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REPORT OF A TYPHOID EPIDEMIC IN GRAFTON, W. VA., DURING THE WINTER OF 1926–27

By E. S. TISDALE, *Director, Division of Sanitary Engineering, West Virginia State Department of Health*

During December, 1926, and January, 1927, Grafton, W. Va., suffered from a disastrous typhoid fever epidemic, which was due to a polluted public water supply. More than 150 cases of typhoid fever developed and 25 deaths occurred, according to the records obtained by the sanitary engineers, J. B. Harrington and E. S. Tisdale, detailed to investigate the epidemic by Dr. W. T. Henshaw, State Health Commissioner.

Accompanying the typhoid infection, which was unusually virulent for a water-borne infection, as indicated by the proportion of deaths to number of cases, there occurred a large number of cases of intestinal disorders of five or six days' duration.

The sanitary engineers visited Grafton following an appeal for help from Dr. F. S. Suddarth, the school physician. Case data were gathered by personal visits to all physicians and the attention of the engineers was immediately directed to the city water supply, since the cases were distributed throughout the town wherever the city water mains ran, and no other common food or milk supply was found.

WATER SUPPLY CONDITIONS

Grafton obtains its water supply from a mountain stream, the Tygarts Valley River. Five years previously, the State Health Department, in cooperation with the city authorities and the chamber of commerce, had staged an intensive educational campaign on the need of the water filtration for Grafton. The bond issue was defeated, however, and the only protection which the State health department could secure was chlorine disinfection. It had almost been necessary to have recourse to the courts to obtain the installation of a chlorinator.

On December 28, 1926, the sanitary engineers visited the pump station and found chlorination being practiced, but at a low rate of dosage. The river was very high and muddy, as had been the case during November and December, due to an abnormally high rainfall rate. The chlorinator was partially crippled, and no test could be obtained for residual chlorine in the treated water at the pump

station. The rate of dosage was immediately raised to 15 pounds per 24 hours to treat 2,000,000 gallons of water pumped daily. The rate of dosage was increased at 9 a. m., and by noon a marked residual chlorine test was obtained in the city mains several miles away in Grafton.

Further investigation disclosed the fact that the chlorine apparatus, the sole safeguard of the supply, had been giving trouble during the preceding month and had been shut down for repairs, and treatment of the water supply had not been continuous nor at a high enough rate of dosage. The full-time city and county health officer had, during his term of office, carefully watched the water supply, sent samples regularly to the State laboratory for bacteriological test, and checked up consistently on the chlorine treatment. The full-time health work had been discontinued by the county court as an economy measure some months previous to this epidemic; consequently, the careful supervision of the water supply, requiring the water department to treat it regularly with chlorine, was neglected.

WATERSHED CONDITIONS

The facts as to specific pollution on the watershed of the river above the Grafton water intake were next investigated. Dr. C. B. Williams, county health officer of an adjoining county, reported that he had had 5 cases of typhoid fever at Philippi, 30 miles up steam, in the late fall, and at Arden, 20 miles up stream from Grafton, 8 or 10 virulent typhoid cases had been reported to him during October and November, 1926. Two young men had died of typhoid fever, at Arden. No care was taken in disposing of the stools of typhoid patients at Arden; they had been thrown out on the banks of a small stream leading to the river. Examination of the rainfall records from the Government Weather Bureau station at Elkins, nearby, indicated that heavy rains had occurred during the second and third weeks of November, a period preceding the time of development of greatest number of typhoid cases at Grafton by two to three weeks. The picture is, therefore, complete for a water-borne typhoid outbreak. The Tygarts Valley River rose during the latter part of November, 1926, bringing the typhoid discharges at Arden direct to the Grafton water supply intake. The disease-laden water, without disinfection or with incomplete treatment, went directly into the Grafton city mains and caused typhoid fever in every area in Grafton served by the mains.

PREVENTIVE MEASURES

The preventive measures adopted included the following:

1. Free typhoid inoculation was offered to all the school children of Grafton by the school authorities and was given systematically in daily scheduled clinics.

2. Repairs to the chlorinating apparatus were made so that the amount of chlorine being fed could be observed directly by the pump-station operator.

3. The rate of chlorine treatment was increased and records were kept by hourly observations on the amounts of chlorine used and tests for residual chlorine in the water in city mains.

4. Immediate steps were taken to retain a competent water-works engineer to draw up plans for a modern filtration plant and the State legislature was asked to pass a special emergency bill allowing a special levy to be laid by the city authorities to finance the construction program.

5. As Grafton is a railroad water-supply point for water used on the Baltimore & Ohio Railroad for drinking purposes on trains in interstate traffic, special emphasis was laid on the safeguarding of this water supply. The system used consisted of double filtration of the city water through two pressure filters. The State health department required an additional chlorinating apparatus to be installed on this railroad water supply after it passed the pressure filters and the keeping of daily reports on filter and chlorinator operation, together with residual tests for chlorine. Good cooperation was secured from the Baltimore & Ohio Railroad in this respect.

6. Furthermore, the department urged that the city and county reestablish the full-time health unit which had done such good and effective work in the past and had been discontinued because of a desire for economy.

A typhoid epidemic costing 25 deaths and 150 cases of sickness, not to mention the anguish and suffering, is rather costly economy. The economic loss to Grafton due to this outbreak of water-borne typhoid fever cost the community close to $200,000, figuring the matter conservatively.

A RÉSUMÉ, WITH COMMENTS, OF THE AVAILABLE LITERATURE RELATING TO POSTURE

By Louis Schwartz, *Surgeon, United States Public Health Service*

DEVELOPMENT OF THE BIPED POSTURE

It is generally accepted by anthropologists that the erect biped carriage of man has gradually evolved from an original horizontal quadruped posture, and they prove this by evidences in the human body itself.

Clevenger (28) showed that the valves in the veins are so placed as to function best in the quadruped posture. Baker (7) states that he found the levator claviculæ present in some negroes and says that normally it is represented as a vestigial remain in the human

body by the cervical fascia. He adds that ontogeny also gives testimony to the assumption that we once walked on all fours, since the child first walks on all fours and requires about two years gradually to learn to walk erect. Testut (136) says that he found the dorsoepitrochlearis, a muscle used in swinging from branch to branch, developed in the Bushman and that in the body it is normally represented as a fibrous strap uniting the latissimus dorsi to the triceps. He states that remains of the ligamentum nuchæ which keep the head suspended in animals which walk on all fours are also found in the body. The occasional presence of cervical ribs he interprets as evidence that at one time our ancestors had such a structure.

Gerhartz (46) points out that there are other animals besides anthropoids that at times assume the erect posture—the bear, for example, and some birds also walk upright, as the penguin—and from experiments on dogs he concludes that man probably came to walk upright because his pelvis was adaptable to that posture and that it was possible for him to maintain this posture because of the great development of the sacrum and its rigid union with the pelvis. He assumes that man chose to continue the erect posture because it left his hands free for purposes other than locomotion, and that it was probably the man who lived on the plains who first permanently adopted the erect posture because the plains are better suited for locomotion in the erect posture than are the woods and hills. Gerhartz (46) further states that an increase in the number and size of the sacral vertebræ favors the development of the erect posture, and that there is a tendency shown by the human skeleton to include the fifth lumbar vertebra in the sacrum, and in this he sees the tendency of evolution toward a future type of erect man.

SPINAL CURVES

Klapp (73) points out the fact that mammals, with the exception of man and possibly of anthropoids, have only one curve, a kyphosis, to the spinal column. Cunningham (34) shows that in the anthropoids the curves are less developed than in man and says that in the lower races of man the lumbar curve is less developed than it is in the European. Wiedersheim (146) finds that in the Veddas, a primitive people of Ceylon, the curves of the spine are not marked.

All of the above-mentioned anthropologists agree that the curves of the spine are adapted to balancing the trunk on the femur and that they result from the effort to place the center of gravity behind the sacro-iliac articulation and behind the axis of the hip joint. The gluteals, the gastrocnemius, and the muscles of the thigh, especially the quadrieeps extensor, must be enormously developed in order to maintain this posture. Cunningham (34), as well as Baker (7), says that the lumbar curve is more firmly stamped upon the

spine of the European than upon the spine of the savage and gives it rigidity; that in the life of the European, which rarely necessitates forsaking the erect posture, flexibility in the lumbar column has been sacrificed for stability, while in the savage whose life requires agility and suppleness, the anthropoid conditions of the vertebræ have been preserved and he possesses a superior flexibility of the lumbar curve. Hence, the lumbar curve is regarded as a sign of advance in the scale of evolution, and absence or diminished depth of it as showing incomplete adaptability to the erect posture.

These conceptions seem to be corroborated by ontogeny, because the spine of the child is at first straight and it is only when it begins to lift its head, to sit up, to stand, and, finally, to walk, that the curves of the spine become fully developed. Grossman (63) states that "the new-born child has only one curve to its spinal column. This curve has its convexity backward. After a child begins to lift its head at the age of three or four months, the cervical spine changes to a position of lordosis. At the end of the first year, when the child begins to walk, the muscles of the back arising from the sacrum and, inserting into the lower dorsal region of the spine, shape the spine into a position of lordosis in the lumbar region. Thus the original kyphotic spine acquires a lordosis of the cervical and lumbar regions and a kyphosis in the dorsal region."

CHANGES IN THE BODY THAT HAVE TAKEN PLACE AS A RESULT OF THE ERECT POSTURE

Magnus has contributed important fundamental data regarding the physiology of posture. He defines posture as being an active process, the result of the cooperation of a great number of reflexes, but points out that the study of the way in which these reflexes, act toward providing the erect posture in man is still in its infancy. He shows, however, that three of these important reflexes, namely, labyrinthine righting, neck righting, and optical righting reflexes can be demonstrated in man as in animals.

Practically nothing is known, however, of the part that this cooperation of reflexes plays in the development of different types of posture.

Baker (7) says that as a result of the erect posture there has occurred a change in the shape and size of the feet. They have become larger and have developed arches. The great toe is larger, the heel bone is stronger, and the arch is higher in the European than in the savage. Cunningham (34) says that as a result of the erect posture the curves of the spine have developed, and as the adaptation to the erect posture became better their depth and size have increased. As a result of these curves changes have taken place in the bodies of the vertebræ. They have become molded to these curves. The lumbar

vertebræ have become deeper in front and, as a result, bending forward in the lumbar region is more restricted. Wiedersheim (145) states that the pelvis has become broader and flatter and stronger, that the cervical ribs have disappeared, and that there are signs which show the tendency to disappearance of the first dorsal ribs, and this will result in diminishing the size of the lungs. Further, in order to maintain the erect posture, the muscles of the calf, buttocks, thighs, and the erector spinæ mass have become enormously developed.

DISADVANTAGES OF THE ERECT POSTURE

Rudolph Klapp (73) says that the fact that the human body has not yet had time fully to adapt itself to the erect posture has resulted in many physical disadvantages. W. C. Mackenzie (81) also says that if generalizations were to be made about the causes of human diseases, it would be along the line of failure of accommodation to the erect posture. The inadequate support of the abdominal organs by the belly walls in the erect posture accounts for inguinal hernia, displacements of the uterus and the kidneys, and visceroptosis. Leonard Williams (148) states that, in the horizontal posture, the primates' organs, the heart and lungs as well as the spleen, liver, kidneys, and stomach, found a sufficiently solid floor upon the ribs; the uterus and the ovaries rested on the bony pelvis, and the intestines had gravity to aid the abdominal wall to support them, because the primate was higher behind than in front. The erect posture has changed all this. The transverse colon is suspended between two acute angles and tends to form a stagnant cesspool. The thyroid gland, the genitals, and the great vessels of the thigh, forearm, and abdomen are exposed to injury in the erect posture.

Baker (7) points out that stone in the bladder is partly due to the erect posture, because concretions do not gather at the opening of the bladder, as they would in the horizontal posture, but fall back into the cul-de-sac and there grow in size. The appendix in the horizontal posture is so placed that gravity frees it from fecal accummulation. The ascending colon in the erect posture must lift its contents against gravity. The liver hanging from the diaphragm, and the diaphragm adhering to the pericardium, which is continuous with the deep fascia of the neck, makes it so that the liver, in effect, hangs from the top of the thorax and the base of the skull. This tends to restrict the action of the lungs and favors the development of tuberculosis. The erect posture also throws a great strain on the circulation, which may result in congestion of the liver and cardiac dropsy. The rapid delivery of the blood in the descending vena cava may result in syncope, if the heart action for any reason is lessened. Cerebral hemorrhage is also favored by the extreme variations in blood pressure due to the erect posture. The tendency to edema of

depending parts and to varicose veins is also favored by the erect posture.

Klapp (73) says that the weight of the body pressing on the vertebrae in the erect posture predisposes to the development of scoliosis and Pott's disease. J. Knox Thompson (138) says that the quadruped position is best suited for drainage from the sinuses of the head, therefore middle ear disease, mastoiditis, and sinusitis are aggravated by the erect posture. The origin of spitting and the development of nasal and tracheal catarrh are also attributed to the erect posture by Thompson. Klapp (73) says that the disadvantages of the erect posture are intensified by the weakening effect on the connective tissue of the body occasioned by civilization which restricts the natural exercises.

ADVANTAGES OF THE ERECT POSTURE

The upright gait brought enormous mental and physical advantages. The hands were no longer needed for locomotion, and as a result they were used for the development of writing, art, literature, and the sciences. The range of vision and hearing was increased and these senses were, to a large extent, substituted for smell, leading up to a psychology based rather on sight and hearing than on smell, and thus to the development of art and music. (J. Knox Thompson (138).) The better drainage from the brain may explain the distinction between the intelligence of animals and the intellect of man. (Leonard Williams (148).)

CAUSES OF POSTURAL DISEASES

Klapp (73) says that if the body of man were completely adapted to the erect posture, postural diseases would not occur. Even as it is, postural diseases would be rarer if man lived purely the primitive life, because his habits would then result in the development of those muscles which are required to keep his organs properly functioning in the erect posture. Primitive peoples suffer none of the diseases, such as scoliosis, varicosities, etc., the etiology of which goes back to the erect posture. But when the customs of civilization are implanted on primitive races they soon become subject to the same diseases as are civilized peoples. It seems that civilization, by its customs of living, which limit the natural exercises of our muscles, predisposes to a degeneration of connective tissue which, combined with the imperfect adaptation of our bodies to the erect posture, is the basic cause of postural diseases.

DEFINITIONS OF CORRECT POSTURE

The art of the Greeks has had a great influence on the ideas of correct posture. Goldthwait (58) assumes that the ancient Greek statues are models of perfect posture. Seaver (115) points out that

these statues are modeled after victors at the Olympic games; that the sculptor, Polycleitos, modeled his ideal of a perfect man and called it "The Spear Thrower," and later schools of sculpture followed his canons. (Author's comment: A careful study of these statues shows that the subjects, when at rest, are standing in a posture of ease with the weight borne mostly on one leg, the other being slightly bent and a little in advance.)

In modern literature on posture there are many definitions for the correct upright posture. These definitions variously stress the center of gravity of the body, the inclination of the pelvis, the spinal curves, the shape of the chest, the shape of the abdomen, the method of bearing the weight on the feet, and the costal angle.

Floyd A. Rowe (108) defines good posture as a winning fight of the human mechanism, muscle, and will power, against the pull of gravity, and he grades posture by measuring the length of the body when horizontal and when it is vertical and by dividing the vertical length by the horizontal length. This gives what he says is an exact percentage of posture.

Grossman (63) rather indefinitely defines normal posture, saying that the line connecting the upper border of the symphysis with the promontory of the sacrum should form a 50° angle with the horizontal; and a vertical line drawn from the cervical region to the lowest portion of the sacrum must slightly touch the dorsal curvature or fall very near to it.

J. Madison Taylor (134) states that the features of good posture are a straight back—that is, no lateral curvature, and with little more antero-posterior curvature than is normal for a child of 10 years—a nearly horizontal pelvis, and an erect carriage of the head and neck.

Crampton (33) says that, in good posture, the outline of the body from the neck down over the adbomen is convex, particularly over the thorax; in poor posture, it is concave. He says that poor posture is essentially a ptosis; that the chest circumference in good posture should exceed the abdominal circumference by at least 10 per cent (32). He also emphasizes the depth of the spinal curves as a measure of good posture and says that the greatest depth of the cervical and the lumbar lordosis from the vertical touching the most prominent part of the spine should be less than 1 inch (32), and that the chest should extend at least as far forward as the abdomen.

Bancroft (8) defines good posture by saying that the long axis of the head, neck, and trunk should be one continuous vertical line.

Goldthwait (58) says that the correct attitude, the position in which there is the least strain, is with the body so held that it is made as tall as possible without rising on the toes, the chin in, the chest up, the waist in, and the weight on the balls of the feet.

Mosher (100) emphasizes that in good posture, the pelvis must be elevated slightly at the back and dropped in front. The head should be elevated to its highest point; the shoulders must not be thrown back or dropped forward, but should be in a vertical plane with the hips and parallel to them. The position of the feet should be with the right foot a short step in advance of the left and with the toes pointing forward. Both Goldthwait (57) and Mosher (100) state that the weight of the body should be borne mainly on the balls of the feet.

Mankell (83) says that, in good posture, the pubic spines and the antero-superior spines of the ilium should be in one vertical plane, and that a plumb line from the antero-superior spine going through the patella should strike the foot between the second and third toes.

The American Posture League (129) says that good posture is that in which the different segments of the body are balanced vertically on each other so that a vertical line will pass through the ear, shoulder, hip, and foot.

Banning (10) says that, in the standard correct posture, a line dropped from the face would fall along the anterior surface of the small of the back. In that posture, the head is elevated and set upon the shoulders, the chest is thrown out full, the pit of the stomach elevated, the distance from the lower ribs to the hip bones is lengthened, and the abdominal muscles are put upon the stretch.

J. M. Taylor (135) says that a straight back, a raised and expanded thorax well distanced from the pelvis, and a flat abdomen are characteristic of good posture.

Geis (45) gives the following directions for the posture which leads toward vital efficiency: Square your shoulders, make yourself as tall as possible, and slightly sway backed. Keep the lower ribs expanded at the sides.

Scanes-Spicer (113) says that the normal orthograde posture is that in which the center of gravity of the head is vertically over the center of the base of support. The vertical plumb line, joining these points, bisects the median transverse occipito-condyloid axis passing through the center of gravity of the mass, made up of the trunk and upper limbs. The center of gravity of the head and of the trunk and the center of the base of support are actively distanced as much as possible from each other by the fullest possible extension of the vertical axis in which the above points lie with each inbreath until the extension becomes automatic and unconscious.

Shafer (117) says that there are many erect postures, more or less comfortable, that there is no erect posture which can be maintained long without exhaustion, and that if we are called upon to stand for any length of time we instinctively change our posture so that the strain is first on one set of muscles and then on the other. He says

that the shape of the body determines the location of the center of gravity. A protuberant abdomen tends to cause the body to fall forward so that obese or pregnant women must hold the head and shoulders back in order to keep the plumb line within the area covered by the feet. The contrary is true of a burden on the back.

Lloyd T. Brown (20) says that few people agree as to what is good posture and what is not.

TESTS FOR CORRECT POSTURE

The tests and standards for posture differ somewhat from each other and place stress on the position and shape of various parts of the body. The straight-line test is the most familiar one used to test posture. According to this, a plumb line from the external auditory meatus should pass through the tip of the shoulder, the hip joint, and the middle of the foot. This test is based on the theory that the principal segments of the body should be balanced evenly on the base of support, and, hence, their long axes should be a continuous straight line.

Crampton (32) places the subject with the back against the wall and states that in his natural posture, if it is correct, the hands should fit snugly between the lumbar curve and the wall; and when the subject is placed with the toes against the wall, then if the posture is correct, the chest will touch the wall but the abdomen will not.

Bancroft (8) advocates the triple test in which the teacher judges the posture of the child while it is standing, walking, and sitting.

Rowe (108) obtains the percentage of posture by dividing the length of the body when vertical by the length of the body when horizontal.

APPARATUS USED IN TESTING POSTURE

To record and test posture, the pantograph, the schematograph, the photograph, and the lead tape have been used. The schematograph is an instrument very similar to a camera; but instead of a film, the image is traced on a piece of paper fitted over the ground glass. The lead tape is used to determine the shape of the spine and the depth of the spinal curves and also the costal angle.

All these tests and standards of posture are made with the person in a fixed position with the arms at the sides and the feet alongside of each other more or less parallel. This posture or any other fixed posture, as Shafer (117) says, can not be held for any length of time without fatigue.

TYPES OF BUILD

The fact that there are many types of normal build and that these types differ from each other not only in framework and musculature, but also in the size and shape and position of the internal organs, is

recognized by many writers on posture. Not only do the types of build differ in different individuals (Davenport (35)), but they differ in the same individual at different age periods. The proportions of the different segments of the body change normally in the same individual up to the age of full maturity. In the child, the head and trunk are large compared to the limbs. The shape of the child's chest is different from that of the adult. It is comparatively deeper antero-posteriorly and narrower laterally—more keel shaped. (Klapp (73).) As the child grows, its limbs grow proportionately faster than its trunk up to 11 to 15 years of age, depending on the race and sex. After this the trunk grows faster. (Hrklicka and Gray (62).)

Robert Bennett Bean (12) notes that there are different rates of growth of the torso at different ages and different rates of growth exist between boys and girls of the same age. He says that the proportion between the length of the torso and the length of the limbs remains practically constant between the age of 25 and 60, but that after 60, the torso decreases in size more than the limbs, this change being due to shrinkage of the muscles and intervertebral disks and slight shrinkage of the long bones. The sitting-height index varies with race, type of build, stature, sex, and age.

Shafer (117), in his comments on the efforts of the various experimentors to find the center of gravity of the body, says that no two individuals have the same build.

Robert M. Osgood (106) divides types of build into stout, the placid, heavy herbivorous hyper-ontomorph and the light, slender, lank carnivorous hypo-ontomorph, and the neutral or meso ontomorph.

Kretschmer (74) divides physiques into three types—the asthenic, the athletic, and the pyknic.

Mills (90) describes four types of build—the hyper-sthenic, which is of massive powerful physique with great body weight and heavy bony framework, and the asthenic, which is of frail and slender physique, and between these two he has the sthenic, which resembles the hyper-sthenic but is less marked in degree, and the hypo-sthenic, which resembles the asthenic but is less marked in degree.

Bradford (17) recognizes that there are different types of builds when she states that the exercises devised by W. Curtis Adams have a tendency to enable a person to fill out "his own mold."

Dickson (38) recognized different types of build when he says that one out of five are of the long, slender type of build.

Mankell (83) says that the lines by which good posture are measured are necessarily somewhat indefinite, because individuals differ somewhat in build.

Crampton (32) speaks of the Alpine and Riparian types of build.

Sargent (112) recognizes that different types of build tend for excellence in different forms of athletics.

Davenport (35) obtains an index of build by dividing the weight of an individual by the square of the height and multiplying the result by 1,000. According to this index, he classifies types of build into very slender, slender, medium, fleshy, and very fleshy.

Goldthwait (57) recognizes types of build and divides them into the slender type, the stocky heavy type, and the normal type, which is in between the other two.

George T. Stevens (127) says that the shape of the cranium tends to determine the posture, because different shaped heads have different normal planes of vision, and those with low visual planes find it easier to throw the head backward than to elevate the eyes. On the contrary, those with high visual planes prefer to throw the forehead in advance and lower the chin onto the breast rather than to maintain a tension on the eye muscles to pull the eyes down. These positions of the head influence the whole posture. He says that those with broad heads and with long heads usually have the forehead thrust back and the chin elevated because they have low normal visual planes, whereas tall heads and mesocephalic heads have high visual planes and, as a result, carry the shoulders bent forward, the head leaning forward, the chest compressed, and walk with a stoop.

