgary.....			1					2									
Edmonton.....	14	2	2	12		4		1					3	1			
British Columbia—Vancouver.....	51	66	70	8		19		7		6	7	2	1	2	4		
Manitoba.....	23	21	15	3				1		2		4	6				
Winnipeg and vicinity.....	2												2				
New Brunswick.....				3													
Nova Scotia.....	5	2				1											
Ontario.....	36	83	83	57	16	37	21	40		30	7	3					
Niagara Falls.....				1								3					
North Bay.....												3					
Ottawa.....			4				2	1	1		7		2				
Toronto.....			1	2		1								1	4	2	5
Windsor.....							3		3					1	1		
Prince Edward Island.....	2	2	28														
Quebec.....	37	24	16	14	11	8	11	4	3	3	3	3	6	3	2	1	
Montreal.....		8	10	3			3	1									
Quebec.....	4	8		3	1					1							
Riviere du Loup.....					1								2				

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

SMALLPOX—Continued

[C Indicates cases; D, deaths; P, present]

Place	Dec. 16, 1919— Jan. 12, 1920	Jan. 13— Feb. 9, 1920	Feb. 10— Mar. 9, 1920	Mar. 10— Apr. 6, 1920	Week ended—												July 6, 1920
					April, 1920			May, 1920				June, 1920					
					13	20	27	4	11	18	25	1	8	15	22	29	
France (see table below).																	
Great Britain:																	
England and Wales:																	
Birmingham	733	890	1,083	1,156		339	374	354	356	277	362	298	242	272	191	106	
Bradford		1	2	3			1				2	1		2	2		
Bristol		1															
Cardiff		4		1		1							4				
Castleford	16	48	85	56	5	5	14	5	7		5	5	2	2			
Hull		2															
Leeds		3	6	8		1	1	1							1		
Liverpool		1															
Liverpool						29	49	56	67	50	52	53	38	69	41	40	
London	36	40	54	68	206	250	203	229	229	159	198	171	128	166	120	113	
London and Great Towns		433	425	598		1	2	2	1	1	10	14	12		11		
Newcastle-on-Tyne	D		6	16	1	1			2	1	1	1					
Nottingham																	
Nottingham		3	1	2		42	30	27	34	12	41	18	15	24	9	13	
Stoke-on-Trent		4	14	72													
Scotland—																	
Aberdeen							1	1	1	1							
Aberdeen						12	6	1									
Glasgow																	
Glasgow																	
Greece (see table below).																	
Hedjaz	48	153	108	84	1	23	22	13	9	23		7	10	23	19	22	19
Hedjaz	15	56	40	52		16	14	14	10	12	13	4	7	11	12	16	14
Honduras: Puerto Castilla																	
Honduras: Puerto Castilla																	
India																	
India	7,877	12,531	14,890	19,120	5,694	5,169	6,194	5,499	5,105								
Bombay	2,143	3,045	3,285	3,983	1,291	1,105	1,359	1,304	1,354								
Bombay	34	168	188	208	104	87	85	69	64	70		34	50	38	42	36	
Bombay	21	78	188	206	46	30	48	51	30	46	22	33	22	27	27	27	
Calcutta	D	10	32	104	34	24	25	18	6	16	6	16	6	7	4	8	
Calcutta	D	6	16	29	77	26	16	16	16	16	6	16	6	10	7	4	
Karachi	D	6	6	147	205	29	57	33	25	23	22	17	22	8	13	10	
Karachi	D																
Karachi	D	223	14	70	8	22	17	12	12	11	11	12	21	6	8	7	
Madras	D																
Madras	94	35	260	392	107	87	70	63	60	63	60	37	24	21	17	28	
Madras	25	6	61	83	20	26	22	16	14	23	11	13	13	2	6	8	

[C indicates cases; D, deaths; P, present]

[illegible]

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

[C indicates cases; D, deaths; P, present]

Place	Jan. 13- Feb. 9, 1929	Feb. 10- Mar. 9, 1929	Mar. 10- Apr. 6, 1929	Week ended—											
				April, 1929			May, 1929			June, 1929			July, 1929		
				13	20	27	4	11	18	25	1	8	15	22	29
Belgian Congo: Tumba.....	C	-----	-----	-----	-----	1	-----	-----	-----	-----	-----	-----	-----	-----	-----
Brazil:	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Bahia.....	C	-----	1	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Guaratingueta.....	C	-----	1	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Para.....	D	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Pernambuco.....	D	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Porto Alegre.....	C	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Rio de Janeiro:	C	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Sao Paulo.....	C	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Colombia: Socorro. ¹	D	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Liberia: Monrovia.....	C	3	7	10	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
On vessel:	D	2	4	4	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
S. S. Skogland, at Porto Alegre, from Rio de Janeiro.....	C	-----	-----	-----	-----	-----	-----	-----	1	-----	-----	-----	-----	-----	-----

¹ Imported.
² 29 cases of yellow fever with 14 deaths were reported at Rio de Janeiro during January, 1929, mostly suburban.
³ From June 19 to July 8, 1929, 41 cases of yellow fever with 23 deaths were reported in Socorro, Colombia.

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