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A SPECIAL STUDY OF THE VISION OF SCHOOL CHILDREN

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The conservation of vision is of vital importance in the development and progress of modern man. This study was made with the hope of throwing further light on the development of visual defects.

Many observers have submitted reports on the visual defects of school children; yet, prior to this, there had been no complete ophthalmological study of school children in this country with the aid of a cycloplegic.

The special observations of the vision of the children of the District of Columbia were made for the following purposes:

(1) To determine the number of refractive errors in school children by using a cycloplegic and employing the services of an ophthalmologist.

(2) To determine, if possible, at what ages myopia tends to develop, and the progress of this condition.

(3) To determine what changes may take place in the eyeball during the process of growth of the school child.

The results of this study are being presented in two publications: Public Health Bulletin No. 182, which is now in press, contains a detailed statistical analysis of the collected data;[1] the present publication is a descriptive summary of the facts presented in that Bulletin.

The Eye

Before presenting the plan and results of the survey it may be worth while to describe briefly the structure of the eye, its physiology, visual powers, and the nature of refractive errors.

The eye, or the organ of sight, is an extension of the brain and is protected by the bony cavity of the skull called the orbit. The eye is a globelike body about 23 millimeters long. It has the shape of a slightly flattened ball, with a front curvature similar to that of a watch crystal.

The eyeball has three special membranes, or coats. From without, inward, they are called (1) the sclera, (2) the choroid, and (3) the retina.

[1] This Bulletin may be obtained later by application to the Surgeon General, U. S. Public Health Service, Washington, D. C.

Figure 1 shows a section of the eye in schematic form.

The outer coat, or sclera, is a very tough, protective membrane and serves as the framework for the eye and as means for the attachment of the external muscles which move the eyeball.

The middle coat, or choroid, is a vascular network firmly adherent to the sclera and the retina.

The inner coat, or retina, is a delicate network of nerve fibers. The optic nerve enters the eyeball and spreads out so that it covers the inside of the eyeball as far forward as the ciliary body. (See fig. 1.) The retina is a marvelous provision of nature to receive visual stimuli. It consists of 10 layers of nerve fibers and nerve cells, and is

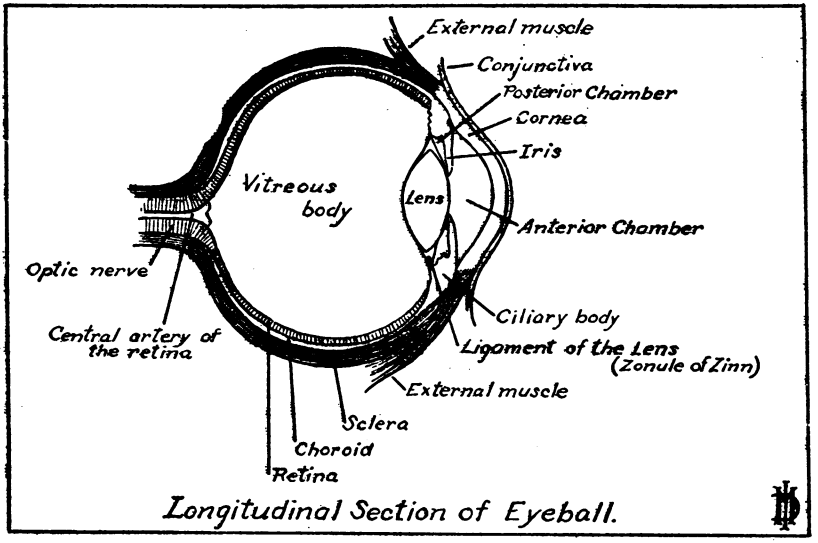


FIG. 1.—Schematic section of the eye

sensitive throughout its structure. In each eye, however, there is one point of clearest vision; this is called the "macula lutea."

The sclera covers the entire eyeball, but in front it takes a different structure. Projecting from the front of the eyeball is a slightly domelike transparent membrane, which is nearly circular in outline. This is the cornea and is part of the sclera.

The cornea is covered by a thin transparent membrane which also lines the inner side of the eyelids and is called the conjunctiva. The conjunctiva over the cornea is a modified form and is transparent.

The choroid coat also extends toward the front of the eye. Here it is thickened to form the ciliary body and the iris. The iris is the colored part of the eye and is a muscular membrane. The central opening is called the pupil. The expansion and contraction of the membrane control the size of the pupil.

The crystalline lens lies behind the iris. This is the principal refracting part of the eye. It is a transparent biconvex body with the elastic property of increasing or decreasing its convexity under certain conditions.

There are two chambers of the eye in front of the lens, called the anterior and posterior chambers, the dipping down of the iris forming the division. These spaces are filled with a clear fluid called the aqueous humor. The cavity of the eyeball behind the lens is filled with a jellylike substance called the vitreous humor.

The refractive elements of the eye are the cornea, the aqueous humor, the crystalline lens, and the vitreous humor. The most important are the cornea and the lens.

The movements of the eyeball are accomplished by the action of the extrinsic muscles, six in number. These muscles are attached to

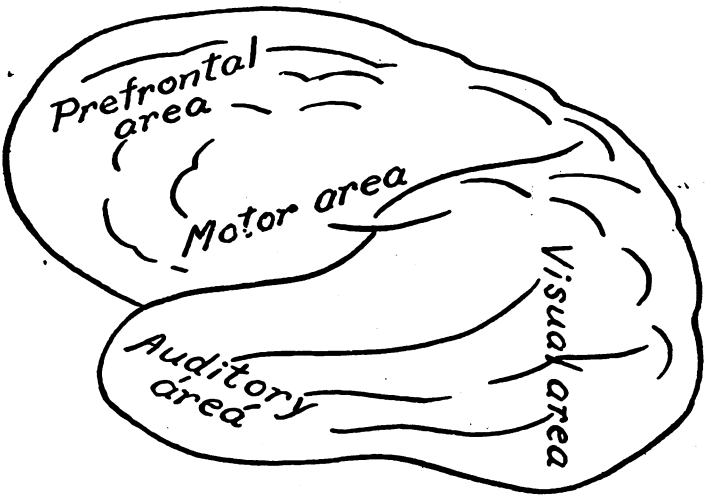


FIG. 2.—Visual center of the brain

the wall of the orbit and to the eyeball. The mechanism of movement of both eyes is synchronized by the nerve supply of these muscles from the visual center of the brain. The eyeball is well cushioned by fat and fascia which fill the orbital space not occupied by the eyeball and the muscles.

The function of the eye is to carry to the brain the stimuli of light rays reflected into the eye. The retina is really an extension of the brain. Vision is, therefore, the result of light rays reflected from an object into the eye. Here certain impulses are carried from the endings of the nerve fibers of the optic nerve in the retina to the visual center of the brain. These are interpreted as a mental image or picture of the external object. Here also are stored the myriad mental pictures which are recalled to conscious mind from time to

time. This visual center is illustrated in Figure 2. Injury to this part of the brain may result in blindness, or partial blindness, although the eyes may be in perfect condition.

The nerve fibers of the retina do not all go to one side of the brain. Figure 3 is a diagram illustrating that the fibers of the nasal half of the right retina and the outer half of the left retina go to the left side

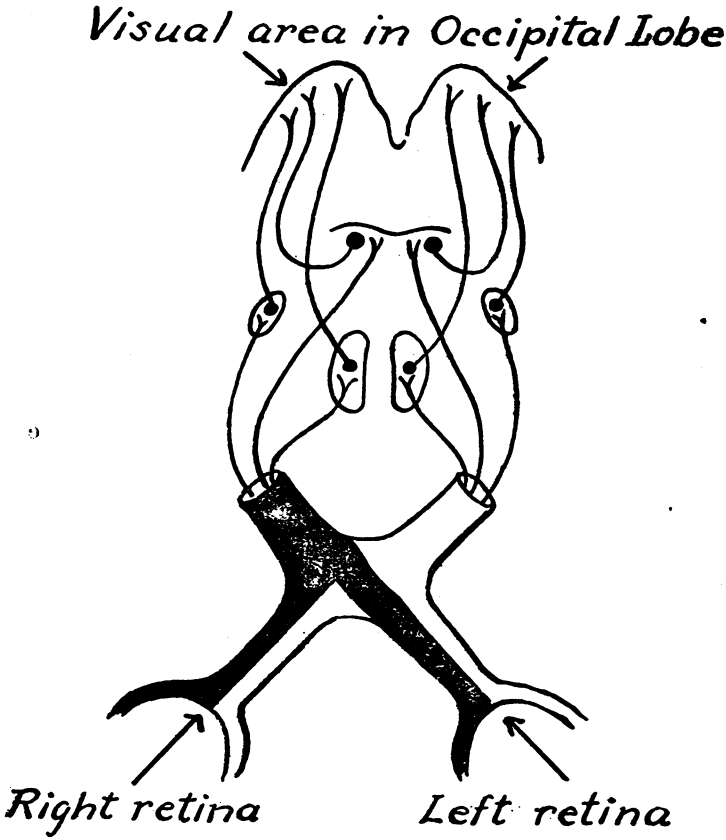


FIG. 3.—Diagram showing the path of nerve fibers from the retina to the brain. (From Howell's Physiology)

of the brain. Those of the nasal half of the left eye and the outer half of the right eye go to the right side of the brain.

The optic nerve fibers cross at the optic chiasm below the base of the brain. It will be noticed that the fibers of the outer half of each retina do not cross.

Fundamental Principles of Optics

The optics of the eye will be briefly presented so that the visual defects may be better understood.

All external objects reflect light rays. These rays travel in straight lines in all directions. For an object to be seen, the reflected divergent rays must be brought to a focal point on the retina. The focal

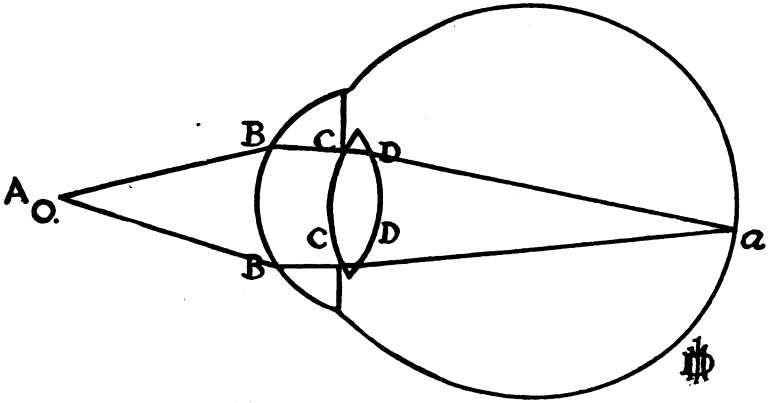


FIG. 4.—Diagrammatic sketch showing how the light rays are focused on the retina

power of the eye is due to the convexity of the cornea, the aqueous humor, the crystalline lens, and the vitreous humor.

The principal agents concerned in focusing light rays on the retina are the cornea (fig. 4) and the lens. Ray *A* enters the cornea at *B*,

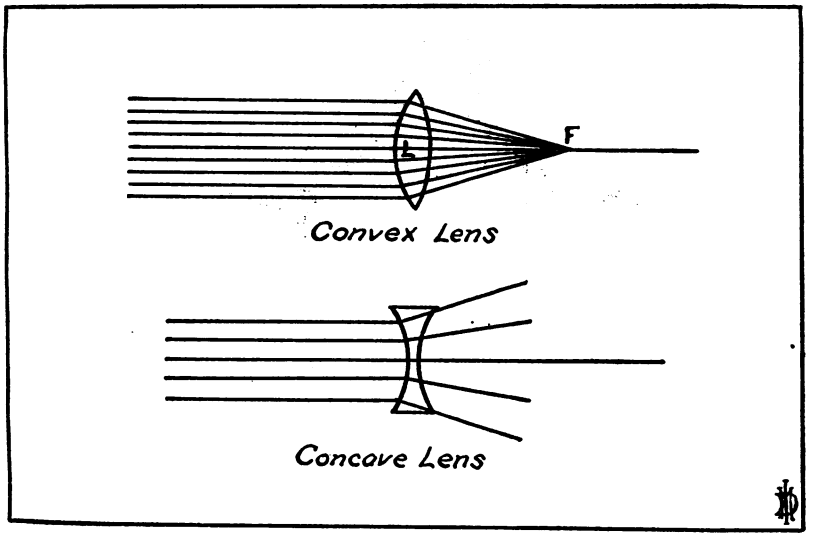


FIG. 5.—Illustrating the effect of convex and concave lens on light rays

is converged then to the anterior surface of the lens at *C* and posterior surface at *D* to fall on the retina at *a*.

Light rays are bent by the curvature of the lens through which they pass. If this curvature is concave, the rays of light are made

more divergent; if convex, the rays are brought closer together. (Fig. 5.)

The convex surface of the lens of the eye is a powerful converger of light rays. This surface has the property of being changed so that its focal point may vary.

In imperfect eyes, due to developmental causes, etc., certain artificial lenses are placed in front of the eye to overcome optical defects of the cornea and crystalline lens.

NORMAL VISION

In the following an explanation of the vision of the normal eye is given. For purposes of clarity, the optics of the normal eye at rest will be explained. With the normal eye at rest, all objects beyond 20 feet are observed without any change in the intrinsic mechanism of the eye, as rays of light reflected from objects at a distance of 20 feet or more enter the eye practically in parallel lines and the refrac-

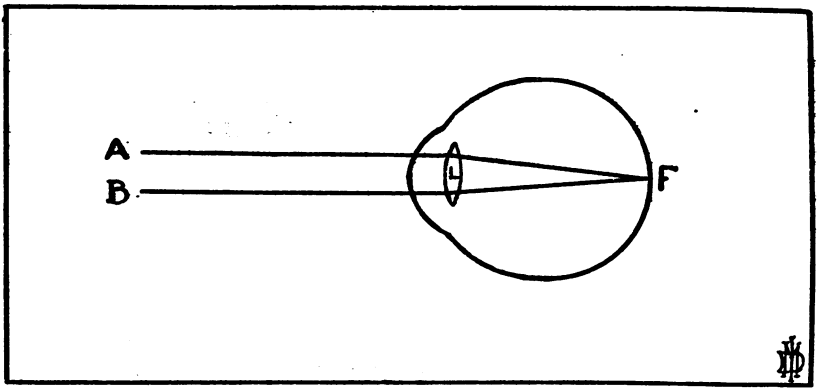


FIG. 6.—Emmetropia, or normal

tive power of the normal eye at rest brings all parallel rays to exact focus on the retina. This is shown graphically in Figure 6.

Parallel rays of light *A* and *B* enter the eye and the cornea converges or bends them together slightly; continuing through the crystalline lens they are so converged as to fall in focus on the retina *F*. In order that the eye may clearly see objects less than 20 feet away it must adjust its refractive power so that the divergent rays of light reflected from near objects and entering the eye will be brought to a focal point on the retina. This adaptive mechanism of the eye is called accommodation.

To make the crystalline lens more convex in order to converge the light rays, the ciliary muscle (see fig. 1 and fig. 7) contracts and permits the ligaments supporting the elastic lens to slacken. The lens bulges more in the antero-posterior diameter, thereby becoming more convex. The nervous mechanism controlling the power of accommo-

dation is so efficient that the normal eye is able to adjust itself for all visual distances. When looking at a near-by object the eyeballs converge inward and the pupils contract—this is all part of the marvelous and intricate power of accommodation.

Figure 4 shows diagrammatically how the normal eye acts in near vision. Rays *AB* from the near object *o* are diverging until they reach the cornea and lens, where they are converged to meet at their focal point on the retina. The mechanism of the eye, which is able to accommodate for the myriad objects looked at, near and far, may well be appreciated.

The normal eye works best for distant vision, as the rays of light from an object at a distance of 20 feet or more enter the eye practically in parallel lines, and no muscular effort is needed. For near objects the power of adaptability of the eye, called "accommodation," adapts the lens to converge the divergent rays of light from near objects.

The far-sighted eye is forced to extra work for near vision, and it is this circumstance which causes the symptoms of eye strain in children who apparently have normal vision. Even for clear distant vision the hyperopic eye is forced to use the power of accommodation. The hyperopic eye, to see clearly at a distance, must correct the hyperopic defect by the use of accommodation. If accommodation is not used, the parallel rays of light reflected from objects beyond 20 feet could never be brought to focus on the retina. (See fig. 11.)

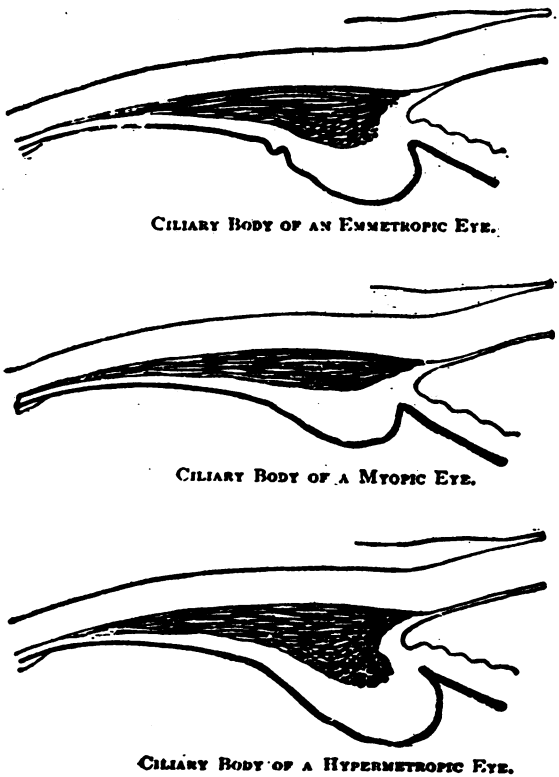


FIG. 7.—Ciliary body. (From Duane's translation of Fuchs's "Ophthalmology")

Both near-sighted and far-sighted eyes are defective eyes and need correction. As age increases, the power of accommodation decreases. This is due to the lessened elasticity of the crystalline lens,

and it becomes apparent in the majority of people about 35 to 40 years of age.

The ciliary muscle is well developed in far-sighted eyes, moderately so in the normal eye, and poorly in the near-sighted eye.

VISUAL ACUITY

The acuity of vision is the power of the eye to see clearly the smallest object possible, or the greatest distance at which it can distinguish an object of a given size.

Figure 8 is presented to help make clear the explanation of visual acuity. Suppose that an eye is just able to distinguish object *ab* from distance *aK*. Another eye can, however, see this object when it is twice as far away, *AK*. The size of the retinal image *A' B'* is reduced to one-half of the first image *A' b'*. The visual acuity of the second eye is twice as great as that of the first eye.

Now, instead of moving the object *ab* twice as far away, its size can be reduced one-half and remains at the same position as *ac*.

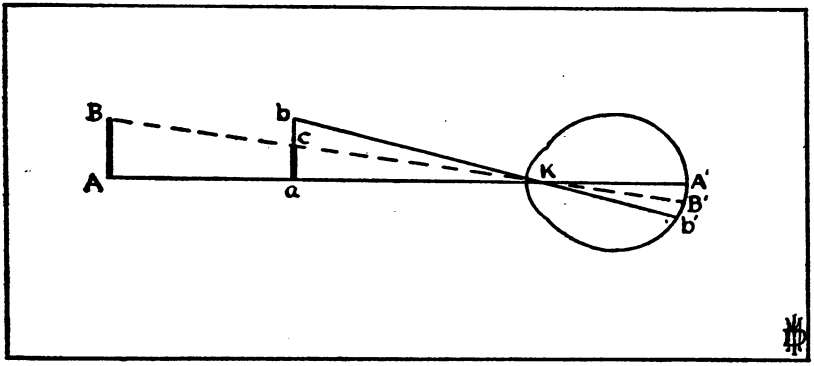


FIG. 8.—Illustrating two methods of measuring visual acuity

In this case the size of the retinal image would be reduced one-half, as *A' B'*.

For estimating visual acuity there are two ways open to us. In one method an object of given size may be carried away from the eye to the farthest point at which it can be recognized. The other is to conduct a test at a constant distance with objects or letters of different size presented to the eye to find the minimum size that the object or letter can have and still be recognized. The latter method is employed when we test the vision with the Snellen test chart.

The following two conditions must be fulfilled for the eye to have normal vision:

(1) The refracting media must be perfectly clear. Therefore, any opacities of the cornea, lens, etc., make clear vision impossible.

(2) The refracting media of the eye must act to project an image of external objects so as to fall precisely upon the retina and be perfectly distinct.

The variations from the second rule are called errors of refraction or accommodation, and are the errors in which we are particularly interested.

REFRACTIVE ERRORS

The near-sighted, or myopic, eye is a "long" eyeball. (Fig. 9.) The rays of light *A* and *B*, passing through the refractive media, are

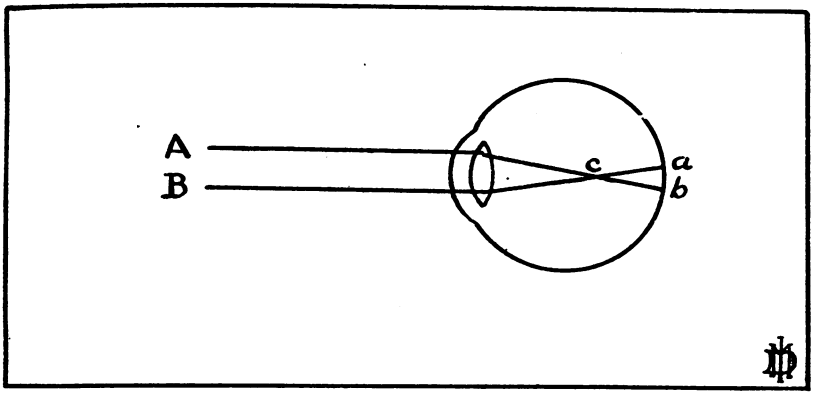


FIG. 9.—Myopia

brought to a focal point in front of the retina at *c* and then diverge to *ab* before striking the retina. The image, therefore, is not clear.

To correct this optical error a biconcave lens (focal power depending upon the refractive error) is placed in front of the eye as shown in

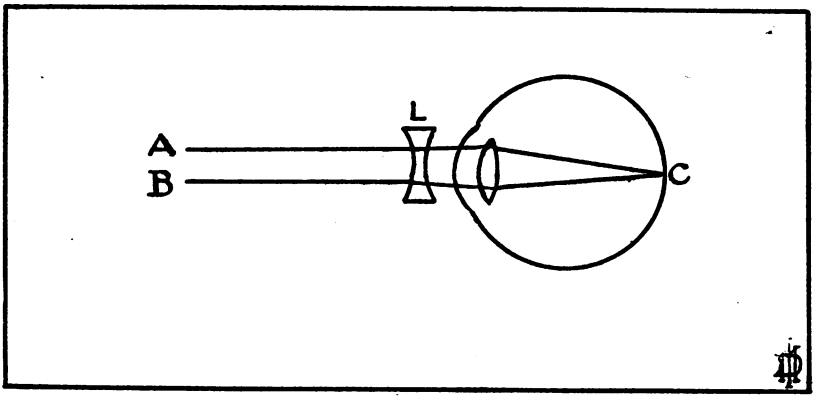


FIG. '0.—Myopia corrected by biconcave lens

Figure 10. The rays of light *A* and *B* pass through the biconcave lens, *L*, and are diverged slightly before entering the eye to then be so converged as to fall on the retina *C*.