Life insurance officials recognize differences in types of build, and in an article based on the records of life insurance companies it is stated that overweight in the types that have long bodies and large chests is not so detrimental to longevity as it is in those having short bodies and small chests. (Public Health Reports, June 8, 1923.)

DEPTH OF SPINAL CURVES IN RELATION TO CORRECT POSTURE

There seems to be no definite standard for the depth of the spinal curves in correct posture. J. Madison Taylor (134) says that a back with a little more antero-posterior curvature than is normal for a child of 10 years is one of the features of good posture.

Crampton (32) says that the depth of the lumbar curve in correct posture should be just great enough to allow the hand to fit snugly between the lumbar curve and the wall, when the patient is standing with his back and heels directly against the wall.

Goldthwait (56), Mosher (94), and Thomas (137) say that an exaggerated lumbar curve causes sway back and poor posture, the weight of the body being borne on the heels instead of the balls of the feet, resulting in sunken chest and protruding abdomen.

Goldthwait and Thomas (137) say that increased dorsal curve causes narrowing of the ribs and round shoulders and that by correcting the depth of the cervical curve by changing the position of the

head, the organs of the body can be raised an inch or more, while Banning (10) says that, in the healthy trunk, the lumbar region or small of the back should be quite hollow and the shoulders or dorsal region have quite a prominence behind, so as to counteract the gravitating influence of the abdomen in front of the spine. He claims that the small of the back is the center of gravity of the body and states that the head should be so carried as to bring the law of gravity to the aid of the trunk in maintaining the body in its proper position.

HEREDITY

Davenport (35) showed that type of build is inherited.

Robert Bennett Bean (12) recognizes that different races have different types of build, as is shown by differences in the sitting-height index.

Sargent (112) recognized heredity of type of build when he said that "ancestry and nurture prescribe the limit of stature and weight."

Goldthwait (56) recognizes that heredity influences type of build when he states that the "John Bull" type is the inherited type in England and also when he says that human beings have types of build just as in the horse family there are truck horses, family horses, and race horses, each splendid for its type, but it is impossible to change one into the other.

Crampton (32) recognizes the influence of heredity on the type of build when he speaks of the Alpine and the Riparian types.

Cunningham (34) proves that the shapes of the vertebræ are inherited and, hence, the degree of the lumbar curve is inherited.

Graves (60) proves that the shape of the scapulæ is inherited.

(Author's comment: While it is generally recognized that heredity plays an important part in the type of build of an individual and that the type of build greatly influences the posture, yet standards and definitions of correct posture have not taken these facts into consideration. They have endeavored to apply one standard to all types of build, instead of having separate standards for each type, and posture enthusiasts have endeavored, by means of exercises, to change all types of build into one type—that which they think is the only one compatible with good posture.)

CAUSES OF BAD POSTURE

Bulwer (21) attributed bad posture to faulty styles of clothing and mistaken ideas of beauty.

Andre (54), as early as 1741, enumerated most of the conditions which are now recognized as causing bad posture.

Most modern students of posture mention muscular weakness or diminished muscle tone as important causes of faulty posture.

Crampton (33) says that bad posture is essentially a group of ptoses and evidence of low vitality, and that anything that lowers the vitality increases the tendency to faulty posture.

Grossman (63) says that incorrect posture is very rare in children who are in good physical condition; that it occurs mostly in children who are lacking in general vigor and muscular development, and that continuous harmonious cooperation of numerous muscles is essential to retaining the spine in its normal position.

Banning (10) says that spinal curvature is due to lack of exercise and faulty habits of sitting and standing.

Keith (72) says that it is lack of strength on the part of the muscles of the abdominal wall that causes enteroptosis.

Stella S. Bradford (17) says that posture or poise is the natural sequence of flexibility and symmetrically developed muscles. If the joints are rendered flexible and the muscles symmetrically developed, poise will naturally result.

Mills (90) goes as far as to say that muscle tone determines the form of the alimentary tract. In heavy, powerful individuals, muscle tone is good, hence the stomach is hypertonic in form and the transverse colon is high in position. In frail and slender types, the muscle tone is poor, resulting in pendant stomach and low transverse colon. He says that the degree of strength and tone of the skeletal muscles also exerts an influence on visceral topography, as does the degree of nutrition.

E. H. Bradford (16) attributes round shoulders to muscular weakness of the spinal column.

Bancroft (8) says that poor posture is characteristic and impressive of weak physical power.

Lowman (80) states that posturally relaxed children usually have more or less weakened and overstretched ligaments or muscles.

Osgood (106) states that children in factories develop bad posture because they become fatigued. The lack of opportunity to relax causes tired muscles and excessive fatigue, and this results in bad posture and deformity.

E. Blanche Sterling (125) examined 1,115 school children in the first grades and found that 31 per cent of those with good nutrition throughout the school year had good posture and of those with poor nutrition during the same period, only 22 per cent had good posture.

Goldthwait (57) and Thomas (137) say that the principal cause of round shoulders is weak muscles.

Goldthwait (57) and Mosher (96) also emphasize the occurrence of muscular weakness with faulty posture.

The premature employment of children, long continued standing or sitting either in school or at work, or anything else that may

cause fatigue, are recognized as causes of bad posture by several of the State laws for the regulation of labor.

Talbot (128) says that fatigue and poor posture go hand in hand.

Improper clothing and shoes are also given as causes for bad posture (La Fetra (75)), and the American Posture League has gone to considerable work in trying to improve clothing and shoes.

Improper school furniture and improper industrial furniture are also recognized as causes of faulty posture. Faulty habits of posture are given as causes of permanent postural defects. (Mosher (100).)

Occupation as a cause of postural deformity is emphasized by O'Ferrall (105), and he gives as examples the posture of seamstresses, stenographers, stone cutters and clerks.

Flat foot is given as a cause for faulty posture by Mankell and Lowman (80).

Defective vision and improper lighting as causes of faulty posture are emphasized by Abbott (1) and Alger (4).

The habitual carrying of weights on one side of the body, such as school books, the carrying of children by nursemaids or heavy weights by laborers is also given as a cause of postural deformity by most of these writers on posture.

Heredity as a cause of bad posture is pointed out by Goldthwait (57), Mosher (94), and Bancroft (9) when they state that the long slender types of build are the ones that are most liable to faulty posture.

J. Madison Taylor (133) says that right posture and attitude depend for their integrity on the neuro-muscular mechanism, which is dependent on balanced nutrition and poised metabolism, and the whole is regulated by the ductless glands.

Klapp (73) sums up the causes of bad posture by stating that it is all due to connective tissue weakness.

The sum total of all these causes of bad posture seems to be heredity and defective environment which result in poor health and bodily weakness.

NOMENCLATURE OF POSTURE

There have been many names given to faulty types of posture, outside of such names as scoliosis, lordosis, and kyphosis, the meaning of which is self-evident.

Crampton (33) calls all faulty posture a ptosis, or slump.

Bancroft (9) speaks of the fatigue, the relaxed or slump posture, and of the bantam posture.

Mosher (94) emphasizes the "slouch posture" in which the body weight is borne mostly on one leg, with one hip and one shoulder higher than the other.

Truslow (37) speaks of the "kangaroo type" and the "gorilla type." He states that, in the kangaroo type, most of the pivotal

structures of the trunk are carried in front of the line of gravity and those of the lower extremities are behind the line of gravity. The pelvis rotates forward and downward. In the gorilla type most of the pivotal structures of the trunk are carried back of the line of gravity and those of the lower extremities in front of the line of gravity. The pelvis rotates backward and downward. In the kangaroo type, there is forward displacement of the abdominal and pelvic viscera, and in the gorilla type there is backward and downward displacement of the abdominal and pelvic viscera.

Lovett (107) speaks of the round back and of the round hollow back and the round upper back.

Mankell (84) speaks of the exaggerated lumbar curve posture.

RESULTS OF BAD POSTURE

John Bulwer (21), in 1650, published a book in which he described some of the faulty ideas of posture which were prevalent in his day and the physical illnesses resulting therefrom.

In 1741, M. Andre (54) wrote a book called "Orthopædia," in which he described the evil results of bad posture and gave rules for obtaining good posture.

According to Mosher (94), enteroptosis and its train of symptoms, such as constipation, flatulence, and digestive disorders, malpositions of the uterus, and tuberculosis, are caused by faulty posture. Mosher also holds that the posture and general body shape of idiots and defectives indicate a close relation between the lack of brain development and habit posture, and that faulty posture hastens senility and is a very frequent cause of hernia.

Banning (10) says that relaxation of the abdominal and spinal muscles causes ptosis of the viscera.

James Warren Seaver (114), as a result of the study of the stomachs of 83 children, concludes, among other things, that posture has little to do with ptosis of the stomach.

Orthopedists, such as Rugh (109), Goldthwait (55), and Truslow (37), emphasize the fact that faulty types of posture cause strains of joints and ligaments. Sacro-iliac, knee, and foot strain as a result of faulty posture are stressed by Truslow. Strains of the spine, of the neck, the pelvic joints, and the knees are emphasized by Goldthwait. Rugh says that faulty posture causes strain of the back.

Albuminuria has been attributed to faulty posture by Brown (19) and Klapp (73). Klapp quotes Jehle and Tandler as having shown that albuminuria occurs between the ages of 7 and 14 in individuals who have abnormal lumbar lordosis in the upper third of the lumbar column and whose ligaments, muscles, and bones are weakened.

Crampton (33) states that the ptosis of the organs which results from faulty posture causes impairment of the circulation.

M. Hertz (152) (Therapie der Gegenwart, June 1908, No. 6 p. 241), says that stooping posture interferes with cardiac function.

The relaxation of the abdominal muscles and of the diaphragm resulting in visceroptosis is mentioned by many writers as caused by faulty posture. Fatigue is also mentioned by many writers as being caused by faulty posture.

To sum up, the most serious results of bad posture mentioned by the above writers are visceroptosis, tuberculosis, albuminuria, impairment of the circulation, strains of joints and ligaments, and nervous derangements.

HOW TO OBTAIN CORRECT POSTURE

Mosher (100) says that the habit of correct posture must be formed early in life by teaching children the proper methods of standing and walking. She says that, in order to obtain normal poise in standing, the feet should be placed side by side, or better, one foot a short step in advance, with the toes pointing forward. Rest the weight of the body heavily on the balls of the feet and lightly on the heels. Raise the head high with the chin in and then relax, retaining this position. In sitting, elevate the pelvis and hold the head high and when bending, rock forward, holding the head and trunk in one piece instead of doubling at the waist.

Community setting-up drills and athletic games to promote health and vigor, posture training in the schools, proper school furniture, and hygienic clothing are advocated by Goldthwait (55), Bancroft (9), and Mosher (100), as aiding in the attainment of good posture.

Thomas and Goldthwait (137) say that, to correct poor posture, systematic training must be instituted to gain two objects—muscular sense and muscular strength. Physical training should be devoted to the development of the trunk muscles, which are the keynote to good posture.

Stella S. Bradford (17) advocates exercises for symmetrical muscular development in order to obtain correct posture.

Grossman (63) says that the general hygienic conditions must be good and that there must be proper food and exercises and development of both sides of the body in work and play in order to attain good posture.

Crampton (33) advises proper food, plenty of air, and exercise for the development of muscular tone in order to attain good posture.

Abbott (1) and Alger (4) stress proper lighting conditions and the correction of visual defects for the attainment of good posture.

Todd (139) stresses the freedom of action of the muscles around the hip joint and freedom of movement of the hip joint in order to attain good posture.

J. M. Taylor (135) gives the following exercises to be repeated in order to obtain good posture: Clasp the hands behind the back, pulling apart strongly and pushing the arms forcibly down, at the same time thrusting up the chin vertically. Repeat with steady increments of force.

De Forrest P. Willard (147) says that the attainment of the military posture by gradual training, which strengthens the muscles, is a cure for postural defects.

Samuel Hare (64) says that exercise gives tone and strength to the muscles, resistance to the ligaments, and density to the bones, thus tending to prevent deformity.

Eldred Noble Smith (120) says that educators should not insist that children take forced upright postures. It is better to allow them to take any position desired. He says that there should be proper school furniture, but that it would be better still if there were no seats or desks provided for the pupils, but couches so that the children could rest prone and thus avoid spinal curvature.

R. J. Cook (29) says that general exercise has little influence on improving postural defects, although it strengthens the individual. He advocates corrective gymnastics for faulty posture with the general plan of stretching contracted muscles and increasing the tone of the trunk muscles.

R. M. Osgood (106) advocates the development of good muscular tone in order to attain good posture.

Orthopedists use mechanical and surgical means for the correction of postural deformities and give exercises to strengthen weakened muscles and to stretch contracted muscles.

Proper hygienic methods of living and dressing, properly constructed school and industrial furniture, the assuming of correct posture, and the taking of suitable exercises for the development of good muscular tone are the principal methods given for attaining good posture.

BENEFITS OF GOOD POSTURE

All of the diseases which are caused by bad posture are mentioned by various authors as benefited or cured by good posture.

J. M. Taylor (135) says the more promptly an individual returns to the orthograde posture after departure from it, the more are the factors of vital rhythm, ebb, and flow of fluids, respiration and oxygenation encouraged and economized.

Goldthwait (54) and Mosher (94) state that all the functions of the body are best carried on in the correct posture. The bones of the skeleton are placed most advantageously for the work of the muscles and all the organs are in the best position for the performance of their functions. They say that the correct posture prevents

visceroptosis and even though visceroptosis is congenitally present, correct posture helps the prolapsed organs to function properly. They also state that the correct posture tends to prevent and helps to cure tuberculosis.

Keith (72) also emphasizes the fact that the attainment of good posture tends to cure visceroptosis.

H. L. Taylor (129) says that the Committee of the American Posture League showed that the assuming of the correct erect posture raised the internal organs from 1 to 3 inches.

Bancroft (9) states that only in the perfect erect posture are organs able properly to perform their work. It is the posture of greatest efficiency and vigor and prevents the debility of old age.

William James (153), the psychologist, says that the erect posture keeps up the spirits and tends to banish fear, despondency, and depressing thoughts.

Geis (45) is of the opinion that the way to increase vital efficiency is by means of physical attitude, that is, to adopt an attitude that augments the normal habitual capacity of the lungs.

POSTURE AND BRAIN ACTIVITY

Leonard Hill, in "Cerebral Circulation," London 1896, page 78, states that mental diseases of various types have peculiar bodily postures. James (153) in "Principles of Psychology," volume 2, page 463, states that bodily postures definitely influence the emotions. Shafer's (117) "Physiology," volume 2, page 90, says that a rise in arterial pressure produces an increased velocity of blood in the brain. Erlanger and Hooker in the American Journal of Physiology, volume 10, 1903, show that the blood flow per heart beat is greatest in recumbent posture. This would indicate that the intellectuality is greatest in the recumbent posture. Mosher (97) states that idiots, imbeciles, and certain abnormal and mental states are characterized by peculiar attitudes. E. E. Jones (71), in an experiment, sent letters to noted men asking them in what postures they did their best work and found that 65 per cent worked best in the horizontal posture. The postures of the other 35 per cent were various and difficult to classify. Jones (153) also found by experiments that pitch is best discriminated in the vertical posture and that the strength of grip and the tapping per minute are best in the erect posture, while the tactile sense, and the visual and auditory memory are best in the horizontal posture.

Burnham (22) associates posture with various conditions of thought, such as the erect posture and highly poised head of cautious attention; the bent body and raised head of alert attention in watching for a sudden stroke of an adversary. He says that what we call good posture seems to be most efficient in all forms of motor activity, but

does not seem to be most favorable in many forms of mental activity, especially in the more strictly intellectual work. He states that conditioned reflexes of the utmost significance to physical and mental health may be developed in connection with posture.

(Löwenstein (78) finds a connection between types of body build and the types of mental disturbances, decay, and degeneration. He says that when the slender and the athletic types described by Kretschmer and grouped together as schizoids have fully developed mental diseases, the intellectual centers are involved, whereas in the pyknics only periodic depressions occur which do not affect the intellectual centers. (Löwenstein, Journal American Medical Association, November, 1925, vol. 85, No. 24, page 1905.)

FOSTURE AND TUBERCULOSIS

That persons with certain postures and types of build were predisposed to tuberculosis was noted by Bulwer (21) as early as 1650. He says "For they who have straight and narrow breasts are necessarily made opportune to spit of blood."

Klapp (73) says that the deep but narrow thorax is the primitive one and is ontogenetically seen in the infant and that this shape of thorax is predisposed to respiratory diseases. He also says that narrowing of the upper structure of the thorax which results from connective tissue weakness demobilizes the apices of the lungs, hinders their function, and renders them more liable to tuberculosis infection.

Goldthwait (54) says that the lungs can not be properly developed unless the body is in correct posture and that the attainment of proper posture helps in the cure of tuberculosis.

J. M. Taylor (135) says that the correct posture is the one for maximum respiratory efficiency.

Mosher (97) says that in the posture of lateral asymmetry the difference in respiratory action on the two sides is easily observed and the wide separation of ribs on the high shoulder side limits their motion and interferes with respiration at the apex of the lung and predisposes to tuberculosis. She states that she found in an examination of tuberculosis patients that the disease always began in the apex of the lung which was on the side of the high shoulder.

STATISTICAL DATA

Dixon states that, in 1915, 20 per cent of the children under 12 years of age at the orthopedic out-patient department of the University of Pennsylvania had some postural defect, and that in the Boston Hospital 44 per cent of the children had some static foot trouble.

Spence (124) examined 2,500 girls and boys in the public schools of Richmond, Va., and found that 10 per cent of them had spinal curvature.

R. J. Cook (29) examined 2,200 Yale freshmen and found 25 per cent with normal spinal curves, 50 per cent with scoliosis, 55 per cent with lordosis, 56 per cent with flat chest, and 42 per cent with prominent abdomens.

Brown (19) reports 476 Harvard freshmen examined, among whom he found 6.7 per cent with grade A posture and 80 per cent who had poor posture.

E. Blanche Sterling (125) examined 1,115 children in the first six grades of school in studying the relation between nutrition, physical defects, school grade, and physical training, and found that 29 per cent of the children had good posture, 40 per cent fair, and 31 per cent poor posture.

Lillian M. Towne (140) examined 1,484 pupils and found 13 per cent with good posture.

R. Tait McKenzie (85) found 23 per cent of lowered shoulders and 30 per cent of gorilla-type posture in the Montreal High School, and he found that 14 per cent of all the students at McGill University had similar deformities.

The Life Extension Institute, in its examination of industrial groups of more than 10,000 people actively engaged at work, found 44 per cent with generally faulty posture. Among 760 cases of low back pain in the clinic of the Massachusetts General Hospital, a large number of the cases were due to attitudinal disturbances.

TESTS FOR PHYSICAL FITNESS

There seems to be no universally accepted test for estimating physical fitness. Dreyer (39) correlates physical fitness with vital capacity. He has worked out a table in which the weight and sitting height, vital capacity and weight, vital capacity and sitting height, vital capacity, and chest measurements are correlated for men and women. He divides the normals for men into three classes, according to the occupation, and gives standards for each class. He states that 10 per cent below the standard for the vital capacity in each class indicates that the patient is suffering from some health-depressing condition.

Eugene Lyman Fiske (151) worked out a table of vital capacity per pound for all weight groups and divided it into three classes, according to the occupation. He quotes Wentworth, of the Peter Bent Brigham Hospital, who has worked out a formula that can be applied to the surface area of the body in obtaining the normal vital capacity. The surface area of the body can be ascertained from the graphic chart prepared by Dubois and Dubois. If the net weight and height are known, the surface area in square meters can be ascertained from this chart, and this multiplied by 2.5 for men and by 2 for women gives what the vital capacity should be.

Flack (150) measures physical fitness by testing the expiratory force and the expiratory fatigue and by breath holding. He measures the expiratory force by having the person blow with his greatest force into a manometer and noting the height to which the column of mercury rises. He says that fit classes should register well above 100 millimeters, yet the minimum normal is given at 80 millimeters. He tests respiratory fatigue by having the patient blow the column of mercury in the manometer to the height of 40 millimeters and noting how long he can maintain the column at that height with one breath. Fit classes should register 48 seconds, yet he gives the minimum normal of 40. The breath-holding test consists in asking the patient to take a large inspiration and holding his breath as long as possible. Fit classes should register 66 seconds and a low normal would be between 55 and 60 seconds. This test should not be given to tuberculosis or cardiac cases.

(Author's comment: Although W. M. Hastings (65) says that there is a period between 11 and 16 years of age when the flexibility of the thorax is greatest and after maturity there is a tendency to less mobility of the thorax, especially in individuals of large, well-knit frame, and although Bean (12) concludes that the mobility of the chest varies with age, hence, chest expansion and vital capacity vary with age, and the largest chest expansions are usually at the age of 14, yet age, which affects the mobility of the chest, is not taken into consideration in these tests of physical fitness).

Crampton (30) has constructed a table to estimate physical fitness by correlating blood pressure and pulse in the standing posture and the blood pressure and pulse in the sitting posture. He states that increase in the systolic pressure when standing indicates efficiency in the circulation; and an increase in the heart beat indicates decrease in the circulation. According to his table, young men in good physical condition have indexes running from 70 to 100.

On the other hand, Barach and Marks (11) found that the maximum blood pressure was higher in the horizontal than in the erect posture, that the minimum blood pressure was lower in the horizontal than in the erect posture, that the pulse pressure was higher in the horizontal than in the erect posture, and that people with poor muscular development usually showed a reversal of this pressure curve.

In the Public Health Reports of June 8, 1923, in discussing body weight and longevity, it was stated that overweight among men after 40 years of age involves an added mortality, while underweight within limits after this age tends to longevity. It is stated that those who were between 10 and 20 per cent below the average show the optimum condition for longevity at most ages beyond early adult life.

THE SITTING POSTURE

Goldthwait (55) says that, in sitting, the body should be erect and inclined slightly backward and bending should be done from the hip with the trunk straight. He says that the body should be straight from the hips to the neck, and not be allowed to flex or bend at the waistline.

Burnham (22) says that the variety of sitting postures of school children is infinite and that it is important to have chairs so fashioned as to make the upright sitting posture comfortable.

Blake (15) says that, in sitting, we should sit on the back of the thighs and on the bones of the pelvis; that the chair should be low enough to let the feet rest easily on the ground, shallow enough so that the base of the spine should be held firmly against the back of the chair, and so constructed as to give a slightly rounded support to the small of the back.

Mock (91) says that continuous sitting is worse for women than continuous standing. Backache, strain of the back, and constipation are caused by continuous sitting.

Osgood (106) says that the sitting employment of children tends to cause distortions of the spine and chest.

Lorenz (77) says that it is possible to sit erect in good posture in a chair without a back, but the muscular effort necessary to do this can not be maintained for any length of time. Without a support for the back, we are likely to slump forward into a complete kyphosis in which posture breathing is more difficult, circulation is impaired, and the abdominal organs suffer from unnatural compression. Most of the work in the sitting posture is done leaning forward as if the chair had no back and in this posture the trunk finds support by resting the elbows on the workbench or table. A working chair should have a short back against which the worker can recline from time to time.

(Author's comment: It seems that the general opinion is that continuous sitting in any one position is tiring, that change in the sitting posture is more comfortable, and that chairs should be so designed as to support the body in any comfortable posture).

POSTURE IN INDUSTRY

Mock (91) states that the ideal work for women will enable them to sit part of the time and stand part of the time.

Aksel Mikkelsen (88) says that curves in the posture are harmful by narrowing body cavities and compressing organs. Dust can be expelled only with difficulty from the lungs in bending postures. Sinking of the shoulder and the knee are also harmful. In postures requiring bending, the bending should be from the hip with the

body straight. The back and the head should be held erect in stooping and squatting and in all working postures.

Oliver Thomas (69) says that fatigue, due to long standing, improper seats and workbenches, insufficient light, faulty habits of childhood, and constrained occupational postures are the causes of postural deformities. Slouchy attitudes are found among handworkers who bend over their work and result in contracted chests and displacement of the abdominal organs. He says a proper chair should be of such height that when sitting well back, the occupant's feet should rest flat on the floor with the legs at right angles to the thighs.

The New York Industrial Commission, in Special Bulletin 124, says that faulty postures are adopted to ease some group of tired muscles and that certain occupations accentuate postural deformities which are already present.

Special Bulletin No. 104, of the Department of Labor, State of New York, says that continuous sitting and continuous standing are both harmful. Therefore the posture of the worker should be allowed to be varied at will; and work conditions should allow of good posture by providing a physiologically good chair and by insuring a proper relationship of the different parts of the work place. Many artisans who are obliged to assume more or less constrained attitudes at work are liable to congestion of the organs and interference with normal respiration and, as a result, suffer from phthisis, dyspepsia, constipation, and hemorrhoids and have a low average of life.

The California Industrial Welfare Commission gives detailed instructions regarding seating at canneries, which provide that seats adjustable to fit the back should be provided and kept so adjusted to the worktable or machines that the position of the worker relative to the work shall be substantially the same whether standing or seated; worktables, cutting and canning tables, and sorting belts shall be of such dimensions and design that there are no physical impediments to efficient work in either sitting or standing positions; and individual foot rests must be provided.

The British Research Council (13), in Industrial Fatigue Studies, found that less energy is required to carry loads by means of a yoke and that most energy is required by carrying them on the hip and that fatigue is diminished at work if the posture is frequently changed.

Reprint No. 482 of the United States Public Health Service (August 16, 1918), says that where the workers are obliged to sit instead of stand at their work, the seats should be adjusted to the individual worker, with backs of such shape as to fit the individual's back.

The Massachusetts Institute of Technology has designed a work chair which has a shallow seat and a back so curved as to fit the small of the back.

The American Posture League gives the following requirements for the seating of factory workers:

(1) The pelvic seat bones should rest in a pocket or depression in seat floor, which will sustain the pelvis in its right relation to the spine and distribute the pressure borne by pelvis and thighs. In most chairs the seat bones of the pelvis bear the major part of the weight.

(2) The thighs should be supported at a higher level from the pelvis to within a few inches of the bend of the knee, pressure on which should be avoided.

(3) The front edge of the seat should be rounded to avoid undue pressure on the nerves and blood vessels at the bend of the knee.

(4) The back of the chair should provide space for the buttocks and their coverings, both laterally and vertically; it should sustain the spine in correct relation to the pelvis without pressure on the bony spine or pelvis; it should be properly shaped for a wide range of sizes and types of back without the need of adjustable devices.

(5) The horizontal supports of the back should avoid pressure from sharp edges and should be correctly spaced as to height in relation to the shoulder blades.

(6) The back support should be free from pronounced curves (hollows) in the region of the shoulders, as these are a mold for round shoulders.

(7) The height of the seat should sustain to the working surface such a relation that there is room for the knee under the latter, and opportunity for the play of the arms at the elbow height.

(8) The height of the seat from the floor should be such that foot rests will give variation in height and place all in a proper relation to the working surface.

SUMMARY

The consensus of opinion seems to be that—

1. The biped posture of man has been evolved from the quadruped posture.

2. The body has not yet fully adapted itself to the biped posture.

3. There are many physical disadvantages to the erect posture, but they are outweighed by the physical and mental advantages resulting therefrom.

4. Good posture can be attained by having good health, taking enough exercise to keep the muscles strong and the joints supple, and continually assuming correct postures in the daily tasks.

5. Fatigue is the most frequent cause of postural deformities in the industries.

6. Continuous sitting or standing in any posture is fatiguing.

7. Change of posture at the will of the worker is the remedy for industrial fatigue.

8. Industrial furniture should be so constructed as to fit the individual worker and to allow of comfortable working conditions both in sitting and standing postures.

THE AUTHOR'S COMMENTS

1. There is a lack of agreement in the various definitions of standards and tests for good posture.

2. Heredity, type of build, balance of muscle strength, and tone have not been given sufficient importance in establishing standards for posture.

3. It has not been established whether the faulty postures associated with certain diseases are the causes or the results of these diseases.

4. There is no universally satisfactory test for physical fitness.

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CURRENT WORLD PREVALENCE OF DISEASE

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

No marked change in the plague situation in the Far East or in Africa was indicated by the reports received by the health section of the League of Nations during February and published in the Epidemiological Report of March 15. Cases or deaths were reported

[1] From the Office of Statistical Investigations.

in the far eastern ports during the four weeks ended March 5 as follows: 18 deaths from plague at Rangoon, 10 deaths at Bombay; 13 cases at Colombo, 7 at Surabaya, 2 at Saigon and Cholon, and 1 case each at Bangkok and Makassar. Early spring is the season of maximum incidence of plague in most parts of the Far East. The situation appears, therefore, to be quite satisfactory.

Reports of plague in India indicate that the disease has been very much less prevalent this past winter than a year ago. The number of deaths from plague in the various Provinces during two weeks in January are shown in the table below. The number was lower in every Province than for the corresponding period of 1926, and particularly low in the Punjab and the United Provinces.

TABLE 1.—*Plague deaths in the Provinces of India*

Province	1926, Dec. 5–18	1927, Jan. 9–22	1926, Jan. 10–23
North-West Frontier	0	0	0
Punjab	274	239	838
Delhi	0	0	0
United Provinces	300	532	1,272
Bihar and Orissa	77	228	284
Bengal Presidency	0	0	0
Assam	0	0	0
Central Provinces	368	247	252
Madras Presidency	113	143	176
Hyderabad States	76	57	178
Mysore	69	93	219
Bombay Presidency	96	104	513
Burma	21	120	309
Other Indian States	89	85	336
Total	1,483	1,848	4,377

The weekly number of deaths from plague in Java remained practically the same from the last of November to the beginning of January, with approximately 200 deaths reported each week.

In Egypt, Algeria, and Morocco no cases of plague were reported during February. The outbreak in the interior of Tunisia continued, and 33 cases were reported during the first 20 days of February.

The plague incidence in Madagascar continued unusually high throughout the month of February. Approximately 50 per cent of the deaths were reported in the Tananarive Province; Itasy Province was also seriously affected.

TABLE 2.—*Deaths from plague in Madagascar*

Month	1924–25	1925–26	1926–27
October	66	161	232
November	157	216	241
December	127	373	281
January	122	302	372
February	189	267	363

During the four weeks ended December 25 there were 166 deaths from plague reported in Uganda, as compared with 96 cases in the last two weeks in November. In the Union of South Africa, 13 cases were reported in the six weeks ended February 26.

In South America, cases were reported during December and January in a number of provinces of Peru, including Lima and Callao. At Guayaquil, Ecuador, 8 cases were reported in the second half of December and 5 cases in the first half of January.

Cholera.—Cholera increased in Siam during January and the first half of February; 75 deaths were reported in the two weeks ended February 12, as compared with 40 deaths in the preceding two weeks. An increase in cases at Bangkok became evident during February and continued into March, with 19 cases in the week ended March 12, as compared with 13 cases in each of the preceding two weeks. The ports of French Indo-China were free from cholera during February except for 1 case at Turane.

Cholera incidence decreased in French Indo-China during February except in Cambodia, where 127 cases were reported during the month as compared with 9 cases in January. In Tonkin, only 11 cases were reported in February as compared with 243 in the preceding month.

In India, 6,030 cases of cholera were reported in the two weeks ended January 22. The disease was less prevalent in January in Madras Presidency, but more prevalent in Bengal than in 1926. A few hundred cases were reported in Assam and Burma, while there were only a few sporadic cases elsewhere in India.

Typhus and relapsing fever.—Reports from the Union of Socialist Soviet Republics showed a considerable increase in typhus in December, but the incidence was, on the whole, not higher than during the corresponding month of the preceding two years. "The highest number of cases was reported in the governments of Viatka (234), Kursk (162), Tambov (161), and Riazon (146)," states the Report. "Five hundred and forty-nine cases were reported in December in the Ukraine as compared with 949 during the corresponding month of 1925."

Relapsing fever was less prevalent in the Union of Socialist Soviet Republics in December than during the corresponding month of any previous year. The highest number of cases was reported in December from the Government of Samara (103) and the Tartar Republic (85).

In Poland, the typhus incidence during January and February was about two-thirds as high as in the corresponding period of the preceding year. Most of the cases were reported in the eastern provinces.

In Rumania, typhus has been somewhat more prevalent so far this year than in 1926; 288 cases were reported in two weeks in February, as compared with 278 cases during the whole month of February, 1926.

Smallpox.—"The peak of the smallpox epidemic in northern England was passed in February; 1,725 cases were reported during the four weeks ended March 12, as against 2,116 cases during the preceding four weeks and 945 during the corresponding four weeks of the preceding year."

No case of smallpox has been reported in Switzerland since last November; and Poland, Czechoslovakia, Hungary, Austria, Rumania, and Bulgaria had reported no case in the current year. In the Union of Socialist Soviet Republics smallpox has become rare; only 444 cases were reported in December, most of which were in the eastern districts. The northern and northwestern districts were entirely free from smallpox.

The usual winter increase in smallpox cases was reported for the United States; 4,537 cases were reported during the four weeks ended February 5, as compared with 2,788 cases during the preceding four weeks and 3,996 during the corresponding period of 1926.

Smallpox has been very prevalent in India, as it was also a year ago; 10,032 cases and 2,471 deaths were reported during the two weeks ended January 22. Its general distribution, according to the Report, was as follows:

> The greatest prevalence was, as formerly, in Orissa, but there is now a new epidemic center in the districts of Gaya and Shahabad on the Son River south of the Ganges in Bihar. Four thousand six hundred and forty-two cases were reported in the Province of Bihar and Orissa. The disease was spreading rapidly also in the southern districts of Bengal adjoining Orissa (Midnapur and the 24 Parganas). Smallpox is also epidemic at Calcutta, where it has caused 1,140 deaths during the first 10 weeks of the current year; the outbreak was still increasing early in March, 349 deaths being reported during the two weeks ended March 12. The disease was also prevalent at Bombay, Rangoon, and Madras, but appeared to be of a mild type in the latter town, very few deaths having been reported.

Cerebrospinal meningitis.—The reported cases of cerebrospinal meningitis increased during February in Great Britain and in the Netherlands; the increase in the second four-week period of the current year over the first four-week period in England and Wales was from 40 to 65 cases; in Scotland from 9 to 21 cases; in the Netherlands from 4 to 20 cases. The incidence in most countries has been about the same as in the preceding year.

The incidence of the disease was somewhat higher in the United States during January and February than during the same months of 1926.

Lethargic encephalitis.—In England and Wales 159 cases were reported during the four weeks ended February 26, as compared with 212 cases during the corresponding period of the preceding year. In Czechoslovakia there were 13 cases in February, compared with 32 in January. Sweden reported 10 cases in February and Denmark reported 16 cases.

Scarlet fever.—Scarlet fever was prevalent in Poland, Germany, and the Netherlands last autumn. The disease reached its maximum in November, but the incidence has remained high throughout the winter.

Scarlet fever was also more prevalent in the Union of Socialist Soviet Republics than in the preceding year; 29,690 cases were reported in December, 1926, as compared with 17,753 in December, 1925.

This increase in scarlet fever was most general throughout Europe. In Great Britain and in Scandinavia the incidence has been below normal, and there has been no unusual prevalence in the Balkans.

TABLE 3.—*Cases of scarlet fever reported in Poland, Germany, and the Netherlands, 1922–1927*

Period	Poland		Germany		Netherlands	
Total 1922	14,717		32,448		3,305	
Total 1923	15,746		27,234		3,577	
Total 1924	18,030		32,798		6,635	
Total 1925	25,210		39,919		11,631	
Total 1926	37,625		55,472		14,624	
4 weeks ended—	1925	1926	1925	1926	1925	1926
Mar. 27	1,864	1,954	2,805	2,890	709	724
Apr. 24	1,485	1,598	2,529	2,926	678	640
May 22	1,629	1,589	2,540	3,172	619	707
June 19	1,670	2,010	2,488	3,147	603	774
July 17	1,769	2,278	2,715	3,180	814	857
Aug. 14	1,476	2,458	2,567	3,008	743	914
Sept. 11	1,825	4,225	3,165	4,367	976	1,031
Oct. 9	2,376	5,152	3,895	5,846	1,305	1,554
Nov. 6	2,693	4,681	3,818	6,497	1,378	1,857
Dec. 4	2,649	4,377	3,705	7,215	1,203	1,891
	1926	1927	1926	1927	1926	1927
Jan. 1	1,694	3,250	3,366	6,597	1,087	1,710
Jan. 29	2,069	2,905	3,321	6,765	1,068	1,262
Feb. 26	1,984	2,663	3,306	5,977	897	1,051

Influenza.—A résumé of the data available on the recent influenza epidemic in Europe is given in the Report; but much of this information has previously been reprinted in the PUBLIC HEALTH REPORTS. The following comment on the general course of the disease in Europe is taken from the report:

The influenza epidemic reached its maximum in the course of February in the countries where it had not already been reached at an earlier date. As in the case of most epidemics, the disease has followed no distinct line of march. In

England, the south was attacked a month before the north. In Denmark, the Netherlands, and Switzerland, the movement of the epidemic was, generally speaking, from west to east. In France, the northwest was attacked later than the northeast, while in Germany the epidemic reached its maximum about the same time in Brandenburg and on the Rhine. Silesia was affected fully a month earlier than the neighboring districts of Saxony. In Sweden, the epidemic appears to have first made its appearance in the extreme north and the extreme south of the country. Western Europe, including Spain, has apparently been attacked a couple of months earlier than eastern Europe and the Balkans, but a definite and detailed statement of the progress of the epidemic can not be made until the final reports, which the health committee has asked the administrations of the various countries to prepare, have come in.

FATAL CASE OF FOOD POISONING CAUSED BY FRIED OYSTERS CONTAMINATED WITH PARATYPHOID B. BACILLUS[1]

A chief pharmacist, a chief carpenter, and a chief boatswain ate fried oysters at a Washington, D. C., restaurant and subsequently all three had symptoms of food poisoning. The chief pharmacist died.

The chief boatswain felt nauseated almost immediately after eating the oysters. He left the table, vomited, and felt weak and depressed, but recovered in seven or eight hours. The chief carpenter was taken sick about half an hour after eating the oysters, with emesis and the passage of several watery stools. Shortly after the symptoms developed, he took a large dose of magnesium sulphate. He considered that he had recovered from the poisoning in seven or eight hours. The chief pharmacist became ill about an hour after having eaten the oysters. At first he did not seem to be as sick as either of his companions, but later it was apparent that he was severely poisoned and a physician was called to attend him at his hotel. He died about 11 hours after the symptoms had developed.

The symptoms in the fatal case were those to be expected from the ingestion of toxins produced in food by bacilli of the meat poisoning group. The onset was sudden, with nausea and weakness, chilliness, and, later, great prostration. The patient was restless and had continuous pain in the muscles of his legs; also frontal headache. He had no pain in the stomach and no intestinal colic. Post-mortem examination revealed no striking pathological changes. Microscopic examination of the stomach and other organs did not show anything pertinent to the cause of death. Chemical examination of the stomach contents for possible poison was negative.

Cultures made directly from the stomach contents of the patient and from the heart blood and spleen of a white mouse which died three days after having been inoculated intraperitoneally with dilute

[1] From a report in the United States Naval Medical Bulletin, Vol. XXV, No 2, April, 1927, pp. 475-477

stomach contents, revealed a bacillus which was identified as *B. paratyphosus* B. The microorganism was proved to be extremely toxic.

An investigation of the restaurant was promptly made by the health department of the District of Columbia, but no conclusive evidence was obtainable regarding the oysters. Some of the oysters and oyster liquor which was sent by the restaurant to a bacteriological laboratory for general examination was reported to show a high *B. coli* count. No attempt was made by the bacteriologist to isolate bacilli of the paratyphoid group.

The report concludes:

> These three cases suggest that, in addition to the danger of contracting typhoid fever by eating uncooked oysters which have been taken from polluted water, there is also a definite food-poisoning hazard associated with cooked oysters contaminated by sewage-polluted water if the oysters are incubated at warm room-temperature long emough to permit multiplication of the bacilli with production of the characterictic and heat-resistant toxin in sufficient amount to cause the early onset of severe symptoms of poisoning. The heat applied in frying the oysters was not sufficient, in the fatal case at least, to destroy all the bacilli, but it hardly seems possible that quickly fatal poisoning could have resulted without the ingestion of pre-formed toxin. It is, of course, true that the oysters which caused poisoning in these cases may have been contaminated in the restaurant by a carrier in handling and preparing them. It could not be determined how long after preparation any of the oysters were held at a temperature suitable for incubation. Nevertheless, it is not necessary to assume that they were contaminated in the restaurant. The oysters were already contaminated, as indicated by the presence of members of the *B. coli* group. To kill a patron it was only necessary to provide an incubation period sufficient for the production of toxin.

OUTBREAKS OF FOOD POISONING RECENTLY REPORTED IN THE NAVY [1]

Poisoning from chicken salad.—The chicken salad served was made from cold storage chicken and eggs, apples, and mayonnaise dressing, and was prepared in cleanly manner. No unusual odor was detected during its preparation. When served, however, it was observed to have a "slightly disagreeable taste," thought at the time to be due to the cold storage eggs. Of 16 officers eating the salad, 9 developed food poisoning, the symptoms in the first case appearing three hours after the patient had eaten the salad, and in all cases within five hours. All of those poisoned had recovered within 24 hours, excepting the officer most severely poisoned. Cultures from the vomitus and stools of the latter showed the presence of *B. enteritidis*, and cultures made from a sample of the chicken salad showed the presence of that organism in large numbers.

Outbreak of fish poisoning.—The poisoning in this outbreak was determined to have resulted from the eating of fresh mackerel in

[1] From reports published in the United States Naval Medical Bulletin, Vol. XXV, No. 2, April, 1927

which bacterial poison had developed as the result of improper storage of the uncooked fish, due to the carelessness of a mess boy. The fish had been bought and some of it had been served the day before, when it was considered perfectly fresh and enjoyed by those eating it. The causative organism was not determined. Thirteen of 17 boys who ate the fish developed poisoning symptoms, the severity of which appeared to be in direct proportion to the amount of fish consumed.

Food poisoning from eating boiled smoked tongue.—Of 21 men eating sandwiches made of smoked tongue, 14 were poisoned. The tongue had passed all the usual careful inspections made by the Navy officers. Tongue from the same lot had been served about once a week for five weeks with no ill effects on those eating it, and all that remained on board after the poisoning was found to be of good appearance and odor. A sample of that used for the sandwiches, however, yielded in culture a microorganism belonging to the enteritidis-paratyphoid group. It was concluded that the meat which caused the poisoning was contaminated with *B. enteritidis* bacillus after it had been boiled and that bacterial growth in the chill room had probably continued long enough for the production of sufficient toxin to cause poisoning symptoms.

Food poisoning caused by cheese.—An extensive outbreak of food poisoning suspected to have resulted from the eating of cheese occurred on board the U. S. S. *Reuben James* on October 15, 1926. All messes were affected, excepting one mess in which the cheese was not served. Of 105 members of the crew, 40 had poisoning symptoms. The first man to be affected was taken ill about three hours after the meal, or about 9 p. m., and by midnight 37 other men had appeared for treatment. Two became ill after midnight. All had completely recovered by noon the following day. The report states that "the crew was incapacitated to such an extent that a bonus run had to be abandoned and medical assistance summoned. The possible effect of an extensive outbreak of poisoning in time of war is suggested."

Bacteriological proof of the cause of the outbreak was not obtained. Examination of the cheese for bacilli of the enteritidis-paratyphoid group gave negative results. All other evidence pointed definitely to the cheese, and Commander Phelps, of the Medical Corps of the Navy, calls attention to the possibility that microorganisms other than those of the enteritidis-paratyphoid group might render food toxic and cites the two outbreaks of food poisoning caused by a streptococcus in cheese reported by Linden, Turner, and Thom.[1]

Poisoning caused by corned-beef hash.—Of 155 men eating the breakfast at which the corned-beef hash was served, 58 developed poisoning

[1] Public Health Reports, Vol. 41, No. 32, August 6, 1926, pp. 1647-1652.

symptoms, 17 within three hours, 20 between three and four hours, 20 between four and five hours, and 1 in the fifth hour. No sample of the suspected food was obtainable for examination. It was concluded, however, that the outbreak resulted from the eating of the corned-beef hash, the meat ingredient of which had been prepared the day before it was to be eaten, contrary to published instructions and established orders, and that the meat had been contaminated by a human carrier or by vermin and then subjected to incubation conditions favorable for the production of a sufficient quantity of toxic material to cause the symptoms of mild food poisoning.

This outbreak and the other similar outbreak mentioned above indicate that it is not safe to return to a cold-storage room for future consumption meat that has possibly been contaminated.

PUBLIC HEALTH ENGINEERING ABSTRACTS

Report and Conclusions of the Second Subcommittee on Cholera Epidemiology. Anon. *Bulletin Mensuel*, Office International D'Hygiène Publique, Paris, vol. 18, No. 8, August, 1926, pp. 878–881. (Abstract by W. H. W. Komp.)

The article states that our knowledge of cholera has not been appreciably increased since the formulation of the conclusions of the subcommittee on cholera of the 1912 International Sanitary Conference. The conclusions of the 1926 subcommittee may be summarized as follows: (1) The period of incubation of cholera is short, usually not exceeding five days; (2) the virus of cholera is contained in human excreta. Man is the principal agent in its diffusion; (3) great movements of men (such as pilgrimages, fairs, and migrations) are of the greatest moment in the spread of cholera. Anticholera vaccination is considered to-day the most efficacious method of preventing the spread of the disease; (4) the definition of confirmed cholera should rest on clinical and pathological symptoms, supported by bacteriological confirmation. Suspected cholera is said to occur when the vibrios are not found in the excreta. Suspects may be released when two negative examinations, at an interval of 24 hours, have been made. Germ carriers are convalescents or those having no symptoms of the disease who, nevertheless, continuously or intermittently pass the cholera vibrios in their evacuations; (5) there is no doubt that healthy carriers play an important part in the production of local epidemics, and that they are in a condition to transport the germs to great distances. In the present state of our knowledge it is difficult to state precisely their part in the dissemination of cholera to distant parts. On the contrary, certain considerations, such as the usually very short time the germs are present in the excreta, and the small numbers of them, and the fact that they are contained in solid matter, cause it to be thought that the influence of healthy carriers in lighting up cholera foci is confined to a limited radius; (6) no certain observations are on record of the carriage of cholera to any distance in merchandise, including foodstuffs, but all objects soiled with cholera excretions are infectious as long as the germs are living. Therefore, body linen, bedding, clothes, and objects of personal use should be suspected; (7) drinking water aboard ship should be the object of special precautions, especially when taken aboard in cholera-infected ports; (8) water ballast may be suspected of propagating cholera; (9) anticholera vaccination, which protects for a period of six months, is the present method of choice in fighting epidemics.