The far-sighted eye, or hyperopic eye, is a "short" eyeball. Almost all new-born children are hyperopic but the eyeball increases in length with age. The hyperopic eye is just the opposite of the near-

sighted eye. The rays of light entering this eye (at rest) are never brought to a focus because the focal point lies behind the retina. (Fig. 11.) The image is therefore blurred.

To correct this error a biconvex lens, of proper focal length, is placed in front of the eye to converge the rays slightly before entering the eye, then to be brought to a focal point on the retina *C*. (Fig. 12.)

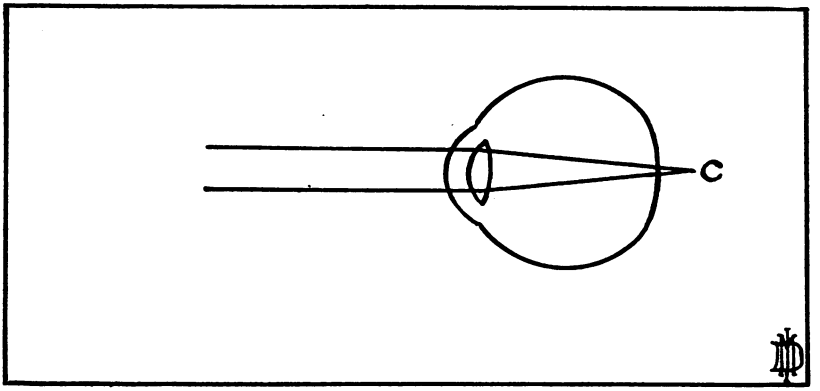


FIG. 11.—Hyperopia

Many hyperopic eyes are able to overcome the optical defect by the power of accommodation. When this is overdone, the symptoms of eye strain arise. With continued near use of the eyes the print or near work becomes blurred, the eyes water, and headache may

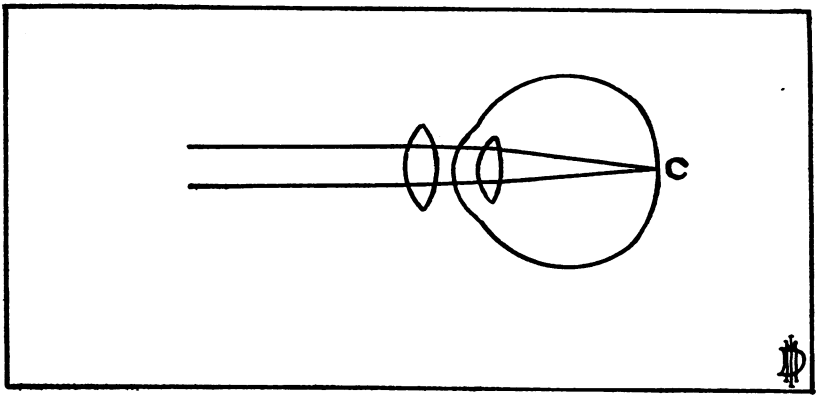


FIG. 12.—Hyperopia corrected by biconvex lens

occur, especially toward the end of the day. These symptoms may become so aggravated that to do near work is very uncomfortable and the child, therefore, does not like school work.

There is a third type of optical error called astigmatism. When the parallel rays of light entering the eye are not brought to a common focus at any spot, the condition of astigmatism exists.

In the normal eye the meridians of curvature of the cornea are the same in all directions. When these curvatures are not the same, however, one curvature being more convex than the other, the rays of light can never be brought unaided to focus on the retina. This is one type of astigmatism.

The crystalline lens may have different curvatures of its meridians; and if so, astigmatism results. As a matter of fact, this condition is true of practically all eyes, but it is not always marked enough to produce symptoms. Corneal astigmatism is a common optical error. This is difficult to explain fully by a drawing, but one type of such astigmatism is presented in Figure 13. Let *A C B D* represent the circumference of the cornea. Meridian *A B* brings the rays of light *A E* and *B E* to a focal point, *E* in front of the retina; meridian *C D* brings the rays of light *C F* and *D F* to a focal point on the retina *F*.

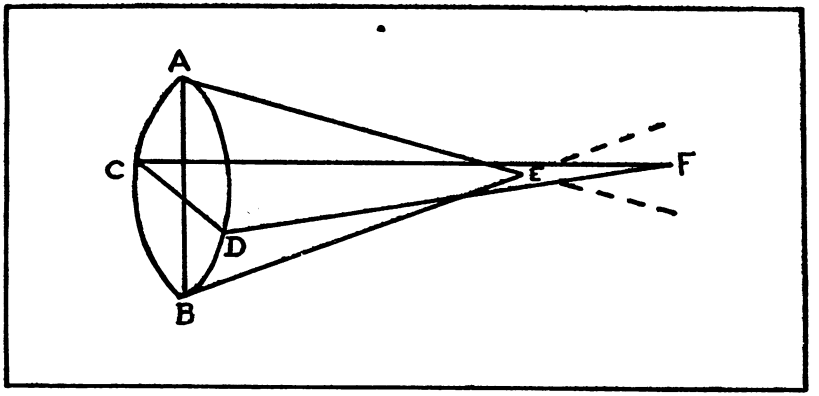


FIG. 13.—Astigmatism of one type

The eye has myopic astigmatism in the vertical meridian. Many varieties of astigmatism are possible. The eye may be myopic in one main meridian and hyperopic in the other, in which case a mixed astigmatism results.

The astigmatic eye not only has indistinct vision but has peculiarities distinct from simple myopia or hyperopia. The image takes on an elongated form, and straight lines are not always distinct, depending on the direction they take.

The correction of astigmatism requires a lens which will correct the optical defect in each meridian, or, if one meridian is normal, permit the rays of light to pass through this meridian unchanged.

The three optical defects with which this survey is concerned are, then—

1. Myopia;
2. Hyperopia; and
3. Astigmatism.

Plan of Study of Vision

This was begun by Senior Surg. Taliaferro Clark and was carried out through the cooperation of the Departments of Health and Education of the District of Columbia.

The examinations were made in the school buildings. Acting Assistant Surgeon Jarman made the ophthalmological examinations, in which he was assisted by Miss Elizabeth Bell.

A suitable room was selected in each school which provided a distance of 20 feet from the illuminated eye chart to the subject. The eye chart was illuminated by reflected light from electric bulbs. The illumination was tested with a Macbeth illuminometer, so that 16-foot candles were maintained as the standard illumination.

The written consent of the parents of each child examined was obtained before any attempt at examination was made.

A cycloplegic of 2 per cent homatropine hydrobromide was used in making the visual test of each child. The Snellen test was made before and after the cycloplegic.

The acuity of vision was tested in the following manner:

An eye chart with the usual Snellen sized type was placed 20 feet from the child to be examined. The reason for this is, as before noted, that at 20 feet the reflected light rays may be assumed to enter the eye in a parallel manner, and, in the normal eye, no accommodation is necessary for clear vision at that distance.

In the simple Snellen test, which is the one commonly used in testing visual acuity, each eye is examined separately by holding a card in front of one eye, care being exercised that no pressure is brought against the covered eye and also that that eye remains open. The vision is recorded by using 20 as the numerator, and the denominator is taken as the smallest line of the Snellen type which the eye is able to read; e. g., 20/20 means that the eye reads at 20 feet the line which a normal eye is supposed to read at 20 feet; 20/40 means that the eye was only able to read at 20 feet the type which the normal eye could read at 40 feet.

Next a drop of 2 per cent solution of homatropine was dropped into each eye, and this was repeated every 10 minutes during the hour. This had a temporary paralyzing effect on the muscles inside the eyeball which control the power of accommodation. Each eye was tested separately as before. This latter test gave the visual acuity of the eye as a passive optical body, or at rest.

The ophthalmologist examined the fundus with an electric ophthalmoscope, looking for evidences of disease of the retina, choroid, nerve, etc. Then, with the aid of the retinoscope, the length of the eyeball was determined and the findings in the two meridians were recorded. The retinoscope is an instrument which reflects light into

the eye and back into the examiner's eye. A certain kind of shadow is seen to cross the pupil of the eye of the person examined when the little instrument is rocked from side to side or upward and downward. The type of shadow depends upon the visual defect.

Lenses of varying strength are then placed in the trial frames, and when a reversal of the movement of the shadow is obtained the strength of the lens found in a particular meridian is recorded on the child's card. If the work has been correctly done, when the proper lens is placed before the eye tested it should enable the child to read 20/20; and if this is accomplished it is quite evident that the findings obtained with the retinoscope were correct.

If a child failed to read 20/20 with the lens indicated, the retinoscope was again used in an attempt to discover the error. In the majority of cases no error had been made, such cases having defects of so great a degree that vision could not be brought up to normal.

It was found often that vision had never been developed in one eye and, regardless of the findings, no lens could be fitted that would improve the vision in that eye. Other cases with poorly developed vision could be improved, but to no great extent.

The Children Examined

Before considering the results of the vision tests of these children it should be shown that this group of children is fairly representative of all school children in Washington and in other cities of this latitude. That is, we should be able to demonstrate that these children were not a selected group. One might erroneously infer that each child had a suspected visual defect because the parents consented to the examination.

The group of 1,860 children examined with the cycloplegic was checked against nearly 1,000 Washington children whose parents' consent to the use of a cycloplegic was not obtained, and in whom no cycloplegic was used. Only simple Snellen type readings at 20 feet were considered for both groups. The Snellen readings of groups of children from other localities were also considered.

The Snellen readings of three groups checked against each other included 1,860 Washington children who comprise this special study group, 963 other Washington children, and 9,245 children from schools in South Carolina, Maryland, Delaware, and New York.

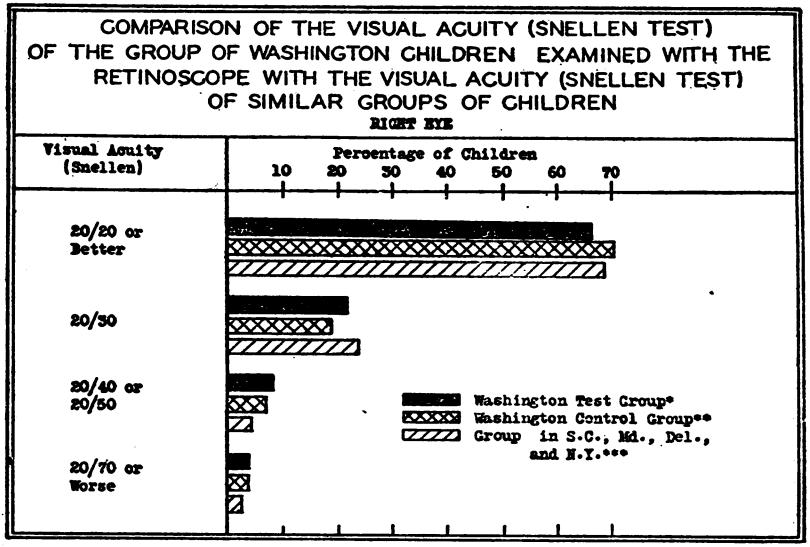
The results of the plain readings of Snellen type at 20 feet are very much the same in the three groups. Figure 14 shows this in graphic form. The two Washington groups were tested by the same examiner under standard conditions.

The other children were examined by different examiners and under varied conditions of illumination; yet the results show but little variation.

In the Washington control group the number of children who read 20/20 or better is slightly higher than in either the Washington test group or the miscellaneous group. On the other hand, the percentage of children who read 20/30 is slightly higher in the two latter groups.

Figure 15 shows by age the percentage of children with specified Snellen readings in the three groups. This confirms our first impression. The two Washington groups in particular are quite similar. We may then assume that the children who were examined with the use of a cycloplegic were not a selected group.

The power of accommodation in the young is so great that the simple Snellen readings do not reveal all children with hyperopia



*The test group is made up of children whose parents consented to the use of the cycloplegic and whose eyes were therefore examined with the retinoscope.
**The Washington control group is made up of children whose parents refused permission to use the cycloplegic and who therefore had only the Snellen test.
***This is the group reported on in Reprint No. 975 from the Public Health Reports, vol. 39, No. 48, Nov. 28, 1924.

FIG. 14

while the child with myopia is almost invariably discovered by this method.

Results of Tests

The results of the visual tests of the 1,860 Washington children will now be explained. Figure 16 shows the visual acuity of the children of all ages before and after the use of a cycloplegic.

Before the cycloplegic, 66 per cent could read 20/20 or better; 22 per cent could read 20/30; 5 per cent read 20/40; 7 per cent read 20/50 or worse.

The visual tests after the cycloplegic showed an extraordinary change. Those who read 20/20 or better dropped to 21 per cent; the 20/30 group showed little change, dropping to 20 per cent; the

group reading 20/40 increased to 16 per cent; the 20/50 or worse showed the really astounding increase from 7 per cent to 43 per cent.

As the results set forth graphically in Figure 16 show that before the cycloplegic 66 per cent read 20/20 or better, whereas after its use, only 21 per cent could read 20/20 or better, a little explanation may be necessary. The paralyzing effect of the cycloplegic caused this,

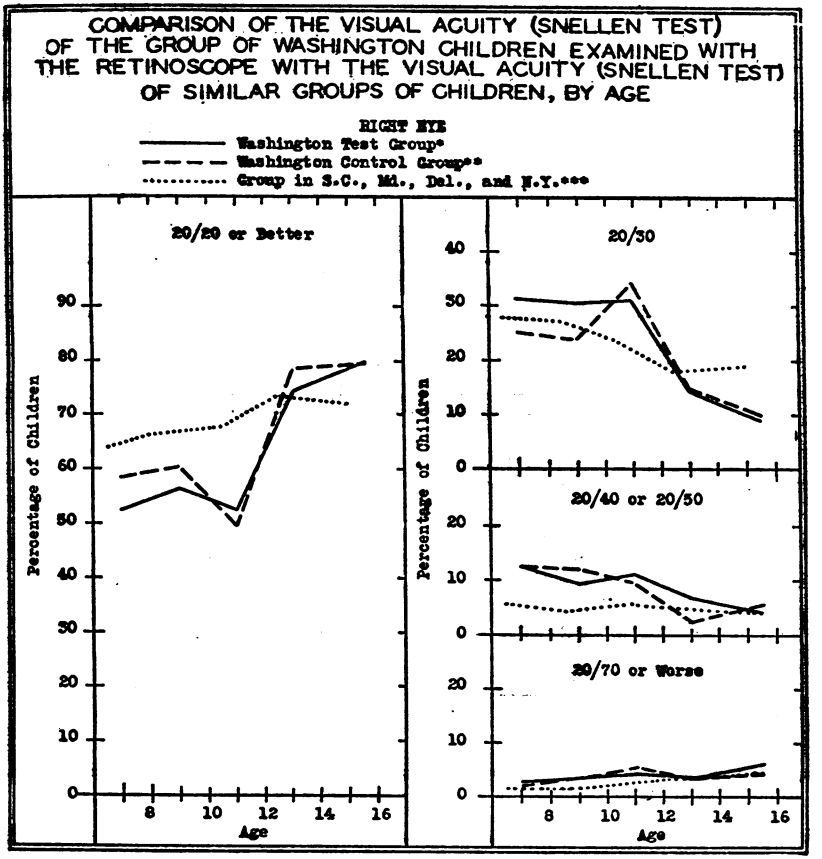


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FIG. 15

showing that these children had very strong muscles of accommodation and much reserve strength.

It should be kept in mind that the proportions shown in Figure 16 are percentages of all children who were tested. The percentages after the cycloplegic represent a redistribution of the total number of children according to the Snellen reading when accommodation was paralyzed, regardless of what reading any individual may have

made before the cycloplegic. Because many of the children who read 20/20 or 20/30 before the cycloplegic read as low as 20/100 or even worse after the cycloplegic, the percentages in these poorer vision groups after administration of the cycloplegic are considerably augmented from all the better vision groups before the cycloplegic.

The question of age may be of interest in connection with the Snellen reading before and after the cycloplegic. This is shown graphically in Figure 17. The percentage of children in all age groups who read 20/20 is lower after the cycloplegic than before its use. There is an interesting feature of this curve, however. It will

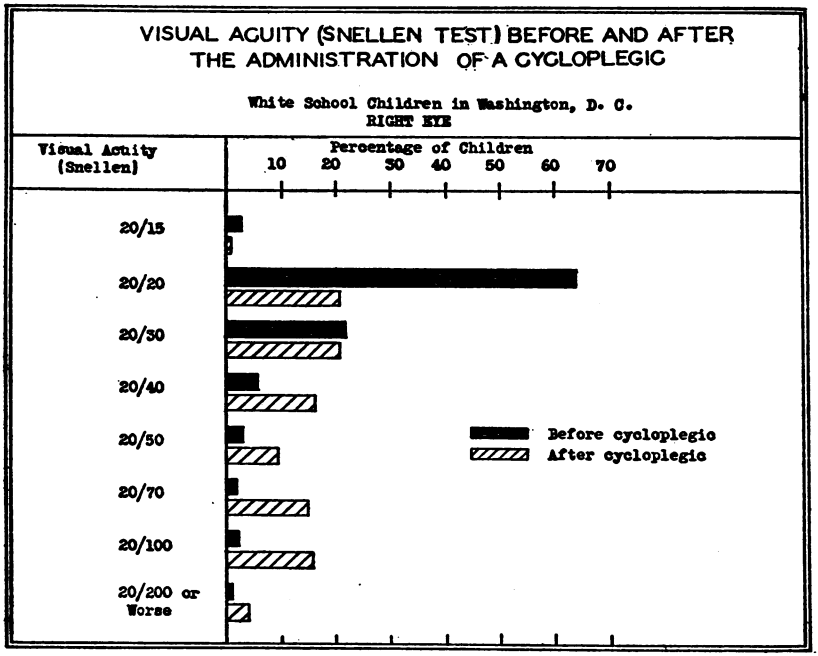


FIG. 16

be noted that the percentage of children who read 20/20 after the cycloplegic increases with age. This is probably due to the natural change in the eyeball as the child grows older. The eyeball is short, or hyperopic, at birth and increases in length as the child grows older. This gradual change would account for the increase in the number of children who read 20/20 or better after the administration of the cycloplegic.

The important practical points to note and understand are the increase in the number of children whose poor vision was revealed after the cycloplegic had been used. The group reading 20/50 or worse increased from 7 per cent to 43 per cent. Nearly one-fourth of the 66 per cent who read 20/20 or better before the cycloplegic fell

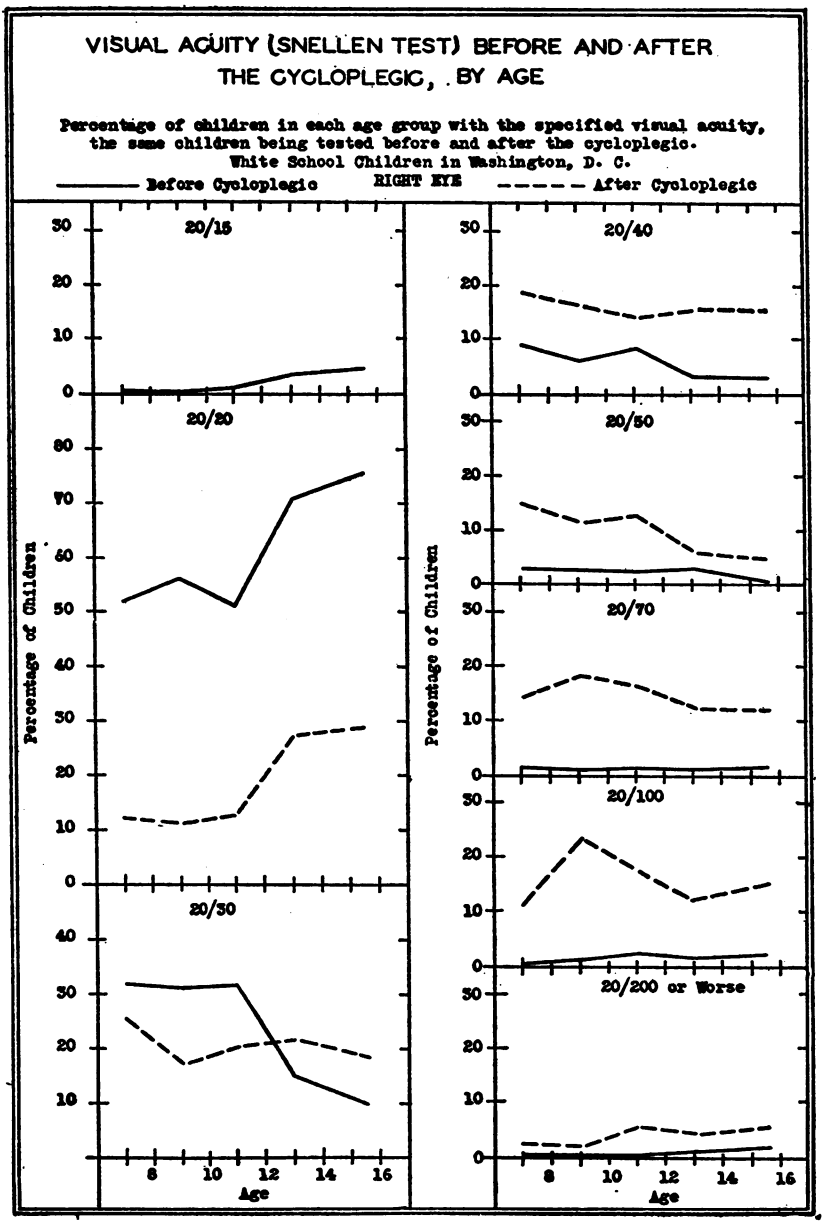


FIG. 17

109475°—28——2

to 20/70 or worse when accommodation was temporarily paralyzed. These children would pass with normal vision on the simple Snellen test.

Character of Refractive Errors Found

In classifying the character of the refractive errors, errors of different degrees are combined, that is, mild and severe hyperopia, for instance, are grouped together.

Figure 18 shows the percentage of each type of refractive error in the children of all ages.

The number of children with normal vision, or emmetropia, is very small, being only 3.4 per cent.