Its use in a systematic way permits the arrest of a beginning epidemic or the extinguishing of an epidemic focus at its onset.

Water Consumption for Various Purposes in Terms of Depth and Area. Charles H. Lee, Consulting Hydraulic Engineer, San Francisco, Calif., *Journal American Water Works Association*, vol. 17, No. 2, February, 1927, pp. 193–214. (Abstract by J. K. Hoskins.)

Rapid increases in industrial development and in irrigation practice make difficult the estimation of water consumption on a per capita basis, since the amount of water used has no direct relation to population. A definite need exists "for some simple basis of estimating, other than population, which can be applied to all varieties of use and yet be related to some common factor." The author proposes "to use area as the common factor instead of population, with equivalent depth of water delivered to the area as the measure of the requirement." The relationships between per capita consumption, depth, and population density are given in a formula.

Depths of water in feet per acre of area consumed annually by various American cities are given in the form of tables. In a group of 95 cities with a total population of 17,800,000 and in which 80 per cent or more of the services are metered, the depth of water consumed per annum ranges from 0.1 to 10.12 feet. For eight cities having less than 25 per cent metered services, the depth ranges from 1.22 to 7.25 feet. From an analytical study of the data presented the author concludes that the depth of water consumed in general municipal service varies directly as the density of population. In domestic service alone the depth seldom exceeds 2.1 feet; for human needs less than 1 foot is used; irrigation varies from 1.25 to 4.58 feet; while for commercial areas the maximum may be 24 feet per annum.

Water Supply and Chlorination. Anon. *The Lancet*, vol. 210, No. 5340 January 2, 1926, pp. 29–30. (Abstract by A. S. Bedell.)

This is a brief report on two papers given before the Public Works, Roads, and Transport Congress. Mr. I. G. Gibbon of the Ministry of Health urged that, in areas where communities have a common interest in water supply, regional committees be appointed to consider the needs of all, leaving, however, the actual decision to the constituent authorities. Sir Alexander Houston regretted the tendency of large towns to appropriate for distant sources irrespective of the needs of others. In the past the wise attempts to secure the purer upland waters have been successful, but in the future the great demands for water will necessitate the utilization of waters of doubtful origin. This will be done with increasing assurance for the interpretation of the results of the examination of waters has radically changed, artificial purification of impure waters has greatly progressed, and sentiment and tradition are no longer obsessions. Storage and filtration will practically eliminate *B. coli*, while chlorinated superadded will absolutely destroy them. "Over one-seventh of the population of England have been, and are, drinking with impunity highly purified water derived from sources of questionable origin. This may be described as a physiological, or pathological, experiment on a vast scale." Attention is called to a booklet on "Water Sterilization by Gaseous Chlorine."

The Orthotolidine Reagent for Free Chlorine in Water. Emery J. Theriault, chemist, U. S. P. H. S., *Public Health Reports*, vol. 42, No. 10, March 11, 1927, pp. 668–672. (Abstract by E. H. Gage.)

A review of the results of experimental work on the preparation of the orthotolidine reagent for free chlorine in water and on the effect of iron or manganese compounds on the orthotolidine test. A method for preparing the reagent is given which utilizes the relative solubilities of the compounds formed:

(1) Weigh out 1 gram of orthotolidine, transfer to a 6-inch mortar, and add 5 cubic centimeters of 1.5 hydrochloric acid (previously prepared by adding 100

cubic centimeters of concentrated hydrochloric acid, specific gravity 1.18–1.19, to 400 cubic centimeters of distilled water); (2) grind to a thin paste and add 150 to 200 cubic centimeters of distilled water. The orthotolidine goes into solution immediately; (3) transfer to a 1,000 cubic centimeters graduate and make up to 505 cubic centimeters with distilled water; (4) make up to the 1,000 cubic centimeter mark by adding the balance (495 c. c.) of the 1.5 hydrochloric acid.

It is stated that "The desired yellowish colorations will be obtained when 1 cubic centimeter of the usual reagent is added to 100 cubic centimeters of a chlorine-containing sample, provided (*a*) that its volumetric alkalinity does not exceed, say, 400 or 500 parts per million, and (*b*) that its chlorine content is less than 4 or 5 parts per million." References are appended.

How to Treat Water with Iodine. Dr. W. T. Schrenk, E. C. Hunze, and W. Scott Johnson. *Water Works Engineering*, vol. 80, No. 6, March 16, 1927, pp. 341–342. (Abstract by William L. Havens.)

The use of iodine as a prophylactic for goiter has received considerable attention during the past few years, and the methods of treatment include its administration as a medicine, the use of iodized foods, and the iodizing of water supplies. McClendon, in his research work on natural waters, found that districts having a water low in iodine indicate a high goitrous region. In many instances iodized tablets and candies have been made available for school children, and the use of iodized salt has been recommended for several years. Rochester, N. Y., reports satisfactory results in the iodization of its city water supply, and other cities have recently adopted this treatment. The cost has been estimated variously ranging from 1½ cents to 5 cents per individual per year. Current practice in treating water supplies is the use of 0.664 pound of sodium iodide per million gallons of water, this amount being administered daily in three-week periods twice a year. As the result of a survey of water supplies in Missouri by the School of Mines and Metallurgy, it was concluded that cistern, or rain, water is entirely deficient in iodine, water from shallow wells and springs is usually deficient, and water from rivers and deep wells may or may not contain normal quantities of iodine. In the latter case, treatment should be applied only after proper examination.

Definitions of Pasteurization and Their Enforcement.[1] Leslie C. Frank, sanitary engineer; Frederic J. Moss, assistant sanitary engineer; and Peter LeFevre, associate milk specialist, United States Public Health Service, Montgomery, Ala. *American Journal of Public Health*, vol. 17, No. 2, February, 1927, pp. 131–139. (Abstract by R. E. Irwin.)

The object of this paper is to discuss (1) certain unsatisfactory aspects of the present status of milk Pasteurization and (2) a suggested remedy.

The problem.—(1) That present day definitions of Pasteurization which refer by intent to recording thermometer limits, and which do not specify approved apparatus, can not be depended upon to provide uniformly effective Pasteurization, whereas those which do specify approved apparatus can not be entirely fairly enforced because of the lack of an adequate basis for approval; (2) that present day definitions of Pasterurization which do not refer by intent to recording thermometer limits, but which require "every particle of milk" to be exposed to the definition limits, obviously imply a knowledge on the part of the local health officer as to the design and operation conditions which must be satisfied before any type of apparatus will carry out the definition. This information is not at present completely available to health officers; (3) that some present day definitions of Pasteurization would, if strictly enforced, partly or completely

[1] This paper, revised and expanded, was published in Public Health Reports, vol. 42, No. 17, Apr. 29, 1927, pp. 1152–1162.

destroy the creaming ability of milk and, consequently, interfere with Pasteurized milk sales.

A suggested remedy.—This statement of the problem points the way fairly obviously to at least part of the remedy. Certainly it is desirable that some competent and responsible agency should furnish us as early as possible with the results of exhaustive tests on various makes of apparatus. These tests should determine for each type of apparatus: (1) What design corrections should be made, if any, before its use should be authorized at all; (2) what margin of safety must be applied in its operation before it can be expected to apply any given Pasteurization limits to every particle of milk passing through it; and (3) how it must be operated in order that the recommended margin of safety may be adequate.

The agency doing the testing could well be advised and supported by a committee of experts representing health officers, the apparatus industry, the dairy industry, and the Federal health and dairy agencies. Once such information is available for all makes of apparatus and continuously augmented for newly appearing types of apparatus, the solution of our problem will have become relatively simple provided only that some point or points upon the minimum lethal curve can be generally agreed upon. This latter must, of course, be the business of bacteriologists.

Studies of Pasteurization machinery.—Neither 142° F. nor 145° F., as indicated by the indicating or recording thermometers for the main body of the milk, will offset a temperature drop frequently as high as 6° or 7° and occasionally as high as 50° F. in the milk in "cold pockets" which are beyond the influence of the heating and agitation devices.

Correction of foam and milk mixture.—It is, of course, obvious that the mixture of foam and milk which leaves the vat at the end of the Pasteurization process is not safely Pasteurized. Any infection present in the foam before Pasteurization may be present in the foam after Pasteurization and will partly destroy the value of the Pasteurization process. The remedy is, of course, either to eliminate the foam entirely or to keep the foam at the Pasteurization temperature.

Leaky valves.—Another defect which can not be offset by either 142° F. or 145° F. is that of leaky valves.

Another design defect which must be corrected is that effluent valves become contaminated with leakage during the filling, heating, and holding period. This contamination is not avoided, of course, by the leak escape feature above described. For this reason either a manual or automatic steaming of effluent valves is recommended just prior to the discharge of Pasteurized milk from any holder.

Effect of unequal temperatures.—A defect found in long distance flow holders is the existence of unequal temperatures in the air surrounding the holder tubes. The variation found has been as much as 19° F. This should be corrected by requiring thermostatically controlled heating of the air in the holder. Agitation of the air in the holder may further prove necessary in order to insure sufficiently even distribution of temperature.

The above is merely a tentative list of defects thus far studied and will probably have to be augmented as the studies proceed.

A tentative draft of specifications of Pasteurization apparatus which are suggested for use pending further development in Pasteurization apparatus is given.

Chicago's Program for Correction of Pasteurization Defects. George W. Putnam, chief, Bureau of Dairy Products, Chicago Health Department. *American Journal of Public Health*, vol. 17, No. 2, February, 1927, pp. 121–130. (Abstract by R. E. Irwin.)

Herman N. Bundesen, Commissioner of Health of Chicago, organized in March, 1926, a sanitary engineering program for the determination and elimination of defects in existing Pasteurization equipment and in the methods of

operating this equipment in plants selling milk or dairy products in the city of Chicago.

Coincident with this, the United States Public Health Service established its Pasteurization equipment testing station in Chicago. Practically every type of Pasteurizing equipment has been made available here for tests to determine the thermal treatment milk receives under actual plant operating conditions. Under the city's intensive program of Pasteurization supervision, defects found have been rapidly corrected, giving improved equipment for final testing and approval.

A study of the mechanical and sanitary features of the various types of Pasteurization plant equipment has been made by the department of health and considerable experimental work has been carried on to verify the conclusions reached. Conferences with representatives of equipment and instrument manufacturers were held, the defects were pointed out, and, with their cooperation, means for their correction were worked out. The following is an outline of each defect and the method evolved for correcting it:

Dead ends in Pasteurizer holder outlets.—Dead ends in which the milk is not subjected to sufficient agitation or heating to keep the temperature up to that required prevent proper Pasteurization of that portion of the milk held in them.

Leakage through valves.—Numerous instances of milk valves on holders which leaked continuously were discovered and a large percentage were found to leak at intervals.

Foam and splash.—Approximately 30 per cent of the positive holders in the larger plants in Chicago had foam in amounts ranging from one-half to 12 inches deep. Upon emptying the milk from a positive holder vat or pocket, air at room temperature is drawn in. This air cools off the foam which rises to the top of the milk as the holder is filled. Consequently, the foam, when cooled in this manner, is not properly Pasteurized and contaminates the main volume of the Pasteurized milk when the holder is emptied.

Defective continuous-flow units.—Continuous-flow holders which do not subject every drop of milk to the Pasteurizing temperature for the full 30-minute holding period are not permitted in Chicago. The long-distance tubular type is the only continuous-flow holder which has been found to satisfy this requirement in commercial operation.

A frequent defect in operation on this holder is that the operator will fail to heat the holder to the Pasteurizing temperature before starting the milk flow. The milk entering from the heater at the Pasteurizing temperature will then be cooled down by the mass of colder metal in the milk pipes. The result has frequently been that the first milk would come from the holder outlet at around 125° F. and 5 to 10 minutes would elapse before the temperature of the milk coming from the holder reached the Pasteurizing temperature.

Recording thermometers are required on both the inlet and outlet of the holder to furnish a record of milk temperatures for the department of health.

Positive Pasteurization with this type of continuous-flow holder is mainly dependent on the rate of pumping and the satisfactory operation of the steam controller. The use of steam pumps permits an operator to speed up the rate of pumping, which cuts down the holding period below the required 30 minutes. Chicago requires a constant speed motor geared directly to the milk pump for holders of this type, timed to give at least a 30-minute holding period for every drop of milk.

Human element.—Full appreciation should be given to the fact that after correcting the mechanical defects in Pasteurizing equipment, we still have the human element with which to contend. Ignorance of proper methods of operation is a particularly troublesome factor in some of the small plants and even in the large plants when untrained men relieve the regular employees. The remedy in Chicago has been the thorough schooling of competent inspectors who, in turn,

instruct and check the plant operators. In Chicago, 9 city milk inspectors each supervise an average of 25 Pasteurizing plants, visiting each plant about once in 10 days.

The department of health is perfecting further plans for instruction in Pasteurizing methods by means of a school for plant operators to be held this coming winter. The desirability of eventually licensing milk-plant operators, requiring them to have a thorough knowledge of the various phases of clean, safe, high-quality milk production is also being considered.

Summary.—In conclusion, known defects preventing proper Pasteurization of milk in commercial plants have been corrected or safeguarded, as follows: (1) Dead ends at Pasteurizer holder outlets were corrected by flush-type outlet valves; (2) leakage through valves was corrected by requiring the abandonment of the old type multiple-way valve, the disconnecting of holder inlet and outlet pipes immediately after each use, or the installation of properly designed leak-protector valves; (3) foam was eliminated or materially reduced by removing or properly adjusting the unit causing it—usually the clarifier centrifugal type heater, or pump, and by providing a special inlet pipe to accomplish the smooth non-turbulent discharge of the milk into the holder. Splash was eliminated by reducing the speed of the coil in vats; (4) continuous-flow holders not providing proper temperature or holding period have been eliminated; accepting the long-distance flow-type holder when properly heated before starting; and requiring careful attention and servicing of all continuous-flow units; (5) the troublesome human element was minimized by schooling competent plant inspectors who instruct the operators and make frequent inspections. A school for Pasteurization plant operators is being organized.

PATIENTS IN INSTITUTIONS FOR THE FEEBLE-MINDED

Data for August, 1926

Reports for the month of August, 1926, were received from 30 institutions for the care of the feeble-minded.

Movement of patient population in 30 institutions for the feeble-minded, August, 1926

	Male	Female	Total
Number of public institutions included			29
Number of private institutions included			1
Total			30
Patients on books Aug. 1, 1926:			
In institutions	13,014	12,233	25,247
On temporary leave	2,367	1,832	4,199
Total	15,381	14,065	29,446
Admitted during August:			
First admissions	142	203	345
Readmissions	10	4	14
Admitted by transfer	80	19	99
Total received during August	232	226	458
Total on books during month	15,613	14,291	29,904
Discharged or placed on indefinite parole during August	64	58	122
Transferred from institutions	80	19	99
Died during month	23	33	56
Total discharged, transferred and died during August	167	110	277
Patients on books Aug. 31, 1926:			
In institutions	13,146	12,456	25,602
On temporary leave	2,300	1,725	4,025
Total	15,446	14,181	29,627

Analysis of movement of patient population of 30 institutions for the feeble-minded, August, 1926

	Male	Female	Total
Per cent increase in number of patients during August:			
Total (increase)	0.42	0.82	0.61
In institutions (increase)	1.01	1.82	1.41
On temporary leave (decrease)	2.83	5.84	4.14
Per cent of total patients absent on temporary leave:			
August 1	15.39	13.03	14.26
August 31	14.89	12.16	13.59
Per cent of total admissions (excluding transfers) which were—			
First admissions	93.42	98.07	96.10
Readmissions	6.58	1.93	3.90
Per cent of total patients discharged during August (based on average number for month)	0.42	0.41	0.41
Males per 1,000 females, Aug. 31			1089.
Deaths per 1,000 patients under treatment (annual basis)	17.34	27.19	22.05

Reports for May, June, and July, 1926, showed reductions in the aggregate number of patients in the institutions, and a steady increase in the number on temporary leave. The reports for August showed an increase during that month of 355 in the institutions, and a decrease in the number on leave of 174. The reports from only 10 institutions showed increases in the number of patients on temporary leave. Thirteen institutions reported decreases in the number on leave, aggregating 215 patients. Six of the institutions did not report any patients on temporary leave.

DEATHS DURING WEEK ENDED APRIL 23, 1927

Summary of information received by telegraph from industrial insurance companies for week ended April 23, 1927, and corresponding week of 1926. (From the Weekly Health Index, April 28, 1927, issued by the Bureau of the Census, Department of Commerce)

	Week ended Apr. 23, 1927	Corresponding week, 1926
Policies in force	67, 421, 189	64, 125, 650
Number of death claims	13, 589	14, 073
Death claims per 1,000 policies in force, annual rate	10.5	11.4

Deaths from all causes in certain large cities of the United States during the week ended April 23, 1927, infant mortality, annual death rate, and comparison with corresponding week of 1926. (From the Weekly Health Index, April 28, 1927, issued by the Bureau of the Census, Department of Commerce)

City	Week ended Apr. 23, 1927		Annual death rate per 1,000 corresponding week, 1926	Deaths under 1 year		Infant mortality rate, week ended Apr. 23, 1927 [2]
	Total deaths	Death rate [1]		Week ended Apr. 23, 1927	Corresponding week, 1926	
Total (68 cities)	7,986	14.0	[3] 15.1	822	[3] 1,005	[4] 68
Albany [6]	43	18.7	18.4	3	1	63
Atlanta	60			7	12	
White	33			4	6	
Colored	27	(6)		3	6	
Baltimore [5]	260	16.6	16.9	24	28	74
White	189		14.7	16	21	62
Colored	71	(6)	29.8	8	7	124
Birmingham	69	16.7	18.5	11	8	
White	33		11.4	5	3	
Colored	36	(6)	29.5	6	5	
Boston	251	16.5	18.2	31	34	87
Bridgeport	39			3	9	56
Buffalo	150	14.2	16.7	10	23	42
Cambridge	34	14.3	15.0	3	6	53
Camden	50	19.6	19.9	7	6	120
Canton	24	11.1	19.4	2	10	47
Chicago [5]	733	12.3	12.2	87	91	75
Cincinnati	153	19.4	20.9	19	17	118
Cleveland	206	10.9	13.3	23	32	61
Columbus	103	18.5	14.3	15	4	140
Dallas	35	8.7	14.4	2	5	
White	26		13.9	2	3	
Colored	9	(6)	17.4	0	2	
Dayton	56	16.2	10.6	5	6	82
Denver	83	14.9	12.6	8	6	
Des Moines	38	13.3	14.6	3	4	50
Detroit	347	13.6	16.6	52	70	82
Duluth	23	10.4	9.7	1	4	22
El Paso	39	17.8	20.6	7	7	
Erie	28			2	5	39
Fall River [5]	28	11.0	28.3	3	14	53
Flint	24	8.8	11.1	6	5	98
Fort Worth	45	14.3	3.9	7	2	
White	37		3.4	7	2	
Colored	8	(6)	8.2	0	0	
Grand Rapids	37	12.1	16.7	3	5	44
Houston	67			7	10	
White	48			6	7	
Colored	19	(6)		1	3	
Indianapolis	95	13.2	17.0	5	14	39
White	79		15.8	3	9	27
Colored	16	(6)	26.1	2	5	122
Jersey City	84	13.6	13.4	9	13	67
Kansas City, Kans	28	12.5	18.7	5	6	97
White	19		17.8	3	5	67
Colored	9	(6)	22.9	2	1	304
Kansas City, Mo	88	12.0	16.4	5	12	
Knoxville	20	10.2		1		
White	18			1		
Colored	2	(6)		0		
Los Angeles	291			27	23	77
Louisville	74	12.1	17.4	2	7	17
White	55		16.0	2	4	19
Colored	19	(6)	25.5	0	3	0
Lowell	28	13.2	18.0	3	8	58
Lynn	32	15.9	9.5	3	2	79
Memphis	64	18.6	23.9	10	8	
White	27		17.8	3	4	
Colored	37	(6)	34.8	7	4	
Milwaukee	120	11.9	14.4	20	22	93
Minneapolis	110	13.0	16.5	12	15	68

[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 67 cities.
[4] Data for 62 cities.
[5] Deaths for week ended Friday, Apr. 22, 1927.
[6] In the cities for which deaths are shown by color, the colored population in 1920 constituted the following percentages of the total population: Atlanta 31, Baltimore 15, Birmingham 39, Dallas 15, Fort Worth 14, Houston 25, Indianapolis 11, Kansas City, Kans., 14, Knoxville 15, Louisville 17, Memphis 38, Nashville 30, New Orleans 26, Norfolk 38, Richmond 32, and Washington, D. C., 25.

Deaths from all causes in certain large cities of the United States during the week ended April 23, 1927, infant mortality, annual death rate, and comparison with corresponding week of 1926. (From the Weekly Health Index, April 28, 1927, issued by the Bureau of the Census, Department of Commerce)—Continued

City	Week ended Apr. 23, 1927		Annual death rate per 1,000 corresponding week, 1926	Deaths under 1 year		Infant mortality rate, week ended Apr. 23, 1927
	Total deaths	Death rate		Week ended Apr. 23, 1927	Corresponding week, 1926	
Nashville [5]	46	17.4	16.4	4	7	----------
White	29	----------	13.8	3	4	----------
Colored	17	(6)	22.7	1	3	----------
New Bedford	27	11.8	17.0	4	3	69
New Haven	42	11.8	11.7	2	2	28
New Orleans	123	15.1	16.7	11	9	----------
White	63	----------	12.3	6	3	----------
Colored	60	(6)	29.2	5	6	----------
New York	1,584	13.8	15.2	159	228	66
Bronx Borough	201	11.3	11.5	20	19	64
Brooklyn Borough	518	11.9	14.1	50	102	52
Manhattan Borough	688	19.8	19.0	69	70	81
Queens Borough	145	9.3	12.3	17	30	73
Richmond Borough	32	11.4	22.6	3	7	56
Newark, N. J	108	12.1	14.4	11	22	54
Norfolk	40	11.7	11.7	7	1	141
White	13	----------	8.9	1	1	33
Colored	27	(6)	16.6	6	0	318
Oakland	67	13.1	7.6	8	2	94
Oklahoma City	35	----------	----------	3	1	----------
Omaha	49	11.7	17.9	5	2	56
Paterson	48	17.4	16.0	3	7	53
Philadelphia	627	16.1	14.7	53	64	71
Pittsburgh	184	14.9	16.6	15	30	52
Portland, Oreg	74	----------	----------	5	5	53
Providence	76	14.1	17.1	4	6	34
Richmond	64	17.4	18.2	7	3	92
White	44	----------	16.3	2	2	40
Colored	20	(6)	22.8	5	1	190
Rochester	95	15.3	15.8	8	11	67
St. Louis	216	13.4	16.2	26	21	----------
St. Paul	64	13.3	15.6	5	2	45
Salt Lake City [5]	39	15.0	10.2	2	3	30
San Antonio	80	19.8	13.5	11	9	----------
San Diego	45	20.4	12.8	2	3	43
San Francisco	170	15.4	14.1	10	10	62
Schenectady	16	9.0	15.7	3	3	90
Seattle	68	----------	----------	3	4	31
Somerville	18	9.2	15.6	1	0	36
Spokane	26	12.4	10.0	4	2	100
Springfield, Mass	43	15.3	13.7	4	2	62
Syracuse	63	16.7	13.8	7	3	90
Tacoma	27	13.2	10.8	2	0	47
Toledo	78	13.4	17.3	8	6	77
Trenton	49	18.6	18.7	4	9	70
Washington, D. C	141	13.6	12.4	10	11	58
White	95	----------	10.1	7	4	59
Colored	46	(6)	19.5	3	7	55
Waterbury	24	----------	----------	2	5	47
Wilmington, Del	45	18.6	17.7	4	7	99
Worcester	45	12.0	17.6	3	6	36
Yonkers	21	9.2	10.8	3	8	68
Youngstown	46	14.2	13.9	5	8	70

[5] Deaths for week ended Friday, Apr. 22, 1927.