The most frequent visual defect is simple hyperopia, which reaches 63 per cent. Myopia has not reached alarming proportions in this

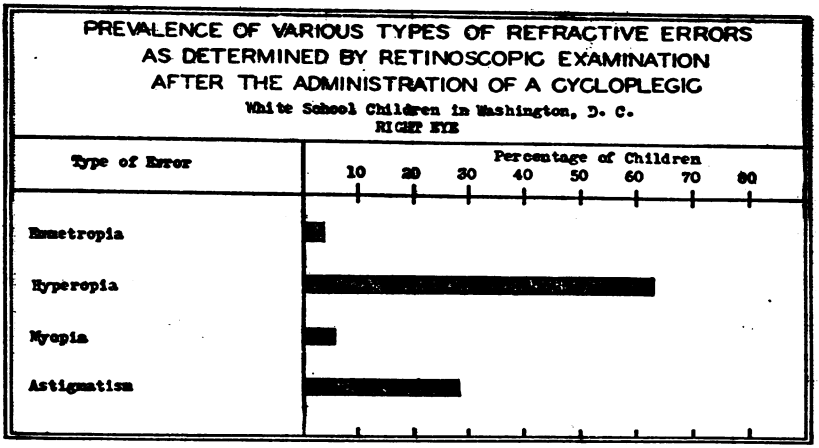


FIG. 18

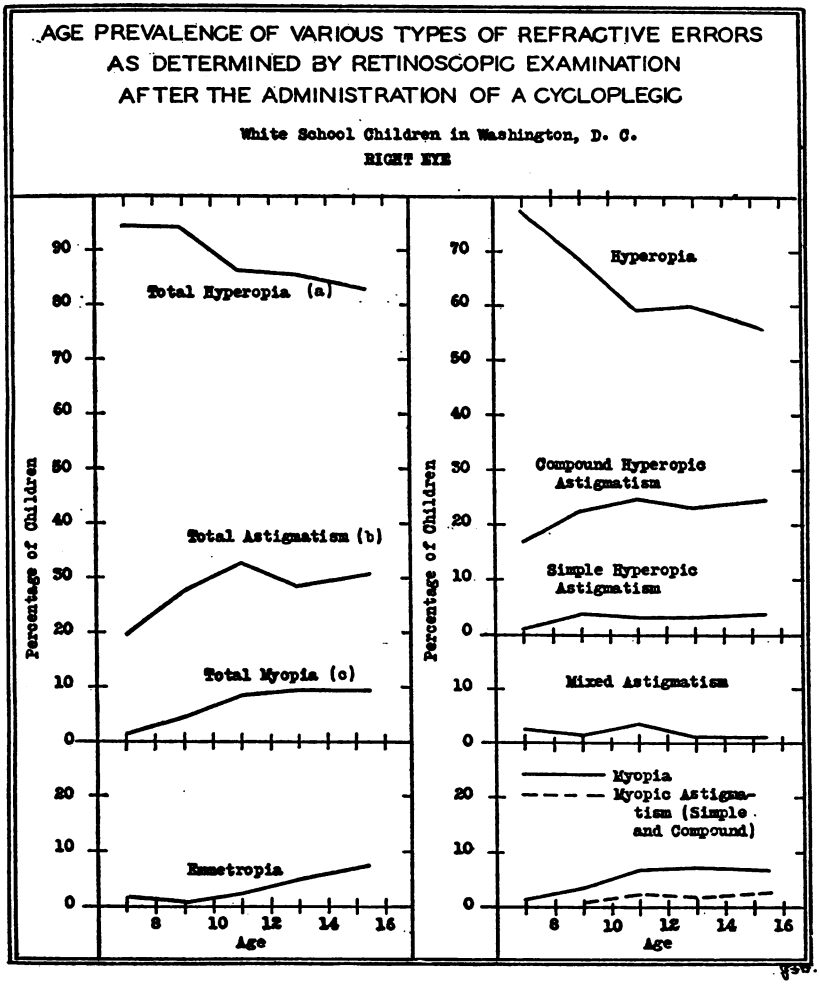
group, being 5.5 per cent. The astigmatic group includes all types of astigmatism; but of this 28 per cent there is 25 per cent of hyperopic astigmatism.

The age prevalence of these refractive errors is of interest and is shown in Figure 19.

This graph shows the age curves of the different types of conditions. Here again we can see that hyperopia decreases with age, whereas astigmatism and myopia increase with age.

The rate of change is very marked in myopia between 7 and 12 years of age, as shown in Figure 20. The proportion of children with myopia is four or five times as great among children 12 to 16 years as among children 6 to 7 years of age. This shows the necessity for careful observation of the vision of school children between the seventh and twelfth years to find the cases of myopia before the condition has advanced.

The factor of sex was considered to determine whether either sex is more prone to visual defects. Figure 21 shows the visual defects by age group and by sex. There is no material difference in the sexes at any age for any type of refractive error. It is usually thought that, because girls may do more close work (sewing, etc.) than



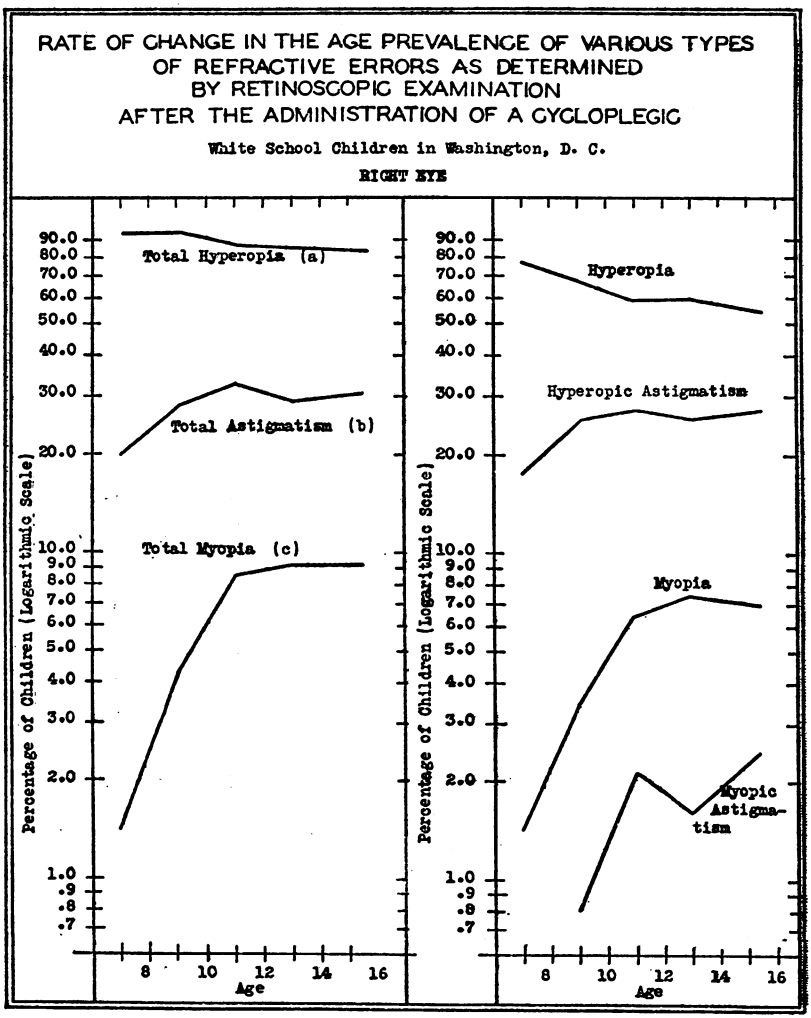
(a) Including hyperopic astigmatism
(b) Including hyperopic, myopic, and mixed astigmatism
(c) Including myopic astigmatism

FIG. 19

boys, more girls would be found to be myopic. There is no evidence in these data to support this common belief; in fact, the slight differences that do occur in myopia are in favor of the girls.

The severity of the visual defect is rated in this study in quarter diopters. A diopter is the unit of measurement used by ophthal-

nologists for the purpose of rating the severity of the visual defect. The distance required by a lens to bring parallel light rays to a focal point is its focal length, and a diopter is the refractive power of a lens that has a focal distance of one meter. The number of diopters



(a) Including hyperopic astigmatism
(b) Including hyperopic, myopic, and mixed astigmatism
(c) Including myopic astigmatism

FIG. 20

required to bring the vision as near to normal as possible is of great importance, as it indicates the severity of the visual defect. However, it must always be remembered that eyestrain of hyperopia is not measured by the degree of hyperopia. A slight hyperopic condition may cause some eyestrain.

In Figure 22 the percentage distribution of the eyes of the children with respect to the severity of visual defect is shown. Zero is emmetropia. The data relative to the right eye of boys and girls of all ages are shown in section A. The curves are practically identical. In section B of the same figure the curves for the two eyes of all children are superimposed, and they are almost identical. For the purposes of the involved statistical work required in the analysis of all the data (Public Health Bulletin No. 182) the right eye was selected. In section C of Figure 22 similar distributions are shown

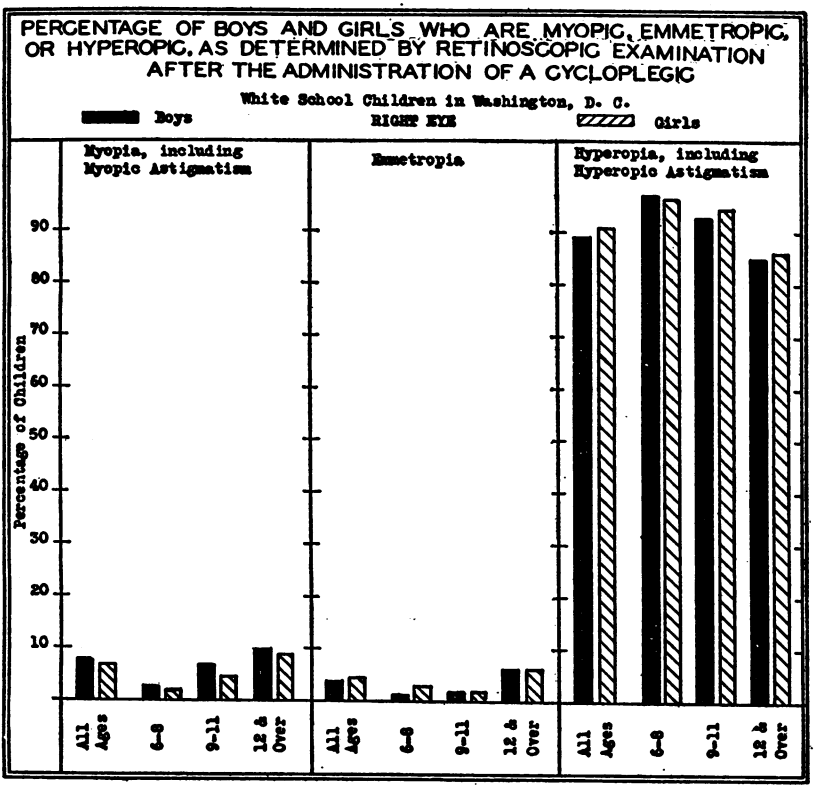


FIG. 21

for children of three age groups. Again the gradual decrease in hyperopia is indicated by the shift of the curves toward zero or emmetropia.

The severity of the various visual errors is naturally an important question. Figure 23 presents very clearly the average effect of refractive errors of varying severity on the Snellen reading before and after the use of the cycloplegic. In this figure the solid line shows the mean visual acuity for children, with specified diopters of refractive error, before the cycloplegic was used. The broken line

shows the corresponding mean after the cycloplegic had been administered. Zero is emmetropia. The curve shows how quickly clear vision is lost with relatively little optical error. One diopter of myopia causes the average vision to fall to about 20/40. This, of

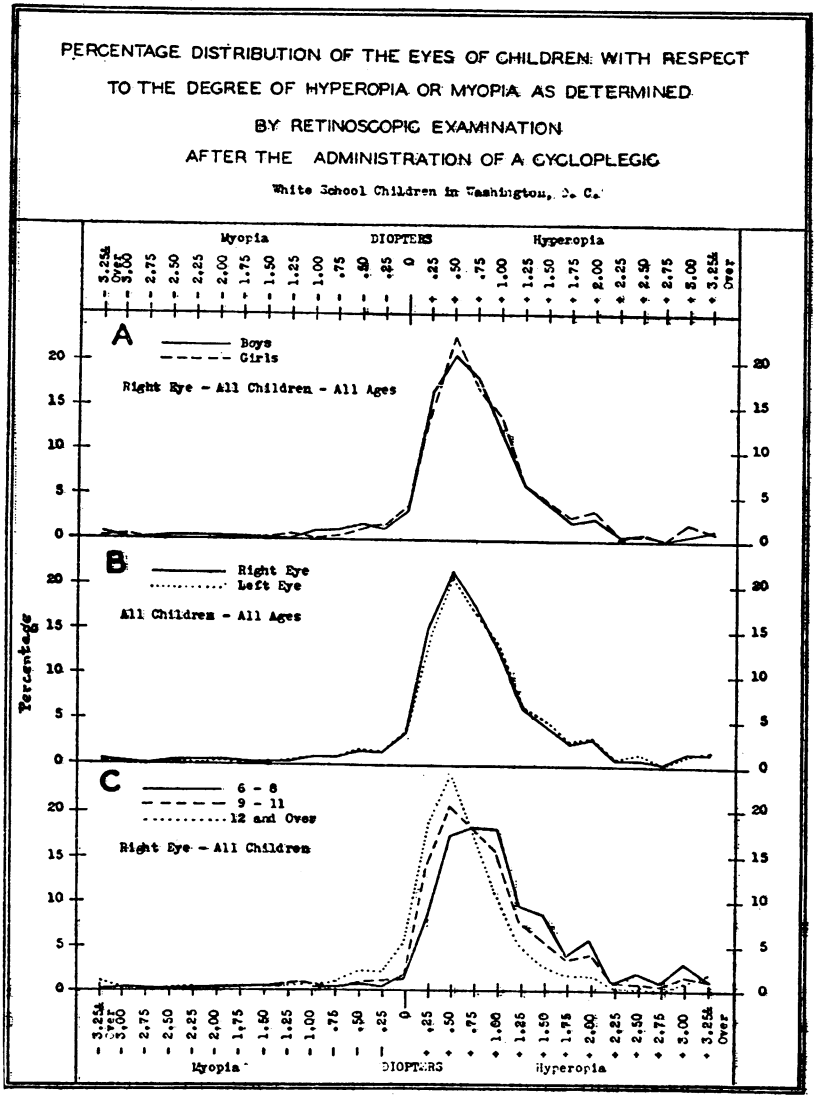


FIG. 22

course, does not mean that the eye sees only half as well as normal, but means that for distant vision the eye sees clearly only at 20 feet what it should see at 40 feet. All distant vision is therefore blurred.

The myopic eye has practically no power of accommodation. Myopic children show little difference before and after the cycloplegic.

This is very clearly shown in the curves; the solid line and the broken line are practically the same. In other words, if the best vision of a myopic eye was 20/40 before the cycloplegic, it shows little change after the cycloplegic had its effect. On the other hand, the hyperopic eye shows a remarkable change. There is no way of telling what the amount of hyperopia may be without temporarily paralyzing accommodation. The vision after a cycloplegic is the only reliable way of testing the eye. The hyperopic eye has increased power of accommodation which is in constant use for far vision and near vision. That is why symptoms of eyestrain frequently develop in the hyperopic eye. There are a certain number of persons having severe

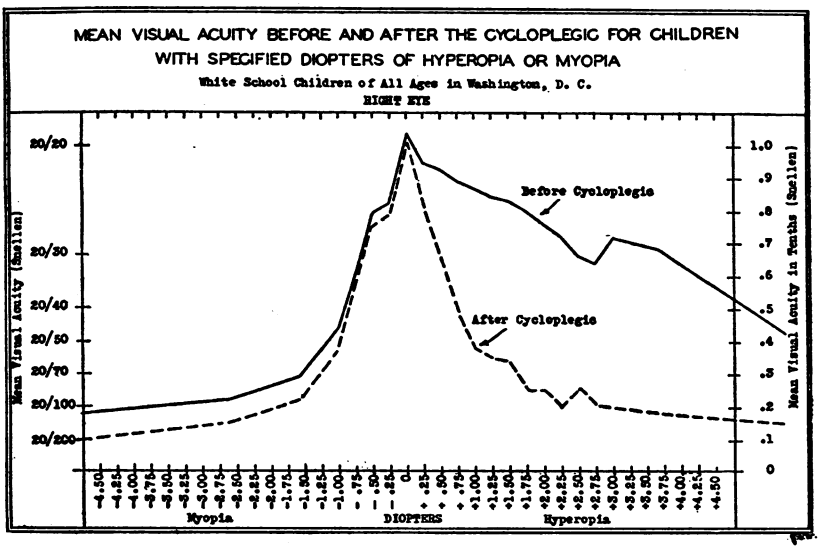


FIG. 23

hyperopia who can not overcome the optical defect, and vision is not clear, distant or near.

The hyperopic eye can see no better than the myopic eye of the same refractive error when the power of accommodation is removed. After the cycloplegic and temporary paralysis of accommodation takes place, the hyperopic eye and the myopic eye reach practically the same level of vision for a given number of diopters of refractive error.

General Discussion

The simple Snellen test reveals but a small percentage of the actual number of refractive errors in children. While the usual examinations of the eye, as conducted in the schools, are of much benefit, only the children who have marked visual defects are discovered; a great number are found to have normal vision and are so informed,

when in reality they are suffering with latent defects. Strains of varying amounts are present which may become worse as the child advances in its school course. The individual goes out into the commercial world much handicapped, due to the effects of visual defects.

The myopic eye is nearly always discovered with the use of the simple Snellen test. When a child reads 20/30 instead of 20/20, before and after the cycloplegic, the defect most often found is myopia or one of the types of astigmatism.

In certain parts of Europe a high percentage of the older school children are myopic.[1] This may be associated with racial characteristics. If the face is broad and greater separation of the eyes exists, more convergence is necessary for near work. The percentage of myopia in this country is low. Only 2 per cent was found in Washington school children of 6 and 7 years of age, but this increased to 9 per cent at the age of 12—an astounding increase.

The fact that myopia tends to increase between the seventh and twelfth years is very important as it may develop rapidly. For this reason all school children should have the simple Snellen test twice a year. Myopic children in most cases will not complain of symptoms. They may not progress with their school work as well as they did earlier in their school career, because much depends upon their ability to see the blackboard. They see clearly any objects that are close at hand and read books very easily and often with much comfort. They, however, can see well only when reading matter is held close to their eyes. These children enjoy reading as a form of amusement and do not play games requiring distant vision as the normal healthy boy or girl does. The reason is clearly evident; they can not see. A near-sighted boy can not play baseball; he does not see the ball until it gets quite near him, and then perhaps he is unable to catch it or bat it away, and consequently he is struck. After a few attempts, without knowing why, he gives up baseball and similar sports and spends his afternoons with his head buried in a book. If myopes are questioned, it will be found that in nearly all cases they refrain from outdoor games and sports, and that they derive much more pleasure from reading.

The hyperopic eye is rarely found with the simple Snellen test, and then only the very severe types are revealed. This shows the importance of a proper eye examination; and for such, a cycloplegic is necessary. In the case of a child who reads 20/20 before the cycloplegic and who can read only 20/70 or 20/100 after its use, what information should be given to the parents? Does this child actually need glasses? Some absolutely do, while others may be able to go on for a long while without any increase of the defect.

[1] Duane (Fuchs' Textbook of Ophthalmology), p. 836.

In fact, improvement may take place. However, it would be much wiser to place the child under the watchful eyes of a competent eye physician who can keep a record of successive eye examinations and properly advise such a case.

The hyperopic eye tends to improve with advancing school age. This is very encouraging; but such improvement should not be expected in all cases. Children with errors should be rechecked from time to time.

The astigmatic eye may be found with the simple Snellen test. Of course, this test does not reveal the type of visual defect. It only shows that certain eyes can read only certain letters at a specified distance. Small errors of astigmatism are very difficult at times to discover, and a cycloplegic is necessary. In such cases very little strain is present, but it may be of a nature to make one tire easily, or cause severe and constant headaches. Small errors are more difficult to discover than larger ones. An eye which has been given the wrong glass will accept it for a while, but soon will tire again and headache will recur. When a cycloplegic is used, the astigmatism is more readily found, and its proper correction will give absolute relief.

Any child with symptoms of eyestrain should be sent to an eye physician for careful examination even if the naked eye reads 20/20 on the Snellen chart. This is just as important as having the teeth examined for presence of cavities, or the nose or throat examined to determine the presence of enlarged tonsils or adenoids. If informed, after a careful examination with a cycloplegic, that the vision is normal and that no disease exists, the general feeling of satisfaction experienced is well worth the effort. If some defect is found, it does not necessarily mean glasses; but certainly such a child should be observed from time to time, so that an accurate check can be kept on the progress of such a defect. Children may not complain of symptoms until the defect is far advanced, and then much valuable time has been lost. If glasses are necessary for a child and are worn as directed, in many cases they can later be discarded. Even then an occasional visit should be made to an eye physician.

Of the 66 per cent of eyes which read 20/20 or better and appeared normal, 32 per cent read 20/50 or worse when a cycloplegic was used, thus indicating that many eyes work under a handicap. Nearly one-fifth of all the children tested 20/100 or worse after the administration of the cycloplegic. If these children see clearly, excessive strain is required for them to do so. This in time will not only affect the child's vision but the nervous system will be involved. From a practical viewpoint of this survey, it is of importance to note that the ophthalmologist recommended that glasses were needed in 34 per cent of all cases examined and that glasses were recommended for reading and study in 10 per cent more.

The results of this study emphasize the necessity for regular annual examinations of eyes which are known to be defective. Also it is important to look for defects in the supposedly normal eye, for this study has shown that many eyes thought to be normal are far from being such.

It is believed that if more thought had been given to vision and its correction at the proper time instead of awaiting symptoms many who are to-day wearing glasses would not find it necessary to do so.

Summary

The following are the important features brought out by this survey:

1. The simple Snellen test reveals but a small percentage of the actual number of refractive errors in children.
2. The myopic eye is nearly always discovered with the use of the simple Snellen test.
3. The hyperopic eye is rarely found with the simple Snellen test, and then only the very severe types are revealed.
4. The astigmatic eye may be found with the simple Snellen test. Of course the simple Snellen test does not reveal the type of visual defect; it shows only that certain eyes can read only certain letters at a specified distance.
5. The frequency of myopia tends to increase between the seventh and twelfth years. This is very important, as myopia may develop rapidly. For this reason all school children should have the simple Snellen test twice a year.
6. Of the 66 per cent of eyes which read 20/20 or better and appeared normal, 32 per cent read 20/50 or worse when a cycloplegic was used, thus indicating that many eyes work under a handicap. Nearly one-fifth of all the children tested 20/100 or worse after the cycloplegic.
7. The hyperopic eye tends to improve with advancing school age.
8. The myopic eye tends to grow worse with advancing school age.
9. These results emphasize the necessity for regular annual examination of eyes which are known to be defective.