[6] In the cities for which deaths are shown by color, the colored population in 1920 constituted the following percentages of the total population: Atlanta 31, Baltimore 15, Birmingham 39, Dallas 15, Fort Worth 14, Houston 25, Indianapolis 11, Kansas City, Kans., 14, Knoxville 15, Louisville 17, Memphis 38, Nashville 30, New Orleans 26, Norfolk 38, Richmond 32, and Washington, D. C., 25.

PREVALENCE OF DISEASE

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

UNITED STATES

CURRENT WEEKLY STATE REPORTS

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

Reports for Week Ended April 30, 1927

ALABAMA

	Cases
Cerebrospinal meningitis	1
Chicken pox	18
Diphtheria	23
Influenza	87
Malaria	52
Measles	317
Mumps	16
Ophthalmia neonatorum	1
Pellagra	16
Pneumonia	49
Scarlet fever	9
Smallpox	34
Tetanus	1
Tuberculosis	44
Typhoid fever	12
Whooping cough	70

ARIZONA

Chicken pox	2
Diphtheria	7
German measles	1
Measles	27
Scarlet fever	4
Tuberculosis	3
Typhoid fever	2

ARKANSAS

Chicken pox	31
Diphtheria	7
Hookworm disease	1
Influenza	59
Malaria	30
Measles	195
Mumps	38
Ophthalmia neonatorum	2
Pellagra	7
Scarlet fever	3

ARKANSAS—continued

	Cases
Smallpox	8
Trachoma	2
Tuberculosis	10
Typhoid fever	16
Whooping cough	60

CALIFORNIA

Cerebrospinal meningitis:	
Los Angeles	2
Sacramento	2
San Francisco	2
Santa Barbara	1
Chicken pox	487
Diphtheria	118
Influenza	23
Lethargic encephalitis	2
Measles	2,378
Mumps	273
Scarlet fever	186
Smallpox	34
Tuberculosis	177
Typhoid fever	9
Whooping cough	207

COLORADO

Cerebrospinal meningitis	1
Chicken pox	26
Diphtheria	23
German measles	11
Measles	118
Mumps	4
Pneumonia	2
Scarlet fever	145
Smallpox	4
Tuberculosis	4
Typhoid fever	2
Whooping cough	25

CONNECTICUT

	Cases
Chicken pox	78
Diphtheria	26
German measles	17
Influenza	3
Malaria	1
Measles	50
Mumps	53
Ophthalmia neonatorum	1
Paratyphoid fever	1
Pneumonia (broncho)	26
Pneumonia (lobar)	44
Poliomyelitis	1
Scarlet fever	99
Septic sore throat	6
Tetanus	1
Tuberculosis (all forms)	46
Typhoid fever	1
Whooping cough	31

DELAWARE

Chicken pox	6
Diphtheria	2
Measles	8
Mumps	3
Paratyphoid fever	1
Pneumonia	2
Scarlet fever	19
Tuberculosis	4

FLORIDA

Cerebrospinal meningitis	1
Chicken pox	79
Diphtheria	14
Influenza	7
Malaria	14
Mumps	22
Pneumonia	133
Poliomyelitis	3
Scarlet fever	7
Smallpox	32
Typhoid fever	25
Whooping cough	52

GEORGIA

Cerebrospinal meningitis	1
Chicken pox	49
Diphtheria	8
Dysentery	20
Hookworm disease	2
Influenza	140
Malaria	41
Measles	106
Mumps	25
Pellagra	17
Pneumonia	36
Scarlet fever	13
Septic sore throat	9
Smallpox	24
Tuberculosis	19
Typhoid fever	8
Whooping cough	51

IDAHO

	Cases
Cerebrospinal meningitis:	
Idaho Falls	1
Potlatch	1
Chicken pox	2
Diphtheria	1
Lethargic encephalitis	1
Measles	48
Mumps	3
Rocky Mountain spotted fever	1
Scarlet fever	11
Smallpox	15
Tuberculosis	1
Whooping cough	1

ILLINOIS

Cerebrospinal meningitis:	
Cook County	10
Fulton County	1
Lake County	1
Chicken pox	230
Diphtheria	99
Influenza	58
Lethargic encephalitis	6
Measles	1,459
Mumps	500
Pneumonia	352
Poliomyelitis:	
Cook County	2
Macoupin County	1
Scarlet fever	255
Smallpox	18
Tuberculosis	414
Typhoid fever	8
Whooping cough	199

INDIANA

Chicken pox	109
Diphtheria	34
Influenza	33
Measles	281
Mumps	1
Pneumonia	7
Scarlet fever	196
Smallpox	166
Tuberculosis	37
Typhoid fever	1
Whooping cough	52

KANSAS

Cerebrospinal meningitis:	
Blakeman	1
Topeka	1
Chicken pox	86
Diphtheria	9
German measles	17
Influenza	12
Measles	1,027
Mumps	46
Pneumonia	61
Scarlet fever	83
Smallpox	5
Tuberculosis	34
Vincent's angina	2
Whooping cough	56

LOUISIANA

	Cases
Diphtheria	26
Influenza	27
Measles	80
Pneumonia	36
Poliomyelitis	2
Scarlet fever	7
Smallpox	12
Tuberculosis	34
Typhoid fever	17

MAINE

Chicken pox	36
Diphtheria	2
German measles	52
Influenza	7
Measles	86
Mumps	17
Pneumonia	20
Scarlet fever	29
Tuberculosis	16
Typhoid fever	4
Vincent's angina	1
Whooping cough	24

MARYLAND [1]

Chicken pox	114
Diphtheria	29
Dysentery	1
German measles	5
Influenza	34
Malaria	1
Measles	23
Mumps	46
Paratyphoid fever	1
Pneumonia (broncho)	44
Pneumonia (lobar)	58
Scarlet fever	67
Septic sore throat	1
Tetanus	1
Tuberculosis	86
Typhoid fever	11
Vincent's angina	1
Whooping cough	70

MASSACHUSETTS

Cerebrospinal meningitis	2
Chicken pox	253
Conjunctivitis (suppurative)	8
Diphtheria	75
German measles	25
Influenza	14
Lethargic encephalitis	3
Measles	408
Mumps	480
Ophthalmia neonatorum	26
Pneumonia (lobar)	122
Poliomyelitis	2
Scarlet fever	435
Septic sore throat	4
Trachoma	2
Tuberculosis (pulmonary)	120
Tuberculosis (other forms)	22
Typhoid fever	5
Whooping cough	135

[1] Week ended Friday.

MICHIGAN

	Cases
Diphtheria	81
Measles	211
Pneumonia	190
Scarlet fever	253
Smallpox	34
Tuberculosis	130
Typhoid fever	11
Whooping cough	138

MINNESOTA

Cerebrospinal meningitis	7
Chicken pox	162
Diphtheria	13
Dysentery	1
Influenza	5
Lethargic encephalitis	1
Measles	140
Pneumonia	4
Scarlet fever	176
Smallpox	8
Tuberculosis	46
Typhoid fever	2
Whooping cough	17

MISSISSIPPI

Diphtheria	5
Scarlet fever	10
Smallpox	4
Typhoid fever	2

MISSOURI

Cerebrospinal meningitis	3
Chicken pox	56
Diphtheria	51
Influenza	1
Measles	205
Mumps	110
Pneumonia	1
Scarlet fever	95
Smallpox	18
Tuberculosis	51
Typhoid fever	3
Whooping cough	76

MONTANA

Cerebrospinal meningitis	2
Chicken pox	9
Diphtheria	1
German measles	1
Measles	40
Rocky Mountain spotted fever	5
Scarlet fever	61
Smallpox	8
Tuberculosis	1
Typhoid fever	3
Whooping cough	2

NEBRASKA

Chicken pox	46
Diphtheria	9
German measles	33
Influenza	8
Measles	406
Mumps	62

NEBRASKA—continued

	Cases
Pneumonia	3
Scarlet fever	60
Septic sore throat	2
Smallpox	31
Tuberculosis	3
Typhoid fever	1
Whooping cough	9

NEW JERSEY

Cerebrospinal meningitis	2
Chicken pox	274
Diphtheria	110
Dysentery	1
Influenza	22
Measles	76
Pneumonia	159
Scarlet fever	277
Trachoma	1
Typhoid fever	6
Whooping cough	181

NEW MEXICO

Diphtheria	2
Influenza	1
Measles	117
Scarlet fever	11

NEW YORK

(Exclusive of New York City)

Cerebrospinal meningitis	1
Chicken pox	354
Diphtheria	75
German measles	317
Measles	810
Mumps	468
Ophthalmia neonatorum	3
Paratyphoid fever	1
Pneumonia	339
Scarlet fever	306
Septic sore throat	10
Smallpox	3
Tetanus	1
Typhoid fever	13
Vincent's angina	24
Whooping cough	154

NORTH CAROLINA

Chicken pox	117
Diphtheria	11
German measles	14
Measles	1,681
Scarlet fever	19
Septic sore throat	2
Smallpox	47
Typhoid fever	5
Whooping cough	742

OKLAHOMA

(Exclusive of Oklahoma City and Tulsa)

Chicken pox	27
Diphtheria	11
Influenza	60
Malaria	18
Measles	394

OKLAHOMA—continued

	Cases
Mumps	33
Pellagra	10
Pneumonia	32
Poliomyelitis—Texas County	1
Scarlet fever	51
Smallpox	4
Typhoid fever	11
Whooping cough	14

OREGON

Chicken pox	22
Diphtheria	13
Influenza	35
Measles	370
Mumps	8
Pneumonia	[1]4
Poliomyelitis	1
Scarlet fever	32
Septic sore throat	2
Smallpox	19
Trachoma	1
Tuberculosis	[1]4
Typhoid fever	2
Whooping cough	12

PENNSYLVANIA

Cerebrospinal meningitis—Williamsport	1
Chicken pox	423
Diphtheria	172
German measles	122
Impetigo contagiosa	4
Lethargic encephalitis	1
Measles	744
Mumps	507
Ophthalmia neonatorum	2
Pneumonia	174
Poliomyelitis	1
Scabies	6
Scarlet fever	466
Tetanus	1
Tuberculosis	35
Typhoid fever	42
Whooping cough	182

RHODE ISLAND

Cerebrospinal meningitis	1
Chicken pox	4
Diphtheria	3
Measles	2
Mumps	1
Scarlet fever	12
Tuberculosis	11
Typhoid fever	1
Whooping cough	2

SOUTH CAROLINA

Chicken pox	107
Dengue	2
Diphtheria	12
Hookworm disease	37
Influenza	1,222
Malaria	125
Measles	173
Mumps	37
Paratyphoid fever	1

[1] Deaths.

SOUTH CAROLINA—continued

	Cases
Pellagra	117
Pneumonia	5
Poliomyelitis	1
Scarlet fever	3
Smallpox	14
Tuberculosis	73
Typhoid fever	15
Whooping cough	258

TENNESSEE

Actinomycosis	1
Anthrax—Memphis	1
Cerebrospinal meningitis—Knoxville	1
Chicken pox	38
Diphtheria	8
Influenza	112
Malaria	9
Measles	121
Mumps	4
Ophthalmia neonatorum	1
Pellagra	11
Pneumonia	33
Scarlet fever	31
Smallpox	11
Tuberculosis	50
Typhoid fever	11
Whooping cough	61

TEXAS

Anthrax	1
Chicken pox	63
Diphtheria	11
Influenza	17
Measles	275
Mumps	21
Pellagra	1
Pneumonia	5
Scarlet fever	14
Smallpox	47
Tuberculosis	6
Typhoid fever	12
Whooping cough	20

UTAH

Chicken pox	45
Diphtheria	6
German measles	10
Influenza	2
Measles	63
Mumps	6
Pneumonia	13
Scarlet fever	29
Whooping cough	52

VERMONT

Chicken pox	14
Diphtheria	1
Measles	122
Mumps	42
Scarlet fever	12
Typhoid fever	1
Whooping cough	27

WASHINGTON

	Cases
Cerebrospinal meningitis	3
Chicken pox	104
Diphtheria	14
German measles	401
Measles	459
Mumps	125
Scarlet fever	60
Smallpox	21
Tuberculosis	1
Typhoid fever	4
Whooping cough	53

WEST VIRGINIA

Chicken pox	47
Diphtheria	12
Influenza	105
Measles	169
Scarlet fever	43
Smallpox	48
Tuberculosis	23
Typhoid fever	1
Whooping cough	60

WISCONSIN

Milwaukee:	
Cerebrospinal meningitis	7
Chicken pox	115
Diphtheria	18
German measles	3
Measles	126
Mumps	111
Ophthalmia neonatorum	1
Pneumonia	16
Poliomyelitis	1
Scarlet fever	39
Smallpox	1
Tuberculosis	13
Typhoid fever	1
Whooping cough	25
Scattering:	
Cerebrospinal meningitis	2
Chicken pox	107
Diphtheria	16
German measles	39
Influenza	43
Measles	721
Mumps	200
Pneumonia	15
Scarlet fever	88
Smallpox	6
Tuberculosis	45
Whooping cough	86

WYOMING

Chicken pox	2
Diphtheria	2
German measles	9
Measles	75
Mumps	11
Pneumonia	2
Rocky Mountain spotted fever:	
Fremont County	2
Natrona County	1
Scarlet fever	17
Smallpox	1
Tuberculosis	1

Reports for Week Ended April 23, 1927

ALABAMA

	Cases
Cerebrospinal meningitis	1
Chicken pox	51
Dengue	1
Diphtheria	31
Influenza	103
Lethargic encephalitis	1
Malaria	21
Measles	275
Mumps	21
Ophthalmia neonatorum	1
Pellagra	9
Pneumonia	99
Poliomyelitis	1
Scarlet fever	18
Smallpox	30
Tetanus	4
Tuberculosis	145
Typhoid fever	17
Typhus fever	1
Whooping cough	73

CALIFORNIA

Botulism	1
Cerebrospinal meningitis:	
Butte County	1
Fresno County	1
Long Beach	1
Los Angeles	2
Sacramento	1
Sacramento County	1
San Francisco	2
Ventura	1
Chicken pox	478
Diphtheria	135
Influenza	38
Leprosy—Fresno County	1
Lethargic encephalitis	4
Measles	2,619
Mumps	185
Poliomyelitis—San Francisco	3
Scarlet fever	180
Smallpox	36
Tuberculosis	184
Typhoid fever	18
Whooping cough	195

DELAWARE

Chicken pox	6
Diphtheria	2
Measles	13
Mumps	2
Pneumonia	3
Scarlet fever	21
Tuberculosis	5

DISTRICT OF COLUMBIA

Chicken pox	54
Diphtheria	29
Influenza	2
Measles	11
Pneumonia	33
Scarlet Fever	27
Tuberculosis	32
Whooping cough	5

INDIANA

	Cases
Chicken pox	117
Diphtheria	26
Influenza	26
Measles	206
Mumps	2
Pneumonia	4
Scarlet fever	174
Smallpox	142
Tuberculosis	21
Typhoid fever	3
Whooping cough	36

IOWA

Chicken pox	31
Diphtheria	43
German measles	3
Measles	195
Mumps	28
Pneumonia	2
Scarlet fever	28
Smallpox	11
Tuberculosis	7
Typhoid fever	1
Whooping cough	13

MINNESOTA

Cerebrospinal meningitis	6
Chicken pox	151
Diphtheria	38
Influenza	10
Measles	226
Pneumonia	6
Scarlet fever	166
Smallpox	1
Tuberculosis	55
Typhoid fever	1
Whooping cough	22

MISSISSIPPI

Diphtheria	4
Scarlet fever	3
Smallpox	2
Typhoid fever	6

MISSOURI

Cerebrospinal meningitis	1
Chicken pox	67
Diphtheria	52
Influenza	10
Measles	367
Mumps	141
Pneumonia	3
Scarlet fever	122
Smallpox	14
Tuberculosis	56
Typhoid fever	3
Whooping cough	66

NEBRASKA

Cerebrospinal meningitis	2
Chicken pox	48
Diphtheria	2
German measles	44
Influenza	1

NEBRASKA—continued

	Cases
Measles	528
Mumps	50
Pneumonia	1
Scarlet fever	47
Smallpox	28
Tuberculosis	2
Typhoid fever	1
Whooping cough	3

NORTH DAKOTA

Chicken pox	15
Diphtheria	12
German measles	6
Measles	157
Mumps	9
Pneumonia	24
Scarlet fever	60
Smallpox	6
Tuberculosis	2
Typhoid fever	4
Whooping cough	2

OKLAHOMA

(Exclusive of Oklahoma City and Tulsa)

Cerebrospinal meningitis—Craig County	1
Chicken pox	24
Diphtheria	18
Influenza	83
Malaria	26
Measles	433
Pneumonia	75
Poliomyelitis—Washita County	1
Scarlet fever	48
Smallpox	45
Typhoid fever	29
Whooping cough	17

PENNSYLVANIA

Chicken pox	532
Diphtheria	185
German measles	157
Lethargic encephalitis	2
Measles	705
Mumps	399
Ophthalmia neonatorum	4
Pneumonia	235
Puerperal fever	1
Scabies	1
Scarlet fever	522
Tuberculosis	159
Typhoid fever	16
Whooping cough	196

RHODE ISLAND

	Cases
Chicken pox	9
Diphtheria	10
German measles	2
Mumps	11
Scarlet fever	25
Septic sore throat	1
Tuberculosis	4
Whooping cough	7

SOUTH CAROLINA

Chicken pox	68
Dengue	2
Diphtheria	10
Hookworm disease	35
Influenza	1,088
Malaria	139
Measles	138
Mumps	1
Paratyphoid fever	1
Pellagra	71
Scarlet fever	8
Smallpox	23
Tuberculosis	38
Typhoid fever	6
Whooping cough	161

TENNESSEE

Chicken pox	31
Diphtheria	4
Influenza	106
Malaria	8
Measles	84
Mumps	27
Pellagra	14
Pneumonia	24
Rabies	2
Scarlet fever	8
Smallpox	9
Tuberculosis	22
Typhoid fever	13
Whooping cough	53

WYOMING

Chicken pox	13
Diphtheria	1
German measles	22
Measles	81
Mumps	55
Rocky Mountain spotted fever	6
Scarlet fever	15
Tuberculosis	1
Typhoid fever	1
Whooping cough	1

SUMMARY OF MONTHLY REPORTS FROM STATES

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

State	Cerebrospinal meningitis	Diphtheria	Influenza	Malaria	Measles	Pellagra	Poliomyelitis	Scarlet fever	Smallpox	Typhoid fever
March, 1927										
California	23	750	468	2	18,203		7	1,210	111	56
Florida	1	120	97	32	591	4	1	61	187	54
Idaho	0	23			655		0	121	53	0
Illinois	17	540	222	1	11,126		5	1,626	213	39
Kansas	2	55	32	1	4,803	3	5	776	188	7
Maine	0	15	57		710		1	124	1	13
Maryland	0	214	1,348	1	241	1	0	365	2	32
Minnesota	26	147	10		1,182		1	1,252	8	24
Mississippi		61	5,248	2,644	3,109	394	4	61	25	70
Missouri	7	193	54		991		1	579	332	9
North Carolina	2	125			2,211		1	149	260	21
North Dakota	9	15			918		9	312	13	4
Oklahoma [1]	6	61	549	44	969	21	0	205	190	66
Oregon	8	61	720	1	543		0	253	90	10
Rhode Island	2	53	7		11		1	160	0	0
Washington	19	80	117		1,558		3	458	242	20
Wyoming	0	3	1		261		1	134	14	0

[1] Exclusive of Oklahoma City and Tulsa.

March, 1927	Cases
Chicken pox:	
California	3,477
Florida	261
Idaho	34
Illinois	1,649
Kansas	575
Maine	130
Maryland	613
Minnesota	784
Mississippi	983
Missouri	387
North Carolina	754
North Dakota	55
Oklahoma	115
Oregon	148
Rhode Island	80
Washington	527
Wyoming	41
Conjunctivitis:	
Maine	1
Dengue:	
Florida	1
Mississippi	4
Dysentery:	
California (amoebic)	3
California (bacillary)	2
Florida	11
Illinois	24
Maryland	3
Minnesota	1
Mississippi (amoebic)	48
Mississippi (bacillary)	264
Oklahoma	7
Washington	1
German measles:	
California	266
Illinois	184
Kansas	42
Maine	214
German measles—Continued.	Cases
Maryland	20
North Carolina	56
Rhode Island	5
Washington	1,860
Wyoming	106
Hookworm disease:	
Florida	215
Mississippi	341
Impetigo contagiosa:	
Maryland	3
Oregon	18
Jaundice (epidemic):	
California	4
Leprosy:	
California	4
Lead poisoning:	
Illinois	31
Missouri	1
Lethargic encephalitis:	
California	8
Florida	2
Illinois	8
Maryland	2
Minnesota	2
Rhode Island	2
Washington	7
Mumps:	
California	1,615
Florida	60
Idaho	38
Illinois	2,763
Kansas	290
Maine	70
Maryland	118
Mississippi	741
Missouri	315
North Dakota	27
Oklahoma	80
Oregon	81

Mumps—Continued.	Cases
Rhode Island	36
Washington	607
Wyoming	116
Ophthalmia neonatorum:	
California	2
Idaho	1
Illinois	59
Maryland	1
Mississippi	14
Missouri	3
North Carolina	1
Oklahoma	2
Rhode Island	3
Wyoming	1
Paratyphoid fever:	
California	5
Maine	8
Pink eye:	
Kansas	5
Polioencephalomyelitis:	
Wyoming	1
Puerperal septicemia:	
Illinois	6
Mississippi	62
Rabies in animals:	
California	39
Idaho	1
Maryland	16
Mississippi	8
Missouri	19
Oregon	4
Rabies in man:	
Kansas	2
Mississippi	1
Rocky Mountain spotted or tick fever:	
Idaho	2
Oregon	1
Scabies:	
Oregon	6
Septic sore throat:	
Illinois	7
Maryland	21
Missouri	43
North Carolina	2

Septic sore throat—Continued.	Cases
Oklahoma	1
Oregon	7
Rhode Island	4
Tetanus:	
California	5
Florida	18
Illinois	4
Maryland	4
Trachoma:	
California	31
Illinois	6
Kansas	4
Maryland	1
Mississippi	10
Missouri	15
Oklahoma	9
Rhode Island	2
Trichinosis:	
California	2
Typhus fever:	
Florida	2
Vincent's angina:	
Illinois	2
Maine	10
Maryland	2
Washington	1
Whooping cough:	
California	930
Florida	74
Idaho	39
Illinois	1,015
Kansas	252
Maine	177
Maryland	431
Minnesota	118
Mississippi	1,874
Missouri	224
North Carolina	3,526
North Dakota	22
Oklahoma	68
Oregon	39
Rhode Island	63
Washington	194
Wyoming	1

PLAGUE-PREVENTION WORK IN LOS ANGELES, CALIF.

The rodent division of the Los Angeles Department of Health reports that during the period from September 13, 1926, to April 16, 1927, 19,401 rats and 12,616 mice were collected. Three rats were found plague-infected, the last one being found on March 23, 1927, at 635 South Spring Street.

GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

The 98 cities reporting cases used in the following table are situated in all parts of the country, and have an estimated aggregate population of more than 30,800,000. The estimated population of the 92 cities reporting deaths is more than 30,150,000. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

Weeks ended April 16, 1927, and April 17, 1926

	1927	1926	Estimated expectancy
Cases reported			
Diphtheria:			
42 States	1,713	1,177	
98 cities	1,037	641	863
Measles:			
41 States	15,343	22,867	
98 cities	4,514	10,156	
Poliomyelitis:			
42 States	11	9	
Scarlet fever:			
42 States	5,177	4,212	
98 cities	2,314	1,786	1,184
Smallpox:			
42 States	864	815	
98 cities	143	151	125
Typhoid fever:			
42 States	275	247	
98 cities	48	40	45
Deaths reported			
Influenza and pneumonia:			
92 cities	1,014	1,665	
Smallpox:			
92 cities	0	9	
Los Angeles	0	9	

City reports for week ended April 16, 1927

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

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

Division, State, and city	Population July 1, 1925, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND									
Maine:									
Portland	75,333	7	1	1	0	0	1	1	2
New Hampshire:									
Concord	22,546	0	0	0	0	0	1	0	3
Manchester	83,097	0	2	0	0	3	0	0	4
Vermont:									
Barre	10,008	0	0	0	0	0	0	0	0
Burlington	24,089	2	1	0	0	0	13	0	0
Massachusetts:									
Boston	779,620	70	53	32	4	1	82	122	21
Fall River	128,993	4	3	1	2	1	1	1	7
Springfield	142,065	5	2	3	2	2	2	10	1
Worcester	190,757	24	5	2	0	0	0	4	6
Rhode Island:									
Pawtucket	69,760	4	1	0	0	0	0	0	3
Providence	267,918	0	9	1	0	2	0	0	10
Connecticut:									
Bridgeport	(1)	0	5	3	0	0	9	2	3
Hartford	160,197	3	6	2	0	0	0	3	6
New Haven	178,927	4	3	0	0	1	0	5	5

[1] No estimate made.

City reports for week ended April 16, 1927—Continued

Division, State, and city	Population July 1, 1925, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
MIDDLE ATLANTIC									
New York:									
Buffalo	538,016	10	9	10	----	0	15	9	16
New York	5,873,356	----	219	412	43	21	50	429	225
Rochester	316,786	7	8	21	----	0	6	3	6
Syracuse	182,003	28	6	1	----	0	175	7	4
New Jersey:									
Camden	128,642	12	4	25	0	1	2	1	7
Newark	452,513	63	15	8	8	4	3	68	13
Trenton	132,020	5	3	4	1	0	0	0	8
Pennsylvania:									
Philadelphia	1,979,364	69	72	54	----	13	19	98	55
Pittsburgh	631,563	52	17	15	----	3	74	4	19
Reading	112,707	8	3	0	----	0	6	28	3
EAST NORTH CENTRAL									
Ohio:									
Cincinnati	409,333	16	7	4	1	4	4	23	19
Cleveland	936,485	93	21	45	1	2	9	66	20
Columbus	279,836	10	3	8	0	2	3	0	9
Toledo	297,380	39	3	1	2	2	22	2	5
Indiana:									
Fort Wayne	97,846	8	2	3	0	0	19	0	2
Indianapolis	358,819	64	5	7	0	0	17	14	8
South Bend	80,091	1	1	0	0	0	8	0	3
Terre Haute	71,071	5	1	0	0	0	10	0	2
Illinois:									
Chicago	2,995,239	87	78	67	15	4	1,033	143	86
Peoria	81,564	6	1	1	0	0	7	7	3
Springfield	63,923	5	0	0	1	1	14	0	0
Michigan:									
Detroit	1,245,824	77	47	47	3	2	12	72	44
Flint	130,316	25	3	4	0	0	13	0	4
Grand Rapids	153,698	13	4	1	0	0	9	1	0
Wisconsin:									
Kenosha	50,891	6	1	0	0	0	46	47	0
Madison	46,385	----	0	----	----	----	----	----	----
Milwaukee	509,192	79	12	13	2	1	122	68	13
Racine	67,707	9	2	4	0	0	7	34	1
Superior	39,671	0	0	0	0	0	1	0	0
WEST NORTH CENTRAL									
Minnesota:									
Duluth	110,502	2	1	0	0	0	23	0	2
Minneapolis	425,435	55	15	12	0	3	8	0	17
St. Paul	246,001	27	14	1	0	1	15	1	18
Iowa:									
Davenport	52,469	1	0	0	0	----	2	4	----
Des Moines	141,441	0	2	2	0	----	28	0	2
Sioux City	76,411	4	1	5	0	----	47	2	----
Waterloo	36,771	4	0	2	0	----	43	0	----
Missouri:									
Kansas City	367,481	19	6	2	1	1	60	6	10
St. Joseph	78,342	3	1	0	0	0	48	0	5
St. Louis	821,543	65	38	29	0	0	49	113	----
North Dakota:									
Fargo	26,403	4	0	0	0	0	41	2	1
Grand Forks	14,811	0	1	0	0	----	0	0	----
South Dakota:									
Aberdeen	15,036	1	1	0	0	----	35	1	----
Sioux Falls	30,127	0	0	0	0	----	30	0	----
Nebraska:									
Lincoln	60,941	4	1	1	0	0	105	11	1
Omaha	211,768	13	3	1	0	0	82	21	9
Kansas:									
Topeka	55,411	14	1	3	1	1	215	0	0
Wichita	88,367	15	1	0	0	0	33	0	0

City reports for week ended April 16, 1927—Continued

Division, State, and city	Population July 1, 1925, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
SOUTH ATLANTIC									
Delaware:									
Wilmington	122,049	1	2	1	0	0	0	0	5
Maryland:									
Baltimore	796,296	81	25	31	39	3	5	11	37
Cumberland	33,741	1	0	0	0	0	0	0	1
Frederick	12,035	0	1	0	0	0	0	0	1
District of Columbia:									
Washington	497,906	60	10	30	2	2	3	0	10
Virginia:									
Lynchburg	30,395	14	0	2	0	0	53	0	1
Norfolk	(1)	22	0	1	0	0	180	7	4
Richmond	186,403	4	2	5	0	3	139	3	5
Roanoke	58,208	5	1	1	0	2	2	0	5
West Virginia:									
Charleston	49,019	7	0	1	1	1	2	1	1
Wheeling	56,208	3	0	1	0	0	17	0	1
North Carolina:									
Raleigh	30,371	10	0	1	0	0	86	0	2
Wilmington	37,061	0	1	0	0	1	14	17	6
Winston-Salem	69,031	8	1	0	0	2	42	22	5
South Carolina:									
Charleston	73,125	3	0	0	52	1	13	2	2
Columbia	41,225	3	0	0	0	-------	1	7	-------
Greenville	27,311	-------	0	-------	-------	-------	-------	-------	-------
Georgia:									
Atlanta	(1)	8	2	3	20	0	63	17	5
Brunswick	16,809	3	0	0	0	0	0	14	0
Savannah	93,134	0	0	0	17	6	8	0	9
Florida:									
St. Petersburg	26,847	-------	0	-------	-------	0	-------	-------	1
Tampa	94,743	2	0	1	0	0	97	0	1
EAST SOUTH CENTRAL									
Kentucky:									
Covington	58,309	-------	2	-------	-------	-------	-------	-------	-------
Louisville	305,935	1	4	3	1	0	4	4	11
Tennessee:									
Memphis	174,533	8	4	0	0	1	2	0	8
Nashville	136,220	5	0	1	0	1	3	4	3
Alabama:									
Birmingham	205,670	2	1	11	23	15	27	5	0
Mobile	65,955	2	1	0	0	0	10	0	1
Montgomery	46,481	26	0	1	0	0	32	0	0
WEST SOUTH CENTRAL									
Arkansas:									
Fort Smith	31,634	1	0	0	0	-------	60	1	-------
Little Rock	74,216	2	0	2	0	0	13	0	1
Louisiana:									
New Orleans	414,493	0	7	19	9	4	27	0	8
Shreveport	57,857	11	0	1	0	0	5	7	0
Oklahoma:									
Oklahoma City	(1)	3	1	1	0	0	19	2	5
Tulsa	124,478	21	-------	2	0	-------	347	26	-------
Texas:									
Dallas	194,450	14	3	2	2	2	130	2	5
Galveston	48,375	0	0	0	0	0	0	0	0
Houston	164,954	2	2	4	0	1	0	3	1
San Antonio	198,069	2	1	6	0	3	8	0	3
MOUNTAIN									
Montana:									
Billings	17,971	2	0	0	0	0	0	1	2
Great Falls	29,883	3	0	1	0	1	8	0	0
Helena	12,037	0	0	0	0	0	0	0	0
Missoula	12,668	5	0	0	0	0	1	6	1
Idaho:									
Boise	23,042	3	1	1	0	0	3	0	0

[1] No estimate made.

City reports for week ended April 16, 1927—Continued

Division, State, and city	Population July 1, 1925, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
MOUNTAIN—continued									
Colorado:									
Denver	280,911	13	10	7	-------	1	150	2	8
Pueblo	43,787	3	1	0	0	0	52	0	2
New Mexico:									
Albuquerque	21,000	0	0	0	0	0	10	9	2
Utah:									
Salt Lake City	130,948	17	3	3	0	0	18	1	4
Nevada:									
Reno	12,665	0	0	0	0	0	0	0	0
PACIFIC									
Washington:									
Seattle	(1)	37	5	0	0	-------	66	74	-------
Spokane	108,897	12	2	3	0	-------	1	0	-------
Tacoma	104,455	12	1	3	0	0	55	1	2
Oregon:									
Portland	282,383	9	6	8	0	1	130	2	3
California:									
Los Angeles	(1)	59	39	24	8	0	585	16	24
Sacramento	72,260	10	2	3	0	1	14	1	3
San Francisco	557,530	48	20	11	1	3	124	99	5

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
NEW ENGLAND											
Maine:											
Portland	3	0	0	0	0	0	1	2	0	1	21
New Hampshire:											
Concord	1	0	0	0	0	0	0	0	0	0	6
Manchester	3	0	0	0	0	1	0	0	0	0	24
Vermont:											
Barre	0	0	0	0	0	0	0	0	0	2	3
Burlington	0	0	0	0	0	0	0	0	0	2	3
Massachusetts:											
Boston	68	131	0	0	0	15	1	1	0	23	224
Fall River	4	3	0	0	0	4	1	1	0	0	33
Springfield	6	7	0	0	0	0	0	0	0	17	31
Worcester	8	9	0	0	0	7	1	0	0	7	65
Rhode Island:											
Pawtucket	1	1	0	0	0	0	0	0	0	0	19
Providence	8	10	0	0	0	1	1	0	0	5	64
Connecticut:											
Bridgeport	10	10	0	0	0	4	0	0	0	0	26
Hartford	4	10	0	0	0	1	0	0	0	3	41
New Haven	11	1	0	0	0	1	1	0	0	0	43
MIDDLE ATLANTIC											
New York:											
Buffalo	20	34	0	0	0	14	0	0	0	7	114
New York	252	891	1	0	0	[2] 131	9	6	1	94	1,613
Rochester	15	12	0	0	0	5	1	0	0	5	80
Syracuse	11	13	0	0	0	0	0	2	1	1	34
New Jersey:											
Camden	6	2	0	0	0	4	0	0	0	0	37
Newark	25	74	0	0	0	10	1	1	0	35	123
Trenton	3	6	0	0	0	1	1	0	0	0	45
Pennsylvania:											
Philadelphia	78	131	0	0	0	34	3	1	1	19	545
Pittsburgh	27	15	0	0	0	11	1	0	0	10	157
Reading	4	3	0	0	0	1	0	0	0	5	23

[1] No estimate made.

[2] Pulmonary tuberculosis only.

City reports for week ended April 16, 1927—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
EAST NORTH CENTRAL											
Ohio:											
Cincinnati	14	31	2	0	0	13	1	1	0	3	146
Cleveland	31	46	0	0	0	17	1	1	0	40	----
Columbus	11	14	2	0	0	7	0	0	0	17	86
Toledo	14	10	4	0	0	6	0	0	0	14	68
Indiana:											
Fort Wayne	5	4	3	4	0	2	0	0	0	0	32
Indianapolis	10	8	8	36	0	5	0	0	0	22	97
South Bend	3	5	0	1	0	2	0	0	0	2	21
Terre Haute	2	1	1	3	0	0	0	0	0	4	20
Illinois:											
Chicago	111	131	3	0	0	56	2	0	0	65	782
Peoria	2	4	0	0	0	2	0	0	0	1	22
Springfield	2	1	0	0	0	2	0	0	0	0	24
Michigan:											
Detroit	84	72	2	0	0	29	2	0	0	44	312
Flint	6	37	1	3	0	1	0	0	1	1	22
Grand Rapids	7	11	1	1	0	0	0	0	0	10	31
Wisconsin:											
Kenosha	3	12	1	0	0	0	0	0	0	0	4
Madison	3	----	0	----	----	----	0	----	----	----	----
Milwaukee	26	45	2	0	0	8	0	0	0	22	119
Racine	3	4	1	0	0	0	0	0	0	9	12
Superior	3	6	2	0	0	0	0	0	0	0	----
WEST NORTH CENTRAL											
Minnesota:											
Duluth	5	10	2	0	0	3	0	0	0	0	34
Minneapolis	42	53	7	1	0	3	0	0	0	0	110
St. Paul	27	32	5	1	0	2	0	1	0	4	62
Iowa:											
Davenport	2	0	2	0	----	----	0	1	----	0	----
Des Moines	5	13	3	1	----	3	0	0	----	0	26
Sioux City	2	2	1	1	----	----	0	0	----	3	----
Waterloo	2	0	0	0	----	----	0	0	----	1	----
Missouri:											
Kansas City	11	20	2	6	0	6	1	0	0	16	94
St. Joseph	2	6	0	6	0	1	0	0	0	0	24
St. Louis	35	36	4	5	0	9	2	3	0	34	206
North Dakota:											
Fargo	2	8	1	0	0	2	0	2	0	0	----
Grand Forks	0	7	0	0	----	----	0	0	----	0	----
South Dakota:											
Aberdeen	2	1	0	0	----	----	0	0	----	0	----
Sioux Falls	2	3	1	0	----	----	0	0	----	0	----
Nebraska:											
Lincoln	2	2	1	0	0	0	0	0	0	3	11
Omaha	3	24	9	6	0	2	0	0	0	1	55
Kansas:											
Topeka	4	8	2	2	0	0	0	0	0	7	9
Wichita	3	1	3	0	0	0	0	0	0	12	16
SOUTH ATLANTIC											
Delaware:											
Wilmington	3	7	0	0	0	2	0	0	0	1	40
Maryland:											
Baltimore	35	38	1	0	0	23	2	4	0	58	222
Cumberland	0	0	0	0	0	0	0	0	0	1	10
Frederick	1	1	0	0	0	0	0	0	0	1	5
District of Columbia:											
Washington	24	12	2	0	0	17	1	0	0	16	158
Virginia:											
Lynchburg	1	0	0	0	0	1	0	0	0	1	14
Norfolk	1	7	0	0	0	3	0	1	0	12	----
Richmond	2	7	0	0	0	5	0	0	0	0	57
Roanoke	1	3	1	4	0	3	0	0	0	0	22

City reports for week ended April 16, 1927—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
SOUTH ATLANTIC—continued											
West Virginia:											
Charleston	0	0	0	1	0	0	0	0	1	8	31
Wheeling	2	0	0	0	0	1	0	0	0	0	13
North Carolina:											
Raleigh	0	2	0	0	0	2	0	0	0	22	24
Wilmington	0	0	0	0	0	2	0	0	0	6	18
Winston-Salem	0	0	5	0	0	0	0	0	0	34	26
South Carolina:											
Charleston	0	1	0	2	0	2	0	0	0	3	17
Columbia	0	0	0	0	----	----	0	1	----	8	----
Greenville	0	----	0	----	----	----	0	----	----	----	----
Georgia:											
Atlanta	3	3	3	3	0	6	0	1	0	15	79
Brunswick	0	0	0	2	0	0	0	0	0	0	2
Savannah	1	0	1	1	0	1	0	0	0	2	29
Florida:											
St. Petersburg	0	----	0	----	0	0	0	----	0	----	13
Tampa	0	2	0	1	0	6	0	0	0	5	45
EAST SOUTH CENTRAL											
Kentucky:											
Covington	2	----	1	----	----	----	1	----	----	----	----
Louisville	6	15	0	2	0	4	1	0	0	27	68
Tennessee:											
Memphis	4	21	4	6	0	7	0	1	0	9	87
Nashville	2	1	1	0	0	5	1	0	0	3	39
Alabama:											
Birmingham	1	4	10	11	0	6	1	4	0	15	75
Mobile	0	0	1	0	0	0	0	1	1	0	14
Montgomery	0	0	0	0	0	0	0	1	0	25	----
WEST SOUTH CENTRAL											
Arkansas:											
Fort Smith	0	0	0	0	----	----	0	0	----	3	10
Little Rock	1	0	0	0	0	1	1	1	0	1	----
Louisiana:											
New Orleans	5	2	2	0	0	10	2	3	0	2	119
Shreveport	1	0	1	1	0	3	0	0	0	2	26
Oklahoma:											
Oklahoma City	2	0	3	0	0	2	0	1	0	3	23
Tulsa	----	2	----	1	----	----	1	0	----	3	----
Texas:											
Dallas	2	5	2	12	0	2	1	0	0	0	41
Galveston	0	0	0	0	0	0	0	0	0	0	13
Houston	1	4	1	6	0	1	0	0	1	0	48
San Antonio	1	1	0	2	0	4	0	0	1	0	67
MOUNTAIN											
Montana:											
Billings	0	1	0	0	0	0	0	0	0	0	5
Great Falls	1	3	1	0	0	0	0	0	0	0	11
Helena	0	0	1	0	0	0	0	0	0	0	3
Missoula	0	7	0	0	0	0	0	0	0	0	4
Idaho:											
Boise	1	0	0	0	0	0	0	1	0	0	6
Colorado:											
Denver	11	69	2	0	0	7	1	0	0	1	80
Pueblo	1	18	0	0	0	1	1	0	0	0	14
New Mexico:											
Albuquerque	0	1	0	0	0	2	0	0	0	0	9
Utah:											
Salt Lake City	2	8	0	3	0	0	0	0	0	9	32
Nevada:											
Reno	0	0	0	0	0	0	0	0	0	0	1

City reports for week ended April 16, 1927—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
PACIFIC											
Washington:											
Seattle	9	4	4	3	----	----	0	2	----	29	----
Spokane	4	19	5	6	----	----	0	1	----	3	----
Tacoma	2	4	3	0	0	0	0	0	0	0	28
Oregon:											
Portland	6	2	6	0	0	3	1	0	0	7	72
California:											
Los Angeles	19	37	4	0	0	31	1	0	1	19	249
Sacramento	2	1	1	1	0	0	0	1	0	0	22
San Francisco	13	28	4	0	0	10	1	3	0	17	140

Division, State, and city	Cerebrospinal meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths
NEW ENGLAND									
Maine:									
Portland	1	1	0	0	0	0	0	0	0
Massachusetts:									
Boston	1	2	1	0	0	0	0	0	0
Rhode Island:									
Providence	0	0	0	0	0	0	0	1	0
Connecticut:									
Hartford	0	0	0	1	0	0	0	0	0
MIDDLE ATLANTIC									
New York:									
New York [1]	9	3	3	4	0	0	0	1	0
Rochester	0	0	1	0	0	0	0	0	0
Pennsylvania:									
Philadelphia	0	0	0	1	0	0	0	0	0
EAST NORTH CENTRAL									
Ohio:									
Cleveland	0	0	0	1	0	0	0	0	0
Columbus	0	0	0	1	0	0	0	0	0
Illinois:									
Chicago	2	2	2	2	0	0	0	0	0
Michigan:									
Detroit	2	0	2	2	0	0	0	0	0
Wisconsin:									
Milwaukee	5	1	0	0	0	0	0	0	0
WEST NORTH CENTRAL									
Minnesota:									
Duluth	1	1	0	0	0	0	0	0	0
Minneapolis	0	1	0	0	0	0	0	0	0
St. Paul	0	0	0	1	0	0	0	0	0
Missouri:									
Kansas City	2	1	0	0	0	0	0	1	0
North Dakota:									
Fargo	0	0	0	0	0	0	0	1	0
Kansas:									
Topeka	1	0	0	0	0	0	0	0	0

[1] Rabies (human): 1 case and 1 death at New York, N. Y., and 1 case at Savannah, Ga.

City reports for week ended April 16, 1927—Continued

Division, State, and city	Cerebrospinal meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths
SOUTH ATLANTIC [1]									
Maryland:									
Baltimore	0	1	0	0	0	0	1	0	0
District of Columbia:									
Washington	0	0	1	0	0	0	0	0	0
Virginia:									
Norfolk	1	0	0	0	0	0	0	0	0
North Carolina:									
Winston-Salem	0	0	0	0	1	1	0	0	0
South Carolina:									
Charleston [2]	0	0	0	0	1	0	0	0	0
EAST SOUTH CENTRAL									
Alabama:									
Birmingham	0	0	0	0	1	0	0	1	1
WEST SOUTH CENTRAL									
Arkansas:									
Little Rock	0	0	0	0	0	2	0	0	0
Louisiana:									
New Orleans	1	0	0	0	0	0	0	0	0
Shreveport	0	0	0	0	0	1	0	0	0
Texas:									
Galveston	1	1	0	0	0	0	0	0	0
MOUNTAIN									
Montana:									
Great Falls	1	0	0	0	0	0	0	0	0
Colorado:									
Denver	1	1	0	0	0	0	0	0	0
Pueblo	2	1	0	0	0	0	0	0	0
PACIFIC									
Washington:									
Seattle	1	0	0	0	0	0	0	0	0
Spokane	0	0	0	0	0	0	0	1	0
Oregon:									
Portland	1	1	0	0	0	0	0	0	0
California:									
Los Angeles	0	0	1	0	1	0	0	0	0
Sacramento	3	1	0	0	0	0	0	0	0
San Francisco	0	1	0	1	3	3	0	0	0

[1] Rabies (human): 1 case and 1 death at New York, N. Y., and 1 case at Savannah, Ga.
[2] Dengue: 1 case at Charleston, S. C.

The following table gives the rates per 100,000 population for 101 cities for the five-week period ended April 16, 1927, compared with those for a like period ended April 17, 1926. The population figures used in computing the rates are approximate estimates as of July 1, 1926 and 1927, respectively, authoritative figures for many of the cities not being available. The 101 cities reporting cases had estimated aggregate populations of approximately 30,440,000 in 1926 and 30,960,000 in 1927. The 95 cities reporting deaths had nearly 29,780,000 estimated population in 1926 and nearly 30,290,000 in 1927. The number of cities included in each group and the estimated aggregate populations are shown in a separate table below.