Appendix

An explanation of the designations or titles of persons qualified to examine the eyes is considered important.

Oculist and ophthalmologist are the names given to a graduate physician or a doctor of medicine who has, in addition to the regular medical training, specialized in the treatment of diseases of the eye and the correction of visual defects.

Optician is the name given to the person who is trained in the grinding and fitting of lenses. Another name for an optician is optometrist. This means one who makes measurements of the power of vision and adaptation of lenses for the aid thereof without the use of drugs. Another name used is eyesight specialist.

In an attempt to remove the confusion regarding these terms, the Guild of Prescription Opticians of America, an organization of the opticians of the better type, has decided to call one of their number a dispensing optician or guild optician and to call the oculist or ophthalmologist an eye physician. A guild optician or dispensing optician will give glasses only when a prescription is brought from an eye physician. They do not examine eyes; they only fill prescriptions. They realize that glasses should be given only after a careful examination of the eyes by a graduate physician or doctor of medicine who has had special training in treating diseases and defects of the eyes.

An optician, or optometrist, or eyesight specialist, is not a graduate physician or doctor of medicine and he does not diagnose or treat diseases of the eye. He is trained to grind and measure lenses and to fit frames properly.

The only proper way to examine the eyes for glasses is with the aid of a cycloplegic or "drops." There are several kinds of "drops," depending upon the type of case. All have the same effect, that is, temporarily to paralyze the little muscles inside the eye, so that the pupil will become dilated or much enlarged. With a little instrument called the ophthalmoscope, the physician can then look inside the eye and see the interior, make a study of its contents, and determine whether everything is normal or whether there is evidence of disease. This can not properly be done unless "drops" are used. Also, when the pupil is dilated the physician can, with another little device called the retinoscope, see into the back of the eye and with it measure the length or depth of the eyeball. When this is done he can accurately prescribe a suitable glass; he knows what to prescribe, and does not have to guess regarding it. The examination of eyes and the fitting of glasses without the aid of "drops" are based on guesswork.

An eye physician can determine whether headache and other symptoms are due to the eyes or to other causes, and can direct the patient to the proper physician. Pain around the eyes and defective vision are often due to sinus infection, pus absorption from tonsils and teeth, etc. The eye physician recognizes such conditions and the proper treatment is advised. In such cases glasses are not needed at all, although pain and eye symptoms are present. It is important that such conditions come to the attention of an eye physician so that glasses will not be prescribed when they are not necessary.

DEATH RATES IN A GROUP OF INSURED PERSONS

Rates for Principal Causes of Death for April, 1928

The statements quoted below and the accompanying table are taken from the Statistical Bulletin for May, 1928, issued by the Metropolitan Life Insurance Co. The table presents the mortality experience of the industrial insurance department of the company, by principal causes of death, for April, 1928, as compared with March and with April, 1927. The rates are based on a strength of more than 18,000,000 insured persons in the United States and Canada.

The Bulletin states:

The higher mortality as compared with April a year ago is accounted for, in large part, by large increases in deaths from influenza, pneumonia, and other respiratory conditions. These diseases were jointly responsible for 20 per cent of all the deaths in April. As is invariably the case when there is increased

prevalence of influenza-pneumonia, relatively higher death rates were experienced in April for the principal chronic "degenerative" diseases. The heart-disease death rate was 11 per cent higher, and that for Bright's disease 13 per cent higher, than for April a year ago; and there was a somewhat smaller rise for cerebral hemorrhage.

Two of the principal epidemic diseases of childhood—measles and scarlet fever—also showed higher rates than were in evidence a year ago. This has little significance with respect to scarlet fever, as the rate has been unusually low both this year and last. Deaths from measles, however, have been much more frequent than during the early months of 1927. The year-to-date death rate, up to May 12, was 7.3 per 100,000, as compared with 4.7 for the corresponding period of 1927. There were small increases in April in the rates for diabetes, diarrheal complaints, and puerperal diseases.

Tuberculosis continues to be the outstandingly favorable item in the health record of 1928. No doubt whatever now exists that 1928 will register a new minimum mortality rate for this disease. The winter and early spring seasons, when deaths from tuberculosis are always most numerous, are now behind us; and up to the week ending May 12, the tuberculosis death rate among the industrial policyholders was only 93.7 per 100,000, as compared with 102.5 for the corresponding period of last year. This is a gain of 8.6 per cent. The rate for the whole year 1927 was 93.5 per 100,000. Obviously, then, the tuberculosis death rate *for the worst part* of 1928 is as low as for all of 1927; and after the influence of the summer and fall months is felt, the 1928 tuberculosis mortality rate will be sure to drop to a new low point. All indications are that the gain will be large.

Death rates (annual basis) for principal causes per 100,000, April, 1928, as compared with March and with April, 1927

[Industrial department, Metropolitan Life Insurance Co.]

Cause of death	Death rate per 100,000 lives exposed [1]			
	April, 1928	March, 1928	April, 1927	Year 1927 [2]
Total, all causes	996.9	1,027.0	954.1	885.4
Typhoid fever	1.4	1.3	6.7	4.6
Measles	10.2	7.7	7.5	4.1
Scarlet fever	4.4	3.4	3.8	3.1
Whooping cough	6.1	6.2	7.6	6.4
Diphtheria	9.3	11.4	9.7	10.5
Influenza	35.4	34.8	27.1	17.7
Tuberculosis (all forms)	94.8	100.1	107.2	93.3
Tuberculosis of respiratory system	83.8	88.6	95.0	81.7
Cancer	75.0	74.8	77.0	74.0
Diabetes mellitus	18.0	20.4	17.5	16.7
Cerebral hemorrhage	59.5	59.6	56.6	54.9
Organic diseases of heart	151.8	160.7	137.3	132.2
Pneumonia (all forms)	140.6	137.3	110.7	77.6
Other respiratory diseases	19.3	21.9	16.6	15.4
Diarrhea and enteritis	15.8	14.7	15.2	24.5
Bright's disease (chronic nephritis)	74.5	82.3	66.1	69.3
Puerperal state	15.2	13.8	14.7	15.4
Suicides	8.2	9.3	8.9	8.3
Homicides	5.6	6.2	6.0	7.2
Other external causes (excluding suicides and homicides)	53.4	48.3	54.8	63.7
Traumatism by automobiles	15.3	11.2	15.7	18.3
All other causes	198.4	212.5	203.2	186.7

[1] All figures include infants insured under one year of age.
[2] Based on provisional estimate of lives exposed to risk in 1927.

COURT DECISIONS RELATING TO PUBLIC HEALTH

Milk ordinance sustained:—(Georgia Supreme Court; Leontas *v.* Walker, Governor, 142 S. E. 891; decided April 16, 1928.) An ordinance of the city of Savannah relating to the production, handling, and sale of milk and cream gave the city health officer power to prohibit within the city the sale of milk and cream when conditions at dairy farms, etc., were such as, in his opinion, rendered the milk and cream unsuitable or unsafe for human food. Acting under this ordinance the health officer prohibited the sale of milk produced by appellant. Later an indictment was returned against the appellant charging him with involuntary manslaughter, it being alleged that a certain person had died as a result of drinking milk which had been sold by the appellant, contrary to the prohibition of the health officer, and which milk had been finally purchased and consumed by the decedent. In a proceeding to forfeit a bond given by the appellant for his appearance in court to answer the charge against him, several reasons were given by him why the indictment was void, among which were the following:

(1) The above-mentioned ordinance violated the constitutional provision that "No law or ordinance shall pass which refers to more than one subject-matter, or contains matter different from what is expressed in the title thereof," because the ordinance intended to provide for the regulation of the sale of milk and it was attempted in the same ordinance to give authority to the health officer to absolutely prohibit the sale thereof.

(2) The ordinance was unconstitutional in that it purported to vest arbitrary discretion in a public officer without prescribing a definite rule for his guidance.

(3) The city, while having authority to enact ordinances, was without authority to delegate legislative authority to any one individual or public officer, such as the health officer, unless and until the action of said officer had been approved by the city sanitary board.

(4) The ordinance was vague, unreasonable, arbitrary, unenforceable, and void in that it attempted arbitrarily to vest in the hands of the health officer the absolute power to prohibit the sale of milk without such authority being first approved by a governmental or legislative body.

The supreme court, however, held that the indictment was not void for any of the reasons given by the appellant.

Collar manufacturers laundering own collars held not engaged in public laundry work.—(New York Supreme Court, Appellate Division; Van Zandt's, Inc., *v.* Department of Labor of New York et al.; C. W. Ferguson Collar Co. *v.* Same, 228 N. Y. S. 635; decided May 3, 1928.) Section 296 of the labor law provided, in part, that "A shop,

room, or building where one or more persons are employed in doing public laundry work by way of trade or for purposes of gain is a factory within the meaning of this chapter and subject to the provisions relating to factories." The State industrial board adopted a set of rules relating to laundries, commonly called the laundry code, and in rule 1700 defined a laundry as "an establishment wherein public laundry work is done by way of trade or for purposes of gain, and in which the washing, ironing, or other finishing of clothes or other textiles is accomplished by the use of power-driven machinery." The term "factory" was defined by section 2, subdivision 9, of the labor law as follows:

"Factory" includes a mill, workshop, or other manufacturing establishment and all buildings, sheds, structures, or other places used for or in connection therewith, where one or more persons are employed at manufacturing, including making, altering, repairing, finishing, bottling, canning, cleaning, or laundering any article or thing, in whole or in part * * *.

The State department of labor issued an order requiring plaintiffs, who were collar manufacturers, to comply with the laundry code. The plaintiffs laundered only their own collars and did not hold themselves out to the public as laundries. They did no laundry work directly for the public, but confined themselves strictly to washing and ironing their own collars before packing them and placing them on the market for sale. The plaintiffs brought actions to have the labor department's order declared invalid on the ground that the said department was without jurisdiction or authority to issue the same. The lower court dismissed the complaints,[1] but the appellate court reversed the judgments of the court below and held that the order was invalid as to the plaintiffs. The court stated, in part, as follows:

* * * The laundering is a purely incidental part of the work of manufacturing, to make the manufactured product more salable. Thus, incidentally, the public receives the benefit of laundering work, because the laundered article eventually gets into the hands of members of the public. It is upon this theory that the industrial board and the court below have found that such manufacturers are doing "public laundry work," and doing it "by way of trade or for purposes of gain." We think that is a strained construction of the language used in the statutory definition. Such collar manufacturer does not operate a commercial or "public" laundry, as the word "public," so applied, would be ordinarily understood. It has no customers as such, and does not hold itself out to the public, "by way of trade or for purposes of gain," as engaged in the laundry business. In our opinion, that is the significance of the word "public" in the term "public laundry work"—doing laundry work directly for the public, by cleaning and ironing soiled and used clothes on orders received from members of the public as customers. Section 296 of the labor law has been on the statute books in its present form since 1901, and apparently until 1924 no effort was made to apply it to manufacturers incidentally engaged in laundering their own output. * * *

[1] Public Health Reports, vol. 42, No. 32, Aug. 12, 1927, p. 2005.

The factories of the plaintiffs, including the places therein where they launder their own collars, are subject to the labor law. Rules of the industrial board may be made, ordering the plaintiffs to guard their machinery, and otherwise protect their employees, engaged in laundering, but the board must exercise its power under that part of the industrial code relating to factories, rather than under the portion known as the laundry code. We hold that the rules objected to by the plaintiffs apply only to laundries wherein public laundry work is done by way of trade or for purposes of gain; that the plaintiffs do not conduct such a laundry; that the department of labor was without jurisdiction or authority to issue to the plaintiffs the orders requiring them to comply with such rules; and that said orders are invalid as to the plaintiffs.

Ordinance relating to plumbing, drainage, etc., held invalid.—(New Jersey Supreme Court; Public Service Electric and Gas Co. *v.* Village of Ridgewood, 141 A. 672; decided May 1, 1928.) The board of health of the village of Ridgewood adopted an ordinance entitled "An ordinance establishing rules and regulations for plumbing, drainage, water supply, and ventilation of buildings in the village of Ridgewood." The village had adopted the commission form of government as provided for in a 1911 act. Legislation enacted in 1913, supplemental to the 1911 act, abolished boards (including boards of health) existing in municipalities which had adopted the commission form of government, and transferred the powers and duties of such boards to the board of commissioners. The above-mentioned ordinance was attacked on several grounds, one being that, at the time it was attempted to enact the ordinance, there was no legal board of health of the village, and also that, if there was a legally constituted board of health, it had no power to pass such an ordinance. The court stated that, for present purposes, it considered that a valid board of health had been set up by virtue of a 1925 amendment enacted by the commissioners of the village, but held that only the commissioners themselves had power to pass a new ordinance such as the one attacked, and also held that the ordinance was invalid because not enacted by the commissioners.

COMMITTEE ON RESEARCH IN SYPHILIS

While the importance of syphilis is well known to the medical profession both in private practice and in public health, large funds for the systematic study of the disease, with the exception of the Government appropriations during the World War, have not been made available. On March 10 and 11, 1928, a group of laymen, acting through Dr. Edward L. Keyes, president of the American Social Hygiene Association, met in New York City with a group of syphilologists and investigators interested in syphilis and organized a committee on research in syphilis. The committee is incorporated and is to receive and distribute, through proper subcommittees, funds donated for syphilological research.

It is the purpose of the committee to expend the sums placed at its disposal by donors in developing a constructive program of research in both the clinical and laboratory aspects of syphilis and to stimulate, through grants, researches already in progress or about to be undertaken.

Any one interested in any aspect of syphilology is invited to submit to the chairman of the scientific committee pertinent suggestions regarding the problems desired to be considered, together with the names and records of investigators of promise.

Applications for grants should be addressed to Dr. John H. Stokes, chairman, scientific committee, 3800 Chestnut Street, Philadelphia, Pa. Further information in regard to the method of granting subsidies and the policies of the committee will be sent upon request, together with application forms. Applicants are requested by the committee to state in their first communication whether the problem to be undertaken is of a clinical or laboratory nature.

PUBLIC HEALTH ENGINEERING ABSTRACTS

Water Pollution Control: Tannery Wastes. H. S. Murphy, J. M. Hepler, and E. F. Eldridge. Department of conservation, department of health, Lansing, Mich. (Abstract by H. R. Crohurst.)

The first 13 pages of this 18-page report consist of a brief summary of the results of experiments with and treatment of tannery wastes during 19 past investigations and 5 pages of a condensed report of the operation of the tanner's experimental waste treatment plant at Holland, Mich. The summary of past experiments with tannery wastes and the conclusions from the present investigation, in so far as they have progressed, indicate the following:

Bacteria are found to be present on the filtering medium of biological filters used for the treatment of tannery waste. Counts of 200,000 per gram of sample were obtained from incubation at room temperature, and 30,000,000 from incubation at 37°. Ninety per cent of the bacteria were chromogens. Practically all of the groups identified are soil and water bacteria which aid in oxidizing and stabilizing the unstable material.

Chemical precipitation is not necessary or advisable. Tannery wastes contain a large amount of suspended and settleable solids, and the addition of chemical precipitants simply increases the already large sludge problem. Proper combination of the wastes will precipitate out a large portion of the suspended, settleable solids and even dissolved solids. Sedimentation is necessary to remove the solids. The sludge will not digest in the tanks; therefore best results are obtained by frequent drawing. Sludge can be air-dried to a moisture content where it can be easily handled. The sludge has a fertilizer value as well as being capable of acting as a neutralizer for the acidity of the soil. Clinker filters appear to provide the best filtering medium. The high oxygen demand of the wastes necessitates some form of secondary treatment. Sand for secondary filtration may be advisable under certain circumstances, but would materially increase the cost of construction and operation.

Laws Governing Water-Pollution Control—Municipal. Anon. Michigan Department of Health, revision of 1927. (Abstract by P. S. Fox.)

This act authorizes the governing body of a municipality to issue mortgage bonds in excess of the general limits of bonded indebtedness for the construction of sewage-disposal plant and system. These bonds do not constitute a general

liability, but shall be secured by the property benefited. The act provides for the issuing of a franchise to private corporations for the construction and operation of sewerage systems. Fees may be collected from the property owner by the corporation or by the municipality in the form of taxes. When collected by the municipality the corporation is paid on a flat-rate basis.

This act further authorizes the governing body of the municipality to issue and sell bonds when a court of competent jurisdiction has ordered the installation of a sewage-disposal system.

Observations on Sewage Experiments at Dallas, Tex. E. A. Kingsley. Proceedings of the Ninth Texas Water Works Short School, pp. 293–294. (Abstract by H. E. Hargis.)

In 1913 the State legislature passed a law requiring all cities in Texas to cease the pollution of streams by sewage. Mr. J. A. Fuertes, of New York City, made a study and presented plans for a disposal plant. Only the battery of Imhoff tanks with sludge beds was installed before the war, and in 1923 the number was doubled. This has only partially stopped the pollution, and further studies are in progress to determine what can be done. One unusual feature is a crude gas-collecting agency which collects sufficient gas, however, to provide power for running the machinery.

Report of an Investigation upon the Detergent and Germicidal Efficiency of a Colloidal-Alkali Mixture. Milton E. Parker and Howell K. Smith. Proceedings of American Association of Medical Milk Commissions and the Certified Milk Producers Association of America, 1927, pp. 155–182. (Abstract by R. E. Irwin.)

"A dairy detergent, particularly that used for bottle-washing purposes, should perform a twofold function—that of being an efficient cleansing agent and that of exhibiting effective germicidal properties.

"* * * The compounds such as sodium carbonate and sodium hydroxide, or various combinations of these two, with or without other cleansing substances of inorganic chemicals, for the most part have been used extensively in the dairy industry for detergent purposes. These soda and caustic cleaners for dairy equipment, utensils, and glass bottles, while of unquestionable merit, have been found lacking in some respects for the thorough cleansing and maintenance of low bacterial contamination so highly essential in the production of milk—particularly certified milk. * * *

"There are two classes of dirt which detergents have to remove—one where the particles of dirt are held to the substance to be cleaned by means of grease or oil, the other where the dirt is held to the substance by the adhesion of the dirt to the surface of the substance. * * *"

The authors then give a brief history of detergents and their properties. The results of field and laboratory experiments are given when using various washing compounds, including colloidal-alkali mixtures.

Conclusions: "(1) The colloidal alkali mixture possessed a marked activity in removing the calcium deposits from the working parts of the automatic bottle cleaner which the other did not exhibit; (2) *B. coli* was not recovered, even in the case of bottles contaminated with known amounts of the organisms, with any of the detergents used in the field experiments; (3) the best results both from physical and bacteriological points of view were obtained by using the colloidal alkali mixture with actual caustic strengths of 1.2 per cent and 1.6 per cent NaOH and temperatures of 120° and 160° F.; (4) when using caustic soda alone as a detergent, the best results were obtained with concentrations of 4 per cent and 4.5 per cent NaOH and temperatures of 120° and 160° F.; (5) concentrations of various alkalies studied which had the equivalent germicidal action toward *B. coli* were found to have hydroxyl ion concentrations within close range (plus or minus pH 0.30); (6) *B. coli* and *B. typhosus* were both killed within two

minutes at room temperatures in 1 per cent aqueous solutions of the colloidal alkali mixture and of an equivalent alkali mixture in repeated tests."

The Outbreak of Paratyphoid in West Hertfordshire. Anon. *The Lancet.* (No. 22 of vol. 2, 1927). No. 5439, vol. 213, November 26, 1927, p. 1159. (Abstract by W. L. Havens.)

A recent outbreak of paratyphoid B, involving parts of the rural districts of Hemel Hampstead and Watford in England, was early detected by means of the Widal reaction and was traced to the milk supply. Blood tests showed that the dairyman and five of his roundsmen gave positive or partially positive Widal reactions. At one farm a child was found ill who subsequently gave a positive reaction. In all, over 100 patients were removed to hospitals and were not discharged until they were proved to be noncarriers of *paratyphosus B.* Immediately the existence of the outbreak became known, steps were taken to provide adequate hospital treatment and to secure sterilization of the milk supply from the suspected dairy.

Chemicals are Effective Sterilizers. M. J. Prucha. *The Milk Dealer*, vol. 17, No. 5, February, 1928, pp. 84–90. (Abstract by C. T. Butterfield.)

This article states that steam and hot water are efficient sterilizers, but not always effective, owing to local conditions.

All chemical sterilizers, except chlorine, are eliminated, either on account of their toxicity or because their odors are lasting and objectionable.

A series of experiments employing chlorine, derived from gas, hypochlorites, and organic chlorine, are described and results are given. All three sources were found to be equally effective in reducing bacterial numbers. The results were obtained from laboratory studies and from commercial milk plant experiments. Methods for applying such sterilization in milk plants are given and the effect of traces of milk on the utensils at the time of exposure are given as well as the sterilization accomplished at 80°, 120°, and 160° F.

The author concludes that chemical sterilization of utensils by means of chlorine sterilizers is effective and practical, and simple of application.

(ABSTRACTOR'S NOTE.—Chlorine as such and chlorine plus alkali combinations have no bactericidal effect on tubercle bacilli, even in concentrated solution, unless the exposure is prolonged. This should be given consideration. In this connection refer to " Chemical Sterilization of Milk Bottles in Relation to Tubercle Bacilli," by E. M. Wade, R. W. Archibald, and H. A. Whittaker, Jour. Bact., Vol. XV, No. 3, March, 1928, where this topic is discussed and experimental data are presented.)

Pasteurization of Milk. John W. S. McCullough. *Public Health Journal* (Canadian Public Health Assn.), vol. 19, No. 3, March, 1928, pp. 119–123. (Abstract by R. E. Thompson.)

A general discussion of milk Pasteurization, including value, objections, supervision, cost, and extent. The need of Pasteurization is amply proved by the numerous epidemics traced to milk. The objections are few and may be readily overcome. Any tendency to scurvy in babies fed on Pasteurized milk, due to destruction of vitamin C, may be prevented by use of orange juice, tomato juice, or potato water. Pasteurization, when properly carried out, destroys about 99 per cent of the bacteria present. If the milk is then immediately cooled and kept at 40° F., the bacterial increase in 24 hours will be but slight. The cost was estimated in 1922 to be less than one-half cent per gallon. It is a significant fact that, as Pasteurization increases, infant mortality decreases; and it is further significant that not a single municipality adopting Pasteurization has abandoned it. Tuberculin testing, in the absence of Pasteurization, is a measure which affords a certain protection, not a complete one, against milk-borne tuberculosis, but nothing else; whereas Pasteurization affords a sure protection not only against tuberculosis but also against a large number of other infections. Inauguration of milk protection in Ontario is in the hands of the municipal authorities and is unsatisfactory.