Summary of weekly reports from cities, March 13 to April 16, 1927—Annual rates per 100,000 population, compared with rates for the corresponding period of 1926 [1]

DIPHTHERIA CASE RATES

	Week ended—									
	Mar. 20, 1926	Mar. 19, 1927	Mar. 27, 1926	Mar. 26, 1927	Apr. 3, 1926	Apr. 2, 1927	Apr. 10, 1926	Apr. 9, 1927	Apr. 17, 1926	Apr. 16, 1927
101 cities	120	171	[2] 131	178	[3] 126	[3] 191	116	[4] 202	110	[5] 175
New England	127	137	139	130	80	137	125	181	47	104
Middle Atlantic	126	225	142	227	146	264	125	269	119	271
East North Central	98	157	102	179	[3] 113	[3] 160	88	[3] 170	86	[3] 136
West North Central	147	127	149	121	159	159	204	171	246	109
South Atlantic	69	141	[2] 62	147	95	157	86	[2] 126	89	[6] 143
East South Central	26	31	36	41	57	61	114	66	47	[7] 86
West South Central	103	164	155	176	60	180	60	340	30	143
Mountain	73	126	255	81	146	108	118	171	191	108
Pacific	281	165	238	194	201	170	137	126	134	115

MEASLES CASE RATES

101 cities	1,783	913	[2] 1,834	934	[3] 1,693	[3] 805	1,781	[4] 864	1,770	[5] 764
New England	1,722	211	1,344	197	1,460	204	1,568	269	1,809	223
Middle Atlantic	1,858	93	1,839	114	1,850	128	1,773	159	1,702	173
East North Central	1,994	1,160	2,091	1,092	[3] 1,504	[3] 884	1,572	[3] 920	1,471	[3] 861
West North Central	1,892	1,564	2,323	1,519	2,428	1,558	3,283	1,304	3,354	1,318
South Atlantic	2,772	1,015	[2] 2,731	977	2,649	1,096	2,630	[2] 1,003	2,919	[6] 1,327
East South Atlantic	2,260	443	2,906	438	2,875	285	3,020	611	2,772	[7] 422
West South Central	43	1,040	125	1,778	43	948	236	2,143	133	1,019
Mountain	328	5,412	310	5,088	556	3,452	419	2,796	529	2,086
Pacific	319	2,930	450	3,170	246	2,767	388	3,058	372	2,212

SCARLET FEVER CASE RATES

101 cities	300	433	[2] 324	424	[2] 296	[3] 439	274	[4] 397	307	[5] 391
New England	403	546	354	478	391	513	318	362	373	423
Middle Atlantic	202	573	210	581	210	614	176	595	187	583
East North Central	340	359	407	351	[3] 331	[3] 323	330	[3] 272	343	[3] 280
West North Central	815	427	897	401	789	469	845	435	910	397
South Atlantic	156	219	[2] 155	179	173	197	145	[3] 189	181	[6] 152
East South Central	145	209	140	163	217	173	165	178	150	[7] 222
West South Central	137	63	146	59	86	55	116	101	133	50
Mountain	246	1,340	210	1,133	146	1,214	100	944	173	953
Pacific	279	254	287	361	249	340	155	243	338	243

SMALLPOX CASE RATES

101 cities	86	31	[2] 37	30	[3] 42	[3] 28	32	[4] 27	26	[5] 24
New England	0	0	0	0	0	2	0	0	0	0
Middle Atlantic	0	1	0	0	0	0	0	0	0	0
East North Central	26	35	10	29	[3] 17	[3] 34	18	[3] 37	14	[3] 32
West North Central	50	50	54	69	46	30	50	42	42	56
South Atlantic	60	51	[3] 95	42	41	62	67	[2] 27	43	[6] 26
East South Central	83	132	57	107	98	122	88	87	52	[7] 103
West South Central	137	46	142	75	90	63	133	105	95	88
Mountain	64	90	27	18	55	9	27	27	27	27
Pacific	163	84	209	99	346	68	137	55	137	26

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

Summary of weekly reports from cities, March 13 to April 16, 1927—Annual rates per 100,000 population, compared with rates for the corresponding period of 1926—Continued.

TYPHOID FEVER CASE RATES

	Week ended—									
	Mar. 20, 1926	Mar. 19, 1927	Mar. 27, 1926	Mar. 26, 1927	Apr. 3, 1926	Apr. 2, 1927	Apr. 10, 1926	Apr. 9, 1927	Apr. 17, 1926	Apr. 16, 1927
101 cities	6	7	[2] 8	8	[3] 10	[3] 8	7	[4] 8	7	[5] 8
New England	0	5	0	5	7	12	9	7	9	9
Middle Atlantic	4	6	10	7	8	6	5	6	7	5
East North Central	3	4	4	4	[3] 3	[3] 1	3	[3] 5	2	[3] 1
West North Central	2	0	2	4	8	2	10	2	4	12
South Atlantic	20	11	[2] 16	13	17	16	6	[2] 10	4	[6] 13
East South Central	21	20	16	41	31	20	10	36	0	[7] 38
West South Central	9	13	9	29	34	25	17	38	34	17
Mountain	9	9	27	0	36	0	18	0	9	9
Pacific	5	18	13	10	11	24	13	8	13	18

INFLUENZA DEATH RATES

95 cities	76	31	[2] 97	27	[3] 89	[3] 22	74	[4] 23	53	[5] 22
New England	45	19	68	7	108	12	83	7	52	16
Middle Atlantic	95	32	112	26	100	21	76	26	59	21
East North Central	65	18	104	16	[3] 110	[3] 14	81	[3] 9	67	[3] 11
West North Central	32	21	38	15	38	4	32	17	23	12
South Atlantic	51	79	[2] 83	63	59	37	59	[2] 41	43	[6] 39
East South Central	222	87	253	92	98	102	238	71	47	[7] 92
West South Central	146	22	115	26	102	30	66	52	53	43
Mountain	46	18	64	27	27	27	46	36	46	18
Pacific	18	14	14	28	21	24	14	17	21	14

PNEUMONIA DEATH RATES

95 cities	372	183	[2] 372	166	[3] 335	[3] 163	277	[4] 163	241	[5] 154
New England	356	172	429	156	467	156	358	139	302	156
Middle Atlantic	504	226	494	199	433	186	339	199	288	176
East North Central	355	142	352	141	[3] 322	[3] 148	245	[3] 132	233	[3] 142
West North Central	146	114	160	102	160	93	186	137	133	129
South Atlantic	352	254	[2] 333	215	291	224	236	[2] 159	208	[6] 188
East South Central	398	183	476	188	357	127	429	209	331	[7] 124
West South Central	260	190	163	116	185	159	159	142	181	78
Mountain	201	162	191	171	155	162	137	243	155	153
Pacific	99	93	117	110	57	128	148	117	117	117

[2] Norfolk, Va., not included.
[3] Madison, Wis., not included.
[4] Madison, Wis., and Norfolk, Va., not included.
[5] Madison, Wis., Greenville, S. C., and Covington, Ky., not included.
[6] Greenville, S. C., not included.
[7] Covington, Ky., not included.

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

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

FOREIGN AND INSULAR

THE FAR EAST

Report for week ended April 2, 1927.—The following report for the week ended April 2, 1927, 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:

Maritime towns	Plague		Cholera		Smallpox		Maritime towns	Plague		Cholera		Smallpox	
	Cases	Deaths	Cases	Deaths	Cases	Deaths		Cases	Deaths	Cases	Deaths	Cases	Deaths
Ceylon: Colombo	4	2	0	0	0	0	French Indo-China:						
British India:							Saigon	0	0	3	2	1	0
Karachi	----	0	0	0	5	0	China: Canton	0	0	0	0	1	0
Bombay	----	6	0	0	85	48	Hongkong	0	0	0	0	10	9
Calcutta	----	0	----	59	306	232	Manchuria: Antung	0	0	0	0	1	0
Rangoon	----	2	----	1	48	13	Kwantung: Dairen	0	0	0	0	4	1
Basseln	----	9	----	4	0	0	Japan:						
Madras	----	0	----	0	20	2	Kobe	0	0	0	0	1	0
Negapatam	----	0	----	0	1	1	Osaka	0	0	0	0	1	0
Siam: Bangkok	0	0	16	9	3	3	Egypt: Alexandria	1	0	0	0	1	0
Straits Settlements:													
Singapore	0	0	0	0	1	1							

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

ASIA

Arabia.—Aden, Jeddah, Perim, Kamaran.

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

British India.—Chittagong, Cochin, Tuticorin, Vizagapatam.

Portugues India.—Nova Goa.

Federated Malay States.—Port Swettenham.

Straits Settlements.—Penang.

Dutch East Indies.—Batavia, Sabang, Belawan-Deli, Pontianak, Semarang, Menado, Banjermasin, Cheribon, Palembang, Balikpapan.

Sarawak.—Kuching.

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

Portuguese Timor.—Dilly.

French Indo-China.—Haïphong, Tourane.

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

China.—Amoy, Shanghai, Tientsin.

Macao.

Formosa.—Keelung, Takao.

Chosen.—Chemulpo, Fusan.

Manchuria.—Yingkow, Mukden, Changchum, Harbin.

Kwantung.—Port Arthur.

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

AUSTRALASIA AND OCEANIA

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

New Guinea.—Port Moresby.

New Britain Mandated Territory.—Rabaul and Kokopo.

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

Samoa.—Apia.

New Caledonia.—Noumea.

Fiji.—Suva.

Hawaii.—Honolulu.

Society Islands.—Papeete.

AFRICA

Egypt.—Port Said, Suez.

Anglo-Egyptian Sudan.—Port Sudan, Suakin.

Eritrea.—Massaua.

French Somaliland.—Djibouti.

British Somaliland.—Berbera.

Italian Somaliland.—Mogadiscio.

Zanzibar.—Zanzibar.

Tanganyika.—Dar-es-Salaam.

Seychelles.—Victoria.

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

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

Reunion.—Saint Denis.

Mauritius.—Port Louis.

Madagascar.—Majunga, Tamatave.

Reports had not been received in time for publication from:

Iraq.—Basrah.
Kenya.—Mombasa.
Dutch East Indies.—Tarakan, Samarinda, Surabaya, Padang, Makasar.
U. S. S. R.—Vladivostock.

Belated information:

Week ending March 26th: *Mombasa:* One plague-infected rat has been found.

Movement of infected ships:

Fremantle.—S. S. Fezara arrived from Colombo infected with smallpox.

Singapore.—S. S. Taifoksing arrived on April 4th from Swatow infected with smallpox.

CANADA

Vital statistics—Quebec—February, 1927.—Births and deaths in the Province of Quebec for the month of January, 1927, were reported as follows:

Estimated population	2,604,000
Births	5,421
Birth rate per 1,000 population	24.98
Deaths	2,602
Death rate per 1,000 population	11.99
Deaths under 1 year	780
Infant mortality rate	143.88
Deaths from—	
Accidents (all)	27
Cancer	119
Cerebrospinal meningitis	6
Diabetes	22
Deaths from—Continued.	
Diphtheria	37
Heart disease	355
Influenza	128
Measles	51
Pneumonia	270
Scarlet fever	14
Syphilis	9
Tuberculosis (pulmonary)	208
Tuberculosis (other forms)	43
Typhoid fever	15
Whooping cough	54

CHILE

Improved sanitary conditions—Antofagasta.—Information received under date of January 20, 1927, indicates that progress has been made in modernizing health regulation at Antofagasta, Chile, and in the application of general sanitary methods. Insanitary zones and tenement houses have been cleaned up or closed. Special appropriations have been provided for the construction of cheap dwellings for workingmen and in November, 1926, an asylum for the aged and infirm was opened in Antofagasta.

ESTONIA

Communicable diseases—February, 1927.—During the month of February, 1927, communicable diseases were reported in the Republic of Estonia as follows:

Disease	Cases	Disease	Cases
Diphtheria	62	Tuberculosis	194
Measles	413	Typhoid fever	20
Scarlet fever	695	Typhus fever	6

Population, estimated, 1,114,630.

GERMANY

Vital statistics—Bavaria—years 1926, 1925, and 1913.—The following statistics of marriages and births in Bavaria in 1926, together with the figures for 1925 and 1913, were given in a report of the Bavarian Bureau of Statistics:

	Marriages			Births, including stillborn		
	1926	1925	1913	1926	1925	1913
First quarter	10,758	10,976	10,708	43,814	44,977	52,427
Second quarter	15,128	14,904	14,719	42,468	45,350	52,345
Third quarter	11,838	12,022	10,718	39,814	41,631	52,615
Fourth quarter	14,926	14,998	12,293	38,254	39,923	50,070
Total	52,650	52,900	48,438	164,350	171,881	207,457

These figures show that the number of marriages decreased slightly in 1926 as compared with 1925, although the number is still considerably larger than in 1913. Births in 1926, on the other hand, showed a large decrease from the figures for 1913. This was due chiefly to the unfavorable industrial situation and the great increase in the cost of living, factors which made it impossible in many cases to raise large families.

Deaths.—The number of deaths during the past year, together with those in 1925 and 1913, were as follows:

	Deaths, including stillborn			Infant mortality (one year old and under)		
	1926	1925	1913	1926	1925	1913
First quarter	27,725	27,264	34,209	5,982	6,170	9,098
Second quarter	26,484	26,607	33,289	5,691	5,576	9,676
Third quarter	23,167	23,838	29,545	4,914	5,566	9,382
Fourth quarter	23,274	26,339	29,093	4,113	5,436	8,649
Total	100,650	104,048	126,136	20,700	22,748	36,805

Although the total number of deaths in 1926 was smaller than in 1913, the infant mortality rate showing a decrease of 40 per cent, the number of births was insufficient to make the excess of births over deaths equal to that in 1913. The excess of births over deaths for the three years is as follows:

	1926	1925	1913
First quarter	16,089	17,713	18,218
Second quarter	15,984	18,743	19,066
Third quarter	16,647	17,793	23,070
Fourth quarter	14,980	13,584	20,977
Total	63,700	67,833	81,321

HAWAII TERRITORY

Rodent operations—Island of Hawaii—March, 1927.—During the month of March, 1927, rodent operations in the Island of Hawaii were reported as follows:

Rodents exterminated	10,498
Rodents examined	8,740
Rodents found plague infected	0
Human plague	0

Last case of rodent plague, July 24, 1926; last case of human plague, October 6, 1926.

MADAGASCAR

Plague—February 1–15, 1927.—During the period February 1 to 15, 1927, 236 cases of plague with 227 deaths were reported in the Island of Madagascar. The occurrence was distributed in the Provinces of Ambositra, Antisirabe, Itasy, Moramanga, and Tananarive, including the town of Tananarive. The distribution by type was: Bubonic, 115 cases; pneumonic, 56; septicemic, 65.

MALTA

Communicable diseases—March 1–31, 1927.—During the month of March, 1927, communicable diseases were reported in the island of Malta as follows:

Disease	Cases	Disease	Cases
Broncho-pneumonia	22	Pneumonia	9
Chicken pox	15	Puerperal fever	2
Diphtheria	7	Scarlet fever	2
Erysipelas	7	Trachoma	51
Influenza	26	Tuberculosis	29
Lethargic encephalitis	3	Typhoid fever	35
Malta fever	42	Whooping cough	252

UNION OF SOUTH AFRICA

Epidemic cerebrospinal meningitis—Cape Province—January 1–March 5, 1927.—Epidemic cerebrospinal meningitis was reported present in Cape Province, Union of South Africa, from January 1 to March 5, 1927, with 17 cases occurring in three localities. Of these, 11 cases with 6 deaths were in Europeans. The localities affected were in the Malmsbury district.

Plague—Cape Province—March 6–12, 1927.—During the week ended March 12, 1927, three cases of plague with two deaths were reported in Cape Province. The occurrence was in Richmond district, on a farm.

Rabies.—The death of a European child, believed to be due to rabies, was reported during the week ended February 26, 1927, in the Standerton district, Transvaal, Union of South Africa. Later

information received under date of March 25, 1927, shows that the child had been bitten in December, 1926, by a dog and on January 6, 1927, by a mongoose. The dog was stated to have appeared normal at the time of the biting, but 10 days later was found dead after convulsive fits. Two cases suspicious of rabies were reported later as occurring in the vicinity in a child and a woman, with fatal termination, and a third case in an adult male who recovered. The occurrence was on farms.

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

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

Reports Received During Week Ended May 6, 1927 [1]

CHOLERA

Place	Date	Cases	Deaths	Remarks
French Settlements in India				Jan. 2-22, 1927: Cases, 10; deaths, 7.
India:				
Calcutta	Mar. 13-19	59	52	
Rangoon	Mar. 13-19	4	3	
Indo-China (French)				Sept. 1-Dec. 31, 1926: Cases, 5,062.
Do				Jan. 1-31, 1927: Cases, 490.

PLAGUE

British East Africa:				
Kenya Colony—				
Mombasa	Feb. 27-Mar. 19	7	7	
Ceylon:				
Colombo	Mar. 13-19	8	5	Plague rodents: Three.
India:				
Bombay	Mar. 12-19	3	2	
Madras Presidency	Feb. 27-Mar. 5	89	33	
Rangoon	Mar. 13-19	4	3	
Indo-China (French)	Sept. 1-Dec. 31	18	15	
Do	Jan. 1-31	12		
Java:				
Batavia	Mar. 6-19	54	54	Province.
East Java and Madura	Feb. 27-Mar. 5	4	4	
Madagascar				Feb. 1-15, 1927: Cases, 236; deaths, 227. Bubonic, 115; pneumonic, 56; septicemic, 65.
Province—				
Ambositra	Feb. 1-15	14	12	
Antisirabe	do	37	37	
Itasy	do	63	57	
Moramanga	do	8	8	
Tananarive	do	106	106	
Tananarive Town	do	8	7	
Senegal:				
Tivaouane	Mar. 28-Apr. 3	2	2	
Thiès	do	3	5	
Union of South Africa:				
Cape Province—				
Richmond District	Mar. 6-12	3	2	In Europeans, on farm.

SMALLPOX

Algeria				Jan. 21-Feb. 20, 1927: Cases, 241.
British East Africa:				
Tanganyika Territory	Feb. 20-Mar. 5		14	
Canada:				
Alberta—				
Edmonton	Mar. 1-31	13		
Manitoba—				
Winnipeg	Apr. 16-22	1		
Ontario—				
Ottawa	Apr. 10-16	2		

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

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

Reports Received During Week Ended May 6, 1927—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
China:				
Chefoo	Mar. 13-19			Present.
Foochow	Feb. 27-Mar. 19			Do.
Hongkong	Mar. 13-19	14	3	
Manchuria—				
Kai-yuan	Mar. 20-26	1		
Tientsin	Mar. 13-26	3		
Chosen				Jan. 21-Feb. 20, 1927: Cases, 7; deaths, 1.
French Settlements, India	Dec. 19-Jan. 1	9	9	
Do	Jan. 2-22	24	24	
French Sudan:				
Kita	Mar. 28-Apr. 3			Present in vicinity
Great Britain:				
England—				
London	Reported Apr. 28	6		
Newcastle-on-Tyne	Apr. 3-9	1		
India:				
Bombay	Mar. 13-19	65	33	
Calcutta	do	278	232	
Karachi	Mar. 20-26	1		
Madras	do	22	2	
Rangoon	Mar. 13-19	29	9	
Indo-China (French):				
Saigon	Mar. 6-12	1		
Italy				Jan. 2-15, 1927: Cases, 2.
Japan				Dec. 26, 1926-Jan. 1, 1927: Cases, 2.
Do				Jan. 2-9, 1927: Cases, 28.
Java:				
Batavia	Mar. 13-19	1		
Mexico				Nov. 1-30, 1926: Deaths, 111.
Saltillo	Apr. 3-9		1	
Nigeria				Dec. 1-31, 1926: Cases, 87; deaths, 36.
Portugal:				
Lisbon	Mar. 27-Apr. 2	2		
Senegal:				
Dakar	Mar. 28-Apr. 3	1		
Straits Settlements:				
Singapore	Feb. 20-26	1		
Tunisia				Feb. 1-20, 1927: Cases, 10.

TYPHUS FEVER

Algeria				Jan. 21-Feb. 20, 1927: Cases, 63; deaths, 7.
Bulgaria				Jan. 1-31, 1927: Cases, 7, deaths, 3.
Chile:				
Santiago	Nov. 15-Dec. 31	7		
Chosen				Dec. 1-31, 1926: Cases, 11; deaths, 3.
Estonia				Feb. 1-28, 1927: Cases, 6.
Japan				Jan. 2-29, 1927: Cases, 2.
Lithuania				Jan. 1-31, 1927: Cases, 24.
Mexico				Nov. 1-30, 1926: Cases, 42.
Poland				Feb. 27-Mar. 5, 1927: Cases, 101; deaths, 11.
Tunisia				Feb. 1-20, 1927: Cases, 51.
Union of South Africa:				
Cape Province—				
Clydesdale	Mar. 6-12			Outbreaks.

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

Reports Received from January 1 to April 29, 1927 [1]

CHOLERA

Place	Date	Cases	Deaths	Remarks
China:				
Canton	Nov. 1-30	10	3	
Chungking	Nov. 14-20			Present.
Do	Jan. 2-Feb. 19			Do.
Tsingtao	Nov. 14-Dec. 11			Do.
Chosen	Sept. 1-Oct. 31	252	159	
French Settlements in India	Aug. 29-Dec. 18	131	97	
India	Oct. 10-Jan. 1			Cases, 20,298; deaths, 3,507.
Do	Jan. 2-Feb. 12			Cases, 15,862; deaths, 8,910.
Bombay	Jan. 9-29	2	1	
Calcutta	Oct. 31-Jan. 1	385	313	
Do	Jan. 2-Mar. 12	542	416	
Madras	Dec. 26-Jan. 1	2	2	
Do	Jan. 2-Mar 19	12	9	
Rangoon	Nov. 21-Jan. 1	11	7	
Do	Jan. 2-Mar. 19	49	44	
Indo-China	July 1-Aug. 31			Cases, 3,446; deaths, 2,276.
Saigon	Oct. 31-Nov. 13	2	2	
Province—				
Annam	July 1-Aug. 31	511	401	
Cambodia	do	727	472	
Cochin-China	do	432	349	
Kwang-Chow-Wan	do	703	361	
Laos	do	56	47	
Tonkin	do	1,017	646	
Japan:				
Hiogo	Nov. 14-20	3		
Philippine Islands:				
Manila	Oct. 31-Nov. 6	1		
Russia	Aug. 1-Sept. 30	8		
Siam	Apr. 1-Jan. 1			Cases 7,847; deaths, 5,164.
Do	Jan. 2-Mar. 5			Cases, 333; deaths, 251.
Bangkok	Oct. 31-Jan. 1	16	5	
Do	Jan. 9-Mar. 5	40	21	
Straits Settlements	July 25-Oct. 16		60	
Singapore	Nov. 21-Jan. 1	14	8	
Do	Feb. 6-12	1		

PLAGUE

Algeria:				
Algiers	Reported Nov. 16	1		
Bona	Jan. 11-19	3	2	
Oran	Nov. 21-Dec. 10	32	22	
Tarafaraoui	Nov. 1-Dec. 9	10	9	Near Oran.
Angola:				
Benguela district	Oct. 1-Dec. 31	17	10	
Do	Jan. 19-31	1		At Cavaco.
Cuanza Norte district	Dec. 1-31	18	10	
Mossamedes district	Dec. 16-31	10		
Do	Jan. 19-31	3		
Port Alexander	Feb. 9-15	1		
Argentina	Jan. 9-15	5		
Azores:				
St. Michaels Island—				
Furnas	Nov. 3-17	4	1	27 miles distant from port.
Brazil:				
Porto Alegre	Jan. 1-31	4	2	
Rio de Janeiro	Nov. 28-Dec. 4	2	2	
Do	Dec. 26-Jan. 1	1	1	On vessel in harbor.
Do	Jan. 2-8	1		
Sao Paulo	Nov. 1-14	1	1	
British East Africa:				
Kenya—				
Kisumu	Jan. 16-22	1	1	
Tanganyika Territory	Nov. 21-Dec. 18		12	
Uganda	Sept. 1-Oct. 31	162	152	
Canary Islands:				
Atarfe	Dec. 20	1	1	Vicinity of Las Palmas.
Las Palmas	Jan. 8-Feb. 12	2		
San Miguel	do	1		Vicinity of Santa Cruz de Tenerife.