DEATHS DURING WEEK ENDED JUNE 23, 1928

Summary of information received by telegraph from industrial insurance companies for the week ended June 23, 1928, and corresponding week of 1927. (From the Weekly Health Index, June 27, 1928, issued by the Bureau of the Census, Department of Commerce)

	Week ended June 23, 1928	Corresponding week, 1927
Policies in force	71, 433, 653	67, 979, 412
Number of death claims	14, 271	12, 778
Death claims per 1,000 policies in force, annual rate	10. 4	9. 8

Deaths from all causes in certain large cities of the United States during the week ended June 23, 1928, infant mortality, annual death rate, and comparison with corresponding week of 1927. (From the Weekly Health Index June 27, 1928, issued by the Bureau of the Census, Department of Commerce)

City	Week ended June 23, 1928		Annual death rate per 1,000 corresponding week 1927	Deaths under 1 year		Infant mortality rate week ended June 23, 1928 [2]
	Total deaths	Death rate [1]		Week ended June 23, 1928	Corresponding week 1927	
Total (67 cities)	6, 867	11. 9	11. 2	738	676	[3] 59
Akron	37			7	6	76
Albany [4]	28	12. 2	13. 1	4	2	82
Atlanta	73	15. 0	13. 6	6	12	
White	35		10. 1	1	4	
Colored	38	([5])	21. 9	5	8	
Baltimore [4]	180	11. 3	11. 8	18	23	57
White	128		10. 5	10	17	40
Colored	52	([5])	19. 5	8	6	125
Birmingham	85	20. 0	14. 9	7	8	60
White	37		9. 8	4	5	55
Colored	48	([5])	22. 8	3	3	68
Boston	202	13. 2	11. 4	31	25	86
Buffalo	135	12. 7	12. 8	22	18	94
Cambridge	27	11. 2	8. 8	1	4	18
Camden	37	14. 3	12. 1	6	2	96
Canton	22	9. 8	7. 8	3	1	71
Chicago [4]	632	10. 5	11. 3	56	79	48
Cincinnati	133	16. 8	14. 0	12	20	73
Cleveland	186	9. 6	9. 5	16	21	43
Columbus	79	13. 9	14. 0	10	3	94
Dallas	41	9. 9	11. 6	4	5	
White	31		11. 0	2	5	
Colored	10	([5])	15. 2	2	0	
Denver	70	12. 4	11. 7	9	11	
Des Moines	27	9. 3	7. 0	4	1	66
Detroit	290	11. 0	9. 8	45	37	70
Duluth	20	9. 0	11. 8	1	2	23
El Paso	33	14. 6	15. 6	13	11	
Erie	32			4	1	82
Fall River [4]	27	10. 5	9. 8	3	4	51
Flint	31	10. 9	6. 2	4	7	51
Fort Worth	28	8. 7	9. 9	5	2	
White	25		10. 1	5	1	
Colored	3	([5])	8. 0	0	1	
Grand Rapids	19	6. 1	9. 0	2	2	30
Houston	69			9	5	
White	44			5	5	
Colored	25	([5])		4	0	
Indianapolis	98	13. 4	14. 1	7	6	53
White	81		13. 1	7	5	61
Colored	17	([5])	21. 0	0	1	0

[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 66 cities.
[4] Deaths for week ended Friday, June 22, 1928.
[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; 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 June 23, 1928, infant mortality, annual death rate, and comparisons with corresponding week of 1927—Continued

City	Week ended June 23, 1928		Annual death rate per 1,000 corresponding week 1927	Deaths under 1 year		Infant mortality rate week ended June 23, 1928
	Total deaths	Death rate		Week ended June 23, 1928	Corresponding week 1927	
Jersey City	66	10.6	9.6	9	10	67
Kansas City, Kans	22	9.7	14.2	0	2	0
White	18		14.1	0	0	0
Colored	4	(5)	14.8	0	2	0
Kansas City, Mo	83	11.1	12.7	10	11	71
Knoxville	25	12.4	12.3	3	2	65
White	18		11.6	3	1	73
Colored	7	(5)	17.1	0	1	0
Los Angeles	244			19	35	54
Louisville	93	14.8	9.6	7	0	59
Lowell	31	14.7	7.1	2	0	42
Lynn	15	7.4	8.5	2	2	50
Memphis	62	17.0	19.2	3	5	35
White	32		16.7	0	3	0
Colored	30	(5)	23.9	3	2	94
Milwaukee	111	10.7	10.7	22	7	98
Minneapolis	81	9.3	10.5	6	4	36
Nashville	43	16.2	15.5	3	6	47
White	22		12.7	2	3	43
Colored	21	(5)	22.8	1	3	60
New Bedford	24	10.5	7.9	6	2	130
New Haven	46	12.8	10.7	3	3	42
New Orleans	179	21.8	15.7	21	16	102
White	99		12.3	10	9	73
Colored	80	(5)	25.5	11	7	160
New York	1,342	11.7	10.9	150	152	61
Bronx Borough	169	9.3	8.4	10	10	30
Brooklyn Borough	468	10.6	10.1	59	62	59
Manhattan Borough	526	15.7	14.8	60	66	71
Queens Borough	145	8.9	7.5	18	12	72
Richmond Borough	34	11.8	12.1	3	2	54
Newark, N. J.	87	9.6	10.9	6	13	31
Oakland	53	10.1	9.0	1	5	11
Oklahoma City	27			3	3	
Omaha	46	10.8	10.0	2	3	23
Paterson	44	15.9	9.8	4	2	69
Philadelphia	451	11.4	10.3	40	19	54
Pittsburgh	159	12.4	11.9	13	10	43
Portland, Oreg	57			2	0	21
Providence	62	11.3	10.4	7	7	61
Richmond	57	15.3	13.0	6	3	78
White	33		9.2	2	1	41
Colored	24	(5)	22.5	4	2	147
Rochester	86	13.7	10.8	12	3	97
St. Louis	195	12.0	11.2	13	16	43
St. Paul	49	10.2	11.9	8	1	77
Salt Lake City [4]	36	13.6	9.2	5	2	82
San Antonio [4]	74	17.7	12.6	23	12	
San Diego	42	18.3	14.5	3	3	57
San Francisco	150	13.4	11.7	5	11	31
Schenectady	19	10.6	15.1	5	2	157
Somerville	8	4.1	10.8	1	0	35
Spokane	27	12.9	14.8	4	0	103
Springfield, Mass	25	8.7	10.6	2	1	32
Syracuse	55	14.4	12.2	1	2	12
Tacoma	30	14.2	9.7	2	1	51
Toledo	75	12.5	11.3	11	6	105
Trenton	36	13.5	17.9	2	5	34
Washington, D. C	138	13.1	9.8	17	10	97
White	84		6.8	6	5	50
Colored	54	(5)	18.4	11	5	203
Waterbury	17			3	3	87
Wilmington, Del	33	13.4	12.0	3	3	79
Worcester	47	12.4	12.3	1	3	12
Yonkers	21	9.1	6.6	3	3	68
Youngstown	36	10.8	6.5	2	2	27

[4] Deaths for week ended Friday, June 22, 1928.

[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; Memphis, 38; Nashville, 30; New Orleans, 26; 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 June 30, 1928, and July 2, 1927

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended June 30, 1928, and July 2, 1927

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended June 30, 1928	Week ended July 2, 1927	Week ended June 30, 1928	Week ended July 2, 1927	Week ended June 30, 1928	Week ended July 2, 1927	Week ended June 30, 1928	Week ended July 2, 1927
New England States:								
Maine	1	5	5	1	34	101	0	0
New Hampshire					36		0	
Vermont	1	1			56	52	0	0
Massachusetts	56	68	9	1	524	364	1	1
Rhode Island	4	6	1		194		0	0
Connecticut	13	31	1	2	247	47	1	1
Middle Atlantic States:								
New York	314	381	[1] 6	[1] 24	1,647	516	29	2
New Jersey	126	82	1	5	795	34	6	1
Pennsylvania	150	133			1,685	293	9	1
East North Central States:								
Ohio	84		50		995		7	
Indiana	16	13	12		196	34	0	1
Illinois	130	105	93	66	185	271	8	5
Michigan	62	66	3	3	594	168	6	6
Wisconsin	8	22	75	3	41	415	0	11
West North Central States:								
Minnesota	19	22	2	2	39	70	1	2
Iowa	4	6			9	52	1	0
Missouri	22	16			235	64	3	1
North Dakota		4			7	19	0	0
South Dakota	1	2			9	25	0	0
Nebraska	3	4	7		34	26	1	0
Kansas	6	9		1	58	174	0	2
South Atlantic States:								
Delaware	1	1			35	1	0	0
Maryland [2]	16	59	8	1	135	20	1	2
District of Columbia	5	11	1		95	2	0	0
Virginia								
West Virginia	4	6	41	14	24	78	0	0
North Carolina	13	17			131	698	0	1
South Carolina	2	8	132	96	27	205	0	0
Georgia		8		21		33		1
Florida	3	12	16	2	21	16	0	0
East South Central States:								
Kentucky	1				121		3	
Tennessee	4	9	45	12	42	12	1	0
Alabama	7	15	60	5	106	62	1	1
Mississippi	3	3					0	0
West South Central States:								
Arkansas	2	3	10	10	61	49	1	1
Louisiana	16	16	8	41	20	103	0	0
Oklahoma [3]	7	4	35	6	68	82	0	0
Texas	6	9	35	1	104	25	0	0
Mountain States:								
Montana	2	1			4	27	0	2
Idaho						4	1	1
Wyoming	3		2			13	0	0
Colorado	4	23			9	73	0	0
New Mexico		1			16	61	0	0
Arizona	4	3			6		2	1
Utah [2]	2	3	9			3	1	0

[1] New York City only. [2] Week ended Friday. [3] Exclusive of Tulsa.

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended June 30, 1928, and July 2, 1927—Continued

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended June 30, 1928	Week ended July 2, 1927	Week ended June 30, 1928	Week ended July 2, 1927	Week ended June 30, 1928	Week ended July 2, 1927	Week ended June 30, 1928	Week ended July 2, 1927
Pacific States:								
Washington	3	8			48	317	0	1
Oregon	5	6	2	10	37	60	0	1
California	79	71	18	10	38	207	3	4

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended June 30, 1928	Week ended July 2, 1927	Week ended June 30, 1928	Week ended July 2, 1927	Week ended June 30, 1928	Week ended July 2, 1927	Week ended June 30, 1928	Week ended July 2, 1927
New England States:								
Maine	0	0	13	34	0	0	5	1
New Hampshire	0		13		0		0	
Vermont	0	0	6	8	0	0	1	0
Massachusetts	2	2	166	271	0	0	21	3
Rhode Island	0	0	20	24	0	0	1	0
Connecticut	1	0	27	23	1	0	2	2
Middle Atlantic States:								
New York	7	3	214	312	7	4	11	17
New Jersey	2	0	146	150	0	0	5	6
Pennsylvania	1	1	221	281	1	0	9	22
East North Central States:								
Ohio	3		99		13		7	
Indiana	1	0	34	39	35	43	3	6
Illinois	1	4	149	132	28	13	15	26
Michigan	0	1	138	150	24	22	6	3
Wisconsin	0	0	61	66	13	18	1	6
West North Central States:								
Minnesota	0	0	66	95	2	1	1	1
Iowa	0	0	22	13	23	17	0	0
Missouri	0	0	42	18	24	21	11	5
North Dakota	1	0	12	20	4	7	0	0
South Dakota	1	0	10	17	5	0	1	0
Nebraska	0	0	19	24	37	21	5	2
Kansas	1	2	37	35	78	22	5	8
South Atlantic States:								
Delaware	0	0	4	2	0	0	0	2
Maryland [2]	3	0	17	23	0	1	11	8
District of Columbia	0	0	21	16	0	6	0	0
Virginia								
West Virginia	0	0	13	21	8	52	10	11
North Carolina	2	0	15	14	12	10	18	51
South Carolina	2			5	0	3	59	98
Georgia		1		15		9		64
Florida	0	0	2	3	10	14	6	8
East South Central States:								
Kentucky	0		24		11		8	
Tennessee	0	3	9	7	8	8	33	106
Alabama	1	0	2	8	20	13	38	63
Mississippi	0	0	2	1	3	1	21	37
West South Central States:								
Arkansas	0	4	5	1	11	8	13	39
Louisiana	1	6	5	2	8	2	39	37
Oklahoma [3]	1	2	11	15	51	24	25	45
Texas	0	0	31	8	31	10	13	19
Mountain States:								
Montana	0	0	4	9	9	6	3	2
Idaho	0	0	2	1	1	1	0	1
Wyoming	0	0	1	6	0	2	0	0
Colorado	0	0	31	59	3	1	1	4
New Mexico	0	2	3	10	0	0	1	5
Arizona	0	0	4	2	3	0	1	13
Utah [2]	0	0	2	6	11	12	2	0
Pacific States:								
Washington	1	0	8	31	35	27	1	7
Oregon	3	0	7	8	20	14	2	3
California	8	14	107	73	18	16	9	9

[2] Week ended Friday.

[3] Exclusive of Tulsa.

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	Meningococcus meningitis	Diphtheria	Influenza	Malaria	Measles	Pellagra	Poliomyelitis	Scarlet fever	Smallpox	Typhoid fever
May, 1928										
Arkansas	5	20	1,321	308	1,441	241	1	105	37	29
California	19	458	198	4	566	12	28	824	140	77
Idaho	1	2			10		1	21	52	10
Illinois	63	434	651	1	1,104		2	1,165	286	39
Louisiana	6	71	154	116	1,010	123	1	43	110	72
Maine	1	12	105		136		2	86	0	6
Mississippi	2	59	5,243	6,038	4,574	1,865	3	44	11	72
Missouri	65	122	199	6	2,139		0	409	249	28
New York	166	1,464	[1] 589	9	18,060		14	2,575	50	62
North Carolina	5	64			4,348		3	108	253	28
Oregon	4	25	90	1	185		2	75	188	14
Rhode Island	0	37	5	1	1,424		0	190	0	10
South Carolina	0	124	1,766	683	963	537	4	28	32	68
Wisconsin	33	94	2,749		347		5	958	58	4
Wyoming	3	1	6		65		0	80	2	0

[1] New York City only.

May, 1928

	Cases
Actinomycosis:	
California	1
Anthrax:	
California	1
Louisiana	1
New York	1
Botulism:	
California	2
Chicken pox:	
Arkansas	90
California	2,807
Idaho	9
Illinois	1,022
Louisiana	71
Maine	107
Mississippi	626
Missouri	249
New York	1,748
North Carolina	360
Oregon	163
Rhode Island	26
South Carolina	150
Wisconsin	891
Wyoming	24
Dengue:	
Mississippi	16
South Carolina	7
Dysentery:	
California (amebic)	2
California (bacillary)	4
Illinois	23
Louisiana	3
Mississippi (amebic)	68
Mississippi (bacillary)	1,050
German measles:	
California	1,484
Illinois	150
Maine	19
New York	2,792
North Carolina	26
Rhode Island	4
Wyoming	2

May, 1928—Continued

	Cases
Hookworm disease:	
Louisiana	23
Mississippi	249
South Carolina	115
Impetigo contagiosa:	
Oregon	4
Jaundice:	
California	1
Lead poisoning:	
Illinois	12
Leprosy:	
Arkansas	1
California	2
Louisiana	1
Lethargic encephalitis:	
California	3
Illinois	9
Louisiana	1
Maine	1
New York	28
Wisconsin	4
Mumps:	
Arkansas	179
California	1,630
Idaho	4
Illinois	891
Louisiana	14
Maine	126
Mississippi	698
Missouri	500
New York	1,581
Oregon	99
Rhode Island	139
South Carolina	18
Wisconsin	473
Wyoming	15
Ophthalmia neonatorum:	
Arkansas	3
California	2
Illinois	41
Mississippi	7
Missouri	1

May, 1928—Continued

Ophthalmia neonatorum—Continued.	Cases
New York	3
Rhode Island	2
South Carolina	13
Wisconsin	1
Paratyphoid fever:	
California	1
Idaho	6
Illinois	25
Maine	1
Oregon	2
South Carolina	3
Wisconsin	138
Puerperal septicemia:	
Illinois	10
Mississippi	42
New York	19
Rabies in animals:	
California	68
Idaho	1
Mississippi	5
Missouri	2
New York	29
Oregon	1
Rhode Island	15
South Carolina	16
Rabies in man:	
Illinois	1
New York	1
Rocky Mountain spotted or tick fever:	
California	6
Idaho	3
Oregon	12
Wyoming	21
Scabies:	
Oregon	9
Septic sore throat:	
Illinois	17
Louisiana	2
Missouri	6
New York	15
North Carolina	2
Oregon	7

May, 1928—Continued

Tetanus:	Cases
California	8
Illinois	1
Louisiana	6
New York	6
South Carolina	1
Trachoma:	
Arkansas	21
California	13
Illinois	14
Mississippi	11
Missouri	13
New York	2
North Carolina	1
Wisconsin	1
Tularaemia:	
Louisiana	3
Oregon	1
Wyoming	3
Typhus fever:	
Illinois	1
Vincent's angina:	
Illinois	2
Maine	7
New York	84
South Carolina	18
Whooping cough:	
Arkansas	57
California	1,482
Idaho	1
Illinois	1,110
Louisiana	76
Maine	142
Mississippi	1,619
Missouri	225
New York	1,901
North Carolina	446
Oregon	16
Rhode Island	28
South Carolina	250
Wisconsin	377
Wyoming	32

ADMISSIONS TO HOSPITALS FOR THE INSANE, MARCH, 1928

Reports for the month of March, 1928, showing new admissions to hospitals for the care and treatment of the insane, have been received by the Public Health Service from 94 institutions located in 34 States, the District of Columbia, and the Territory of Hawaii. Twenty-three of these institutions are corporate or private. These hospitals reported a total of 123,762 patients on March 31, 1928, including those on parole.

The following table shows the numbers of new admissions for the month of March, 1928, by psychoses:

First admissions to 94 hospitals for the insane, March, 1928

Psychoses	Number of first admissions		
	Male	Female	Total
Traumatic psychoses	7	0	7
Senile psychoses	119	92	211
Psychoses with cerebral arteriosclerosis	113	59	172
General paralysis	128	33	161
Psychoses with cerebral syphilis	34	8	42
Psychoses with Huntington's chorea	0	0	0
Psychoses with brain tumor	0	0	0
Psychoses with other brain or nervous disease	23	8	31
Alcoholic psychoses	81	8	89
Psychoses due to drugs and other exogenous toxins	13	11	24
Psychoses with pellagra	6	14	20
Psychoses with other somatic diseases	29	33	62
Manic-depressive psychoses	196	212	408
Involution melancholia	11	26	37
Dementia præcox (schizophrenia)	259	214	473
Paranoia and paranoid conditions	32	24	56
Epileptic psychoses	42	26	68
Psychoneuroses and neuroses	27	39	66
Psychoses with psychopathic personality	23	7	30
Psychoses with mental deficiency	50	38	88
Undiagnosed psychoses	88	79	167
Without psychosis	114	43	157
Total	1,395	974	2,369

Fifty-eight and nine-tenths per cent of the new admissions were males and 41.1 per cent were females, giving a ratio of 143 males per 100 females. The 94 institutions on March 31, 1928, had 65,248 male patients and 58,514 female patients, the ratio being 112 males per 100 females.

Undiagnosed psychoses constituted 7 per cent of the first admissions; dementia præcox, 20 per cent; manic-depressive psychoses, 17.2 per cent; senile psychoses, 8.9 per cent; psychoses with cerebral arteriosclerosis, 7.3 per cent; general paralysis, 6.8 per cent; 6.6 per cent were recorded as without psychosis.

GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

The 97 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 31,075,000. The estimated population of the 92 cities reporting deaths is more than 30,400,000. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

Weeks ended June 16, 1928, and June 18, 1927

	1928	1927	Estimated expectancy
Cases reported			
Diphtheria:			
43 States	1,335	1,463	
97 cities	869	893	754
Measles:			
42 States	12,259	7,608	
97 cities	5,141	2,139	
Poliomyelitis:			
43 States	27	32	
Scarlet fever:			
43 States	2,427	2,699	
97 cities	989	1,166	787
Smallpox:			
43 States	558	491	
97 cities	61	108	84
Typhoid fever:			
43 States	268	592	
97 cities	44	76	63
Deaths reported			
Influenza and pneumonia:			
92 cities	714	528	
Smallpox:			
92 cities	0	0	

City reports for week ended June 16, 1928

The "estimated expectancy" given for diphtheria, poliomyelitis, scarlet faver, 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 non-epidemic 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 1919 is included. In obtaining the estimated expectancy, the figures are smoothed when necessary to avoid abrupt deviations from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Population, July 1, 1926, 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	76,400	11	0	0	0	0	25	5	3
New Hampshire:									
Concord	[1] 22,546	0	0	2	0	0	8	0	2
Manchester	84,000	0	1	0	0	0	0	0	1
Vermont:									
Barre	[1] 10,008	0	0	0	0	0	0	2	1
Massachusetts:									
Boston	787,000	45	44	20	3	1	47	5	26
Fall River	131,000	0	3	4	0	0	21	1	1
Springfield	145,000	3	2	6	2	2	1	15	2
Worcester	193,000	10	3	6	1	0	10	14	3
Rhode Island:									
Pawtucket	71,000	1	0	1	0	0	30	10	2
Providence	275,000	0	5	1	0	1	194	2	10
Connecticut:									
Bridgeport	[2]	4	4	5	2	2	19	1	3
Hartford	164,000	0	5	5	0	0	63	5	1
New Haven	182,000	4	1	0	0	0	15	19	5

[1] Estimated, July 1, 1925. [2] No estimate made.

City reports for week ended June 16, 1928—Continued

Division, State, and city	Population, July 1, 1926, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
MIDDLE ATLANTIC									
New York:									
Buffalo	544,000	15	8	7	--	2	21	32	17
New York	5,924,000	131	232	351	19	13	1,809	26	163
Rochester	321,000	7	9	8	--	1	110	21	6
Syracuse	185,000	30	4	1	--	0	58	9	4
New Jersey:									
Camden	131,000	2	6	4	1	1	35	3	3
Newark	459,000	21	9	52	5	0	74	7	9
Trenton	134,000	4	2	3	0	0	6	1	2
Pennsylvania:									
Philadelphia	2,008,000	59	61	48	0	2	673	35	37
Pittsburgh	637,000	29	15	21	0	3	45	20	27
Reading	114,000	1	2	1	0	0	40	1	2
EAST NORTH CENTRAL									
Ohio:									
Cincinnati	411,000	6	7	2	0	2	8	0	4
Cleveland	960,000	55	24	29	2	3	248	34	12
Columbus	235,000	6	2	2	0	1	126	1	1
Toledo	295,000	20	4	2	5	5	96	1	2
Indiana:									
Fort Wayne	99,900	2	2	4	0	0	4	0	0
Indianapolis	367,000	20	3	2	0	2	168	25	12
South Bend	81,700	0	1	0	0	0	1	0	1
Terre Haute	71,900	1	0	0	0	1	10	0	3
Illinois:									
Chicago	3,048,000	111	64	97	7	7	49	18	81
Springfield	64,700	7	0	0	1	1	0	3	1
Michigan:									
Detroit	[3] 1,242,044	41	40	44	1	4	232	22	31
Flint	136,000	8	2	0	0	0	174	1	3
Grand Rapids	156,000	2	2	0	0	0	13	2	0
Wisconsin:									
Kenosha	52,700	36	0	0	0	0	0	0	0
Milwaukee	517,000	85	12	7	1	0	3	11	17
Racine	69,400	0	1	0	0	0	0	0	0
Superior	[1] 39,671	0	0	1	0	0	0	0	4
WEST NORTH CENTRAL									
Minnesota:									
Duluth	113,000	4	1	0	0	0	1	2	3
Minneapolis	434,000	63	12	16	0	0	35	12	5
St. Paul	248,000	6	9	0	0	0	13	7	12
Iowa:									
Davenport	[1] 52,469	1	1	1	0	--	0	0	--
Des Moines	146,000	0	0	1	0	--	0	0	--
Sioux City	78,000	5	0	0	0	--	0	8	--
Waterloo	36,900	--	1	--	--	--	--	--	--
Missouri:									
Kansas City	375,000	5	4	1	0	1	38	17	7
St. Joseph	78,400	1	0	0	0	0	1	0	1
St. Louis	830,000	12	30	15	0	0	168	7	--
North Dakota:									
Fargo	[1] 26,403	5	1	0	0	0	0	0	1
Grand Forks	[1] 14,811	2	0	0	0	--	0	0	--
South Dakota:									
Aberdeen	[1] 15,036	1	0	0	0	--	0	0	--
Sioux Falls	[1] 30,127	0	0	0	0	--	0	0	--
Nebraska:									
Lincoln	62,000	10	0	2	0	0	0	7	0
Omaha	216,000	6	1	2	0	0	0	1	7
Kansas:									
Topeka	56,500	16	0	0	1	1	8	0	2
Wichita	92,500	2	1	1	0	0	9	1	4
SOUTH ATLANTIC									
Delaware:									
Wilmington	124,000	0	1	0	0	0	24	3	2
Maryland:									
Baltimore	808,000	56	17	18	0	3	95	41	19
Cumberland	[1] 33,741	0	0	0	0	0	1	0	0
Frederick	[1] 12,035	0	0	0	0	0	5	0	0

[1] Estimated, July 1, 1925.

[3] Special census.

City reports for week ended June 16, 1928—Continued

Division, State, and city	Population, July 1, 1926, 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			
SOUTH ATLANTIC—con.									
District of Columbia:									
Washington	528,000	11	8	10	0	0	124	0	6
Virginia:									
Lynchburg	[3] 38,493	10	1	2	0	0	22	4	1
Norfolk	174,000	0	1	0	0	0	2	0	2
Richmond	189,000	0	1	0	0	0	18	0	3
Roanoke	61,900	12	0	0	0	0	6	0	0
West Virginia:									
Charleston	50,700	0	0	1	0	0	3	0	0
Wheeling	[1] 56,208	14	0	2	0	1	3	3	1
North Carolina:									
Raleigh	[1] 30,371	0	0	1	0	0	6	0	0
Wilmington	37,700	3	0	0	0	0	0	0	1
Winston-Salem	71,800	6	0	0	0	0	1	2	0
South Carolina:									
Charleston	74,100	0	0	1	13	0	0	0	0
Columbia	41,800	3	0	0	0	0	0	7	4
Greenville	[1] 27,311		0						
Georgia:									
Atlanta	(2)	3	1	0	0	0	9	0	4
Brunswick	[1] 16,809	0	0	0	0	0	0	5	0
Savannah	94,900	1	0	0	4	0	0	0	1
Florida:									
Miami	[3] 131,286	1	0	1	0	0	1	1	2
St. Petersburg	[3] 47,629		0			0			0
Tampa	102,000	2	1	0	0	0	0	0	0
EAST SOUTH CENTRAL									
Kentucky:									
Covington	58,500	0	1	0	0	0	1	0	3
Louisville	311,000		1						
Tennessee:									
Memphis	177,000	0	1	2	0	1	3	0	5
Nashville	137,000	3	0	0	0	2	11	0	3
Alabama:									
Birmingham	211,000	7	1	2	8	1	48	5	4
Mobile	66,800	1	0	0	0	0	0	0	0
Montgomery	47,000	0	0	0	1		0	0	
WEST SOUTH CENTRAL									
Arkansas:									
Fort Smith	[1] 31,643	3	1	0	0		0	2	
Little Rock	75,900	1	0	0	0	0	0	0	1
Louisiana:									
New Orleans	419,000	3	4	9	5	3	1	0	8
Shreveport	59,500	1	0	2	0	0	4	0	1
Texas:									
Dallas	203,000	4	3	0	1	0	17	0	1
Fort Worth	159,000	3	1	0	0	0	1	3	5
Galveston	49,100	0	0	0	0	0	2	0	0
Houston	[1] 164,954	0	2	0	0	0	3	1	5
San Antonio	205,000	0	2	2	0	1	1	0	2
MOUNTAIN									
Montana:									
Billings	[1] 17,971	3	0	0	0	0	0	0	0
Great Falls	[1] 29,883	1	1	0	0	0	1	0	1
Helena	[1] 12,037	0	0	0	0	0	0	0	0
Missoula	[1] 12,668	0	0	0	0	0	0	0	0
Idaho:									
Boise	[1] 23,042	1	0	0	0	0	0	0	0
Colorado:									
Denver	285,000	19	9	3		0	48	55	4
Pueblo	43,900	6	1	0	0	0	28	0	0
New Mexico:									
Albuquerque	[1] 21,000	0	1	0	0	0	0	1	1
Utah:									
Salt Lake City	133,000	25	3	2	0	1	0	3	1
Nevada:									
Reno	[1] 12,665	0	0	0	0	0	0	0	0

[1] Estimated, July 1, 1925. [2] No estimate made. [3] Special census.

City reports for week ended June 16, 1928—Continued

Division, State, and city	Population, July 1, 1926, 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			
PACIFIC									
Washington:									
Seattle	(2)	26	4	5	0	-------	7	6	-------
Spokane	109,000	13	2	3	0	-------	0	0	-------
Tacoma	106,000	2	2	0	0	0	11	26	2
Oregon:									
Portland	[1] 282,383	13	5	3	0	0	6	1	4
California:									
Los Angeles	(2)	47	37	23	16	2	17	35	19
Sacramento	73,400	2	2	0	0	0	0	7	2
San Francisco	567,000	28	14	12	0	0	8	34	3

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
NEW ENGLAND											
Maine:											
Portland	1	2	0	0	0	2	1	1	0	3	21
New Hampshire:											
Concord	0	0	0	0	0	0	0	0	0	0	13
Manchester	0	0	0	0	0	0	0	0	0	0	10
Vermont:											
Barre	0	1	0	0	0	1	0	0	0	0	4
Massachusetts:											
Boston	45	67	0	0	0	10	2	0	0	23	199
Fall River	2	3	0	0	0	2	0	0	0	2	25
Springfield	4	3	0	0	0	3	0	0	0	0	26
Worcester	7	6	0	0	0	2	0	0	0	3	41
Rhode Island:											
Pawtucket	1	0	0	0	0	0	0	0	0	1	15
Providence	6	8	0	0	0	6	1	0	0	0	78
Connecticut:											
Bridgeport	6	3	0	0	0	5	0	0	0	5	28
Hartford	3	3	0	0	0	0	0	0	0	2	34
New Haven	3	1	0	0	0	1	0	0	0	16	38
MIDDLE ATLANTIC											
New York:											
Buffalo	16	17	1	0	0	6	0	0	1	22	135
New York	155	172	0	0	0	111	12	4	1	123	1,420
Rochester	10	3	0	0	0	2	0	0	0	9	72
Syracuse	5	3	0	0	0	2	0	0	0	12	53
New Jersey:											
Camden	4	1	0	0	0	1	0	0	0	0	29
Newark	17	28	0	0	0	0	1	0	0	26	96
Trenton	2	1	0	0	0	6	0	0	0	2	39
Pennsylvania:											
Philadelphia	62	73	0	0	0	36	3	0	0	63	455
Pittsburgh	23	24	0	0	0	12	0	0	0	21	166
Reading	2	10	0	0	0	0	0	0	0	6	28
EAST NORTH CENTRAL											
Ohio:											
Cincinnati	9	20	2	3	0	11	1	0	0	0	136
Cleveland	24	15	0	0	0	18	1	1	1	30	180
Columbus	5	7	1	0	0	11	0	0	0	5	87
Toledo	10	4	0	0	0	5	1	0	0	6	50
Indiana:											
Fort Wayne	2	1	1	1	0	2	0	0	0	0	17
Indianapolis	6	12	8	4	0	7	0	0	0	6	103
South Bend	2	1	1	0	0	1	0	0	0	2	14
Terre Haute	2	1	0	3	0	3	0	0	0	1	20

[1] Estimated, July 1, 1925.

[2] No estimate made.

City reports for week ended June 16, 1928—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		
EAST NORTH CENTRAL—CON.											
Illinois:											
Chicago	85	104	2	0	0	72	3	1	0	89	760
Springfield	1	4	0	2	0	0	0	0	0	4	23
Michigan:											
Detroit	57	108	3	0	0	26	3	2	0	103	330
Flint	5	9	1	3	0	1	0	0	0	3	25
Grand Rapids	5	2	0	0	0	0	1	0	0	1	21
Wisconsin:											
Kenosha	1	0	1	0	0	0	0	0	0	9	4
Milwaukee	16	43	1	1	0	9	0	0	0	20	110
Racine	3	0	1	0	0	0	0	0	0.	2	8
Superior	2	9	1	0	0	0	0	0	0	0	11
WEST NORTH CENTRAL											
Minnesota:											
Duluth	5	5	2	0	0	0	0	0	0	9	17
Minneapolis	24	19	6	0	0	2	0	0	0	8	70
St. Paul	14	6	2	0	0	1	0	0	1	34	66
Iowa:											
Davenport	0	0	0	5			0	0		0	
Des Moines	4	0	3	8			0	0		0	28
Sioux City	0	0	2	0			0	0		1	
Waterloo	1		0				0				
Missouri:											
Kansas City	4	16	1	2	0	11	0	0	0	6	119
St. Joseph	0	2	1	5	0	0	0	0	0	1	32
St. Louis	18	16	2	1	0	9	2	2	0	18	192
North Dakota:											
Fargo	1	1	0	0	0	0	0	0	0	6	9
Grand Forks	1	1	0	0			0	0		0	
South Dakota:											
Aberdeen	2	0	0	0			0	0		0	
Sioux Falls	0	8	0	0			0	0		0	1
Nebraska:											
Lincoln	1	4	1	1	0	0	0	0	0	4	16
Omaha	2	5	4	1	0	3	0	0	0	1	51
Kansas:											
Topeka	1	3	0	0	0	0	0	0	0	3	12
Wichita	1	3	1	3	0	0	0	0	0	7	27
SOUTH ATLANTIC											
Delaware:											
Wilmington	3	4	0	0	0	1	0	0	0	0	17
Maryland:											
Baltimore	22	16	0	0	0	13	3	1	1	59	185
Cumberland	0	0	0	0	0	1	0	0	0	0	9
Frederick	0	0	0	0	0	0	0	0	0	0	0
District of Columbia:											
Washington	14	27	1	0	0	13	2	1	1	4	116
Virginia:											
Lynchburg	1	0	0	0	0	0	0	1	0	6	15
Norfolk	1	3	0	1	0	2	0	0	0	3	
Richmond	1	1	0	0	0	3	1	0	0	0	48
Roanoke	1	0	1	0	0	2	1	0	0	0	18
West Virginia:											
Charleston	0	1	0	2	0	1	0	0	0	1	9
Wheeling	2	1	0	0	0	2	0	0	0	0	25
North Carolina:											
Raleigh	0	1	0	0	0	0	0	0	0	6	12
Wilmington	0	0	0	1	0	0	0	1	0	0	12
Winston-Salem	0	1	1	0	0	2	1	2	0	0	
South Carolina:											
Charleston	0	0	1	2	0	2	1	1	0	0	25
Columbia	0	0	0	0	0	0	1	0	0	0	27
Greenville	0		0				0				
Georgia:											
Atlanta	3	5	5	2	6	5	2	1	0	2	78
Brunswick	0	0	0	0	0	0	0	0	0	0	5
Savannah	1	0	0	0	0	3	2	0	0	0	34

City reports for week ended June 16, 1928—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		
SOUTH ATLANTIC—continued											
Florida:											
Miami	1	1	1	0	0	4	1	0	0	3	40
St. Petersburg	0	------	0	------	0	0	0	------	0	------	8
Tampa	0	0	1	0	0	4	0	1	1	0	18
EAST SOUTH CENTRAL											
Kentucky:											
Covington	0	6	0	0	0	1	0	0	0	0	17
Louisville	5	------	1	------	------	------	1	------	------	------	------
Tennessee:											
Memphis	2	3	1	0	0	5	1	2	1	3	66
Nashville	0	1	0	6	0	2	2	0	0	0	60
Alabama:											
Birmingham	1	1	4	1	0	4	2	1	0	2	75
Mobile	0	0	1	0	0	2	0	0	0	0	19
Montgomery	0	0	0	1	------	------	0	3	------	0	------
WEST SOUTH CENTRAL											
Arkansas:											
Fort Smith	0	0	0	0	------	------	0	0	------	1	------
Little Rock	1	2	0	1	0	1	1	0	0	0	------
Louisiana:											
New Orleans	2	4	0	0	0	11	3	8	0	9	122
Shreveport	0	1	1	1	0	2	1	0	1	3	24
Texas:											
Dallas	2	3	1	2	0	6	1	0	0	13	42
Fort Worth	0	2	1	5	0	0	2	1	1	0	40
Galveston	0	0	0	0	0	2	0	0	0	0	20
Houston	0	1	1	1	0	5	1	1	1	0	80
San Antonio	0	0	0	0	0	4	1	0	0	0	65
MOUNTAIN											
Montana:											
Billings	0	0	0	0	0	0	0	0	0	1	------
Great Falls	1	0	0	1	0	0	0	0	0	1	14
Helena	0	0	0	0	0	0	0	0	0	0	5
Missoula	0	1	0	0	0	0	0	0	0	0	3
Idaho:											
Boise	0	1	0	0	0	0	0	0	0	0	10
Colorado:											
Denver	8	4	0	0	0	9	0	1	1	20	78
Pueblo	1	0	0	0	0	1	0	0	0	0	5
New Mexico:											
Albuquerque	0	0	0	0	0	3	0	0	0	0	6
Utah:											
Salt Lake City	2	2	1	3	0	1	1	0	0	12	37
Nevada:											
Reno	0	0	0	1	0	0	0	0	0	0	4
PACIFIC											
Washington:											
Seattle	9	1	2	0	------	------	1	2	------	2	------
Spokane	5	9	3	3	------	------	1	0	------	0	------
Tacoma	2	3	3	0	0	1	0	0	0	3	23
Oregon:											
Portland	4	4	7	22	0	1	1	0	0	0	52
California:											
Los Angeles	21	13	5	1	0	22	2	1	0	64	228
Sacramento	1	11	1	2	0	3	0	3	0	5	23
San Francisco	11	24	2	1	0	10	1	2	2	22	154

City reports for week ended June 16, 1928—Continued

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	0	0	1	1	0	0	0	0	0
MIDDLE ATLANTIC									
New York:									
New York [1]	39	14	4	2	0	0	1	4	0
Rochester	1	1	0	0	0	0	0	0	0
New Jersey:									
Newark	2	0	1	0	0	0	0	0	0
Pennsylvania:									
Philadelphia	2	0	0	0	1	0	0	0	0
Pittsburgh	1	2	0	0	0	0	0	0	0
EAST NORTH CENTRAL									
Ohio:									
Cincinnati	0	1	0	0	0	0	0	0	0
Cleveland	5	2	0	0	0	0	0	0	0
Toledo	1	0	0	0	0	0	0	0	0
Indiana:									
Fort Wayne	1	0	0	0	0	0	0	0	0
Indianapolis	2	1	0	0	0	0	0	0	0
Illinois:									
Chicago	6	1	0	0	0	0	1	0	0
Michigan:									
Detroit	4	3	0	1	0	0	0	0	0
WEST NORTH CENTRAL									
Minnesota:									
Minneapolis	1	0	0	0	0	0	0	0	0
Missouri:									
Kansas City	1	1	0	0	0	0	0	0	0
St. Louis	2	0	0	0	0	0	0	0	0
North Dakota:									
Fargo	0	0	0	1	0	0	0	0	0
SOUTH ATLANTIC [1]									
Virginia:									
Lynchburg	0	0	0	0	0	1	0	0	0
North Carolina:									
Winston-Salem	0	0	0	0	0	1	0	0	0
South Carolina:									
Charleston	0	0	0	0	5	1	0	0	0
Georgia:									
Atlanta	0	0	0	0	4	0	0	0	0
Savannah [1]	0	0	0	0	1	1	0		0
EAST SOUTH CENTRAL									
Tennessee:									
Memphis	0	0	0	0	0	2	0	0	0
Nashville	0	0	0	0	2	0	0	0	0
Alabama:									
Birmingham	0	0	0	0	1	0	1	0	0
Mobile	0	0	0	1	1	0	0	0	0
Montgomery	0	0	0	0	3	0	0	0	0
WEST SOUTH CENTRAL									
Louisiana:									
New Orleans	1	0	0	0	4	2	0	0	0
Texas:									
Fort Worth	0	2	0	0	0	0	0	0	0
Houston	0	1	0	0	0	1	0	0	0
MOUNTAIN									
Montana:									
Great Falls	0	1	0	0	0	0	0	0	0
Colorado:									
Pueblo	1	0	0	0	0	0	0	0	0
PACIFIC									
Washington:									
Tacoma	1	0	0	0	0	0	0	0	0
California: [2]									
Sacramento	1	0	0	0	0	0	0	1	0

[1] Typhus fever: 4 cases; 1 at New York, N. Y., 1 at Savannah, Ga., and 2 at Tampa, Fla.
[2] Rabies (in man): 1 case and 1 death at Los Angeles, Calif.

The following table gives the rates per 100,000 population for 101 cities for the five-week period ended June 16, 1928, compared with those for a like period ended June 18, 1927. The population figures used in computing the rates are approximate estimates as of July 1, 1928 and 1927, respectively, authoritative figures for many of the cities not being available. The 101 cities reporting cases had estimated aggregate populations of approximately 31,657,000 in 1928 and 31,050,000 in 1927. The 95 cities reporting deaths had nearly 30,961,000 estimated population in 1928 and nearly 30,370,000 in 1927. The number of cities included in each group and the estimated aggregate populations are shown in a separate table below.

Summary of weekly reports from cities, May 13 to June 16, 1928—Annual rates per 100,000 population compared with rates for the corresponding period of 1927 [1]

DIPHTHERIA CASE RATES

	Week ended—									
	May 19, 1928	May 21, 1927	May 26, 1928	May 28, 1927	June 2, 1928	June 4, 1927	June 9, 1928	June 11, 1927	June 16, 1928	June 18, 1927
101 cities	137	174	128	171	122	158	[2] 134	[3] 161	[4] 146	150
New England	110	153	64	160	99	160	97	133	115	119
Middle Atlantic	204	267	213	233	178	234	220	247	242	216
East North Central	114	160	102	145	105	123	108	125	123	141
West North Central	95	105	72	91	84	81	[5] 50	81	[5] 69	79
South Atlantic	103	110	109	144	93	126	98	[3] 124	[6] 66	117
East South Central	20	35	35	96	45	61	20	20	[7] 29	41
West South Central	64	50	28	83	56	66	60	45	52	54
Mountain	97	108	71	143	71	179	35	368	44	206
Pacific	120	104	92	196	107	128	115	125	110	115

MEASLES CASE RATES

101 cities	1,346	620	1,305	548	1,215	447	[2] 1,025	[3] 425	[4] 865	360
New England	1,159	416	1,290	435	1,129	314	952	458	995	407
Middle Atlantic	2,274	323	2,185	365	2,164	282	1,767	298	1,399	281
East North Central	680	492	773	372	661	324	688	295	678	261
West North Central	1,116	952	939	653	752	459	[2] 609	372	[5] 539	247
South Atlantic	1,436	1,537	1,219	1,358	1,021	1,001	833	[3] 847	[6] 599	691
East South Central	1,237	355	1,077	319	1,037	380	763	157	[7] 458	132
West South Central	268	620	260	459	176	496	60	418	112	265
Mountain	1,150	906	831	1,049	991	619	734	565	681	341
Pacific	263	1,215	304	1,060	217	1,094	174	1,136	110	969

SCARLET FEVER CASE RATES

101 cities	253	309	234	294	206	219	[2] 197	[3] 240	[4] 166	198
New England	292	432	306	365	248	288	290	323	223	265
Middle Atlantic	279	415	267	363	200	255	190	286	162	223
East North Central	272	267	254	301	228	212	237	247	220	215
West North Central	279	289	207	245	232	236	[2] 162	194	[5] 150	162
South Atlantic	195	101	163	121	184	78	149	[3] 109	[6] 108	81
East South Central	190	132	219	137	284	101	259	66	[7] 80	71
West South Central	216	33	204	25	144	21	92	33	44	8
Mountain	133	986	18	897	77	780	106	717	71	663
Pacific	143	167	130	209	148	185	156	204	156	180

[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, 1928 and 1927, respectively.
[2] Waterloo, Iowa, and Fargo, N. Dak., not included.
[3] Greenville, S. C., not included.
[4] Waterloo, Iowa, Norfolk, Va., Greenville, S. C., and Louisville, Ky., not included.
[5] Waterloo, Iowa, not included.
[6] Norfolk, Va., and Greenville, S. C., not included.
[7] Louisville, Ky., not included.