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

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

Reports Received from January 1 to April 29, 1927—Continued

PLAGUE—Continued

Place	Date	Cases	Deaths	Remarks
Celebes:				
Makassar	Dec. 22			Outbreak.
Ceylon:				
Colombo	Nov. 14-Dec. 11	3	1	2 plague rodents.
Do	Jan. 2-Mar. 5	33	17	10 plague rodents.
China:				
Mongolia	Reported Dec. 21	500		
Nanking	Oct. 31-Dec. 18			Present.
Do	Feb. 6-Mar. 5			Do.
Ecuador:				
Guayaquil	Nov. 1-Dec. 31	26	8	Rats taken, 50,615; found infected, 184.
Do	Jan. 1-Feb. 15	43	10	Rats taken, 36,124; found infected, 129.
Egypt	Jan. 1-Dec. 9			Cases, 149.
Do	Jan. 1-Mar. 18			Cases, 14.
Alexandria	Nov. 19-Dec. 2	2		
Charkia Province	Jan. 5	1	1	At Zagazig (Tel el Kebir).
Gharbia Province	Jan. 4	1	1	
Kafr el Sheikh	Dec. 3-9	2		
Marsa Matrah	Dec. 23-29	10		
Do	Jan. 27	1		
Port Said	Mar. 12-18	2	1	
Tanta district	Nov. 19-Dec. 20	3		
Greece	Nov. 1-30	10	1	Athens and Piræus.
Athens	Nov. 1-Dec. 31	9	4	
Patras	Nov. 28-Dec. 4		1	
Piræus	Apr. 2	1		
Pravi	Nov. 27	1	1	Province of Drama-Kevalla.
India	Oct. 10-Jan. 1			Cases, 16,162; deaths, 9,905.
Do	Jan. 2-Feb. 19			Cases, 9,697; deaths, 6,413.
Bombay	Nov. 21-27	1	1	
Do	Jan. 16-Mar. 12	11	10	
Madras	Jan. 31-Jan. 1	581	324	
Do	Oct. 2-Feb. 26	757	472	
Rangoon	Nov. 14-Dec. 25	11	9	
Do	Jan. 2-Mar. 5	44	40	
Do	Feb. 1-28			Rats found plague infected, 12.
Indo-China	July 1-Aug. 31			Cases, 34; deaths, 19.
Province—				
Cambodia	do	10	10	
Cochin-China	do	14	9	
Kwang-Chow-Wan	do	10		July, 1925: Cases, 22; deaths, 18
Iraq:				
Baghdad	Jan. 23-Feb. 5	2	1	
Java:				
Batavia	Nov. 7-Jan. 1	91	90	Province.
Do	Jan. 2-Mar. 5	233	226	Do.
East Java and Madura	Oct. 24-Jan. 1	17	17	
Do	Jan. 2-Feb. 19	14	14	
Madagascar:				
Province—				
Ambositra	Dec. 16-31	10	10	
Do	Jan. 1-31	32	32	
Analalava	Oct. 16-31	1	1	
Antisirabe	Dec. 16-31	2	2	
Do	Jan. 1-31	17	17	
Diego-Suarez	do	7	7	
Itasy	Oct. 16-Dec. 31	39	39	
Do	Jan. 1-31	29	29	
Maevatanana	Oct. 16-31	10	10	
Majunga	do	3	1	
Moramanga	Oct. 16-Dec. 31	92	67	
Do	Jan. 1-31	42	40	
Tamatave	Oct. 16-Dec. 31	107	69	
Tananarive	do			Cases, 533; deaths, 497.
Do	Jan. 1-31	138	133	
Town—				
Tamatave	Nov. 16-30	2		
Tananarive	Oct. 16-Dec. 31	48	34	
Do	Jan. 1-31	11	11	
Mauritius:				
Plaines Wilhems	Oct. 1-Nov. 30	3	3	
Pamplemousses	Dec. 1-31	3	3	
Port Louis	Oct. 1-Dec. 31	39	35	
Do	Jan. 1-31	5	3	

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

Reports Received from January 1 to April 29, 1927—Continued

PLAGUE—Continued

Place	Date	Cases	Deaths	Remarks
Nigeria	Aug. 1-Nov. 30	999	902	
Peru	Nov. 1-Dec. 31			Cases, 90; deaths, 26.
Do	Jan. 1-Feb. 28	79	18	
Departments—				
Ancash	Dec. 1-31	6	6	
Do	Jan. 1-31			Present.
Cajamarca	do	36	6	
Ica—				
Chincha	Nov. 1-30	1		
Lambayeque	Feb. 1-28	6	2	
Chiclayo	Nov. 1-30	3		
Do	Jan. 1-31	2		
Libertad	Dec. 1-31	2		
Do	Jan. 1-Feb. 28	6		
Lima	Nov. 1-Dec. 31	42	14	
Do	Jan. 1-Feb. 28	66	16	
Piura	Feb. 1-28	1		
Portugal:				
Lisbon	Nov. 23-26	3	2	In suburb of Balem.
Russia	May 1-June 30	44		
Do	July 1-Sept. 30	64		
Senegal	July 1-31	178	162	
Diourbel	Nov. 20-30	12	1	
Tivaouane	Dec. 19-25	6	2	In interior.
Do	Mar. 21-27	2	2	Do.
Siam	Apr. 1-Jan. 1			Cases, 30; deaths, 22.
Do	Jan. 16-Mar. 5			Cases, 9; deaths, 7.
Bangkok	Feb. 27-Mar. 5	1	1	
Syria:				
Beirut	Nov. 11-Dec. 20	4		
Do	Feb. 1-10	1		
Tunisia	Dec. 1-31			Cases, 48.
Do	Jan. 12-26			Cases, 34.
Acheche district	Feb. 11-14	14	14	Pneumonic.
Bousse	Jan. 12-26	8		
Djeneniana	Feb. 11-14	8		
Kairouan	do	3		
Mahares	do	15		
Sfax	Oct. 1-Dec. 31	304	128	
Turkey:				
Constantinople	Dec. 15-25	1		
Union of South Africa:				
Cape Province—				
Cradock district	Jan. 2-Feb. 19	3	1	
De Aar district	Nov. 21-27	1		Native.
Glen Gray district	Jan. 31-Feb. 12	8	8	
Hanover district	Nov. 14-Jan. 1	3	2	
Do	Jan. 2-8	1	1	
Middleburg district	Dec. 5-11	1	1	Do.
Orange Free State	do			Cases, 12; deaths, 2.
Bloomfontein district	Feb. 27-Mar. 5	2	2	
Bothaville district	Dec. 5-18	2	1	
Hoopstad district	Nov. 7-13	1	1	Native.
Do	Dec. 5-25	2	1	Do.
Do	Jan. 2-Feb. 12	4		
Vredefort district	Dec. 19-25	10	5	
Do	Feb. 6-12	2	1	
On vessel:				
S. S. Leconte de Lisle	Feb. 21-23	2		At Tamatave, Madagascar.

SMALLPOX

Algeria	Sept. 21-Dec. 31			Cases, 797.
Do	Jan. 1-20	86		
Algiers	Dec. 11-31	4		
Do	Jan. 1-Mar. 10	8		
Oran	Mar. 21-31	1		
Angola	Oct. 1-15			Present in Congo district.
Congo	Feb. 2-15	1		
Cuanza Norte	Nov. 1-15			Present.
Malange	Feb. 2-15	2		
Arabia:				
Aden	Dec. 12-18	1		Imported.
Belgium	Oct. 1-10	1		

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

Reports Received from January 1 to April 29, 1927—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Brazil:				
Bahia	Oct. 30–Dec. 18	12	8	
Para	Oct. 31–Nov. 6		1	
Do	Feb. 5–12		1	
Pernambuco	Oct. 17–Dec. 25	58	4	
Rio de Janeiro	Year 1926			Cases, 4,033; deaths, 2,180
Do	Jan. 2–Mar. 19	63	31	
Sao Paulo	Aug. 23–Dec. 5	34	18	
British East Africa:				
Kenya—				
Nairobi	Dec. 1–31	15	5	
Tanganyika Territory	Oct. 31–Nov. 20	2		
Do	Jan. 2–15	34	7	
Zanzibar	Oct. 1–31	23	12	
British South Africa:				
Northern Rhodesia	Nov. 27–Dec. 3			Cases, 200. In natives.
Do	Feb. 26–Mar. 4	55	2	
Bulgaria	Nov. 1–30	1		
Canada	Dec. 5–Jan. 1			Cases, 155.
Do	Jan. 2–Apr. 9			Cases, 548.
Alberta	Dec. 5–Jan. 1	132		
Do	Jan. 2–Apr. 9	203		
Calgary	Nov. 28–Dec. 25	12		
Do	Jan. 2–Apr. 2	40	1	
Edmonton	Dec. 1–31	4		
Do	Jan. 1–31	5		
British Columbia—				
Vancouver	Jan. 31–Mar. 20	7		
Manitoba	Dec. 5–Jan. 1	9		
Do	Jan. 2–Apr. 9	22		
Winnipeg	Dec. 19–25	1		
Do	Jan. 2–Apr. 9	8		
New Brunswick	Feb. 13–26	2		
Ontario	Dec. 5–Jan. 1	96		
Do	Jan. 2–Apr. 9	273		
Kingston	Jan. 1–Feb. 19	3		
Ottawa	Dec. 12–31	5		
Do	Jan. 9–Mar. 26	6		
Toronto	Dec. 14–25	14		
Do	Jan. 1–Apr. 9	79	1	
Saskatchewan	Dec. 5–Jan. 1	18		
Do	Jan. 2–Apr. 9	48		
Regina	Jan. 16–22	1		
Chile:				
Concepcion	Dec. 26–Jan. 1		5	
China:				
Amoy	Jan. 1–Feb. 26	2		
Canton	Nov. 1–Dec. 31	6		
Chefoo	Jan. 23–Feb. 19			Present.
Chungking	Nov. 7–Dec. 25			Do.
Do	Jan. 2–Feb. 26			Do.
Foochow	Nov. 7–Dec. 25			Do.
Hankow	Nov. 6–30			Do.
Hongkong	Jan. 23–Mar. 12	56	38	
Manchuria—				
Harbin	Dec. 16–31	3		
Do	Feb. 7–13	1		
Mukden	Dec. 5–11	1		
Nanking	Dec. 12–25			Do.
Do	Jan. 2–Mar. 5			Do.
Shanghai	Dec. 12–18		1	
Do	Jan. 20–Feb. 26		2	
Swatow	Nov. 21–27			Do.
Tientsin	Jan. 16–Feb. 26	20		
Chosen	Aug. 1–Nov. 30	53	19	
Seoul	Nov. 1–30	2		
Egypt:				
Alexandria	Jan. 8–14	1		
Cairo	June 11–Aug. 26	27	4	
Estonia	Oct. 1–30	2		
France	Sept. 1–Dec. 31	293		
Paris	Dec. 1–31	10	3	
Do	Jan. 1–Mar. 20	19	3	
French Settlements in India	Aug. 29–Dec. 18	118	118	

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

Reports Received from January 1 to April 29, 1927—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Germany:				
Stuttgart	Nov. 28–Dec. 4	7		
Gold Coast	Aug. 1–Nov. 30	59	14	
Great Britain:				
England and Wales	Nov. 14–Jan. 4			Cases, 2,262.
Do	Jan. 2–Mar. 26			Cases, 5,749.
Birmingham	Mar. 13–19	5		
Bradford	Jan. 9–22	2		
Cardiff	Feb. 13–19	1		
Leeds	Mar. 27–Apr. 2	1		
Monmouthshire	Feb. 25	22		
Newcastle-on-Tyne	Dec. 5–13	2		
Do	Jan. 2–Apr. 2	18		
Normanton	Dec. 30	1		9 miles from Leeds.
Sheffield	Nov. 28–Jan. 1	60		
Do	Jan. 2–Apr. 2	543	1	
Wakefield	Jan. 30–Feb. 2	2		
Scotland—				
Dundee	Reported Mar. 31	42		
Greece	Nov. 1–Dec. 31	25		
Athens	Dec. 1–31	14	2	
Guatemala:				
Guatemala City	Nov. 1–Dec. 31		15	
Do	Jan. 1–Feb. 28		51	
India	Oct. 10–Jan. 1			Cases, 22,946; deaths, 6,006.
Do	Jan. 2–Feb. 19			Cases, 31,471, deaths, 7,645.
Bombay	Nov. 7–Jan. 1	37	20	
Do	Jan. 2–Mar. 12	346	186	
Calcutta	Oct. 31–Jan. 1	449	311	
Do	Jan. 2–Mar. 12	1,598	1,140	
Karachi	Dec. 19–25	1	1	
Do	Jan. 2–Mar. 5	32	25	
Madras	Nov. 21–Jan. 1	32	2	
Do	Jan. 2–Mar. 19	242	7	
Rangoon	Nov. 28–Jan. 1	2	2	
Do	Jan. 2–Mar. 12	181	35	
Indo-China:				
Saigon	Dec. 26–Jan. 1	3		
Do	Feb. 6–12	1		
Iraq:				
Baghdad	Oct. 31–Dec. 4	7	4	
Do	Jan. 23–Mar. 5	5	1	
Basra	Nov. 7–13	1	1	
Italy	Aug. 29–Jan. 1	28		
Genoa	Dec. 30–31	1		
Do	Jan. 1–10	2		
Jamaica	Nov. 26–Jan. 1	37		Reported as alastrim.
Do	Jan. 2–Apr. 2	105		Do.
Japan	Oct. 24–Dec. 25	25		
Kobe	Nov. 14–20	1		
Do	Jan. 23–Feb. 5	2		
Yokohama	Nov. 27–Dec. 3	2		
Java:				
Batavia	do	2		Province.
East Java and Madura	Oct. 24–Dec. 25	11	1	
Do	Jan. 2–27	4	3	
Lithuania	Nov. 1–30	2		
Luxemburg	Nov. 1–Dec. 31	2		
Mexico	July 1–Oct. 31		534	
Chihuahua	Dec. 31			Several cases; mild.
Do	Jan. 31–Feb. 6			Present.
Ciudad Juarez	Dec. 14–27		2	
Manzanillo	Mar. 5–Apr. 4		4	
Mazatlan	Feb. 14–20		2	
Mexico City	Nov. 23–Dec. 25	6		Including municipalities in Federal District.
Do	Dec. 26–Mar. 26	6		Do.
Nuevo Leon State—				
Cerralvo	Mar. 11			Epidemic.
Montemorelos	Feb. 24			Reported present.
Monterey	Feb. 24–Mar. 20	64	2	Other cases stated to exist.
Parral	Jan. 31–Feb. 6			Cases, 25. Unofficially reported.
Piedras Negras district	Feb. 25	68		At Nueva Rosita.
Saltillo	Feb. 6–12		1	
San Luis Potosi	Nov. 12–Dec. 18		3	
Do	Jan. 9–Apr. 2		25	

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

Reports Received from January 1 to April 29, 1927—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Mexico—Continued.				
Tampico	Jan. 21-31	1		
Torreon	Nov. 28-Jan. 1		12	
Do	Jan. 2-Mar. 19		13	
Victoria	Feb. 24			Present.
Netherlands East Indies	Dec. 14			Island of Borneo; epidemic in two villages.
Nigeria	Aug. 1-Nov. 30	78	4	
Persia:				
Teheran	Nov. 22-Dec. 23		5	
Peru:				
Arequipa	Dec. 1-31		1	
Do	Jan. 1-31		1	
Laredo	Dec. 1			Severe outbreak; vicinity of Trujillo.
Poland	Oct. 11-Dec. 31			Cases, 32; deaths, 3.
Do	Jan. 1-8			Deaths, 1.
Portugal:				
Lisbon	Nov. 22-Jan. 1	43	4	
Do	Jan. 2-Mar. 26	31		
Rumania	Jan. 1-Sept. 30	7	1	
Russia	May 1-June 30	705		
Do	July 1-Sept. 30	884		
Senegal:				
Dakar	Jan. 9-Mar. 6	3		
Ouakam	Mar. 20-27	4		Vicinity of Dakar.
Siam	Apr. 1-Jan. 1			Cases, 711; deaths, 265.
Do	Jan. 2-Mar. 5			Cases, 64; deaths, 30.
Bangkok	Oct. 31-Jan. 1	28	10	
Do	Jan. 2-Mar. 5	34	21	
Sierra Leone:				
Makeni	Feb. 22-28	3		
Nanowa	Dec. 1-15	1		Pendembu district.
Spain	July 1-Sept. 30		9	
Valencia	Feb. 8-Apr. 2	9		
Sumatra:				
Medan	Feb. 20-26	1		
Straits Settlements:				
Singapore	Oct. 31-Jan. 1	12	2	
Do	Jan. 2-15	3	3	
Tunisia	Oct. 1-Dec. 31	9		
Do	Jan. 1-20	8		
Tunis	Jan. 1-Mar. 10	3		
Turkey:				
Constantinople	Feb. 1-7		1	
Union of South Africa:				
Cape Province—				
Albany district	Jan. 23-29			Outbreaks.
Caledon district	Dec. 5-11			Do.
Steynsburg district	...do...			Do.
Stutterheim district	Nov. 21-27			Do.
Wodehouse district	Jan. 30-Feb. 12			Do.
Natal—				
Durban district	Nov. 7-27	9		Including Durban municipality. Total from date of outbreak: Cases, 62; deaths, 16.
Orange Free State	Nov. 14-27			Outbreaks.
Bothaville district	Nov. 21-27			Do.
Transvaal	Nov. 7-20	2		Europeans.
Bethel district	Jan. 23-29			Outbreaks.
Johannesburg	Nov. 14-20	1		
West Africa:				
French Guinea—				
Kissidougou	Feb. 19			Present.
French Sudan—				
Kayes	...do...			Do.
Yugoslavia	Nov. 1-Dec. 31	4	1	
Do	Jan. 1-31	3		

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

Reports Received from January 1 to April 29, 1927—Continued

TYPHUS FEVER

Place	Date	Cases	Deaths	Remarks
Algeria	Sept. 21–Dec. 20	59	2	
Do	Jan. 1–20			Cases, 21.
Algiers	Feb. 1–Mar. 20	33		
Oran	Mar. 21–31	7		
Argentina:				
Rosario	Dec. 1–31		1	
Do	Jan. 25–31		3	
Bulgaria	July 1–Dec. 31	39	5	
Chile	Sept. 15–Nov. 15	39	4	
Concepcion	do	1		
Do	Jan. 23–29		1	
Lebu	Sept. 15–Nov. 15	6	2	
Linares	do	2		
Los Andes	do	8		
Santiago	do	18	2	
Valparaiso	Sept. 15–Dec. 25	10		
Do	Jan. 2–Mar. 19	5	1	
China:				
Antung	Nov. 22–Dec. 5	4		
Chefoo	Oct. 24–Nov. 6			Present.
Chungking	Dec. 25–31			Do.
Chosen	Aug. 1–Nov. 30	43	2	
Seoul	Nov. 1–30	1		
Do	Jan. 1–31	2	1	
Czechoslovakia	Oct. 1–Dec. 31	10		
Do	Jan. 1–Feb. 28	48		
Egypt:				
Alexandria	Dec. 3–9		1	
Do	Jan. 22–Mar. 25	2		
Cairo	Oct. 29–Nov. 4	1	1	
Estonia	Dec. 1–31	1		
Do	Jan. 1–31	7		
France	Nov. 1–30	1		
Gold Coast	Sept. 1–30	1	1	
Greece	Nov. 1–30			Cases, 12.
Athens	Nov. 1–Dec. 31	19	2	
Do	Feb. 1–28	4		
Drama	Dec. 1–31	2		
Kavalla	do	2		
Patras	Jan. 23–29		1	
Ravokan	do	1		
Saloniki	Jan. 25–31	1		
Indo-China:				
Tonkin	Aug. 1–31	2		
Ireland:				
Clare County—				
Tulla district	Jan. 9–15	1		Suspect.
Italy	Aug. 29–Sept. 23	3		
Japan:				
Tokyo Prefecture	Dec. 5–25	9		
Tokyo city	do	5	1	
Latvia	Jan. 1–31	2		
Lithuania	Sept. 1–Dec. 31	41	4	
Mexico	July 1–Oct. 31			Deaths, 534.
Aguascalientes	Jan. 9–Feb. 5	2		
Durango	Jan. 1–31		1	
Guadalajara	Jan. 25–31		1	
Mexico City	Dec. 5–11	3		Including municipalities in Federal district.
Do	Jan. 2–Mar. 26	70		Do.
Parral	Jan. 30–Feb. 5	1		
Nigeria	Sept. 1–30	1		
Palestine:				
Acre	Dec. 29–Jan. 3	1		
Beisan	Dec. 21–27	1		
Haifa	Nov. 23–Dec. 13	5		
Do	Dec. 28–Feb. 7	7		
Jaffa	Nov. 23–Dec. 27	7		
Do	Jan. 11–Feb. 21	3		
Majdal	Dec. 28–Jan. 3	1		
Nazareth	Nov. 16–Jan. 3	12		
Do	Mar. 1–7	1		
Ramleh	Jan. 31–Feb. 7	1		
Safad	Dec. 21–Jan. 3	2		

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

Reports Received from January 1 to April 29, 1927—Continued

TYPHUS FEVER—Continued

Place	Date	Cases	Deaths	Remarks
Peru:				
Arequipa	Dec. 1-31		2	
Poland	Oct. 11-Dec. 25			Cases, 341; deaths, 27.
Do	Jan. 1-Feb. 19			Cases, 414; deaths, 32
Rumania	Aug. 1-Nov. 30	255	11	
Russia	May 1-June 30	6,043		
Do	July 1-Aug. 31	3,060		
Spain	July 1-Sept. 30		4	
Seville	Mar. 16-22		1	
Syria:				
Aleppo	Mar. 13-19	1		
Tunisia	Oct. 1-Dec. 27	30		
Do	Jan. 1-20	21		
Tunis	Jan. 21-Mar. 31	4		
Turkey:				
Constantinople	Dec. 12-25	3		
Do	Jan. 16-22			1 death reported by press.
Union of South Africa	Oct. 1-Dec. 31			Cases, 233; deaths, 30.
Cape Province	do	47	7	
Do	Jan. 1-31	38	4	
East London	Nov. 21-27	1		Native. Imported.
Port St. Johns district	Dec. 5-11			Outbreaks. On farm.
Natal	Oct. 1-31	1		
Do	Jan. 1-31	6		
Orange Free State	Oct. 1-Dec. 31	31	2	
Do	Jan. 1-Feb. 19	12	3	
Transvaal	Oct. 1-31	1		
Do	Jan. 1-31	1		Native.
Yugoslavia	Nov. 1-Dec. 31	30	2	
Do	Jan. 1-Feb. 28	65	4	

YELLOW FEVER

French Sudan	Dec. 19-25	1	1	
Gold Coast	Aug. 1-Nov. 30	10	5	
Nigeria	Sept. 1-Nov. 30	4	3	
Senegal	Dec. 19-25	3	3	
Diourbel	Dec. 6	1	1	
Do	Jan. 1-20	1	1	At N'Bako.
Guinguineo	Dec. 7	1	1	
Rufisque	Nov. 27-Dec. 29	2	1	In European.
Do	Jan. 2-8	3	3	
Upper Volta:				
Gaoua district	Oct. 25	2		