Summary of weekly reports from cities, May 13 to June 16, 1928—Annual rates per 100,000 population compared with rates for the corresponding period of 1927 [1]—Continued

SMALLPOX CASE RATES

	Week ended—									
	May 19, 1928	May 21, 1927	May 26, 1928	May 28, 1927	June 2, 1928	June 4, 1927	June 9, 1928	June 11, 1927	June 16, 1928	June 18, 1927
101 cities	24	26	17	29	13	21	[2] 11	[3] 20	[4] 10	19
New England	0	0	9	0	0	0	0	0	0	0
Middle Atlantic	0	0	0	0	0	0	0	0	0	0
East North Central	22	37	16	49	10	33	9	21	11	21
West North Central	64	48	27	42	29	24	[2] 22	32	[5] 24	30
South Atlantic	32	36	26	40	12	32	30	[3] 20	[6] 13	36
East South Central	30	76	60	61	45	91	25	106	[7] 58	56
West South Central	60	17	24	29	24	17	24	8	20	12
Mountain	159	45	133	27	53	36	71	27	44	54
Pacific	54	71	38	84	49	60	13	91	18	65

TYPHOID FEVER CASE RATES

101 cities	6	10	8	9	12	13	[2] 9	[3] 11	[4] 7	13
New England	7	5	11	9	57	9	2	5	2	12
Middle Atlantic	4	6	6	6	1	5	10	6	2	6
East North Central	2	5	5	7	3	7	7	6	3	8
West North Central	2	6	4	4	4	12	[2] 4	14	[5] 4	6
South Atlantic	7	13	7	18	16	29	11	[3] 18	[6] 17	27
East South Central	20	56	10	30	65	61	10	41	[7] 44	81
West South Central	4	45	12	25	32	37	32	33	36	37
Mountain	0	9	0	18	0	9	9	0	9	18
Pacific	23	10	36	8	18	26	10	21	20	8

INFLUENZA DEATH RATES

95 cities	29	12	25	9	20	7	[8] 17	[3] 6	[9] 11	5
New England	41	14	18	9	16	2	14	0	14	2
Middle Atlantic	28	10	21	8	24	9	19	5	11	5
East North Central	36	12	33	4	21	4	17	4	14	5
West North Central	18	8	12	12	14	6	[8] 14	4	4	2
South Atlantic	16	11	11	13	9	16	9	[3] 9	[6] 8	9
East South Central	63	43	89	27	26	5	52	11	[7] 31	5
West South Central	16	25	33	25	25	17	33	25	16	17
Mountain	27	9	53	9	44	0	0	9	9	9
Pacific	10	0	7	3	7	3	7	7	7	0

PNEUMONIA DEATH RATES

95 cities	189	110	176	100	145	93	[8] 126	[3] 93	[9] 111	87
New England	207	100	253	144	172	116	168	88	136	107
Middle Atlantic	218	119	211	116	182	107	147	112	132	95
East North Central	222	104	175	85	130	79	115	93	111	86
West North Central	88	58	84	87	59	58	[8] 64	50	86	48
South Atlantic	146	148	119	85	137	112	130	[3] 64	[6] 79	60
East South Central	240	112	230	64	204	53	157	117	[7] 117	74
West South Central	123	106	144	89	127	81	107	102	74	93
Mountain	97	63	124	36	106	72	88	90	53	152
Pacific	105	121	91	100	71	97	81	83	88	100

[2] Waterloo, Iowa, and Fargo, N. Dak., not included.
[3] Greenville, S. C., not included.
[4] Waterloo, Iowa, Norfolk, Va., Greenville, S. C., and Louisville, Ky., not included.
[5] Waterloo, Iowa, not included.
[6] Norfolk, Va., and Greenville, S. C., not included.
[7] Louisville, Ky., not included.
[8] Fargo, N. Dak., not included.
[9] Norfolk, Va., Greenville, S. C., and Louisville, Ky., not included.

Number of cities included in summary of weekly reports, and aggregate population of cities in each group, approximated as of July 1, 1928 and 1927, respectively

Group of cities	Number of cities reporting cases	Number of cities reporting deaths	Aggregate population of cities reporting cases		Aggregate population of cities reporting deaths	
			1928	1927	1928	1927
Total	101	95	31,657,000	31,050,300	30,960,700	30,369,500
New England	12	12	2,274,400	2,242,700	2,274,400	2,242,700
Middle Atlantic	10	10	10,732,400	10,594,700	10,732,400	10,594,700
East North Central	16	16	7,991,400	7,820,700	7,991,400	7,820,700
West North Central	12	10	2,683,500	2,634,500	2,566,400	2,518,500
South Atlantic	21	21	2,981,900	2,890,700	2,981,900	2,890,700
East South Central	7	6	1,048,300	1,028,300	1,000,100	980,700
West South Central	8	7	1,307,600	1,260,700	1,274,100	1,227,800
Mountain	9	9	591,100	581,600	591,100	581,600
Pacific	6	4	2,046,400	1,996,400	1,548,900	1,512,100

FOREIGN AND INSULAR

THE FAR EAST

Report for the week ended June 9, 1928.—The following report for the week ended June 9, 1928, was transmitted by the Eastern Bureau of the Health Section of the Secretariat of the League of Nations, located at Singapore, to the headquarters at Geneva:

Plague, cholera, or smallpox was reported present in the following ports:

PLAGUE

Ceylon.—Colombo.
India.—Bassein, Bombay, Rangoon.
Madagascar.—Tamatave.

CHOLERA

India.—Madras, Rangoon, Vizagapatam.
Siam.—Bangkok.
French Indo-China.—Saigon.
China.—Canton.

SMALLPOX

India.—Bombay, Moulmein, Madras, Rangoon, Negapatam, Vizagapatam.
French India.—Pondicherry.
Straits Settlements.—Singapore.
China.—Shanghai, Hong Kong.
Kwangtung.—Dairen.
Manchuria.—Mukden, Liao Yang, Fushun, Penhsihu, Kaiyuan.

Returns for week ended June 9 were not received from Calcutta or Tuticorin, India, or Sabang, Dutch East Indies.

BRAZIL

Maceio, State of Alagoas—Mortality—Year, 1927.—During the year 1927, 1,754 deaths from all causes were reported at the city of Maceio, State of Alagoas, Brazil. Mortality from certain diseases was reported as follows:

Disease	Deaths	Disease	Deaths
Beriberi	1	Malaria:	
Broncho-pneumonia	25	Acute	135
Diarrhea and enteritis under 2 years	429	Chronic	23
Diphtheria	2	Paratyphoid fever	3
Dysentery:		Pneumonia	6
Amebic	27	Puerperal fever	6
Bacillary	8	Syphilis	50
Erysipelas	1	Tetanus	3
Influenza	13	Tuberculosis	173
Leprosy	2	Whooping cough	27

Population, 105,407.

CANADA

Provinces—Communicable diseases—Two weeks ended June 16, 1928.—The Canadian Ministry of Health reports cases of certain communicable diseases from Provinces of Canada for the two weeks ended June 16, 1928, as follows:

Week ended June 9, 1928

Disease	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Alberta	Total
Influenza	4			21			25
Lethargic encephalitis				1			1
Poliomyelitis						1	1
Smallpox			21	5	10	4	40
Typhoid fever	1	1	12	5	1	3	23

Week ended June 16, 1928

Disease	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	Total
Cerebrospinal meningitis				1				1
Influenza	20			20				40
Lethargic encephalitis				1				1
Smallpox				8		4	1	13
Typhoid fever		2	20	8	1	2	2	35

Quebec Province—Communicable diseases—Week ended June 16, 1928.—The Bureau of Health of the Province of Quebec reports cases of certain communicable diseases for the week ended June 16, 1928, as follows:

Disease	Cases	Disease	Cases
Chicken pox	24	Scarlet fever	49
Diphtheria	53	Smallpox	14
German measles	5	Tuberculosis	38
Influenza	3	Typhoid fever	6
Measles	151	Whooping cough	3

ECUADOR

Alausi—Plague—May 12, 1928.—Under date of May 12, 1928, a case of plague was reported at Alausi, Ecuador. The town is situated on the railroad.

Guayaquil—Plague—Smallpox—April-May, 1928.—During the month of April, 1928, 19 cases of smallpox were reported at Guayaquil, Ecuador, and during the month of May, 1928, 31 cases. During the period May 16 to 31, 1928, one case of plague was reported.

Plague-infected rats.—The finding of plague-infected rats at Guayaquil has been reported as follows: Month of April, 1928, of 17,679 rats taken, one rat found infected and during the month of May, 1928, of 16,261 rats taken, one rat found infected.

HAWAII TERRITORY

Honokaa, Island of Hawaii—Plague-infected rat—June 1, 1928.—A plague-infected rat was found at Honokaa, Island of Hawaii, June 1, 1928. The location is about 200 miles from Honolulu, which

is on the Island of Oahu. The last plague rat at Honokaa was found November 25, 1928; the last plague rat found in the island of Hawaii was at Paauhau, December 20, 1928, and the last case of human plague occurred February 16, 1928, at Kukuihaele.

IRELAND

Belfast—Typhus fever—Week ended June 2, 1928.—During the week ended June 2, 1928, two cases of typhus fever were reported at Belfast, Ireland.

LATVIA

Communicable diseases—April, 1928.—During the month of April, 1928, cases of communicable diseases were reported in the Republic of Latvia as follows:

Diseases	Cases	Diseases	Cases
Cerebrospinal meningitis	9	Puerperal fever	5
Diphtheria	43	Scarlet fever	174
Erysipelas	20	Trachoma	21
Influenza	25	Typhoid fever	80
Malaria	1	Typhus fever	4
Measles	1,010	Whooping cough	57
Mumps	18		

UNION OF SOUTH AFRICA

Smallpox—Typhus fever—May 6–12, 1928.—During the week ended May 12, 1928, fresh outbreaks of smallpox and typhus fever were reported in the Union of South Africa, as follows: Smallpox—Orange Free State, in Ladybrand district; typhus fever—Cape Province, in four districts. At Durban, Natal, a case of typhus fever was reported in an Asiatic.

Malaria.—Under date of May 25, 1928, a general improvement in malaria conditions was reported for the Union of South Africa, with no new infections noted. Malaria conditions in the native population were attributed to relapses consequent in part to malnutrition following on long drought and lowered physical resistance.

YUGOSLAVIA

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

Disease	Cases	Deaths	Disease	Cases	Deaths
Anthrax	31	3	Rabies	2	2
Cerebrospinal meningitis	13	10	Scarlet fever	1,124	169
Diphtheria	143	15	Tetanus	23	11
Dysentery	28	2	Typhoid fever	103	13
Leprosy		1	Typhus fever	19	3
Measles	2,502	39			

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

CHOLERA

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 tables 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.

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

Place		Oct. 23–Nov. 19, 1927	Nov. 20–Dec. 17, 1927	Dec. 18, 1927–Jan. 14, 1928	Jan. 15–Feb. 11, 1928	Feb. 12–Mar. 10, 1928	Week ended— March, 1928			April, 1928				May, 1928				June, 1928	
							17	24	31	7	14	21	28	5	12	19	26	2	9
China:																			
Canton	C	12	1					1	1									1	1
	D	11	1					1	1									1	1
Swatow	C	P																	
	D	P																	
Tientsin	C	P	1																
Dutch East Indies: Java—Batavia	C	28	3																
	D	18	3																
India	C	23,047	25,139	15,377	12,391	13,236	4,546	5,384	5,856	5,529	7,746	7,897	8,176	8,743					
	D	12,863	15,026	8,863	6,750	7,282	2,605	2,931	3,182	3,159	4,920	5,157	4,980	5,375					
Bassein	D				1	2		4	25	22	20	6	6	9	9	16	8	7	
Bombay	C	2			1	1	1	1	1						1				
	D	2				1	1		1	1									
Calcutta	C	199	428	156	203	341	164	190	148	162	163	131	152		200	126			
	D	138	281	125	112	241	94	122	114	112	111	97	105	115	126	102	92	90	
Madras	C	13	1	1	2	14		7	1	2	5	5	5	7	7	6	10		
	D	7	2	1	4	18		2	1	1	4	5	4	5	3	4	5	4	6
Madras Presidency	C	3,073	3,702	1,864	4,681	2,961	510	455	243	275									
	D	1,736	2,104	984	2,660	1,618	280	244	131	157									
Negapatam	C				4	4													
	D				6	4					1			1					
Rangoon	C	2	8	4	6	29	4	7	8	3	5	10	7	1		4			
	D	5	6	3	2	18	2	3	6	5	2	7	5	1		3		2	5
Tuticorin	C		8							10	43	45	19	3					
	D	37	14				1			8	26	32	10	3					
India (French):																			
Chandernagor	C	6	10	14	6	5	2	1		4									
	D	6	10	9	1	5	1	1		4									
Karikal	C	1	1	8	32	6					1								
	D	1	1	4	19	5					1								
Pondicherry	C	1	25	11	12	33				1	2	3	2	1					
	D	1	21	12	10	19				1	2	3	2	1					

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

CHOLERA—Continued

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

Place		Oct. 23–Nov. 19, 1927	Nov. 20–Dec. 17, 1927	Dec. 18, 1927–Jan. 14, 1928	Jan. 15–Feb. 11, 1928	Feb. 12–Mar. 10, 1928	Week ended— March, 1928			April, 1928				May, 1928				June, 1928	
							17	24	31	7	14	21	28	5	12	19	26	2	9
Indo-China (see also table below):																			
Saigon	C	------	------	3	4	16	27	13	21	35	50	28	23	15	10	------	4	1	5
	D	------	------	1	1	8	19	8	12	20	37	17	12	10	7	------	2	------	1
Iraq [1]		------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Kwangchow-Wan (see table below)		------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Siam	C	110	88	110	200	295	53	88	70	80	120	85	88	56	46	------	------	------	------
	D	76	64	80	139	214	39	67	54	58	84	61	63	26	29	------	------	------	------
Bangkok	C	4	3	21	101	60	8	12	16	24	------	30	24	20	17	14	11	8	3
	D	2	2	11	66	36	5	5	12	11	------	13	14	8	6	9	7	4	------
Trad [2]	C	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Straits Settlements: Singapore	C	7	5	23	3	------	1	1	------	------	------	------	1	------	------	------	------	------	------
	D	5	4	12	1	------	1	1	------	------	------	------	1	------	------	------	------	------	------
On vessel:																			
S. S. Hawaii Maru at Singapore from Saigon, French Indo-China	C	------	------	------	------	------	------	------	------	11	------	------	------	------	------	------	------	------	------

Place		July–September, 1927	October–December, 1927	January, 1928	February, 1928			March, 1928			April, 1928			May, 1928		
					1–10	11–20	21–29	1–10	11–20	21–31	1–10	11–20	21–30	1–10	11–20	21–31
Indo-China (French) (see also table above):																
Annam	C	3,179	370	267	23	36	14	18	18	23	17	11	18	4	26	13
Cambodia	C	251	337	54	38	22	51	33	22	92	43	102	51	34	47	20
Cochin-China	C	469	391	295	178	113	153	206	217	245	277	316	240	140	139	125
Laos	C	246	77	------	------	------	------	------	------	------	------	------	------	------	------	------
Tonkin	C	1,297	3	1	------	------	------	------	------	------	1	4	1	9	1	16
Kwangchow-Wan	C	16	------	------	------	------	------	------	------	------	------	------	------	------	16	------

[1] From July 19 to Dec. 26, 1927, 1,479 cases of cholera were reported in Iraq, with 1,063 deaths, as follows: Amarah Liwa, 281 cases, 205 deaths; Baghdad Liwa, 80 cases, 60 deaths, Basra Liwa, 421 cases, 330 deaths; Diwaniah Liwa, 122 cases, 72 deaths; Diyalah Liwa, 1 case, 1 death; Duliam Liwa, 100 cases, 69 deaths; Hillah Liwa, 105 cases, 71 deaths; Kerbalah Liwa, 79 cases, 60 deaths; Kut Liwa, 66 cases; 44 deaths; Muntafiq Liwa, 244 cases, 151 deaths.

[2] 1 death from cholera reported June 15 as first case from Trad, Siam.

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

PLAGUE

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

Place		Nov. 20–Dec. 17, 1927	Dec. 18, 1927–Jan. 14, 1928	Jan. 15–Feb. 11, 1928	Feb. 12–Mar. 10, 1928	Week ended— March, 1928			April, 1928				May, 1928				June, 1928			
						17	24	31	7	14	21	28	5	12	19	26	2	9	16	23
Algeria (see also table below):																				
Algiers	C												1							
Oran	C													1				2		
Arabia: Aden	C		19	178	343	189	148	151	163	108	59	53	13	5	1	1				
	D		7	104	206	134	135	134	126	97	48	16	16	7	1	1				
Plague-infected rats				P	P															
Argentina:																				
Avellaneda	C																1			
	D																1			
Bahia Blanca district	C	3																		
Buenos Aires	C			2										(1)	6					
	D														3					
Cordoba Province	C	10	2							5										
Entre Rios	C																	2	1	
Firmat	C	1																		
Loreto	C																3			
Quillino	C	3																		
Rosario	C	4	5	4	1											1				
Santa Fe	C																	7	1	1
Santiago del Estero	C				1													9	1	
Suardi	C																2			
Ucacha	C	1																		
Azores: St. Michaels Island	C	3	2	8	3	1	1		1		2	1	2		1			1		
	D	1	1	4	1	1			1		1	1			1			1		
Brasil:																				
Bahia	C		4	5	8			P	2	1										
	D		4	4	5															
Porto Alegre	C				2															
Rio de Janeiro	C			4	3	2	1													
	D			1	2	2	1													
Plague-infected rats				1																

[1] 6 cases of plague reported in Buenos Aires, Argentina, before May 14, 1928.

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

PLAGUE—Continued

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

Place		Nov. 20–Dec. 17, 1927	Dec. 18, 1927–Jan. 14, 1928	Jan. 15–Feb. 11, 1928	Feb. 12–Mar. 10, 1928	Week ended— March, 1928			April, 1928				May, 1928				June, 1928			
						17	24	31	7	14	21	28	5	12	19	26	2	9	16	23
British East Africa (see also table below):																				
Tanganyiki	C	P	P	2	3															
	D			2	3					5			5							
Uganda	C	67	79	23	13															
	D	61	64	18	10															
Canary Islands:																				
Arrecife	C														1					
	D														1					
Las Palmas	C	3	3	1	1	2		2												
	D	1	1	1	1															
Teneriffe	C				10															
	D				4															
Ceylon: Colombo	C	6	7	3	11	3		4					1	1	2		1	2		
	D	6	6	2	6	3		2					1	1	1			2		
Plague-infected rats			2	5	6															
China:																				
Amoy	C													1	1	2	1			
Hong Kong	C												2							
Dutch East Indies:																				
Balik-Papan	C		1																	
	D		1																	
Celebes—Makassar	C	2	6	5	1															
	D	2	5	5	1															
Java	D	1,017	754	737	454															
Batavia and West Java	C	154	128	137	103	19	18	17	26	13	10	14	10	25						
	D	152	128	135	103	19	18	17	26	13	10	14	10	25						
Cheribon	C	1																		
	D	1																		
Plague-infected rats						1		1	1	1	3	2	1	1	4	2	2	2		
East Java and Madura	C	8	7	7		1	1	2		1	2		1							
	D	8	7	7		1	1	2		1	2		1							
Kedoe Residency	C									P										
Pasoeroean Residency	C	P																		
Surabaya Residency	C	P						1					1							
	D							1					1							
Surakarta Residency	C	P																		

Ecuador (see also table below):																				
Alausi	C													1						
Egypt:																				
Alexandria	C	12	5	2	1											1				
	D	7	2	2	1											2				
Beni-Souef	C											4	8	4	14	34	17	14	3	
	D											1	2	4	6	8	5	7		
Cairo	C		2																	
	D		2																	
Maghagha District	C										1									
	D										1									
Menufia	C															6	5			
	D																2			
Minieh Province	C										32	9	7	13	15	36	12	22	23	
	D										5	4		5	2	9	1	9	5	
Suez	C		1	4	13		4	7	3		3	2			1	2				
	D		1	2	9		2	3	4		2	2			1					
Plague-infected rats							2													
Tanta	C														1					
	D														1					
Greece:																				
Athens and Piræus	C		3																	
	D		1																	
Corfu	C																		1	14
	D																			3
Mitylene	C	3																		
Hawaii Territory: Hawaii	D				1															
Hamakua—Paauhau—																				
Plague-infected rats			2																	
Honokaa—																				
Plague-infected rats		1															1			
India	C	5,518	7,697	12,652	23,174	7,517	6,077	6,634	5,851	6,690	5,080	4,143	2,565							
	D	3,269	4,925	8,521	16,998	6,031	4,724	5,372	4,780	5,911	4,719	3,796	2,648							
Bassein	D	4	17	8	12	5	5	7	5	4	5	1	3	2	1		1	12		
Bombay	C		3	14	33	4	16	28	21	17										
	D		3	9	33	4	11	25	21	15	14	19	21	17	14		6	5		
Calcutta	C		2																	
	D			1					2											
Madras Presidency	C	791	550	452	271	25	19	13	5	14	6					1				
	D	359	206	256	212	18	16	9	5	7	5									
Rangoon	C	15	17	35	48	5	11	3	11	5	2	5	4	3	3					
	D	15	16	30	43	4	9	5	8	5	1	3	5	3	3	3		4	3	
Indo-China (see table below)																				
Iraq:																				
Baghdad	C			4	2	2	2	1		1	4	4	2	4	3	4	2	3	2	
	D			2	2	2	2	1		1		4	1		1	1	1	1	1	
Plague-infected rats												4		3						
Dulaim Liwa	C			1						1										
Kwangchow-Wan (see table below)																				
Madagascar (see table below)																				
Nigeria (see also table below):																				
Lagos	C	18	10	10	8	2		2	3	2	6	7	2	4	8	6	10	11		
	D	13	8	11	8	2		2	2	2	7	7	2	4	8	6	10	10		

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

PLAGUE—Continued

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

Place		Nov. 20–Dec. 17, 1927	Dec. 18, 1927–Jan. 14, 1928	Jan. 15–Feb. 11, 1928	Feb. 12–Mar. 10, 1928	Week ended— March, 1928			April, 1928				May, 1928				June, 1928			
						17	24	31	7	14	21	28	5	12	19	26	2	9	16	23
Peru (see table below)																				
Senegal (see also table below):																				
Baol	C	P																		
Thies and vicinity	C							8												
	D							4												
Siam	C	3	16	20	42	7	8	13	5	6	11	8	2	3						
	D	2	11	12	36	6	9	10	5	4		6	3	2						
Ayudhaya	C																	2		
	D																	1		
Bangkok	C		1	2	1			1			3	1								
	D		1	2	1			1			2									
Nagara	C																1			
Straits Settlements: Singapore	C			1	3		1													
	D			1	2		1													
Syria (see table below)																				
Tunisia [1]																				
Turkey: Constantinople	C	2																		
	D	1																		
Union of South Africa:																				
Cape Province	C	2		1																
	D	1		1																
Orange Free State	C	8		5	5	3	2													
	D	6		4	1	3	2													
Venezuela: State of Miranda—Tacata and Cua	C				P															
On vessel:																				
S. S. Cadwallen, at La Plata, from Rosario, Argentina	C		1																	
S. S. Tymeric, at Barbados, from New Orleans	C															1				

[1] 8 cases of plague with 6 deaths were reported in Bengardane region, Tunisia, Mar. 17 to 27, 1928.

Place		October-December, 1927	January, 1928	February, 1928	March, 1928	April, 1928	May, 1928	June, 1928
Algeria (see also table above):								
Algiers	C	2	-----	-----	-----	-----	1	-----
Angola	C	3	-----	-----	-----	-----	-----	-----
British East Africa (see also table above):								
Kenya	C	62	26	24	19	17	-----	-----
	D					5	-----	-----
Ecuador: Guayaquil	C	18	4	6	10	-----	1	-----
	D	5	4	3	1	-----	-----	-----
Plague-infected rats		31	23	31	21	-----	1	-----
Indo-China (French)	C	10	7	-----	5	9	16	-----
Kwangchow-Wan	C	-----	-----	-----	18	17	10	-----
Madagascar	C	692	427	342	171	-----	-----	-----
	D	605	388	317	159	-----	-----	-----
Ambositra Province	C	25	105	67	30	-----	-----	-----
	D	17	96	66	29	-----	-----	-----
Antisirabe Province	C	109	117	108	56	-----	-----	-----
	D	108	117	108	54	-----	-----	-----
Itasy Province	C	104	33	19	3	-----	-----	-----
	D	94	29	17	3	-----	-----	-----
Madagascar—Continued.								
Moramanga Province	C	95	19	25	12	-----	-----	-----
	D	83	19	24	12	-----	-----	-----
Tananarive Province	C	408	155	123	70	-----	-----	-----
	D	354	129	102	61	-----	-----	-----
Nigeria (see also table above)	C	63	16	16	-----	-----	-----	-----
	D	61	16	16	-----	-----	-----	-----
Peru	C	34	-----	41	52	-----	-----	-----
	D	11	-----	14	9	-----	-----	-----
Callao	D	3	-----	-----	-----	-----	-----	-----
Lima	C	7	6	-----	-----	-----	-----	-----
	D	3	-----	-----	-----	-----	-----	-----
Senegal (see also table above)	C	-----	5	17	8	81	14	-----
	D	-----	-----	13	4	40	5	-----
Rufisque	C	-----	-----	-----	-----	-----	17	-----
	D	-----	-----	-----	-----	-----	9	-----
Syria: Beirut	C	2	-----	-----	-----	-----	-----	1

PLAGUE RATS ON VESSELS

S. S. *Modemi* at Goteborg, Sweden, from Bahia and Buenos Aires via Cape Verde Islands, December 22, 1927.
S. S. *Gydevore* at Landskrona, Sweden, from Rosario via Canary Islands, January 22, 1928.
S. S. *Dryden* at Liverpool from La Plata River ports, January 20, 1928.
S. S. *Sicily* at Liverpool from Buenos Aires and Rosario, June 8, 1928, 7 plague-infected rats.

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

SMALLPOX

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

Place		Oct. 23–Nov. 19, 1927	Nov. 20–Dec. 17, 1927	Dec. 18, 1927–Jan. 14, 1928	Jan. 15–Feb. 11, 1928	Feb. 12–Mar. 10, 1928	Mar. 11–Apr. 7, 1928	Week ended— April, 1928 14	21	28	May, 1928 5	12	19	26	June, 1928 2	9	16
Algeria (see also table below)	C	661	170	129	71	72	3	12									
Algiers	C		3	9	15	10	5		2		2	1	1	3			
Oran	C	20	39	29	11	5	12	3	1	2	11	4	1				
Angola (see table below).																	
Arabia: Aden	C	1	3	1		1											
Brazil (see also table below):																	
Rio de Janeiro	C	1					1										
	D	1					1										
British East Africa (see also table below):																	
Kenya—Mombasa	C						2				1						
Tanganyiki	D	P	P	8	5												
British South Africa:																	
Northern Rhodesia	C	185	252	236	233	297	67	26	7	4	591						
	D	64	62	31	23	42	9	1	1	1	48						
Southern Rhodesia	C	3	2	1	3	7	7	21	3			13					13
	D					1		10									
Canada:																	
Alberta	C	10	10	11	27	10	47	4	2	3	3	13	10	18	1	4	1
Calgary	C						1										
Edmonton	C	1	8	5	3	13	20	2			1	12	10				
British Columbia—Vancouver	C		4	8	26	10	17	11	6	1	6	4	2	5		1	
Manitoba	C	19	7	11	1						7		1	3		10	
Winnipeg	C	2	2	2	2												
New Brunswick	C			1		1							1				7
Ontario	C	264	347	212	243	147	83	6	18	18	8	15	12	6	8	5	8
Hamilton	C		2														
Kingston	C	1		1	1			2		1							
Ottawa	C	134	63	60	68	22	26		3	1		4	2			1	
Toronto	C	34	39	28	20	14	9	2	4	4	1	2	7		3		
Quebec	C	25	16	44	26	54	112	21	25	4	33	13	31	15	19	21	14
Montreal	C	1		8	8	9	9		6	2	1			1	2	3	2
Quebec	C		4	10	16	13	10	3	7	5	8	7	17	9	14	17	11
Riviere du Loup	C	3															
Sherbrooke	C						3										4

Saskatchewan	C	34	58	52	97	22	33	2	23	15	12	12	13	3			
Moose Jaw	C		1	4	11	13	7	3					1				
Regina	C	1	1				3	3	2		3	1					
Saskatoon	C		2	4	15	2											
Ceylon: Colombo	C	1	2		4	6	1										
	D		1		1		1										
China:																	
Amoy	C					1	6	3	2	1	3	1			1		
Antung	C			1					1		2						
Canton	C					2	7	1				1		1			
Chefoo	C		P				P										
	D						1										
Foochow	C	P	P	P	P	P	P	P	P	P	P						
Hong Kong	C			1	2	7	32	4	4	9	8	8	10	3	9	9	
	D			1	2	4	19	7	2	10	7	11	5	4	3	12	
Manchuria—																	
Changchun	C		1		4			2		1	1	3			3		
Dairen	C	2	1	5	15	13	15	7	3	6		12	10	13		14	
	D				8	7	8									7	
Fushun	C	1														4	
Harbin	C		2	1	5	7	7	2	3	2	3	14		11			
Mukden	C	1			4	21	1		3	1					3	1	
Pensihu	C															1	
	D															1	
Shanghai—																	
Foreigners only	C				5	6	7		1	1	1	2	1	3		2	
Including natives	D				11	19	9	3	1	3	2	1	7	5	6	2	
Tientsin	C	8	9	8	48	20	13	9	1	3	4	5	1				
Chosen (see table below)																	
Curaçao (alastrim)	C				2	3											
Dominican Republic: Santo Domingo	C						2				1						
Dutch East Indies:																	
Borneo—																	
Pontianak	C					1											
Samarinda district	C	P															
Java—																	
Batavia and West Java	C	25			4	2	5	1				2					
	D	15															
East Java and Madura	C	9	9	5	2	9		1			1						
	D					1		2									
Sumatra—Medan	C		3	9	23	14	7				2						
	D		2	3	11	2	5	2			1						
Ecuador (see table below)																	
Egypt	C		4	4	1	2	52	11		1		1					
	D		1				33	6		1				1			
Cairo	C		2		1												
France (see table below)																	
Gold Coast (see table below)																	

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

SMALLPOX—Continued

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

Place		Oct. 23–Nov. 19, 1927	Nov. 20–Dec. 17, 1927	Dec. 18, 1927–Jan. 14, 1928	Jan. 15–Feb. 11, 1928	Feb. 12–Mar. 10, 1928	Mar. 11–Apr. 7, 1928	Week ended— April, 1928 14	21	28	May, 1928 5	12	19	26	June, 1928 2	9	16
Great Britain:																	
England and Wales	C	902	1,041	1,175	1,530	1,473	1,341	321	326	376	321	319	336	258	286	365	
Birmingham	C				44	3	1	1									
Bradford	C	11	19	32	24	12	19	3	2	7	2	2	7	2	8	6	
Bristol	C	4	8		3	4	12	1	10	1	5	4	1	4	1	1	
Cardiff	C	1		1			5			1	2		1		1		
Castleford	C					4	36	27	11	20	11	11	6	4	3	5	
Leeds	C	5	16	11	3	9	14	2	2	1	1					3	
Liverpool	C			1		1											
London	C				4	14	17	7	5	3	27	5	10	5	5	49	
Manchester	C	6	25	5	25	8	14	2	4	2		1	1	2	1	1	
Newcastle on Tyne	C	9	55	22	27	12	9			4		1	6	3	2	3	
Nottingham	C			13	27	11	13	4	4	6	3	5	10		5	2	
Sheffield	C	6	9	14	8	6	1		10	2	2	2			2		
Stoke on Trent	C			4	1	15	12	4	10	5	13	9	8	6	1	4	
Greece (see table below)																	
India	C	4,052	6,731	10,676	17,777	18,850	28,034	8,789	8,038	7,398	6,220						
	D	927	1,650	2,429	3,709	3,826	5,540	1,988	1,739	1,601	1,341						
Bassein	C				1						1						
Bombay	C	4	9	14	61	149	218	56	57	54	33	46	37	26	27	19	
	D	3	2		24	73	120	32	34	27	25	25	22	18	13	15	
Calcutta	C	5	25	36	58	71	134	49	51	31	40	41	29	31	29		
	D	2	11	27	34	50	104	32	42	21	35	30	26	23	22		
Karachi	C					1	1				2			3			
	D					1					1			1			
Madras	C	7	11	21	74	100	183	49	36	60	24	17	22	11	9	6	
	D	2	3	6	8	19	29	16	8	7	7	5	5	3	5	3	
Negapatam	C			5	8	3		1		5	1	3	4	1		2	
	D			3	3			1		2			1				
Rangoon	C	6	14	136	275	377	320	62	45	37	23	15	8	6	7	5	
	D	1	4	31	64	104	102	24	17	12	16	4	2	2	5	2	
Tuticorin	C											3					
Vizagapatam	C			3	10	2	3		2			2		1		4	
	D				8									1			

India (French):																		
Chandernagor	C						5				5							
	D						1				1							
Pondicherry	C	42	41	65	47	9	18	12		15	9	16		7	9	6		
	D	42	41	50	47	9	18	12		15	9	16		6	1	6		
Indo-China (see also table below):																		
Saigon	C		1	3		3												
Iraq:																		
Baghdad	C	5	25	23	19	7	5	1	3		1	6		3	7	3	3	
	D	4	14	12	11	4	4	1	1		1	1		2	3	1	1	
Basra	C	3	4	2	1	7	5		1	1	2		1	2				
	D	1	3	1			2		1	1			1	2				
Italy:																		
Leghorn	C					1	1											
Palermo	C						5	1	3	3	3	2		4				
Rome and vicinity	C				3													
Jamaica (outside Kingston) (alastrim)	C	7	3	2	5	10	13		1	2	1			1				
Japan:													6	3	1			
Kobe	C									1	5	2						
Nagoya	C																	
Tokyo	C				4	4	15	8										
	D				1	2	1	1										
Tokyo Prefecture	C						24	1										
	D						1	1	1									
Yokohama	C									1	1	1	1	1				
	D												1					
Latvia (see table below).																		
Mauretania	C					P												
Mexico (see also table below):																		
Acapulco	C	1																
	D	1																
Chihuahua	D			1														
Jalisco (State)	C					P	P	P	P	P								
Guadalajara	D		2			1	2	2	1	4	5	7	4		2	4	2	
Manzanillo	D			1			1											
Mazatlan	D												2		1			
Mexico City and surrounding territory	C		4		2	2				1		1		1				
Saltillo	D											1	1					
Tampico	C					1												
Morocco (see table below).																		
Nigeria (see also table below):																		
Lagos	C						1											
Southern Provinces	C					7	93											
	D						35											
Palestine: Jerusalem	C		1		1													
	D				1													
Persia (see table below).																		
Poland	C		1	6	3	1	1		5	2	2				1			
	D								1									
Portugal (see also table below):																		
Lisbon	C	4	10	12	12	20	5		3	2	1							
	D		1			1												
Oporto	C									1								

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

SMALLPOX—Continued

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

Place		Oct. 23–Nov. 19, 1927	Nov. 20–Dec. 17, 1927	Dec. 18, 1927–Jan. 14, 1928	Jan. 15–Feb. 11, 1928	Feb. 12–Mar. 10, 1928	Mar. 11–Apr. 7, 1928	Week ended— April, 1928 14	21	28	May, 1928 5	12	19	26	June, 1928 2	9	16
Senegal (see also table below):																	
Dakar	C					34	29	5	11			12	7	5			
	D						20		8			4	3				
Siam	C	1	9	23	35	12	28	1		3	6	1					
	D		1	2	4	3	4	1		1	1						
Bangkok	C	1	1	3						1							
	D			1													
Spain (see also table below):																	
Malaga	D	1	1														
Seville	C			1													
Valencia	C			2		1	2										
Straits Settlements: Singapore	C	1			1	1	1	2	1							1	
Sudan (Anglo-Egyptian)	C			4	85	109	332	29	18	78	35	39	7	75			
	D			4	48	27	100	6	8	4	14	4	1	6			
Sudan (French) (see table below):																	
Switzerland	C			2													
Syria (see table below).																	
Tunisia: Tunis	C			4	3	14	4		4		2		1				
Union of South Africa:																	
Cape Province	C				P												
Natal	C				P	P	P										
Orange Free State	C	P	P	P	P		P										
Transvaal	C	1								P							
Union of Soviet Socialist Republics (see table below).																	
Upper Volta	C					5	2	P		4	5						
Venezuela:																	
Maracaibo	D				1	1											
On vessel:																	
S. S. Arendskerk at Singapore, from Amoy, China	C						P										
S. S. Kashgar at Kobe, from Shanghai	C										P						
S. S. Rohna at Penang from Negapatam	C													P			
S. S. Tjileboet at Hong Kong, from Shanghai	C										P						
S. S. Yarmouth at Kingston, Jamaica, from Habana, Cuba	C						1										

Place		July-September, 1927	October-December, 1927	January, 1928	February, 1928			March, 1928			April, 1928			May, 1928		
					1-10	11-20	21-29	1-10	11-20	21-31	1-10	11-20	21-30	1-10	11-20	21-31
Algeria (see also table above)	C	1,217	682													
Oran	C	51	11													
Indo-China (French) (see also table above)	C	68	97	58	50	31	90	57	71	69		35		36	6	37
Ivory Coast	C														7	
Senegal (see also table above)	C											51				20
	D											7				9
Dakar	C											11		12	7	5
	D											8		4	3	
Sudan (French)	C			4		5	1	P.	5			4		30	P.	
	D													6		
Syria:																
Aleppo	C		1	1												
Beirut	C		2	15	11	26		12	7	4	3	5	1	2	3	2
	D									2	1					
Damascus	C		47	13					1							

Place		July-September, 1927	October-December, 1927	January, 1928	February, 1928	March, 1928	April, 1928	May, 1928
Angola	C	51	151	10	36			
	D		2					
Congo	C	5	77		36			
Cuanza-Norte	C	1				1		
Cuanza-Sul	C		9	10				
Loanda	C	1						
Zaire	C	3	5					
Brazil (see also table above):								
Porto Alegre	C	11	5		1			
British East Africa (see also table above):								
Zanzibar	C		2					
	D		1					
Chosen	C	21	4	4	21	23		
	D	6	1	2	8	6		
Seoul	C					1		
Ecuador: Guayaquil	C	4	6	2	9	24	19	31
	D					1		
France	C	37	25	11	10	13	6	

Place		July-September, 1927	October-December, 1927	January, 1928	February, 1928	March, 1928	April, 1928	May, 1928
Gold Coast	C	7	4		1	3		
Greece	C	10	9	6	11	19	1	22
	D				2	2		1
Latvia	C		2		1			
Mexico (see also table above)	D	221	346	256				
Morocco	C	180	622	55	47	30	19	
Nigeria (see also table above)	C	820	316	275	217			
	D	173	81	39	45			
Persia	D		2	7				
Portugal (see also table above)	C			143	115			
	D			22	8			
Spain (see also table above):								
Madrid	D		1					
U. S. S. R.:								
Railways, etc	C	26	33	18	20			
Other territories in Europe	C	366	1,256		998			
Transcaucasus, Siberia, and Central Asia	C	80	81					
Ukraine	C	27	48	6	11			

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

TYPHUS FEVER

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

Place		Sept. 25–Oct. 22, 1927	Oct. 23–Nov. 19, 1927	Nov. 20–Dec. 17, 1927	Dec. 18, 1927–Jan. 14, 1928	Jan. 15–Feb. 11, 1928	Feb. 12–Mar. 10, 1928	Week ended— March, 1928			April, 1928				May, 1928				June, 1928		
								17	24	31	7	14	21	28	5	12	19	26	2	9	16
Algeria (see also table below):																					
Algeria	C					1	3	1	1	2	5	1	3			1	1	2	9		
	D						1						2								
Oran	C				4	2	10	1		2	1	1	6	2	2	1		3			
	D												1								
Austria: Vienna	C					1															
Bulgaria (see also table below):																					
Sofia	C	17	6	1	6	1		3		3	14				1	1		9			
	D		1																		
Chile:																					
Antofagasta	D	1																			
Talcahuano	D								1												
Valparaiso	C		1	2	1		1														
	D		2																		
China (see also table below):																					
Manchuria—																					
Dairen	C											7		3							
Harbin	C		1										1	1							
Chosen (see table below)																					
Czechoslovakia (see table below)																					
Egypt	C	12	4	14	8	9	17		1	1		2	1				11				
	D	5		8	4	2	8		1								2				
Cairo	C			3							2	3			1						
	D			3							1	3			1						
Port Said	C	1		1																	
Behera Province	C										29	23			2	7	5	15	8		
	D											4				3	1		2		
Gharbieh Province	C										23	5		5	4	1	2				
	D											3		2							
Keneh Province	C										5	29		9							
	D											1		6							
Menoufieh	C													5	23	5	1	1			
	D													1	2		1	1			
Suez	C																	1			
	D																	1			
Greece (see table below)																					

Place		1927		1928															
		July–September	October–December	January 1–10	January 11–20	January 21–31	February 1–10	February 11–20	February 21–29	March 1–10	March 11–20	March 21–31	April 1–10	April 11–20	April 21–30	May 1–10
Ireland:																			
Belfast	C															2	1		
	D																1		
Irish Free State	C					1				1						4			
Cork County	C		3	1															
Donegal County, Letterkenny	C	4																	
Japan (see table below)																			
Latvia (see table below)																			
Lithuania (see table below)																			
Mexico (see also table below):																			
Guadalajara	D		1																
Mexico City, including municipalities in Federal District	C	18	28	17	15	5	8	6	6		4		4		7	4	4	4	
	D		2	1	5		4		3				1						
Monterey	D								1										
Morocco (see also table below)	C				32	1,051	316	172	167	219	190	186	167	136	102	62	63	72	83
Palestine	C	5	3	9	8	5	10	5			2	3		1	2	2	1	1		2	1
Peru (see table below)																			
Poland	C	19	64	93	195	346	265	90	90	125	77	93		71	80	90	49		
	D	4	11	10	16	19	26	5	6	7	7	8		2	2	7	6		
Portugal (see also table below): Oporto	C		1			1													
Rumania	C	17	22	35	68	39	68	29	34	33	45	36	38	30	38	39			
	D	2			3	9	5	2	2	3	4		6	5	1	1			
Syria (see also table below): Aleppo	C				2														
Tunisia	C	3	1	1	6	4	1	13		5			2	16	1	3			
Union of South Africa:																			
Cape Province	C	P	P	P	1	1	P		P	P	P	P	P	P	P	P			
Natal	C	P	P	2	3	1	2	P	P	P		P	P	P	P	1			
Orange Free State	C	P		P		P			P	P	P	P	P	P	P	P			
Transvaal	C	5	P	P					P	P									
Union of Soviet Socialist Republics (see table below)																			
Yugoslavia (see table below)																			
On vessel S. S. Gaika at Durban, Natal, from Mauritius	C						1												
Algeria (see also table above)	C	110	12																
	D	13	1																
Algiers	C	10	2																
Bulgaria (see also table above)	C	43	4	7	6		8	12	6										26
	D	3	2		1		1	2	2										
Morocco (see also table above)	C	231	123																

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

TYPHUS FEVER—Continued

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

Place		July-September, 1927	October-December, 1927	January, 1928	February, 1928	March, 1928	April, 1928	May, 1928
China (see also table above):								
Shanghai	D		1					
Chosen	C	90	80	183	400	313		
	D	8	6	19	44	25		
Chemulpo	C	3		1		1		
Gensan	C	2		1				
	D			1				
Seoul	C	5	2			10		
	D	1	1			1		
Czechoslovakia	C	12	7			25		
Greece: Athens	C	3	1	2	2		13	11
	D						2	2
Japan	C	1	1					
Latvia	C	6			1	26	4	
Lithuania	C	69	54	86	137			
	D	14	3	10	12			
Mexico (see also table above)	D	64	98	46				
Peru:								
Arequipa	D	3	3	2			1	
La Oroya	C			P	P	P		
Lima	C	8						
Turkey	C				17			
	D				1			
Union of Soviet Socialist Republics:								
Railways, etc	C	77	102	41	107			
Transcaucasus, Siberia, and Central Asia	C	208	190	7				
Ukraine	C	295	631	533	459			
Other territories in Europe	C	1,839	1,924		1,853			
Yugoslavia	C	20	2	7	24	3	10	19
	D	5		3			1	3

YELLOW FEVER

Place		Aug. 28–Sept. 24, 1927	Sept. 25–Oct. 22, 1927	Oct. 23–Nov. 19, 1927	Nov. 20–Dec. 17, 1927	Dec. 18, 1927–Jan. 14, 1928	Jan. 15–Feb. 11, 1928	Feb. 12–Mar. 10, 1928	Week ended—															
									March, 1928			April, 1928				May, 1928				June, 1928			
									17	24	31	7	14	21	28	5	12	19	26	2	9	16	23
Belgian Congo:																							
Boma	C					3																	
	D					2																	
Matadi	C					29	14	1										2					
	D					16	13																

Place		July	August	September	October	November	December	January	February	March	April	May
Brazil:												
Aracaju	D										2	
Bahia	C											3
Estancia	C						1					
Pernambuco	C											1
Rio de Janeiro [1]	C										2	
	D										2	
Dahomey:												
Abidjan	C											1
Grand Popo	C				1							1
	D				1							1
Gold Coast (see table below)												
Ivory Coast	C					1						
	D					1					[a]	
Liberia: Monrovia	C	1										
Nigeria	C	2										
	D	2										
Senegal	C	21	31	38								
	D	21	31	28								
Dakar	C		12	14	7	2						
	D		7	10	7	2						

Place		July	August	September	October	November	December	January	February	March	April	May
Gold Coast	C	15	2	6	1							1
	D	4	2	4	1							

[1] A total of 12 cases of yellow fever were reported at Rio de Janeiro, Brazil, to June 12, 1928.

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